

Amity University Uttar Pradesh, Noida
Amity Centre of Computational Fluid Dynamics
Summary of the
1st Amity Summer School (Training and workshop)
on
Computational Fluid Dynamics
20th June 2016 - 5th July 2016

| Number of participate | | Total participants | Number of Key speakers | Number of sessions organized | Output of workshop |
|-----------------------|-----------|--------------------|--------------------------------------|------------------------------|---|
| Amity students | Outsiders | | | | |
| 73 | 35 | 108 | 11 (IITs and NITs+ Amity University) | 64 hours | 10 research papers by our students+ knowledge of CFD + Interaction of Amity student with IITs Professor+ Research collaboration |



Figure: CFD Book release ceremony

To impart fundamental knowledge of Computational Fluid Dynamics to students, Department of Mechanical (Amity School of Engineering and Technology) commenced with the “First Amity Summer School on Computational Fluid Dynamics (CFD) Training and Workshop” at University Campus, Noida.

The aim of the Amity Summer School is to provide a platform to students for understanding CFD with well-planned tutorials of commercial software ANSYS and Tec-Plot by industry experts and academicians. The participants will also be given training towards research and publishing of research papers.

More than 100 students of B.Tech/B.E; M.Tech/M.E and Ph. D. Research scholars of different domains of engineering including Mechanical, Civil, Aerospace, Automobile and Biotech from various colleges and Universities across India participated in the Amity Summer School.

Day 1: Opening Ceremony

20th June 2016, 10:30 AM to 12: 30PM, F3 Seminar Hall

First day Key-Speakers



Prof.(Dr.)PMV Subbarao, Professor, IIT Delhi said today, there are a lot of analysis projects that are getting outsourced to India that inculcated the realization of need to train aspiring engineers in filed of CFD. He emphasized that since CFD projects are an extrapolation of advanced mathematics, if the students are guided in the right way, CFD boom could be the next IT boom for India.

Dr. Basant Singh Sikarwar: Briefing about Computational Fluid Dynamics (CFD), He said that CFD as subject academically and practically has been gaining momentum across the globe and it is applied in various domains including Automobile, Aerospace, Bio-Medical, Civil, Marine, Sports etc. Although, in India it is still at infantry stage, but the subject is not even included at Undergraduate level academia. He emphasized that the CFD has various advantages in solving real world problems such as design of skyscrapers, analysis of a volcano burst and study of blood flow in humans. Dr. Basant opined that CFD is an untapped area where India can deepen its roots for systematic scientific development.

Prof.(Dr.)W Selvamurthy: Addressing the gathering, **Prof.(Dr.)W Selvamurthy,** President - Amity Science Technology and Innovation Foundation said that in recent years, there has been growing interest by various engineering companies to perform design simulation studies at different stages of product development to compete in the market. He stressed that the growing demand has resulted in increased requirement of

skilled CFD engineers, making it a good career opportunity in domain of heat transfer and fluid flows. He mentioned that the formulated curriculum for summer school will help the participants to learn and execute each stage of CFD for their projects, researches and careers. During the plenary session, Prof (Dr.) Subbarao briefed the participants on topic “Deeper Learning of Thermal Engineering through Computational Fluid Dynamics and Heat transfer.

Subsequently, this training session continued for 16 days with the gathering of all participants and the eminent scientists from the various IITs, NITs and other reputed organization.

Other Guests on the Opening Ceremony:

Dr. Anmol Ratna Saxena
Dean, Research and Consultancy
Department of Electrical
Electronics, NIT, Delhi

