



An

International Short-Term Course

On

***"Design, Modelling & Simulation of Electric
Vehicles"***

(29th January-2nd February 2018)



Organised By:

College Of Technology,

G. B. Pant University of Agriculture & Technology,

Pantnagar-263145, Uttarakhand, India.

1.0 Overview

India has set the 2021 average CO₂ tailpipe emissions target to 113gCO₂/km while the EU has set the 2020 average CO₂ tailpipe emissions target to 95gCO₂/km which is a significant challenge when the 2009 actual average CO₂ tailpipe emissions stood at 145.7gCO₂/km. Transport Electrification is the long term solution to the growth in vehicles and associated emissions, as electricity allows for much greater flexibility in the energy source such as renewable and clean sources as well as an increase in energy delivery. The course deals with developing the necessary understanding of Electric Vehicle Engineering including principles of operation of electric traction systems, energy storage systems, electrical machines and power electronics for electrical drive and battery charging systems. In addition advance topics in grid ancillary services using Electric Vehicles are explained. A model and live simulations are also guided and explored.

The Course is delivered by internationally acclaimed academic, researcher and practitioner, Dr Eur. Ing. Ing. Brian Azzopardi, with proven knowledge, experience, and demonstrable ability in teaching, consultancy, research, and training in the field of modern transportation system and Electric vehicles. The course will be planned and offered in accordance with the of GIAN program.

2.0 Objectives:

The primary objectives of the course are as follows:

- i. Exposing participants to the fundamentals of science and engineering in modern transportation systems and Electric vehicles.
- ii. Building in confidence and capability amongst the participants in the application of Electric Vehicles and techniques in terms of design modelling and simulation.
- iii. Providing exposure to practical problems and their solutions, through case studies and live/simulation based projects in Electric vehicles.

3.0 Teaching Faculty:

(a) **Dr. Brian Azzopardi (Foreign Expert)**

(b) **Dr. Rajiv Singh (Internal Expert)**

(c) **Dr. Neeraj Bisht (Internal Expert)**

4.0 Course details:

4.1 Tentative Duration: 29th January 2018- 2nd February 2018 (5 days)

4.2 Brief Course Contents:

Brief introduction to the history of electrical vehicles, Battery and storage in electrical vehicles, problems associated and solutions available. Alternative sources of energy storage in Electric Vehicles, Fuel Cells for energy storage in EV. Application of Electric machines & Speed controllers in Electrical Vehicles, Complete Electrical Vehicles modelling. Electrical Vehicles- design considerations. Design of ancillary systems in Electrical Vehicles, Various Case studies on electrical vehicles.

5.0 (a) Participants who can attend:

- Entrepreneurs, Executives, engineers and researchers from manufacturing, service and government organizations including R&D laboratories.
- Student at all levels (B.Tech./M.S.c./M.Tech./Ph.D.) or Faculty from reputed academic institutions and technical institutions.

(b) Registration Fees:

- Any participant from abroad: \$ 150
- Professionals from Industry/ Research Organizations: 5000 INR
- Professionals from academic institutions: 3000 INR
- Students from research/academic institutions: 1000 INR

The above fee includes all instructional materials, computer use for tutorials, free internet facility at the time of course classes. The participants will be provided with single bedded accommodation and food on payment basis subject to availability in the guest houses of the university.

(c) Registration Process:

Web register at GIAN registration portal (www.gian.iitkgp.ac.in/GREGN/index) with once in life time fee of INR 500. Already registered persons can skip this step.

Click "Course Registration" tab at GIAN Portal for displaying the list of approved courses. From the displayed list

'check-box' select "Design, Modelling & Simulation of Electrical Vehicles" course & click 'save' button for registration. Finally click "Confirm course" to confirm your registration.

Fill the form under "Application" tab either on-line or offline. The signed offline application should be sent to the course- coordinator via email.

Bank Account Details: The fees should be paid in the form of Draft/NEFT/RTGS Payable in favour of GIAN ELECTRICAL (SBI Pantnagar, Uttarakhand), Account no: 35938055149, Branch Code:1133, MICR Code: 263002901, IFSC Code: SBIN0001133.

6.0 CV of Experts:

6.1 Brief CV of Dr. Brian Azzopardi (Foreign Expert):



Dr. Eur. Ing. Ing. Brian Azzopardi is Senior Lecturer II at the Malta College of Arts, Science and Technology (MCAST), the highest academic level to a faculty member at MCAST and is one of only 5 Senior Lecturers II. Since 2011, he was appointed as a senior faculty member and retained visiting status at Oxford Brookes University (OBU) and Kaunas University of Technology (KTU). He is former Associate Professor in Electrical Power and Energy at KTU and a former Senior Lecturer in Electric Vehicle Engineering at OBU. He has worked for Enemalta Corporation on the development and operations of the high voltage network, and as consultant on award-winning, first-time implemented projects in the energy field. His publications have been widely cited internationally. He also held honorary visiting positions at **The University of Manchester** and the **University of Malta**. He has over 16 years of academic and industrial experience in the power systems, renewable energy systems and electric vehicles and has published over 75 scientific and technical publications. He has been involved as principal / co-investigator / researcher in a number of industry funded pilot scale projects as well as projects funded by the UK Technology Strategy Boards (TSB), UK Engineering and Physical Science Council (EPSRC) (WISE-PV and Hybrid Solar Cell projects) and the European Commission (BATTERIE, HI-CON PV, StableNextSol, RELY projects), ERANETMED programme (EdGe-WiSe, 3D-Mgrid projects), the FUSION programme supported by the Malta Council for Science and Technology (Water Resource Management project) and several projects supported by the Lithuanian Research Council.

6.2 Brief CV of Dr. Rajiv Singh (Course Coordinator):



Dr. Rajiv Singh is presently with the **Department of Electrical Engineering, College of Technology, G.B. Pant University of Agriculture and Technology, Pantnagar, Uttarakhand**. He has around twelve years teaching and research experience in several reputed academic institutions in India. The areas of his research interests include Control, Instruments and Sensors, Wind, PV and other renewable energy systems, Energy policy studies, Smart materials etc. He has several publications in peer-reviewed journals/conferences of national and international repute along with book chapters published by reputed international publishers. He has also attended several national and international conferences in India and presently holds a research project funded by TEQIP World Bank. **He has organised a GIAN course programme between 21st-25th Nov, 2016 on "Techno-Economics of solar PV Energy Systems" with the help of Dr. Brian Azzopardi as foreign expert.**

6.3 Brief CV of Dr. Neeraj Bisht (Co-Coordinator):



Dr. Neeraj Bisht is presently with the **Department of Mechanical Engineering, College of Technology, G.B. Pant University of Agriculture and Technology, Pantnagar, Uttarakhand**. He has a wide teaching and research experience. The areas of his research interests include Electric Vehicles, Fracture Mechanics, Experimental Stress Analysis and Composite Materials etc. He has several publications in peer-reviewed journals/conferences of national and international repute. He has also attended several national and international conferences in India.

7.0 Contact Persons:

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- (b) Dr. Neeraj Bisht is presently with the Department of Mechanical Engineering, College of Technology, G.B. Pant University of Agriculture and Technology, Pantnagar, Uttarakhand. dr.neerajbisht@gbpuat-tech.ac.in, 9760995811

Details on; www.gbpuat.ac.in