

Target Audiences

Students and Research Scholars

Venue

Schedule

Date	Time
February 5	6 to 7 pm
February 6	6 to 7 pm
February 12	6 to 8 pm
February 13	6 to 8 pm
February 19	6 to 8 pm
February 20	6 to 8 pm
March 5	6 to 8 pm
March 6	6 to 8 pm
March 12	6 to 8 pm
March 26	6 to 8 pm
April 9	6 to 8 pm
April 10	6 to 8 pm
Week 9-12	10 hours

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Co-Convenor

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Dr. Govindha Rasu N, HOD, Automotive Engineering, SMEC, VIT

Dr. Manikandan M, HOD, Design and Automation, SMEC, VIT

Co-ordinators

Dr. Ashish Alex Sam, Assistant Professor, SMEC, VIT

Dr. Bibin John, Professor, SMEC, VIT

Dr. Sreeja Sadasivan, Associate Professor, SMEC, VIT

Dr. Devendra Kumar Patel, Associate Professor Sr, SMEC, VIT



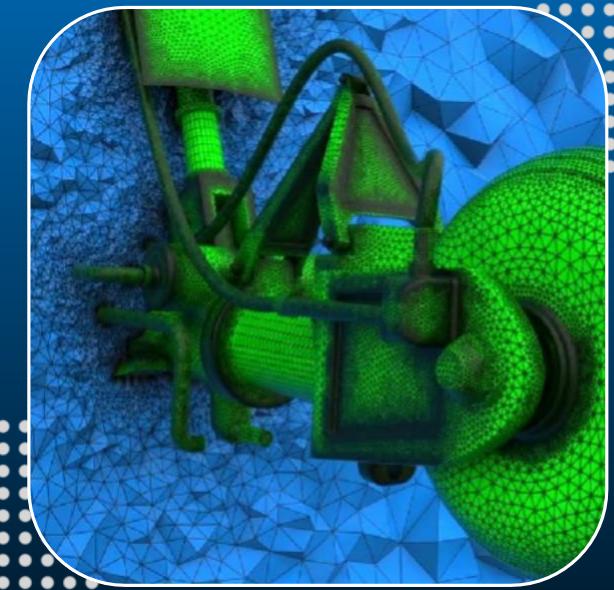
VIT[®]

Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

Value Added Course on

Computational Fluid Dynamics for Smart and Sustainable Engineering Solutions

Winter Semester 2025 - 26
VIT, Vellore



Organized by

School of Mechanical Engineering,
Vellore Institute of Technology, Vellore, India
In association with
FOSSEE, Indian Institute of Technology Bombay

Vellore Institute of Technology (VIT)

VIT has made a mark in the field of higher education in India imparting quality education in a multicultural ambiance, intertwined with extensive application-oriented research. VIT was established in 1984 by the well-known educationist, and former parliamentarian, honorable Dr. G. Viswanathan, the Founder and Chancellor, a visionary who transformed VIT into a Centre of Excellence in higher technical education. It persistently seeks and adopts innovative methods to improve the quality of higher education in all fields of science and technology. VIT is the 9th best institution of India and the 212th best institution in the world in Engineering and Technology in 2024, holding 136th position in computer science and information systems as per the QS World University Rankings by Subject.

School of Mechanical Engineering (SMEC)

The School of Mechanical Engineering at VIT is one of the renowned schools in the country and has been operational since 1984. The school features a team of exceptionally qualified faculty members, many with PhDs from elite universities of India and abroad, who educate and train the greatest brains in the country. The school is proud of the major research support it has received from various government agencies, including DST, DRDO, MNRE, CSIR, CVRDE, CPDO, MOES, AR&DB, CVRDE, ISRO, UGC, NRB, and AICTE, as well as international agencies from the Royal Academy of Engineering, UK, and the British Council UK etc. The school has signed Memorandums of Understanding (MoUs) with world-class universities and reputed industry leaders that ensure our students advance in their careers.

About the Course

This course provides a structured and hands-on introduction to Computational Fluid Dynamics (CFD) using OpenFOAM, a widely adopted open-source simulation platform. Intended for students and researchers, it blends essential CFD theory with extensive practical training in geometry preparation, meshing, case setup, solver usage, and post-processing. Core topics such as incompressible flow, heat transfer, compressible flow, and multiphase simulations are covered through detailed, guided exercises. The course also introduces advanced capabilities including dynamic mesh techniques, solver customization, and parallel computing. By the end of the program, participants will have a strong foundation in OpenFOAM-based CFD workflows, enabling them to independently build, run, and analyze simulations efficiently for a range of engineering applications.

FOSSEE, IIT Bombay

FOSSEE (Free/Libre and Open Source Software for Education) project is funded by the National Mission on Education through ICT, MHRD, Government of India. The FOSSEE team works on 'Adaptation and development of Open-Source simulation packages equivalent to proprietary software', and is based at Indian Institute of Technology Bombay.

OpenFOAM

OpenFOAM is a free and open-source CFD software package, widely used throughout engineering and science. Its extensive capabilities allow users to simulate a broad range of problems, from fluid flows with chemical reactions, turbulence, and heat transfer. Its open architecture and modular design support customization, enabling users to extend solvers and workflows for specialized research and industrial applications.

Date	Topic
February 5	CFD Fundamentals and OpenFOAM Setup
February 6	Structured Mesh (blockMesh)
February 12	Unstructured Mesh (snappyHexMesh)
February 13	Boundary Conditions
February 19	Numerical Schemes and Solvers
February 20	Incompressible Flow and Turbulence
March 5	Numerical Schemes and Solvers
March 6	Heat Transfer and Buoyancy
March 12	Multiphase Flow
March 26	Compressible Flow
April 9	Dynamic Mesh and Overset (Intro)
April 10	Solver Customization and Parallel Computing

- Prospective participants are requested to register for the VAP through the following web link - <https://events.vit.ac.in/>
- The number of participants is strictly limited to 50 based on first come first serve.
- Certificates will be issued jointly by VIT and FOSSEE, IIT Bombay to all registered participants based on attendance and evaluation.
- The sessions will be conducted as per the above schedule and will be intimated by the Course Coordinators of the VAP.
- Attendance is mandatory for all sessions.
- All participants are supposed bring their laptop for all the sessions.
- Participants are expected to submit a case study using OpenFOAM as part of the evaluation.