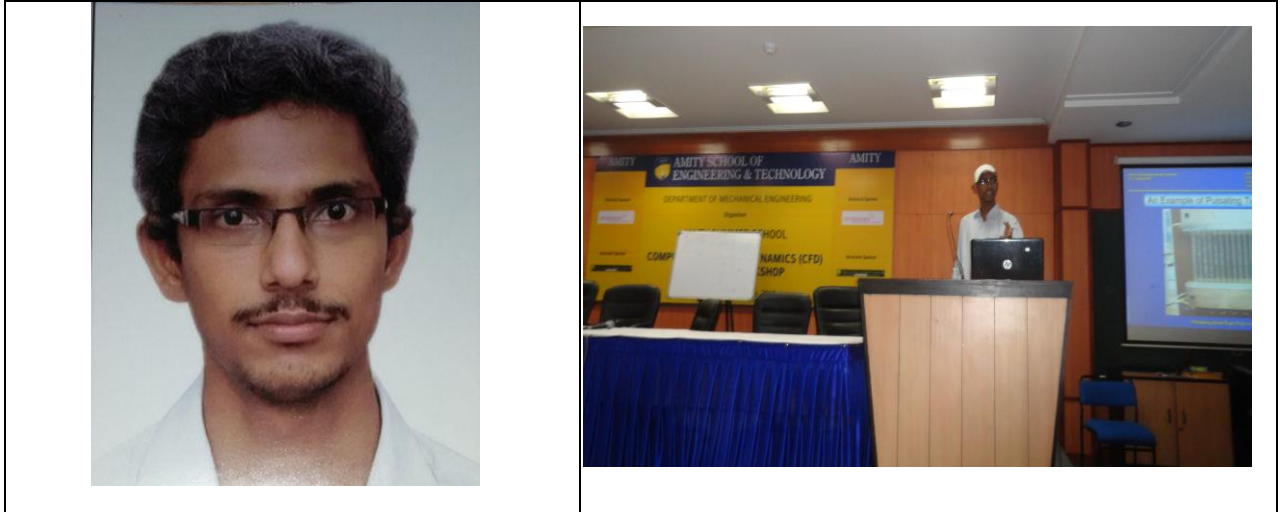


Dr. Anurag Singh
Dean, Planning and Development
& Department of Computer Science &
Engineering, NIT, Delhi



Day 2: Expert Talk

**21st June 2016, 10:30 AM to 12: 30PM, F3 Seminar Hall,
Dr. Balkrishnan Mehta, (PhD, IIT Kanpur, India)
Assistant Professor, IIT Guhwati, India**



He talked about the Modeling of Axial Conduction. He explained the various models and its application for different type of thermal related problem. He also explain about the ongoing research experiment of his lab. He addressed much about the conduction problem and the advantages of the numerical simulation. He agrees to share amity students in his research programs

Day 2: Industrial Expert Talk

**21st June 2016, 2:00 PM to 3: 30 PM, F3 Seminar Hall
Dr. Yash Aggarwal (PhD, University of Surrey, UK)
Chief Technical Consultant
India and Subcontinent,
Simpleware, UK**



He talked about the biomedical modelling and meshing techniques for the complex geometries. He describes his company- software ScanIP™ and solves various complex problem during the experta talk sesion. His sesion was very interactive. He also shows the advantage and limitation of his software over the other existng commercial software.

Day 3: Expert Talk

22nd June 2016, 10:30 AM to 12: 30 PM, F3 Seminar Hall

Dr.Krishna M. Singh, (PhD, IIT Kanpur, India)
Associate Profesor, Department of Mechanical Enginnering,
IIT Roorkee, Uttrakhand, India



He talked about the finite volume method which is a discretization technique. He has specifically chosen the world transportation system for its modelling. He also explained his research projects on the Indian train. His talk was very interactive. He also shared the working culture of IIT Roorkee and various research techniques for computational fluid dynmics.

