**Hands-On Workshop (Part-time)**
on Embedded Controller System Design for Electric Vehicles
during 22nd August to 23rd September 2022
on Alternate Days - from 6.00 pm to 8.00 pm
(Total 30 Hours)

Organized by PSG College of Technology

**Dept. of Electrical and Electronics Engineering**

PSG College of Technology
Peelamedu, Coimbatore – 641 004 Tamilnadu.

**ABOUT THE WORKSHOP**

The idea of electrification is expanding in wide spectrum of application ranging from two wheelers, four wheelers, and tramway to electric aircraft for cleaner skies. Embedded systems play a key role in making this possible. If electric motor is the heart of the Electric Vehicle (EV) system, embedded system is the brain. Control of speed and torque for starting, running and stopping operations are critical for motor control. State machine development coupled with scheduler design is important to ensure system operation under various situations. CAN Communication between sensors, battery management system (BMS), etc. with the motor control in EVs leads to better coordination and in achieving higher efficiency of the EV system. The workshop will focus on implementing the various modules & techniques needed for EV Embedded system development with the C2000 series of microcontrollers by Texas Instruments, as it is widely used in real-time control systems for a wide range of applications in the industry such as industrial motor control, solar inverters, SMPS, automation and electric vehicles.

**OBJECTIVES**

The Key objective of conducting the Hands-On workshop (Part-time) on "Embedded Controller System Design for Electric Vehicles" is to focus on the process involved in embedded systems development for EV system applications. Bridging the gap between real-time industrial applications and academic research coupled with hands-on experience working with microcontrollers are vital for young engineers to innovate and build new technologies.

**ELIGIBILITY**

- Practicing engineers from industries
- Faculty working in engineering colleges
- Engineers from R&D organizations
- UG/PG engineering students

**WORKSHOP CONTENTS**

- Introduction to C2000 Microcontrollers.
- Programming in Code Composer Studio.
- Embedded C programming concepts.
- Register-level Programming.
- Mathematical and Bit-wise operation.
- Working with Launchpad.
- Reading Board schematics.
- Microcontroller datasheets and References
- Programming Peripherals: GPIO, ADC, PWM, CAN.
- Programming Discrete Control Systems (PID).
- Test Driven Development (TDD) Process.
- Designing Scheduler & State Machine.
- OSI Architecture & CAN Message Standards.
- CAN Communication Architecture in EVs.
- CAN Network Project.
- Motor Control Basics.
- Working with Motor controller boards.
- Implementation of V/f control.
- Field-Oriented Control of PMS Motor.

**REGISTRATION FEE:**

<table>
<thead>
<tr>
<th>Category</th>
<th>Fee</th>
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<tbody>
<tr>
<td>PSG Students &amp; Faculty</td>
<td>Rs. 1,500/-</td>
</tr>
<tr>
<td>Other College Students</td>
<td>Rs. 3,000/-</td>
</tr>
<tr>
<td>Industries</td>
<td>Rs. 10,000/-</td>
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The registration fee inclusive of GST and course material.

**PAYMENT DETAILS:**

**Net Banking**

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<th>Details</th>
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<tbody>
<tr>
<td>Bank Account Name: PSG Center for Non-formal and Continuing Education (PSG CNCE)</td>
</tr>
<tr>
<td>Bank Account No: 1481267367</td>
</tr>
<tr>
<td>IFSC Code: CBIN0280913</td>
</tr>
<tr>
<td>Bank Name: Central Bank of India</td>
</tr>
<tr>
<td>Branch : Peelamedu, Coimbatore - 641 004</td>
</tr>
</tbody>
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The scanned copy application form is to be sent to:

Mr. A. Angamuthu, Co-ordinator
Email: aam.eee@psgtech.ac.in
Contact No: 99421 17279 / 63046 53602
ABOUT THE COLLEGE
PSG College of Technology was instituted in the year 1951 by PSG & Sons’ Charities Trust. It is an autonomous institution affiliated to Anna University. The college is approved by AICTE and is ISO 9001:2015 certified. It offers a number of educational programmes in Engineering, Information Technology, Management, Science and Technology disciplines at bachelors, masters and doctoral levels on both full time and part-time basis. Most of these programmes have been accredited by the National Board of Accreditation (NBA).

The Institution has always worked closely with the Industry, with Industrial training being an inherent part of the curriculum, giving students opportunities to learn from experience.

Research and Development in the college receives special thrust, especially with the establishment of 'Centres of Excellence' with prominent industry leaders. PSG College of Technology believes in shaping the future of the nation, by building the engineering talent that is valued and respected world-wide

CHAIRMAN
Dr. K. Prakasan
Principal, PSG College of Technology

CONVENER
Dr. J. Kanakaraj, Head,
Dept. of Electrical and Electronics Engineering

ORGANISING SECRETARIES
Dr. M. Sundaram, Dept. of EEE
Dr. A. Soundarrajan, Dept. of EEE

CO-ORDINATORS
Mr. A. Angamuthu, Dept. of EEE
Dr. P. Sivakumar, Dept. of EEE
Dr. B. Nivedetha, Dept. of EEE

ABOUT THE EEE DEPARTMENT
The Department of Electrical and Electronics Engineering was one of the few disciplines that was started since the inception of the college in the year 1951. New courses were introduced subsequently and the existing ones were restructured to reflect the state of the art.

The Department of Electrical and Electronics Engineering has been playing a vital role in producing scientists and technologists of highest caliber ever since it was established in the year 1951. The department offers UG (Regular and Sandwich) programmes, PG programmes (Applied Electronics, Power Electronics & Drives, and Embedded & Real-Time Systems), and PhD programmes. The department along with its highly qualified faculty members started functioning right from inception and engages actively in teaching and research in all current areas of Electrical and Electronics Engineering.

State of art computational and experimental facilities enable the department to undertake basic and applied research and provide support to R&D organizations. The students acquire the interpersonal and communication skills from the EEE Association and promote their professional skills serving the society through technology.

Important Date to Remember:
Last date for receipt of application : 16.08.2022

The details of this workshop is available in the website: www.psgtech.edu

PSG COLLEGE OF TECHNOLOGY
COIMBATORE

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APPLICATION FORM

Name (in Block Letters): ..........................................
Designation & Dept. ..............................................
Organization .......................................................
Address for ........................................................
Communication : .................................................

Mob No. : ..........................................................
Email Id ..........................................................
Net banking Reference No. & Bank: ......................

Amount in Rs.: ..................................................

DECLARATION BY THE CANDIDATE

The given information is true to the best of my knowledge. I agree to abide by the rules and regulations governing the programme. If selected, I shall attend the course for the entire duration.

Place: ..............................................
Date: ..............................................
Signature of the candidate