



Two-day workshop  
on

**Computational Fluid Dynamics  
with  
OPENFOAM  
Level - 01**

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**Oct. 30 - 31, 2019**

Organized by

**DEPARTMENT OF MECHANICAL ENGINEERING**



**NITTE**  
EDUCATION TRUST

**NMAM INSTITUTE  
OF TECHNOLOGY**

(An Autonomous Institution affiliated to VTU, Belagavi)

NITTE - 574 110, Karkala Taluk, Udupi District, Karnataka, India

## About the Institute

NMAM Institute of Technology was established in 1986. The college is affiliated to the Visvesvaraya Technological University, Belagavi and is recognized by the All India Council for Technical Education, New Delhi. The Institute is accredited by National Assessment & Accreditation Council [NAAC] **with 'A' grade with a CGPA of 3.11 out of 4 till 20<sup>th</sup> October 2022**. Four UG Programs ie. BE (Mech), BE (Civil), BE (E&E) and BE (BT) are accredited by NBA, New Delhi under Tier - 1 category till 30<sup>th</sup> June 2021. Institute is certified to the ISO 9001-2015 standards for quality education by NVT Quality Certifications (ANAB accredited). The institution has been granted Academic Autonomy under the Visvesvaraya Technological University from 2007-08.

The Institute offers graduate programs in 7 branches of Engineering - Electronics & Communication Engineering, Computer Science & Engineering, Civil Engineering, Electrical & Electronics Engineering, Information Science & Engineering, Bio-Technology and Mechanical Engineering. The college also offers postgraduate programs like, Master of Technology, Master of Computer Applications and Master of Business Administration. Besides these, students can also pursue their doctoral programs at the Institute.

## About the Department

The Department of Mechanical Engg., started in 1986 with an intake of 40. Today the department has an intake of 180 with faculty strength of 52. The Department offers a UG programme in B.E in Mech Engg. and 2 PG programmes - M.Tech in Energy Systems Engg.with an intake of 180 and Machine Design with an intake of 18 students each. The Department is also a recognized research centre under VTU, with 8 guides and more than 15 PhD students both internal and external. The department has developed Center for Alternative Fuels Research, Center for System Design, Fabrication and Testing, Center for Tool based Micromachining Research, Center for Condition Monitoring and Advanced Machining Research. The department has excellent infrastructural facilities in terms of class rooms and laboratories. The faculty members are engaged in research activities with sponsored research projects worth more than Rs. 90 lakhs being executed. The department has excellent research output in terms of publications in refereed International Journals and prestigious national and international conferences, with a total number of 75 publications in the last 3 years. The students of the department have been placed in leading companies. Many faculty have won several awards and sponsorships for attending and conducting seminars and conferences.

## Preamble

OpenFOAM is a C++ based open source platform/toolbox with a range of standard numerical solvers and pre/post processing utilities for continuum mechanics problems including computational fluid dynamics. In simple and relevant terms, OpenFOAM is a powerful free to use platform which can specifically be used for CFD simulations.

The structure of OpenFOAM requires a rather clear knowledge of the governing equations, aspects related to discretization the nature and underlying structure of the fluid domain, mesh structure and the solution methodology to solve a problem on hand.

Without some of the basics, even case setup becomes next to impossible. Thus, OpenFOAM enables holistic evolution of knowledge base pertaining to computational fluid dynamics aspects, an aspect which makes OpenFOAM different from other solvers.

### **Objective:**

- To bridge knowledge gap between theory and practice.
- To bridge gap between industry and institutes.
- Helping in creating manpower catering to the requirements of computational fluid dynamics in industries.

### **Topics to be covered**

#### **It is proposed to cover the following topics**

- DAY – 01
  - Computational Fluid Dynamics – An Overview
  - Mathematical preliminaries [Taylors Series / MVT].
  - Fluid dynamics preliminaries.
  - Conservation equations
  - Discretization of governing equations.
  - Turbulence and turbulence modelling.
- DAY – 02
  - Linux fundamentals.
  - Open FOAM – Getting started.
  - Open FOAM – Meshing fundamentals.
  - Open FOAM – Case setup and solution (Preliminary).
  - Open FOAM – Case setup and solution (Extended).
  - Open FOAM – Review of solvers and solution schemes.

### **Participants:**

Students/Professionals/Researchers from Mechanical/Civil sciences. Ideal for engineering students who have completed fourth semester/second year. Maximum number of participants is restricted to 30. Selection is on First-cum-First Served basis.

### **Resource Person:**

#### **Dr. Anand M Shivapuji**

Research Scientist Centre for Sustainable Technologies,  
Indian Institute of Science Bangalore.

**Patron :****Shri N. Vinaya Hegde**

President, NET, Mangalore

**Chairman :****Dr. Niranjan N. Chiplunkar**

Principal

**Organizing Chairman :****Dr. Shashikantha Karinka**

Professor &amp; Head

**Advisors:**

Shri Yogeesh Hegde, Registrar

Dr. I. R. Mithanthaya, Vice Principal &amp; Dean

Dr. Shrinivasa Rao B R, Vice Principal &amp; COE

Dr. Sudesh Bekal, Professor &amp; Dean R &amp; D.

Dr. Subrahmanya Bhat, Professor &amp; Dean (student welfare).

**Organizing Committee:**

Dr. Rashmi P Shetty

Mr. Suresh Shetty

Mr. Veeresha R K

Mr. Ravikiran Kamath B

Mr. Dilip Kumar K.

Mr. Srinivas Prabhu M.

Mr. Aneesh Jose

Mr. Rajath N. Rao

Mr. Krishnaprasad S

Mr. Gautama Hebbar A.

Mr. Sunil Kumar Shetty

Mr. Raghavendra Pai K

**Coordinators:****Dr. Nithin Kumar Shetty**

Assistant Professor,

Dept. of Mechanical Engg.

NMAM Institute of Technology,

Nitte-574110, Karkala Taluk,

Udupi Dist., Karnataka, India.

Email: nithinmech33@nitte.edu.in.

Mobile: 9535621260

**Mr. Vincent L Dsouza**

Assistant Professor,

Dept. of Mechanical Engg.

NMAM Institute of Technology,

Nitte-574110, Karkala Taluk,

Udupi Dist., Karnataka, India.

Email: vincentldsouza@nitte.edu.in.

Mobile: 9902419664

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**Registration Form**

Name : .....

Designation : .....

Affiliation : .....

Department : .....

Telephone No : .....

Email : .....

**DECLARATION BY THE PARTICIPANT**

The information furnished above is true to the best of my knowledge. If selected, I shall attend the programme for the entire duration. I also undertake the responsibility to inform the coordinator sufficiently in advance, in case I am unable to attend the programme.

Signature : .....

Date :

Place :

Endorsement by the Head of the Institution

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**Registration :**

The interested participants are requested to send the attached registration form and must pay a **Cash of Rs. 2000/-** to the Coordinator. The receipt for the registration fee will be issued from the NMAMIT Nitte.

**Accommodation**

Limited accommodation (free) is available in PG hostel (twin sharing) on a first-cum-first served basis

**Important dates**

Last Date of Receipt of Application : **October 22, 2019**

Intimation about Selection. : **October 24, 2019**

(Only through e-mail)

Last Date for confirmation by participant : **October 26, 2019**

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BOOK-POST

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