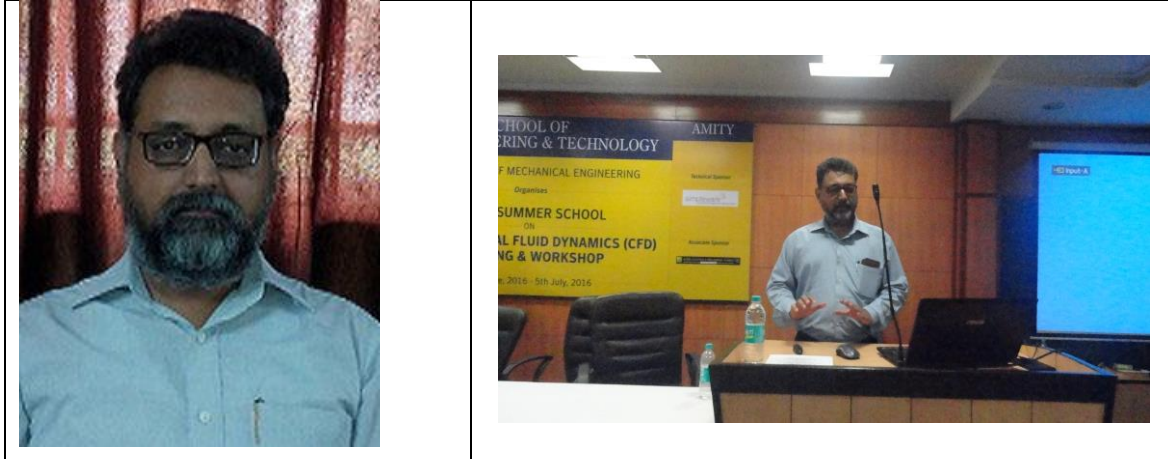
Day 4: Expert Talk

23rd June 2016, 10:30 AM to 12: 30 PM, F3 Seminar Hall

Dr. Ghanshyam Singh (PhD, IIT Madras, India)

Head, Dean (Student Affairs),

Jaypee University, India



He talked about the application of CFD in a heat exchanger, He mainly emphasize on the thermal area. He added that the Computational Fluid Dynamics is a very important tool for researcher and scientist. He explained about the various heat exchanger complexities and issues. Hi talk was very interesting.

Day 5: Expert Talk

24th June 2016, 10:30 AM to 12: 30 PM, F3 Seminar Hall

Dr. Ghanshyam Pal (PhD University of Mississippi, USA)

Assistant Professor-III, Department of Civil Engineering,

Amity University Uttar Pradesh, Noida, India



He talked about the areas of CFD application of Phase change materials. He also talked about the multiscale modelling and experimental characterization of composite materials. He emphasized the CFD structural analysis and multiscale modelling are the backbone of this century. He has also demonstrated some of the outcomes of his experiment.

Day 6: Expert Talk

25th June 2016, 10:30 AM to 1: 00 PM, 2:00 PM to 5:30 PM F3 Seminar Hall

**Dr. Basant Singh Sikarwar (PhD IIT Kanpur, India)
Associate Professor, Department of Mechanical Engineering,
Amity CFD Training, Head Trainer
Amity University Uttar Pradesh, Noida, India**



He talked about the all core area of CFD and explained some of the examples in details. He also took the doubt session and practical session on CFD. All participants enjoyed this highly interactive session and feel the strength of CFD

Day 7: Expert Talk

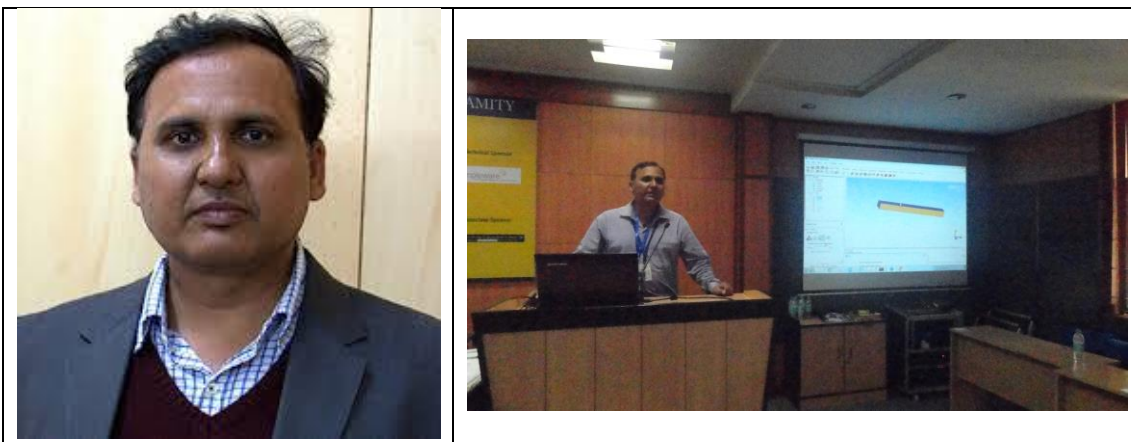
26th June 2016, 10:30 AM to 1: 00 PM, 2:00 PM to 5:30 PM F3 Seminar Hall



Dr. Basant Singh Sikarwar (PhD IIT Kanpur, India)
Associate Professor, Department of Mechanical Engineering,
Amity CFD Training, Head Trainer
Amity University Uttar Pradesh, Noida, India

He further talked about the fundamentals of CFD and the application of commercial tool. He also took the doubt session and practical session on CFD. He also delivered the technical details of the software application that how modelling of the geometries is to be done.

