Science Academy’s Lecture Workshop

Concept of Fluid Dynamics and its Applications (CFDA-2014)

During October 8-10, 2014 at ISM Dhanbad

Highlights of the Workshop

The science academy’s lecture workshop mainly focused on the topic “Concepts of Fluid Dynamics and its Applications (CFDA-2014)”. It was inaugurated by Professor R. Venugopal, Dean (R & D) and acting Director as a Chief Guest of the function and graced by Professor B V. Rathish Kumar, Convener, from IIT Kanpur. In his inaugural address, he explored about glimpses of concept of fluid dynamics and its applications in science and engineering. Fluid Dynamics is as old as any other subject but vibrant like any other branch as deal with all kinds of fluids, solids and gases. It is a time of multi disciplinary research which may be emphasized on joining hand together with science and engineering both and minimize the gap among them. Prof G S Seth, Head Department of Applied Mathematics welcome the participants and briefly explored about various activities of the department and about the science academy lecture workshop. Dr. M K Singh, Coordinator briefly explored about the objective of conducting science academy lecture workshop and proposed the formal vote of thanks.

There were 13 technical lectures scheduled in the technical programme for the participants and it was delivered exactly as per schedule. These may be briefly explored as follows:

1. The two technical lectures were delivered by Prof. B N Mondal, FNASc from ISI Kolkata on the topic “Water wave”. The various mathematical techniques were used to explore the water wave equations and mathematical study of water wave scattering by floating and submerged bodies have been discussed.

2. The two technical lectures were delivered by Prof. B S Dandapat, FNASc from SMIT, Sikkim on the topic “Development of thin film through spin-coating process” and “Waves on the surface of a conducting falling liquid film in presence of electromagnetic field”.

3. The two technical lectures were delivered by Prof. B V Rathish Kumar, FNASc from IIT Kanpur on the topic “Convection in porous media- Part I and Part-II”. He explored about how convection in porous media is powerful to deal the physical problems exists in nature.

4. One technical lecture was delivered by Prof. G S Seth, from ISM Dhanbad on the topic “Boundary layer theory” and explored about basic concept of boundary layer theory and its applications to address the fluid dynamics problems.

5. The two technical lectures were delivered by Prof. P Kandaswamy, FNASc from Coimbatore on the topic “Conservation principles, equations and boundary conditions” and “Introduction to waves, stability and convection”. He explored about the basic concept of fluid dynamics and various challenging problems in fluid dynamics.

6. The two technical lectures were delivered by Prof. Naveen Kumar, Head Department of Mathematics, BHU, Varanasi on the topic “Integral equations and its use in mechanics”. He explored about the Voltera and Fredholm integral equations and its applications to solve the physical problems.
7. The two technical lectures were delivered by Prof. G P Raja Sekhar, IIT Kharagpur on the topic “Introduction to interface conditions in fluid mechanics and their applications”. He explored about the industrial applications of fluid dynamics. He also delivered on the topic “Some insights on viscous flow past drops”

8. The technical lectures delivered by resource persons were summarized by Dr. M K Singh, Coordinator before the participants and taken the feedback of the science academy lecture workshop.

9. There were 110 participants from various institutes like Department of Applied Mathematics and Department of Mechanical Engineering, ISM Dhanbad, CIMFR Dhanbad, P K Roy Memorial College Dhanbad, R S P Jhariya College Dhanbad, Assansole Engineering College Dhanbad, Parasnath College, Parasnath, Central University Jharkhand, Central University Rajasthan etc. other than resource persons and officials.

10. The valedictory session was organized on 10th October at 4:00pm in which Prof. R Venugopal, Dean (R&D) has chaired the session on behalf of Director, Indian School of Mines Dhanbad. Prof Naveen Kumar, BHU and Prof. G P Raja Sekhar, IIT Kharagpur were the Guest of Honours. Prof G S Seth, HOD (Applied Maths) addresses the gathering with highlights of the science academy lecture workshop sponsored by Indian Academy of Sciences, Bangalore; Indian National Science Academy, New Delhi; The National Academy of Sciences, India, Allahabad. Prof Naveen Kumar and Prof G P Raja Sekhar both have emphasize on the continuation of this type of programmes for the benefit of students at least on annual basis. Prof. R Venugopal, Dean (R&D) was happy with the department to organize such kind of event i.e., science academy lecture workshop in ISM campus which really commendable. It will certainly help to improve the scientific temperament among faculty members of the department and participants. Dr. M K Singh, Coordinator proposed the formal vote of thanks.

11. The Fellow’s academy was in opinion that this type of programme may be conducted regularly at ISM Dhanbad at least on annual basis.

