ABOUT THE FDP

The Faculty Development Programme is intended to provide opportunity for faculty members and researchers employed in engineering institutions approved by AICTE to enhance their knowledge and to keep abreast with the latest technical developments in the field of Automotive Engineering related to vehicle subsystems. The primary focus of the programme is to give theoretical exposure and hands-on experience in vehicle subsystems to the participants. The programme will equip them to evaluate the performance of the vehicle subsystems using modern tools and equipment.

MAJOR TOPICS INCLUDE

- ✓ Automotive Engine Development-Trends and Technologies
- ✓ Fault diagnosis of various sensors in MPFI and CRDI engines using Ultrascan P1
- ✓ Advanced Combustion Technologies for IC Engines
- ✓ Two Wheeler emission control and emission standards
- ✓ Demonstration of Engine Performance and Emission Test using AVL Software and Instrumentation
- ✓ Directional stability & performance of a Passenger car
- ✓ Active & Passive safety system on vehicles
- ✓ Vehicle handling characteristics
- ✓ Modern steering, suspension and braking systems
- ✓ Hands-on training to solve vehicle dynamics mathematical model using MATLAB
- ✓ Novel materials and its application to automotive engineering
- ✓ Study and fault diagnosis of Automotive electrical system
- ✓ Vehicle Testing using Chassis dynamometer
- ✓ Hands-on training on Fuel injection systems by M/s. BOSCH, Chennai
- ✓ Industrial Visits and Field Trips

RESOURCE PERSONS

Eminent persons from premier educational institutions and practising engineers from leading automotive industries will share their expertise.

REGISTRATION

To register, duly filled up and certified registration form needs to be submitted along with a Demand Draft for Rs.300 only. The Demand Draft should be drawn in favour of 'The Principal, Sri Venkateswara College of Engineering', payable at Chennai. The paid amount will be refunded to the participants at the end of the programme. The number of participants is limited to 50 and the selection is made on first-come-first-serve basis. Applications will be processed as and when they are received and the selection will be intimated within 3 working days.

The registration form can be downloaded from college website : *www.svce.ac.in/aictefdp.auto*

TRAVEL, BOARDING AND LODGING

The reimbursement of travel expenses will be made as per AICTE guidelines. Boarding and lodging for outstation participants will be arranged at Sri Venkateswara College of Engineering Hostels. The other participants can use the college bus for to and fro journey.

ADDRESS FOR COMMUNICATION

The Coordinator

AICTE Sponsored FDP on Automotive Vehicle Subsystems

Department of Automobile Engineering
Sri Venkateswara College of Engineering
Pennalur, Sriperumbudur (TK) - 602 117
Tamil Nadu, INDIA

Phone : +91-44 27152000, Extn. 450, 451, 454
Mobile : 98416 93964, 98414 96037
Email : *aictefdp.auto@svce.ac.in*
Website : *www.svce.ac.in/aictefdp.auto*

AICTE
SPONSORED

FACULTY DEVELOPMENT PROGRAMME
on

Theory and Performance Evaluation of Automotive Vehicle Subsystems using Modern Tools and Equipment

(November 6 to 21, 2017)

Convener

Dr. J. Venkatesan

Coordinators

Dr. S. Premnath
J. Dhanabal

Organized by

Department of Automobile Engineering
SRI VENKATESWARA COLLEGE OF ENGINEERING

(Autonomous - Affiliated to Anna University)
Pennalur, Sriperumbudur Tk - 602 117

ABOUT THE COLLEGE

Sri Venkateswara College of Engineering (SVCE), a premier self-financing engineering autonomous institution started in the year 1985 and affiliated to Anna University, Chennai. The college is managed by Sri Venkateswara Educational and Health Trust. The college conducts 10 UG Programmes and 10 PG Programmes in Engineering/Technology and the courses are approved by AICTE. The college is accredited by National Assessment and Accreditation Council (NAAC). The college is situated in a calm environment about 37 km from Chennai and situated on Chennai-Bangalore National Highway (NH4) at Pennalur in Sriperumbudur Taluk, Kancheepuram District.