Day 8: Expert Talk
27th June 2016, 10:30 AM to 12: 30 PM, F3 Seminar Hall



Dr. Basant Singh Sikarwar (PhD IIT Kanpur, India)
Associate Professor, Department of Mechanical Engineering,

**Amity CFD Training, Head Trainer
Amity University Uttar Pradesh, Noida, India**

He further talked about the fundamentals of CFD and the application of commercial tool. He also took the doubt session and practical session on CFD. He also delivers the technical details of the software application that how modelling of the geometries is to be done.

**Day 9: Expert Talk
28th June 2016, 10:30 AM to 12: 30 PM, F3 Seminar Hall**

**Prof.(Dr.) Priya Ranjan, (PhD, Univerity of Maryland, USA)
Professor, Department of Electrical & Electronics Engineering,
Amity University Uttar Pradesh, Noida, India**



He has delivered his expertise on the turbulent flow. He shared his scientific skills and experiences throughout the session. He also talked about the parallelization of the code. He took the doubt session about the coding of a numerical solution.

**Day 10: Expert Talk
29th June 2016, 10:30 AM to 12: 30 PM, F3 Seminar Hall**

**Dr. Arvind Kumar Gupta, (PhD, IIT Delhi)
Professor, Department of Mechanical Engineering,
YMCA, Faridabad, Haryana**



He talked about the slurry flow and associated problems. He also explains about the commercial software GAMBIT for modelling and discretization.

Day 11: Expert Talk

30th June 2016, 10:30 AM to 12: 30 PM, F3 Seminar Hall

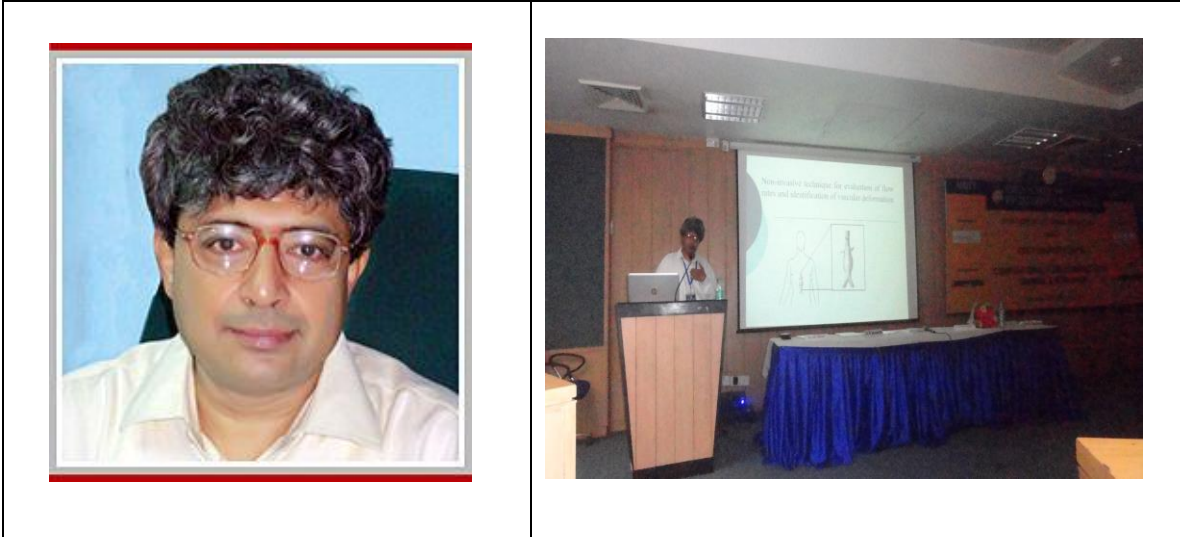


Dr.Sayed Fahad Anwar, (PhD IIT Kanpur, India)
Assistant Professor, Department of Mechanical Engineering,
AMU, Aligarh, Uttar Pradesh

He talked about the LES techniques, computer simulation of problems involving incompressible fluid flow and heat transfer and analysis of bifurcations and instabilities. He also explained the modelling of flows with low Mach number subjected to large temperature differences using Non-Oberbeck-Boussinesq models. He also showed videos of several experimental result.

