



# Thiagarajar College of Engineering

*where quality and ethics matter*



(A Govt. Aided Autonomous Institution Affiliated to Anna University)



## Details of Centres of Excellence

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[www.tce.edu](http://www.tce.edu)



**Chairman & Correspondent**

**Mr. K. Hari Thiagarajan**

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**Dr. L. Ashok Kumar**

**Professor**

**Department of EEE**



**Dean (CoE & CCE)**

**Dr. S. Parthasarathy**

**Professor & Head**

**Department of AMCS**

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**Coordinator**

**Dr. J. Felicia Lilian**

**Assistant Professor**

**Department of Computer Science and Business System**

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**Co-Coordinator**

**Dr. R. Sivanesan**

**Assistant Professor of Data Science**

**Department of Applied Mathematics and Computational Science**

## About the College

Thiagarajar College of Engineering (TCE), established in 1957 by philanthropist Late Karumuttu Thiagarajan Chettiar, is a Government Aided Autonomous Institution affiliated with Anna University, Chennai, and approved by AICTE. The college is known for its modern infrastructure and strong commitment to academic excellence. Located on a serene, eco-friendly campus, TCE offers 11 undergraduate, 7 postgraduate, and doctoral programs in Engineering, Architecture, and Science. Each academic Department at TCE is dedicated to a specific theme, fostering synergy between faculty and students in academic and research endeavours. These themes encompass diverse areas such as Eco-friendly Structures, Power and Energy, Automation, Automotive, Wireless Technologies, Distributed Computing, Database Management, Modelling and Simulation, Material Science, Green Chemistry, and Heritage. Since 2018, TCE has adopted progressive teaching methods including a Competency-Based Curriculum, Outcome-Based Education, and the CDIO framework, all emphasizing practical, hands-on learning. The introduction of MOOCs in 2021 and the Thiagarajar Research Fellowship (TRF) for Ph.D. scholars highlight its growing focus on research and innovation. TCE collaborates with leading industries and ministries such as TVS Motors, Thiagarajar Telekom Solutions Ltd., Ministry of Environment Forest and Climate Change, New DELHI, IBM, Bangalore, M/s. Bentley Education, M/s Hirano, Japan, M/s. TAFE Pvt. Ltd., Madurai, AWS, ICT Academy, Tamil Virtual Academy, MIDAS R&D Centre and so on. These collaborations have resulted in the establishment of state-of-the-art laboratories, industry-oriented curriculum design, collaborative projects, professional training programs, student internships, and placements. TCE's active participation in the Technical Education Quality Improvement Programme (TEQIP) under the National Project Implementation Unit (NPIU) of the Ministry of Human Resource Development (MHRD) has led to innovative teaching and learning processes, faculty development programs, industry-supported research activities, and good governance initiatives. TCE is involved in national and international ranking frameworks, showcasing its commitment to excellence and quality in education. Engineering departments have been recognized with the "Best Industry Linked Technical Institutions award" by AICTE and the Confederation of Indian Industries (CII).

## **CoE @ TCE**

Thiagarajar College of Engineering (TCE), Madurai has established 15 Centres of Excellence (CoE) to foster advanced learning, interdisciplinary research, and industry collaboration. These centres serve as innovation hubs where students, faculty, and industry professionals converge to explore emerging technologies and solve real-world problems. Each CoE is equipped with modern infrastructure, specialized laboratories, and cutting-edge tools tailored to its domain—ranging from artificial intelligence, wireless communication, and embedded systems to advanced manufacturing, material science, and sustainable energy. The objective of these centres is to bridge the gap between academic learning and industrial application by providing hands-on training, facilitating research projects, and supporting entrepreneurial initiatives. These centres also enable collaborative work with industries thereby fostering a culture of innovation and continuous learning within the campus. Collectively, the CoEs at TCE play a crucial role in building technical expertise, promoting translational research and nurturing future-ready engineers and technologists.