ABOUT THE DEPARTMENT

The department of Automobile Engineering was established in the year 1999 with a mission to educate and impart technical knowledge to the students to become globally competent in the field of Automobile Engineering. It has well-qualified and motivated faculty members with relevant experience in their area of specialization. The department is equipped with most modern and state-of-art laboratories like Engine Testing, Automotive Components, Automotive Electrical and Electronics, Vehicle Maintenance and Re-conditioning, 2&3 Wheeler, Automotive Fuels and Lubricants, CAD/CAM, etc., The department is also equipped with 2/3/4 Wheeler Chassis Dynamometer to simulate the vehicle as in on-road condition. It provides consultancy services to research scholars and automotive industries in the field of engine performance and emission testing using alternate fuels with the help of advanced instruments like AVL Pressure pickup, Angle encoder and Data acquistion system. The department is accredited by NBA since 2006.

LABORATORY FACILITIES

- AVL Indimodule System for Combustion analysis, AVL 5 gas analyzer & Smokemeter
- Automotive multi-cylinder engine (MPFI engine, CRDI engine) test rigs
- Chassis dynamometer for 2/3/4 wheelers
- Hydraulic, Electrical & Eddy current dynamometer with piezoelectric pickup & angle encoder
- Modern Engine Analyzer (Ultrascan P1)
- Softwares like CREO, ANSYS, MATLAB
- Fuel Injection Pump calibration test bench
- Semi-automatic wheel alignment gauge
- Two wheeler engine test rig
- Test bench to calibrate automotive electrical accessories
- Battery tester, Ignition coil tester, Spark plug tester
- Bomb calorimeter & Junker's calorimeter
- Apparatus to test the properties of fuels & lubricants
- Headlight beam adjuster
- Fuel injector tester
- Chain test rig
- Shock absorber test rig
- Cylinder reboring and Valve refacing machine
- Cut section demo model of Maruti omni car

ORGANIZING COMMITTEE

Dr. J. Venkatesan
Professor & Head, Automobile Engineering, SVCE

Dr. V. Ganesh
Associate Professor, SVCE

Mr. A. Balasubramanian
Assistant Professor, SVCE

Dr. S. Premnath
Assistant Professor, SVCE

Mr. J. Dhanabal
Assistant Professor, SVCE

Mr. K. Paul Durai
Assistant Professor, SVCE

Mr. G. Ravi
Assistant Professor, SVCE

Mr. Ramanjaneyulu Kolla
Assistant Professor, SVCE

Mr. E. Ravindar Rao
Assistant Professor, SVCE

Mr. R. Sakthivel
Assistant Professor, SVCE

Mr. K.E. Kumaraguru
Assistant Professor, SVCE

Mr. A.K. Boobalasenthilraj
Assistant Professor, SVCE

VENUE

Department of Automobile Engineering
Sri Venkateswara College of Engineering

IMPORTANT DATES

Submission of Application	: 27.10.2017
Intimation of Selection	: 31.10.2017
Confirmation by Participants	: 02.11.2017

AICITE SPONSORED TWO WEEK FACULTY DEVELOPMENT PROGRAMME
On

Theory and Performance Evaluation of Automotive Vehicle Subsystems using Modern Tools and Equipment

November 6 – 21, 2017

Organized by

Department of Automobile Engineering

Coordinator
Dr. J. Venkatesan
Professor and Head
Department of Automobile Engineering
SRI VENKATESWARA COLLEGE OF ENGINEERING
(Autonomous-Affiliated to Anna University)
Pennalur, Sriperumbudur Tk - 602 117

Table of Contents

1. Introduction

The primary focus of the programme was to give theoretical exposure and hands-on experience to the vehicle subsystems to the faculty members attending the programme. The programme equipped them to evaluate the performance of the vehicle subsystems using modern tools and equipment.

Highlights of FDP

- Automotive Engine Development–Trends and Technologies
- Advanced Combustion Technologies for IC Engines
- Engine performance test and characteristics
- Two Wheeler emission control and emission standards
- Directional stability & performance of a Passenger car
- Active & Passive safety system on vehicles
- Vehicle handling characteristics
- Modern steering, suspension and braking systems
- Novel materials and its application to automotives
- Vehicle Testing using Chassis dynamometer
- Hands on Training by BOSCH.
- Industrial Visits and Field Trips

Participants in FDP

Totally 68 participants attended the FDP. All the participants are the teaching faculty members in the engineering colleges in Tamil Nadu and one faculty from Andhra Pradesh. Among 68 participants, 25 are outstation participants (i.e. other than Chennai).

