



शिक्षा मंत्रालय
MINISTRY OF
EDUCATION



 **RMIT**
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SPARC India-Australia Workshop on 'Vehicle Aerodynamics'

Overview

Scheme for Promotion of Academic and Research Collaboration (SPARC) aims at improving the research ecosystem of India's Higher Educational Institutions by facilitating academic and research collaborations between Indian institutions and the best institutions in the world from 28 selected nations as to jointly solve problems of national and/or international relevance. The SPARC scheme promotes bilateral cooperation through academic and research partnerships through India-Australia Workshop on 'Vehicle Aerodynamics' at MNNIT Allahabad, Prayagraj (Uttar Pradesh) during 11-25 January 2024.

The course is intended for senior undergraduate and postgraduate students and will impart a comprehensive knowledge in designing commercial vehicle from aerodynamics point of view leading to make it fuel efficient and environment friendly. The course will also focus on various aspects of aero-acoustics as vehicle aero-acoustic performance is directly related to safety and comfort of the driver and passengers. The course contents will also highlight the evaluation of commercial vehicles in India and its impact on global vehicle market. The course content will also include retrofitting of heavy vehicles, vehicle recycling and environmental impact of design and intelligent vehicle design and road safety.

The course will be delivered in hybrid mode for 2 hours a day for the 15 days. The timing of the course is conveniently scheduled that even the students can attend the course after their regular classes. Interested participants (from undergraduate and post-graduate levels) can join the course at MNNIT Allahabad in offline mode, whereas the outstation participants can also join this course online. There is no course fee/ registration fee to attend the course. However, all the participants need to fill-up a Google form showing their interests to attend the course. The course completion certificate will be given to the participants on the last day of the course.

The course will be delivered by Prof. Firoz Alam, a Professor in the School of Aerospace, Mechanical and Manufacturing Engineering at RMIT University, Melbourne (Australia), who is an internationally acclaimed academic and researcher with proven knowledge, experience, and demonstrable ability in teaching, consultancy, research, and training in the field of vehicle aerodynamics. Indian experts and host faculty members will be associated with the foreign expert to ensure smooth delivery of the course. The course is planned and offered as per the norms set by SPARC and Motilal Nehru National Institute of Technology Allahabad, India.

Name	SPARC India-Australia Workshop on 'Vehicle Aerodynamics'
Dates	11 January – 25 January 2024
Location	The course will be conducted Hybrid mode at the Motilal Nehru National Institute of Technology (MNNIT) Allahabad, Prayagraj-211004, U.P. (India)
Faculty	Prof. Firoz Alam (RMIT University, Melbourne, Australia) Dr. Akshoy Ranjan Paul (MNNIT Allahabad) Dr. Subhankar Sen (IIT-ISM Dhanbad)



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**Course
Schedule**

Thursday 11 Jan. 2024	Lecture Module 1: 06:30 PM to 08:30 PM (2 hr) Topic: An Overview of Global Automobile Industries Industrial and Vehicle Aerodynamics
Friday 12 Jan. 2024	Lecture Module 2: 06:30 PM to 08:30 PM (2 hr) Topic: Introduction to Industrial and Vehicle Aerodynamics, Some Fundamentals of Fluid Mechanics & Performance of Passenger Cars and Light Vehicles.
Saturday 13 Jan. 2024	Lecture Module 3: 10.00 AM to 12.00 Noon Topic: Vehicles Directional Stability, Safety, Comfort and Crosswind Effect
Sunday 14 Jan. 2024	Lecture Module 4: 10.00 AM to 12.00 Noon Topic: Aerodynamics of Commercial Vehicles (Trucks)
Monday 15 Jan. 2024	Lecture Module 5: 06:30 PM to 08:30 PM (2 hr) Topic: Aerodynamics of Commercial Vehicles (Buses, Delivery vans/ Utility vehicles).
Tuesday 16 Jan. 2024	Lecture Module 6: 06:30 PM to 08:30 PM (2 hr) Topic: Vehicle Aerodynamic Noise and Aeroacoustics
Wednesday 17 Jan. 2024	Lecture Module 7: 06:30 PM to 08:30 PM (2 hr) Topic: Spray, Splashes and Soiling, and their Reduction Strategy
Thursday 18 Jan. 2024	Lecture Module 8: 06:30 PM to 08:30 PM (2 hr) Topic: Vehicle Aerodynamic Measurements, Wind Tunnel Testing & Techniques
Friday 19 Jan. 2024	Lecture Module 9: 06:30 PM to 08:30 PM (2 hr) Topic: Racing Car (High Performance Vehicle) Aerodynamics
Saturday 20 Jan. 2024	Lecture Module 10: 10.00 AM to 12.00 Noon Topic: Wind Engineering: Buildings, Structures, Bridges and Wind Turbines
Sunday 21 Jan. 2024	Lecture Module 11: 10.00 AM to 12.00 Noon Topic: Vehicle's Heating, Ventilating and Air Conditioning
Monday 22 Jan. 2024	Lecture Module 12: 06:30 PM to 08:30 PM (2 hr) Topic: Goods and Passenger Train Aerodynamics
Tuesday 23 Jan. 2024	Lecture Module 13: 06:30 PM to 08:30 PM (2 hr) Topic: Fundamentals of Electric Cars
Wednesday 24 Jan. 2024	Lecture Module 14: 06:30 PM to 08:30 PM (2 hr) Topic: Application of Computational Fluid Dynamics (CFD) in Vehicle Aerodynamic Evaluation (Part A)
Thursday 25 Jan. 2024	Lecture Module 15: 06:30 PM to 08:30 PM (2 hr) Topic: Application of Computational Fluid Dynamics (CFD) in Vehicle Aerodynamic Evaluation (Part B). Evaluation of Learning Outcomes (MCQ Test & Feedback) & Certificate distribution.