## **Activities of CoE**

A Centre of Excellence (CoE) can serve as a hub for innovation, research, skill development and industry collaboration. Here is a categorized list of activities that such a lab can undertake:

### **1. Skill Development & Training**

- a) Offer hands-on workshops and certification courses (e.g., AI/ML, IoT, Wireless, Robotics, Cybersecurity).
- b) Organize student bootcamps, internships, and peer-learning sessions.
- c) Conduct faculty development programs (FDPs).

### **2. Research & Innovation**

- a) Facilitate research projects in cutting-edge domains.
- b) Encourage faculty-student research collaborations.
- c) Publish papers, patents, and technical reports.
- d) Provide guidance for final-year and mini-projects.

### **3. Industry Collaboration**

- a) Partner with industries for sponsored projects, training, or mentoring.
- b) Invite experts for guest lectures, seminars, and webinars.
- c) Develop Proof-of-Concept (PoC) solutions for industry problems.

### **4. Product Development & Prototyping**

- a) Develop prototypes using lab infrastructure.
- b) Promote innovation through hackathons and ideation contests.
- c) File patents for innovative student/faculty work.

### **5. Innovative Projects for Students**

- a) Support student-led startups and innovation cells.
- b) Provide mentorship and seed support for incubation ideas.
- c) Facilitate participation in innovation challenges like Smart India Hackathon.

### **6. Community Outreach & Social Innovation**

- a) Conduct workshops for school students and rural youth.
- b) Engage in socially-relevant engineering solutions (e.g., waste management, healthcare).
- c) Promote digital literacy and awareness programs.

### **7. Infrastructure Utilization & Demonstrations**

- a) Offer access to high-end lab equipment/software tools.
- b) Organize regular lab demo days and open houses.
- c) Maintain a repository of reusable code, datasets, and tools.

### **8. Competitions & Events**

- a) Host coding competitions, quizzes, and tech exhibitions.
- b) Conduct internal/external project expos.
- c) Collaborate with student clubs for tech-related events.

## Details of Centre of Excellence (CoE) @ TCE

Sl. No	Name of the CoE	Page No
1.	TS Srinivasan Centre for Automotive Research	7
2.	Centre of Excellence in Electronic Product Testing	8
3.	Centre of Excellence in Environmental Awareness and Education	9
4.	Centre of Excellence in Information Management Systems	10
5.	Centre of Excellence in Sustainability Management	11
6.	Centre of Excellence for Civil Infrastructure- BIM	12
7.	Centre of Excellence in Robotics	13
8.	Centre of Excellence in Visionary Learning Community of India	14
9.	Centre of Excellence in Amazon Web Services	15
10.	Centre of Excellence in Electronic System Design and Manufacturing	16
11.	Centre of Excellence - Tamil Virtual Academy	17
12.	Centre of Excellence in Multidisciplinary Tamil and AI Research for Innovation	18
13.	Centre of Excellence in Hydrogen Energy Research	19
14.	Centre of Excellence for Civil Infrastructure	20
15.	Centre of Excellence in E-Learning Content	21
16.	Centre of Excellence in Material Research and Energy Solutions	22



## **TS Srinivasan Centre for Automotive Research (TSSCAR)**

Department in-charge	:	Mechanical
Year of Establishment	:	29 <sup>th</sup> November 2019
Faculty Coordinators	:	Dr. K. Srithar, Prof & Head / Mech Dr. M. Balamurali, ASP/Mech
Faculty in-charge	:	Dr. M. Balamurali
Industry Collaboration / Interface	:	M/s TVS Motor Company, Hosur

- Thiagarajar College of Engineering Madurai and TVS Motor Company Hosur are jointly desirous of developing an industry supported curriculum program and offer the same to the deserving students. A Memorandum of understanding was signed between TCE and TVSM on 24 June 2010 so as to resource development between two institutions.
- TS Srinivasan Centre for Automotive Research (TSSCAR) was established by M/s TVS Motor Company, Hosur at Thiagarajar College of Engineering, Madurai with an initial investment of Rs.11 Crores and Built-up area -16,400 sq.ft. The inauguration of TSS CAR was made on 29.11.2019 by the Chairman of TVS motor Mr. Venu Srinivasan & the Chairman of Thiagarajar College of Engineering Mr. Karumuttu T.Kannan. This research centre is built as per the Japanese TQM (Total Quality Management).