Boarding and Lodging Arrangements to FDP Participants

The outstation participants were accommodated in Sri Venkateswara College of engineering Hostel. Breakfast, Tea, lunch and dinner were arranged in the Hostel Mess for all the Participants.

1.4 Registration Kit and Study Materials

The registration kit was given to each FDP participants and the kit contains high quality back Bag, note pad, pen and Identity card. Power point slides and lecture materials of all the FDP sessions were given to the participants as soft copy in CD.

2. Inaugural Function

Dr. V. Ganesan, Emeritus Professor, IITM, Chennai inaugurated the AICTE sponsored two week faculty development programme on "**Theory and Performance Evaluation of Automotive Vehicle Subsystems Using Modern Tools and Equipment"** on November 6th, 2017 at 9.00 AM. **Prof. Dr. M. Sivanandham**, Secretary, Sri Venkateswara Educational and Health Trust, delivered the presidential address and **Prof. Dr. S. Ganesh Vaidyanathan**, Principal, Sri Venkateswara College of Engineering, delivered special address in the inaugural function. **Dr. J. Venkatesan**, Coordinator, explained the overview of the FDP. **Dr. S. Premnath,** Co-coordinator introduced the chief guest and **Mr. J. Dhanabal**, Co-coordinator has delivered the vote of thanks. Heads of the various Departments, Deans and Controller of Examinations were present during the inaugural Function.

3. FDP Sessions

Day 1

First session was FDP inaugural function and key note speech was given by Dr. V. Ganesan, the second session was handled by Dr. V. Ganesan on the topic **"From Horse Power to Horse Power".** He discussed the Automobiles from past to future. The session was interesting and informative. The third session lecture was given by Dr. J. Venkatesan, Professor and Head, Department of Automobile Engineering, Sri Venkateswara College of Engineering, on the topic **"Introduction to Automotive Vehicles and their subsystems".** He discussed different types of vehicles and their sub systems like engine, transmission and electrical systems.

Day 2

First session was handled by Dr. K. Pitchandi, Professor, Mechanical Engineering Department, SVCE on the topic **"IC Engines – Thermodynamic Cycles"**, the second session was handled by **Dr. K. Bhaskar,** Professor, Department of Automobile Engineering , Rajalakshmi Engineering College, on the topic **"Automotive Engine Crank train fundamentals".** The afternoon session was a Laboratory Session in the topic **"Engine Loading Devices and Testing Procedure"** and handled by Dr. V. Ganesh, Associate Professor and Mr. J. Dhanabal, Assistant Professor, Automobile Engineering Department, SVCE.

Day 3

Dr. M. Senthil Kumar, Associate Professor, Department of Automobile Engineering, Madras Institute of Technology, Anna University, Chennai, handled the forenoon sessions in the topics such as **"Advanced Combustion Technologies for I.C Engines" and "Hydrogen as Fuel for IC Engines".** He shared lot of information in the field of combustion technologies and Hydrogen. The afternoon session was a Laboratory Session in the topic **"Demonstration of Engine Performance and Emission Test using AVL Software and Instrumentation"** handled by Dr. V. Ganesh, and Dr. S. Premnath, Associate Professors, Automobile Engineering Department, SVCE.

Day 4

Dr. S. Vengadesan, Professor, Department of Mechanical Engineering, IITM, Chennai, handled the forenoon sessions in the topics **"CFD Analysis in IC engines" and "Application of CFD in Heat Transfer"**. He started from the basics of CFD and slowly moved to the applications. The afternoon session was handled by Dr. M. Mohandass, Associate Professor, Department of Mechanical Engineering, SVCE, in the topic of **"Application of Ceramics in Automotives".**

Day 5

Dr. K. Arunachalam, Associate Professor, Department of Automobile Engineering, Madras Institute of Technology, Anna University, Chennai, handled the forenoon sessions in the topics **"Study of influence of Active & Passive safety system on vehicle front and rear end collision" and "Design and Prediction of human comfort of a modern suspension system"**. The afternoon session was a Laboratory Session in the topic **"Study and fault diagnosis of Automotive electrical system"** handled by Dr. V. Ganesh, Associate Professor and Mr. J. Dhanabal Assistant Professor, Automobile Engineering Department, SVCE.