(B V Rathish Kumar)
FNASEc, Convener

(M K Singh)
Coordinator, CFDA-2014
Science Academy’s Lecture Workshop on
Concept of Fluid Mechanics and its Applications
(CFDA-2014)

Sponsored by

Indian Academy of Sciences, Bangalore

Indian National Science Academy, New Delhi

The National Academy of Sciences, India, Allahabad

Organized by

Society of Applied Mathematics
Department of Applied Mathematics
Indian School of Mines
Dhanbad-826004, Jharkhand
# Technical Programme

<table>
<thead>
<tr>
<th>8th October, 2014</th>
<th>9th October, 2014</th>
<th>10th October, 2014</th>
</tr>
</thead>
</table>
| Registration / Inauguration (9:00am-10:30am) | Technical Lecture-V (9:00am-10:15am) Prof. (Dr.) B. N. Mondal, FNASC 
ISI Kolkata “Water Waves” | Technical Lecture-X (9:00am-10:15am) Prof. (Dr.) Naveen Kumar 
Department of Mathematics 
BHU, Varanasi "Integral Equations and its Use in Mechanics" |
| Prof. (Dr.) B. V. Rathish Kumar FNASC, IIT Kanpur, Convener | Technical Lecture- VI (10:15am-11:30am) Prof. B. S. Dandapat, FNASC SMIT, Sikim “Waves on the Surface of a Conducting Falling Liquid Film in Presence of Electromagnetic Field” | Technical Lecture- XI (10:15am-11:30am) Prof. (Dr.) Naveen Kumar 
Department of Mathematics 
BHU, Varanasi "Integral Equations and its Use in Mechanics" |
| Prof. D. C. Panigrahi, Director, ISM Dhanbad, Chief Guest | | |
| Prof. R. Venugopal, Dean(R&D), ISM Dhanbad, Guest of Honour | Tea Break (10:30am-11:00am) | Tea Break (11:30am-12:00Noon) |
| | Tea Break (11:30am-12:00Noon) | Tea Break (11:30am-12:00Noon) |
| Technical Lecture-I (11:00am-12:15pm) Prof. (Dr.) B. N. Mondal, FNASC, ISI Kolkata “Water Waves” | Technical Lecture VII (12:00Noon-1:15pm) Prof. P Kandasamy “Conservation Principles, Equations and Boundary Conditions” | Technical Lecture-XII (12:00Noon-1:15pm) Prof. (Dr.) G P Raja Sekhar 
IIT, Kharagpur “Introduction to Interface Conditions in Fluid Mechanics and their Applications” |
| Technical Lecture-II (12:15pm-1:15pm) Prof. (Dr.) B. S. Dandapat, FNASC SMIT, Sikim “Development of Thin Film through Spin-coating Process” | | |
| Lunch Break (1:15pm-2:30pm) | Lunch Break (1:15pm-2:30pm) | Lunch Break (1:15pm-2:30pm) |
| Technical Lecture –III (2:30pm-3:45pm) Prof. (Dr.) B. V. Rathish Kumar FNASC, IIT Kanpur “Convection in Porous Media- Part I” | Technical Lecture-VIII (2:30pm-3:45pm) Prof. B V. Rathish Kumar FNASC, IIT Kanpur “Convection in Porous Media-Part II” | Technical Lecture- XIII (2:30pm-3:45pm) Prof. (Dr.) G P Raja Sekhar 
IIT, Kharagpur “Some Insights on Viscous Flow Past Drops” |
| Technical Lecture –IV (3:45pm-5:00pm) Prof. (Dr.) G S Seth, ISM Dhanbad “Boundary Layer Theory” | Technical Lecture –IX (3:45pm-5:00pm) Prof. P Kandasamy “Introduction to Waves, Stability and Convection” | Technical Discussion/Feedback Interaction with Participants Dr. M K Singh, ISM Dhanbad Coordinator Valedictory (3:45pm-5:00pm) |
| Tea Break (5:00pm-5:30pm) | | |

---

**Technical Discussion/Feedback Interaction with Participants Dr. M K Singh, ISM Dhanbad Coordinator Valedictory (3:45pm-5:00pm)**
Invitation

Society of Applied Mathematics (SAM)
Department of Applied Mathematics, Indian School of Mines, Dhanbad

Cordially invites you to attend the inaugural session of the

Science Academy’s Lecture Workshop on

CONCEPT OF FLUID DYNAMICS AND ITS APPLICATIONS

Sponsored by
Indian Academy of Sciences, Bangalore, Indian National Science Academy, New Delhi &
The National Academy of Sciences, India, Allahabad

CFDA 2014

8th Oct., 2014 (Wednesday) 09.30 am
at Golden Jubilee Lecture Theater, ISM, Dhanbad

Prof. D. C. Panigrahi, Director, Indian School of Mines, Dhanbad will be the Chief Guest
Prof. R. Venugopal, Dean (R&D), Indian School of Mines, Dhanbad will be the Guest of Honour

Prof. G. S. Seth
HOD (AM) & President (SAM)

Prof. B. V. Rathish Kumar
FNASc, Convener

M. K. Singh
Co-ordinator (CFDA-2014)