

## ABOUT THE INSTITUTE

Walchand College of Engineering Sangli (WCE), established in 1947 and aided by the Government of Maharashtra, is one of the oldest and premier engineering institutions in India. With a rich history of over 70 years and a beautiful campus of over 90 acres, we are providing transformational learning experiences in various disciplines of engineering. WCE offers 4 diploma programs, 6 UG programs in Civil, Electrical, Mechanical, Electronics, Information technology, computer science, and engineering, and 10 PG programs. It also offers Ph.D. programs under Shivaji University, the National Doctoral Fellowship of AICTE, and the Quality Improvement Program (QIP) scheme of the Ministry of Human Resource Development (MHRD). At present, around 700 students are studying in Diploma programs, 1900 students are studying in various B.Tech. programs, 480 students are in M.Tech. programs, and around 75 scholars are pursuing their Ph.D. programs. WCE is affiliated with Shivaji University and is approved by AICTE, New Delhi. The institute has also been given autonomous status by the UGC since 2007. The alumni are spread across reputed Multinational and Indian companies such as Google, Microsoft, LinkedIn, Amazon, John Deere, Rakuten, Mahindra, TCS, and Infosys.

## VISION OF THE INSTITUTE

To produce capable graduate engineers with an aptitude for research and leadership.

## MISSION OF THE INSTITUTE

To impart quality education through demanding academic programs. To enhance career opportunities for students through exposure to industry. To promote excellence by encouraging creativity, critical thinking, and discipline. To inculcate sensitivity toward society and a respect for the environment.

## QUALITY POLICIES

To strive for excellence in academic and research and programs in order to achieve proficiency in students by adopting continually improving standards for the learning process.

## ABOUT THE ELECTRONICS DEPARTMENT

The electronics engineering department of Walchand College of Engineering Sangli has a rich legacy, experienced faculty, well-equipped facilities, and strong industry connections, making it an excellent choice for students interested in pursuing a degree and diploma in electronics discipline.

## CHIEF PATRON

Shri. Ajit Gulabchand, Chairman, Administrative Council, WCE

## PATRON

- Prof. Rajendra B Kakde  
Adviser –I, AICTE
- Dr. Vinod Mohitkar, Director  
Technical Education
- Shri. Amol Chavan,  
Administrative Council Member,  
WCE

## CONVENOR

Dr. U. A. Dabade, Director

## COORDINATOR

Dr. S. D. Ruikar

## CO-COORDINATOR

Mr. S. U. Chavan

## ORGANIZING COMMITTEE MEMBERS

- Dr. B. G. Patil
- Mr. S. B. Dhaigude
- Mr. N. V. Marathe
- Dr. Mrs. A. A. Agashe
- Mr. S. K. Parchandekar
- Dr. S. G. Tamhankar
- Mr. R. G. Mevekari
- Dr. V. V. Sulakhe
- Dr. A. A. Agashe
- Mr. P. B. Patil
- Mr. N. S. Narayankar



## "FACULTY DEVELOPMENT PROGRAM"

ON

## "EMERGING TRENDS IN ELECTRIC VEHICLE"

8- 13 January, 2024

Sponsored by AICTE  
Training and Learning  
Academy - ATAL



Organized by  
DEPARTMENT OF ELECTRONICS  
WALCHAND COLLEGE OF  
ENGINEERING, SANGLI  
(Govt. Aided Autonomous Institute)

## CONTACT US

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Check more details on  
<https://www.aicte-india.org/atal>  
<http://www.walchandsangli.ac.in>

### ABOUT AICTE - ATAL ACADEMY

To empower faculty to achieve goals of Higher Education such as access, equity, and quality. To establish an AICTE Training and Learning (ATAL) cell in all the technical institutions, Universities, Deemed-to universities, and other institutions of technical learning. To build a database of trainers/experts, Video Repositories, Training materials, and training needs for technical institutions. To set up an Academy that will plan and help in imparting quality technical education in the country to support technical institutions in fostering research, innovation, and entrepreneurship through training.

### ABOUT FDP

The objective of AICTE's Training and Learning (ATAL) is to impart quality training through Faculty Development Programmes (FDPs) for Postgraduate students, Research scholars, and Faculty members so that:

**The faculty:** has sound domain knowledge and associated skills to apply in real life with industry connections.

- are equipped with Institutional Leadership skills for academic leadership.
- are understanding their roles in community wellbeing, national building, and their own career development.
- made ready with pedagogy-requisite teaching skills for instructional delivery.
- can effectively communicate knowledge and skill sets to the students in an efficient manner, and their teaching-learning effectiveness is assessed.

#### The students:

- are motivated and fascinated to acquire knowledge and life skills.
- understand their roles in community wellbeing, national building, and their own career development.

### TARGET GROUP AND REGISTRATION

Lecturer, Assistant Professors, Associate Professors, Ph.D. scholar's, PG students/Industry.

Min/Max Limit- 30/50 participants from higher education institutions Institutions/ Industries.

Participants need to register through AICTE -ATAL portal Registration link.  
<https://atalacademy.aicte-india.org/signup>

### MODE OF CONDUCTION

**In house (offline)** for both theory and practical/labs/ experiential learning.  
**Duration- Six days**

### CERTIFICATION

On completion of the program on all days, participants will be awarded a certification of participation by the respective ATAL academy, fulfilling all terms and conditions. For more details visit: <https://www.aicte-india.org/atal>

### OBJECTIVE OF FDP

The major objective of this FDP is to train the faculties, researchers, and practitioners in recent developments in power electronics, EV model fabrication design, design of converters and inverters, advanced vehicle drive and control, motor speed control, and battery management systems used in electric vehicles (EV). The motor controller, using advanced techniques, is the focus of the FDP.