Day 6

First session was handled by Dr. J. Venkatesan, Professor and Head, Department of Automobile Engineering, Sri Venkateswara College of Engineering, on the topic "**Engine performance test and characteristics",** the second session was handled by Dr. K. Bhaskar, Professor, Department of Automobile Engineering, Rajalakshmi Engineering College, on the topic **"Engine pollution and After treatment techniques"**. The third session was handled by Dr. S. Premnath, Associate Professor, Automobile Engineering Department, SVCE in the topic **"Alternate Fuels in IC engines - Current scenario".**

Day 7

Dr. P. Senthil Kumar, Associate Professor, Department of Automobile Engineering, Madras Institute of Technology, Anna University, Chennai, handled the forenoon sessions in the topics **"In-cylinder emission control in Petrol/CRDI engines"** and **"Two Wheeler emission control and emission standards".** The afternoon session is a Laboratory Session in the topic **"Demonstration of Engine Testing using AVL Software and Instrumentation"** handled by Dr. J. Venkatesan, Professor, and Dr. S. Premnath, Associate Professor, Automobile Engineering Department, SVCE.

Day 8

The participants were given **Hands on Training on fuel injection systems** in CRDi engine. The training programme was conducted by Mr. K. Arvind, Trainer, Bosch India Limited, Chennai. The complete day was allotted for the training session and the training was held at Automobile Engineering Laboratory, SVCE. Participants were provided with separate Bosch Training Certificate.

Day 9

Mr. S. Radhakrishnan, Former Vice President, Rane TRW Steering systems, Chennai handled the forenoon sessions in the topics **"Steering Systems - Fundamentals"** and **"Analysis of handling characteristics of a vehicle".** The afternoon session was a Laboratory Session in the topic of **"Major and Minor Tune up of Gasoline and Diesel Engines"** handled by Dr. V. Ganesh, Associate Professor and Mr. J. Dhanabal, Assistant Professor, Automobile Engineering Department, SVCE.

Day 10

First session was handled by Dr. S. Ilaiyavel, Associate Professor, Department of Mechanical Engineering, Sri Venkateswara College of Engineering, on the topic **"Novel materials and its applications in Automotive Components"** and the second session was handled by Dr. R. Ramesh, Professor, and Dr. C. Senthamarai Kannan, Assistant Professor of Department of Mechanical Engineering, SVCE, on the topic **"Vibration studies - Experimental Method"** in the Vibration Laboratory. The afternoon session, a Laboratory Session in the topic of **"Demonstration of Vehicle Testing using Chassis Dynamometer"** was handled by Dr. S. Premnath, Associate Professor and Mr. J. Dhanabal Assistant Professor of Automobile Engineering Department, SVCE.

Day 11

Dr. E. Ganapathy Sundaram, Professor, Velammal Engineering College, Chennai handled the first session in the topic of **"Vehicle Management Systems overview and New Generation Vehicles"** followed by the **Industrial visit to TAFE Industry** - Product training Division, Kelambakkam. The Engineers of the industry briefly explained the manufacturing process of different types of PTO in tractors and also the participants interacted about the various subsystems used in tractors.

Day 12

All the participants visited **Lanson Toyota plant – 3S Division at Pallavaram, Chennai**. The complete day was very much useful by learning different types of services offered in Toyota plant also the demonstration of 30 minutes speed service, driving simulation and working of Hybrid cars were the most attractive features of the industrial visit.

Day 13

Mr. D. B. Sriprakash, DGM, Power Train Division, Hinduja Tech Ltd, Chennai delivered the first session in the topic of **"Automotive Engine Development–Trends and Technologies"** and the second session was handled by Dr. J. Jancirani, Professor, MIT, Anna University, Chennai in the topic of **"Performance Analysis of braking system"** and the lecture in the afternoon session **"A theoretical study of vehicle design"** was handled by Dr. A. Samuel Raja, Assistant Professor, Thiagaraja Engineering College, Madurai.