Registration:

There is no course fee.

However, all the participants need to fill-up and submit a Google form given in the following link:

https://docs.google.com/forms/d/e/1FAIpQLSfDpgW9tVsWS4gajKYQ9yM1ayOHpjkZrInICUnxFEs1jJ_4Yw/viewform?usp=sf_link

International Expert:



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Professor Firoz Alam, RMIT University, Melbourne (Australia)

Professor Firoz Alam completed his Ph.D. in Road vehicle aerodynamics and Aero-acoustics from RMIT University, Melbourne, Australia in 2001. He completed M.Sc. (combined with Bachelor's degree) in Aeronautical Engineering with 1st class Honours (First Class First) from Riga Civil Aviation Engineers Institute, Latvia in 1991. Dr. Alam joined the School of Aerospace, Mechanical and Manufacturing Engineering at RMIT University as Lecturer in January 2002. He was promoted to Senior Lecturer in 2006, Associated Professor in 2011 and full Professor in 2015. In addition to teaching and research responsibilities, Prof. Alam has been serving as Program Director for Mechanical Engineering at RMIT University over 15 years. He has been

heavily involved in teaching, research and administration. His research specialization includes thermal engineering, energy and energy policy, aerodynamics of aircraft, road vehicles, trains, buildings and wind turbines, sports aerodynamics and engineering education. His thermal engineering research includes building energy performance, heating, ventilation and air conditioning, renewable and conventional energy. Prof. Alam has supervised over 15 PhD students as principal supervisor. He has undertaken over 10 energy and aerodynamics related commercial projects with General Motors-Holden (GMH), Ford Motor Company, Queensland Rail, Breeze Air, Freight Link, Neopurple, SCT Logistics, National Pacific Rail, ACI logistics, Ministry of Power, Energy and Mineral Resources Bangladesh, Ministry of Mines and Petroleum Afghanistan, Department of Foreign Affairs and Trade (DFAT) Australia. Prof. Alam has successfully completed a large research project (over 1.2 million dollar) on energy conservation funded by the Australian Federal Government and Ministry of Power, Energy and Mineral Resources Bangladesh. Currently Prof. Alam is leading a skills enhancement project for Afghan Ministry of Mines and Petroleum funded by the Australian Federal Government with the support of Indian Central Government. Professor Alam has been awarded numerous awards including RMIT University Teaching Award, Emerging Researcher Award, Visiting Research Fellowship at Princeton University and NASA (USA). Currently he is serving as a member of the Editorial Board for Sports Engineering, published by Springer, assessor of Australian Research Council (ARC) and European Research Council (ERC). He is also serving as external invited referee for many reputed Journals such as Nature, National Geographic, Computers & Fluids, Energy and Buildings, Building and Environment, Applied Thermal Engineering, Wind Engineering and Industrial Aerodynamics, Sports Engineering, Sports Technology, Sports, Medicine and Science, Sports Science, Applied Biomechanics, Fuel, Powder Technology, European Journal of Engineering Education, Experimental Thermal Fluid Science, etc. Prof. Alam is a Fellow of Engineers Australia (IEAust) and Chartered Professional Engineer. He has delivered invited keynote papers at numerous international conferences and seminars on energy and power and allied areas. He has published over 200 scientific publications as book, book chapters, journal articles and conference papers. His research in applied aerodynamics and thermodynamics has notable impact and has been widely reported by the print and electronic media worldwide. Prof. Alam has chaired and organized major international conferences and Scientific Committees. He was the organizing Chair of 19th Australasian Fluid Mechanics Conference (AFMC2014) and founding chair of International Conferences on Energy and Power (ICEP2016, ICEP2018)- a popular conference series. He was also Co-Chair of the 4th APCST2009, held in Honolulu, USA in 2009 and 5th APCST2011 held in Melbourne in 2011. He has chaired aerodynamics, thermodynamics, and heat transfer sessions of a range of international conferences. He is also an active member of the International Advisory Committee for ICME, ICMIEE, ICTE, ICMERE, ICESD2020 and WEES2020.

Contact Details for Registration/Further Query:

Dr. Akshoy Ranjan Paul

[Indian PI, SPARC Research Project]

Associate Professor

Department of Applied Mechanics.

MNNIT Allahabad

Prayagraj- 211004, Uttar Pradesh. India.

Email: arpaul@mnnit.ac.in

Mobile: +91-9336060762

Dr. Subhankar Sen

[Indian Co-PI, SPARC Research Project]

Associate Professor

Department of Mechanical Engineering

IIT (ISM) Dhanbad

Dhanbad- 826004, Jharkhand. India.

Email: ssen@iitism.ac.in

Mobile: +91-9471192536