The Objective of the TS Srinivasan Centre for Automotive Research is to

- Provide hands on experience in an interdisciplinary and collaborative environment
- Enable CDIO (Conceive – Design – Implement – Operate) curriculum.
- Enable Consulting projects with industry and carry out Academic research.

TSS CAR encompasses the following sections to meet the above objectives:

- Automotive discovery center - Futuristic Learning Centre
- Product Engineering lab – 3D Modeling, Analysis (Structural & Electro-Thermal)
- Product Build lab - CNC Machines (Turn, Mill, Tube Bending) with IOT enabled.
- Electric Vehicle lab – EV Battery and Motor Testing Facilities
- Product Reliability lab – Vibration and Thermal Testing Facilities

### **Centre of Excellence in Electronic Product Testing (CEEPT)**

Department in-charge	:	ECE
Year of Establishment	:	2024
Faculty Coordinators	:	Dr. B. Manimegalai, Prof & Head/ECE Dr. K. Hariharan, Prof & Dean(III)/ECE
Faculty in-charge	:	Dr. N. Ayyanar, AP/ECE
Industry Collaboration / Interface	:	Thiagarajar Telekom Solutions Ltd

Thiagarajar College of Engineering has established a Centre of Relevance and Excellence (CORE) in Wireless Technologies under TIFAC (Technology, Information, Forecasting and Assessment Council) Mission REACH (Relevance and Excellence in Achieving new heights in educational institutions) Program of Department of Science and Technology, Government of India in 2005. TIFAC CORE on Wireless Technologies has laboratory facilities in the areas of RF systems and Baseband Processing. With the extended infrastructure such as Antenna, RF, VLSI and Embedded products testing facility, the centre has evolved as Centre of Excellence in Electronic Product Testing. The Centre of Excellence in Electronic Product Testing (CEEPT) is dedicated to serve as a hub for testing of electronic hardware products across a broad frequency range, catering to wireless and defence industries. CEEPT has a well-established laboratory providing testing facility for Electronic PCB products and antennas as detailed below:

- Mixed Signal board validation
- Embedded board testing
- Communication test benches
- RF component testing
- Anechoic chamber for Antenna testing facility
- Image processing based PCB Inspection
- Product reliability testing



## **Centre of Excellence in Environmental Awareness and Education**

Department in-charge	:	Chemistry
Year of Establishment	:	January 2018
Faculty Coordinators	:	Dr. A. Ramalinga Chandrasekar, AP/Chem
Faculty in-charge	:	Dr. A. Ramalinga Chandrasekar
Industry Collaboration / Interface	:	Ministry of Environment, Forest and Climate Change, New Delhi

The Environmental Information, Awareness, Capacity Building and Livelihood Programme (EIACP) Centre of Excellence (CoE) carries out a range of activities, including creating a repository of environmental knowledge, capacity building programs, green skill development, outreach programs, and promoting sustainable lifestyle practices through Mission Life. Specifically, the CoE collects and disseminates information on environmental themes, conducts training initiatives and workshops, and organizes activities to raise awareness about environmental issues. They also develop and disseminate educational materials, collaborate with other organizations, and implement initiatives to promote environmental conservation and sustainable development. Additionally, the CoE focuses on building capacities in thematic areas identified by the Ministry of Environment, Forest & Climate Change, and provides training and skill development programs to enable India's youth to acquire skills and gainful employment in the environment and forest sector.

### **Software / Equipment Purchased**

1. FTIR - Fourier Transformed Infra-Red Spectroscopy
2. Differential Scanning Calorimeter
3. Brook Field Viscometer
4. Compression Testing Machine
5. Optical Fluorescence Microscope
6. Marshal Stability Value Apparatus
7. Bitumen Characterization Instruments

## **Centre of Excellence in Information Management Systems**

Department in-charge	:	AMCS
Year of Establishment	:	2021
Faculty Coordinators	:	Dr. S. Parthasarathy, Prof, Head & Dean (CoE & CCE)/DS, AMCS Dr. T. Chandrakumar, Prof/DS, AMCS
Faculty in-charge	:	Dr. T. Chandrakumar
Industry Collaboration / Interface	:	IBM, Bangalore