Day 14

First session in the topic of **"Motor Cycle Dynamics- Introduction to transmission and gearbox selection for passenger cars"** was handled by Dr. A. Samuel Raja, Assistant Professor, Thiagaraja Engineering College, Madurai and the special interactive session by Mr. I. Meenakshi Sundaram, Director, Gates Unitta India Company Pvt. Ltd. was arranged on the topic **"Future Automotive Technologies".**

4. Valedictory Function

The Valedictory of FDP was held on 21st November 2017 and it was facilitated by Mr. R. Krishna Prasad, Deputy General Manager, Gates Unitta India Company Pvt. Ltd. Chennai. The chief Guest delivered the valedictory address in the area of **"Scope and opportunities in Automotive Industries"**. Dr. J. Venkatesan, Coordinator, welcomed the gathering, Mr. J. Dhanabal, Co-coordinator introduced the chief guest and Dr. S. Premnath, Co-coordinator delivered the vote of thanks.

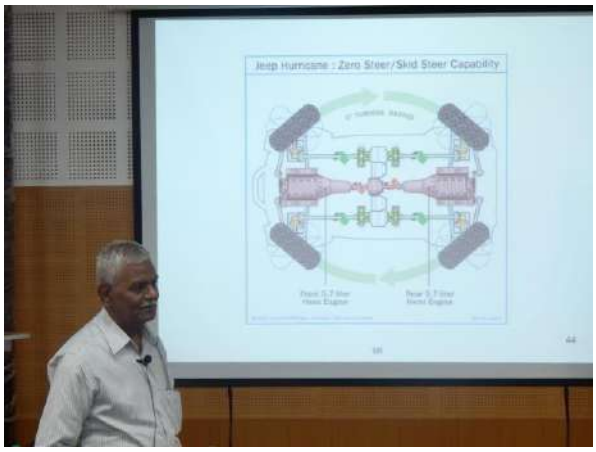
5. PHOTOGRAPHS

Dr. V. Ganesan, Emeritus Professor, IITM, inaugurated the programme

Introductory speech by Dr. J. Venkatesan, Coordinator, FDP.

Dr. S. Ganesh Vaidyanathan , Principal, SVCE delivered the special address

Prof. Dr. M. Sivanandham, Secretary delivered the presidential address



Lecture by Mr. S. Radhakrishnan, Former Vice resident , Rane TRW Steering systems

Lecture on Vibration studies - Experimental Method in the Vibration Laboratory

Interaction of Mr. I. Meenakshi Sundaram, Director, Gates Unitta Pvt. Ltd.

Dr. J. Jancirani, Professor, MIT, Anna University delivering a Lecture

Memento Presentation to Dr. M. Senthil Kumar, Associate Professor, M.I.T, Anna University

Laboratory Session by Dr. V. Ganesh, Associate Professor, SVCE

Lecture by Prof. S. Vengadesan, IITM, Chennai

Training on CRDi engine kit by M/S Bosch

Prof. K. Pitchandi delivering lecture

Prof. K. Bhaskar delivering Lecture

Industrial Visit to TAFE, PTC Division

Industrial Visit to Lanson Toyota, SSS Division

The Valedictory of FDP on 21st November 2017 and it was facilitated by Mr. R. Krishna Prasad, Deputy General Manager, Gates Unitta India Company Pvt. Ltd. Chennai

Photo session after completion of the Valedictory Function with all the Participants

6. Conclusion

A two week faculty development programme (FDP) on THEORY, PERFORMANCE EVALUATION OF AUTOMOTIVE VEHICLE SUBSYSTEMS USING MODERN TOOLS AND EQUIPMENT was conducted successfully. It gave the importance of automotive engineering and its applications as well as very good exposure to the latest technologies and development. It also created an awareness on research areas in the automotive vehicles among the automobile and mechanical engineering faculty members.

7. Acknowledgement

I would like to thank AICTE for sanctioning the grant of Rs. 7 lakhs for conducting Two Week Faculty Development Programme on THEORY, PERFORMANCE EVALUATION OF AUTOMOTIVE VEHICLE SUBSYSTEMS USING MODERN TOOLS AND EQUIPMENT. I would like to thank SVCE management for giving infrastructure support for conducting the programme. I would also like to thank Co-coordinators and other Faculty and Staff members of Department of Automobile Engineering for extending their kind support for successful conduct of the FDP.

Dr.J.VENKATESAN, M.E.,Ph.D.
Professor & Head
Department of Automobile Engineering
Sri Venkateswara College of Engineering
Pennalur, Sriperumbudur Taluk-602 117
Tamil Nadu, India