### BENEFITS AND OUTCOMES OF FDP

Nowadays, EV mobility and charging infrastructure are increasing day by day. By the year 2030, India intends to accelerate the increase in EV sales. An electric vehicle is made up of three important parts: the battery, motor, and controller. An EV controller is essentially a power electronics drive with the primary function of speed control. To increase indigenous design and cater to the needs of power electronics in automobile industries. The skilled and intellectual manpower will help increase EV technology in India.

### MAJOR COURSE CONTENTS

- Electric Vehicle Introduction and Architecture Design.
- Introduction to Power Electronics and converter/inverter design
- Motor types and propulsion for EV applications

- Powertrain modeling for EV applications
- Motor drive and control strategies for EVs
- Battery technology and BMS
- SoC estimation, charging infrastructure, and role of ICT.
- MCU programming and advanced control strategies
- MATLAB Simulation of EV dynamics, torque - power calculation, converter design, and PFC based power supply.
- MATLAB simulation on motor control, PWM methods, and battery energy saving techniques.
- Hands-on training on EV drive design
- Design dynamics in MATLAB, and AutoCAD

### RESOURCE PERSONS

Eminent faculty from Academia /Industry industry experts

- **Mr. Arvind Nene** – Zhejiang Innuovo Magnetics Co. Ltd China, Business Manager for India business.
- **Mr. Prashant Joshi**, Founder & CEO, Leaf & Scale Pvt. Ltd., Pune (MH)
- **Mr. Patel**, CEO, MATEL Motion and Energy Pune
- **Mr. Parth Sarathi Roy**, Founder and CEO, DrivZ, Faridabad
- **Mr. Suraj Marje** - Asst. Manager, E-Vehicle Dept., Kulkarni Power Tools (KPT) Industries Ltd., Shirol Kolhapur (MH)
- **Mr. Vikas Nimbalkar** - Asst. Manager, E-Vehicle Dept., Kulkarni Power Tools (KPT) Industries Ltd., Shirol Kolhapur (MH)
- **Mr. Suhas Parab**, iTech Global Solutions, Nerul, Mumbai.
- **Dr. Mahesh Kumbhar**, Assoc. Professor, E&TC Dept., RIT Islampur (MH)
- **Mr. Narayan Marathe**, Assoc. Professor, Electronics Dept., WCE, Sangli
- **Mr. Anup Joshi**, EV Design and Development, Fusion Leap Consultancy Services, Miraj MIDC, Sangli (MH)
- **Mr. Chinmay Gore**, Founder and Director, Yogtech Industries Pvt. Ltd. MIDC Sangli (MH)

## Session wise Delivery

From : 8 to 13 Jan 2024

Day 1 (8 Jan 2024)	Day 2 (9 Jan 2024)	Day 3 (10 Jan 2024)	Day 4 (11 Jan 2024)	Day 5 (12 Jan 2024)	Day 6 (13 Jan 2024)
9:30 – 12:00 <b>Session 1</b> Electric Vehicle Introduction and Architecture Design	9:30 – 12:00 <b>Session 3</b> Motor types and propulsion for EV applications	9:30 – 12:00 <b>Session 5</b> Motor drive and control strategies for EVs	9:30 – 12:00 <b>Session 7</b> SoC estimation,.	9:30 – 1:00  <b>Industrial Visit to KPT Industries Shirol MIDC Kolhapur</b>	9:30 – 12:00 Session 10 <b>Role of NEP 2020 in HEI</b>
12:00 – 1:00 Article Discussion	12:00 – 1:00 Article Discussion	12:00 – 1:00 Article Discussion	12:00 – 1:00 Article Discussion		12:00 – 1:00 Article Discussion
1:00 – 2:00 LUNCH Break	1:00 – 2:00 LUNCH Break	1:00 – 2:00 LUNCH Break	1:00 – 2:00 LUNCH Break	1:00 – 2:00 LUNCH Break	1:00 – 2:00 LUNCH Break
2:00 – 4:30 <b>Session 2</b> Introduction to Power Electronics and converter/inverter design	2:00 – 4:30 <b>Session 4</b> Powertrain modeling for EV applications	2:00 – 4:30 <b>Session 6</b> Battery technology and BMS	2:00 – 4:30 <b>Session 8</b> Design dynamics in MATLAB, and AutoCAD	2:00 – 4:30 <b>Session 9</b> charging infrastructure, and role of ICT	2:00 – 4:30 MCQ, Feedback & Interactions
4:30 – 5:30 <b>Practical Session:</b> MATLAB Simulation of EV dynamics, torque - power calculation, converter design, and PFC based power supply	4:30 – 5:30 <b>Practical Session:</b> MATLAB simulation on motor control, PWM methods	4:30 – 5:30 <b>Practical Session:</b> MATLAB simulation on battery energy saving techniques	4:30 – 5:30 <b>Practical Session:</b> MCU programming and advanced control strategies	4:30 – 5:30 <b>Practical Session:</b> Hands- on training on EV drive design	4:30 – 5:30 Valedictory Session