Day 12: Expert Talk
01st July 2016, 10:30 AM to 12: 30 PM, F3-MDP Room

Prof. K. Muralidhar (Ph.D, University of Delaware, USA)
Dean, Faculty Affairs IIT, Kanpur, India
Professor , Department of Mechanical Engineering



He delivered his lecture on the Applications of CFD for bio-medical related applications. He explained about the natural laws and its importance. His lectures were highly scientific and interactive. He also answered various queries of the student. He showed various videos and experimental techniques on blood flow problem inside the human body. He mainly talked about the cerebral aneurysm and its modelling. He also shares some of the experimental result and modelling techniques. His lectures cover the basic fundamentals of CFD and various discretizations. He explains that the Surgical treatment of arterial malformation such as aneurysms involve open surgical repairing, coil embolization and clipping. In the cerebral context, medical intricacy has made coil embolization as the preferred technique. The major concern here is to reduce the wall pressure and wall shear at the weakened blood vessel. Mathematical modeling of flow patterns in the presence of coil embolization replaces the coil by an equivalent porous medium.

Day 13: Expert Talk

02nd July 2016, 10:30 AM to 12: 30 PM, 2:00 to 5:30PM, F3-MDP Room



**Dr. Basant Singh Sikarwar(PhD IIT Kanpur, India)
Associate Professor, Department of Mechanical Engineering,
Amity CFD Training , Head Trainer
Amity University Uttar Pradesh, Noida, India**

He further talked about the fundamentals of CFD and the application of commercial tool. He also took the doubt session and practical session on CFD . He also deliver the technical details of the software application that How modelling of the geometries is to be done.

Day 14: Expert Talk

03rd July 2016, 10:30 AM to 12: 30 PM, 2:00 to 5:30PM, F3-MDP Room

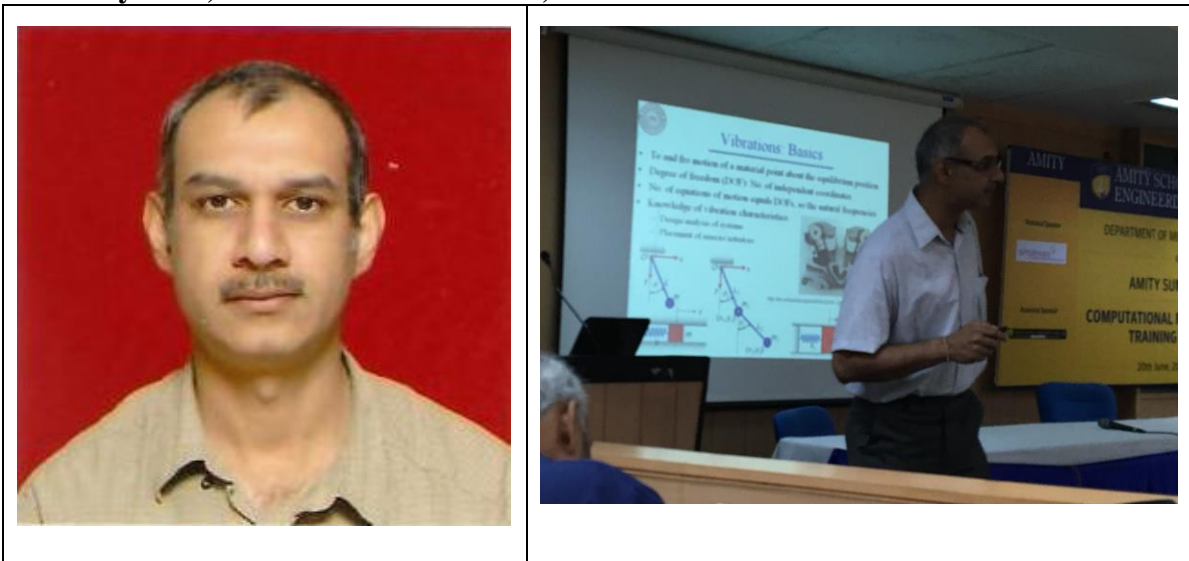


Dr. Basant Singh Sikarwar (PhD IIT Kanpur, India)
Associate Professor, Department of Mechanical Engineering,
Amity CFD Training, Head Trainer
Amity University Uttar Pradesh, Noida, India

He further talked about the fundamentals of CFD and the application of commercial tool. He also took the doubt session and practical session on CFD . He also delivers the technical details of the software application that How modelling of the geometries is to be done.

Day 15: Expert Talk

04th July 2016, 10:30 AM to 12: 30 PM, F3-MDP Room



Dr. Shakti S. Gupta (Ph.D, Vergina Tech University, USA)
Associate Professor, Department of Mechanical Engineering

He talked about the Vibration Analysis: Linear/nonlinear vibrations of discrete systems. He started his lectures by the Constitution of India, He emphasize on the green research. He shows all the depth context of nano fluid and fluid. He also explained the various material modelling techniques. He also stressed on the good meshing techniques and its importance in the research.

Day 16: Closing Ceremony

05th July 2016, 10:30 AM to 5:30 PM, F3-MDP Room

The 15 days highly research and fundamental orientated training session comes to end. The whole 15 days was full of energy. The participants enjoyed this training session a lot and the feedback of the participants are very outstanding for us. Their feedback motivates us to come up with such an highly interactive training session again and again in the near time. The concluding day has a summary of all talks and last doubt session for the participant before the lunch. The main concluding function started at 3:30 PM, the presence of Prof. Dr. W. Selvamurthy, Prof. Dr. A. K. Avasthi, Prof. Dr. Abhay Bansal, Dr. Priya Rnjan and Dr. Basnat Singh Sikarwar along with the Organizing member and participants make this ceremony a memorable ceremony.

Dr. Sikarwar also announced that during the training session, various participants completed almost 15 research paper for the publication in a Scopus Indexed Journal. Many outsiders participants from the reputed universities and organization were mutually agreed to do joint research work with Amity University Uttar Pradesh.

Various prizes were distributed among the top performer during the 15 days training and workshop.

Ms. Anjali – **1st Prize**

Ms. Tanya (KIET,Gaziabad) and Mr Sahil Grover (ASET, Noida) -**2nd Prize**

Mr.Harimohan Jha, Delhi Institute of Tool Engineering, IPU, New Delhi, -**3rd Prize**

Mr.Mukesh Roy & Mr. Nikit Gupta , **Best Organizer Award**

Dr. R.K Tyagi, Dr. R. K Shukla , Dr. Vikash Kumar, Dr. Dilbagh Panchal, Dr. Ashutosh Mishra, Mr. Mukesh Roy were felicitated by Prof. Dr. W Selvamurthy, Dr. D. K Avasthi, Dr. Abhay Bansal Dr. Priya Ranjan and Dr. Basant Singh Sikarwar, for their immense support throughout the 15 days training and workshop as a **Organizing Member**.

Dr. Basant Singh Sikarwar (Head Trainer, Amity CFD Training) and Mr. Mohit Bhandwal, Convenor, Amity CFD Training), received University Prizes for their novel and effortless contribution from **Prof. Dr. W.Selvamurthy**, (President ASTIF), so as to make this training and workshop session a grand success.

Vote of thanks was addressed by Dr. Priya Ranjan and a highly technical and regerous scientific session comes to en

Prize Distribution:

1st Row: Ms Anjali (1st), Mr Sahil & Ms Tanya (2nd)

2nd Row: Mr Hari Mohan Jha(3rd)

3rd Row: Best Organizer Award, Mr. Mukesh Roy and Mr. Nikit Gupta



Organizing Member Felicitation

Row 1: Dr. R.K Tyagi , Dr. R.K. Shukla

Row-2: Dr. Dilbagh Panchal, Dr. Ashutosh Mishra

Row 3: Dr. Meeta Sharma, Mr. Mukesh Roy



University Prize Holder from Prof. Dr. W. Selvamurthy (President, ASTIF) for Organizing this 15 days training and workshop session
Row 1: Dr. Basant Singh Sikarwar, Dr. Priya Ranjan,
Row 2: Mr. Mohit Bhandwal



Dr. Basant Singh Sikarwar