Our Department of Applied Mathematics and Computational Science has signed a Memorandum of Understanding (MoU) with IBM to strengthen academic-industry collaboration and enhance technological capabilities. Through this partnership, the department facilitates advanced data experimentation and provides robust solutions to data-driven challenges in areas such as Data Engineering, Data Analysis, Data Science, Artificial Intelligence, and Machine Learning. IBM supports faculty and students in obtaining industry-recognized certifications and skill badges, while also enabling the development of diverse applications including predictive analytics, machine learning models, data visualization tools, recommendation systems, fraud detection mechanisms, sentiment analysis platforms, and decision-support systems across sectors like healthcare, finance, marketing, and technology. Under the TCE-IBM Academic Initiative, various impactful activities have been conducted, including online seminars, one-credit courses, faculty development programmes, student internships, and access to IBM tools like Watson Studio Desktop and PowerAI Vision. Additionally, students and faculty benefit from cognitive classes and certification programs offered through IBM's digital learning platforms.

### **Software / Equipment Purchased:**

1. 40 Desktop Systems with UPS Backup
2. Watson Studio Desktop

## **Centre of Excellence in Sustainability Management**

Department in-charge	:	Chemistry
Year of Establishment	:	2024
Faculty Coordinators	:	Dr. A. Ramalinga Chandrasekar, AP/Chem
Faculty in-charge	:	Dr. A. Ramalinga Chandrasekar
Industry Collaboration / Interface	:	Thiagarajar College

The Centre for Sustainability at Thiagarajar College of Engineering (TCE) carries out a range of activities to promote environmental awareness and sustainability, including awareness creation through lectures, meetings, and competitions, capacity building through training programs, and research and development to identify innovative solutions for environmental challenges. The centre also engages with the local community through outreach programs and collaborations with NGOs, government agencies, and industries to promote environmental sustainability.

### **Software / Equipment Purchased**

1. FTIR - Fourier Transformed Infra-Red Spectroscopy
2. Differential Scanning Calorimeter
3. Brook Field Viscometer
4. Compression Testing Machine
5. Optical Fluorescence Microscope
6. Marshal Stability Value Apparatus
7. Bitumen Characterization Instruments

## **Centre of Excellence for Civil Infrastructure - BIM**

Department in-charge	:	Civil
Year of Establishment	:	21st March 2025
Faculty Coordinators	:	Dr. G. Chitra, Prof/Civil Mr. B. Dinesh Kumar, AP/Civil
Faculty in-charge	:	Dr. G. Chitra
Industry Collaboration / Interface	:	M/s. Bentley Education and its authorized training partner TechApps Consulting Pvt., Ltd, Chennai

Department of Civil Engineering, has signed a MoU with M/s. Bentley Education and its authorized training partner TechApps Consulting Pvt., Ltd, Chennai under "The Centre of Excellence (CoE) for Civil Infrastructure", in Building Information Modeling (BIM). The objective of this MoU is to upgrade the skill sets of student community in BIM software.

### **Software / Equipment Purchased**

- STAAD Pro Software (Foundation, RCDC, RAM connection) – 120 users: for Structural Design of RCC, Steel Structures and Detailing with STAAD Advanced Concrete Design (RCDC) & RAM Connection
- Open Building Designer (OBD) Software - 120 users: for 3D modeling of Structures
- Synchro 4D Software – 120 users: for 4D simulation of 3D modeled Structures

## **Centre of Excellence in Robotics**

Department in-charge	:	Mechanical
Year of Establishment	:	2019
Faculty Coordinators	:	Dr. G. Kanagaraj, Prof/Mect
Faculty in-charge	:	Mr. M. A. Ganesh, AP/Mect
Industry Collaboration /		
Interface	:	M/s Hirano, Japan

The Centre is equipped with state-of-the-art YASKAWA cooperative robots and Kobuki mobile robots, supporting academic, research, and consultancy activities. In academics, these facilities are utilized for the "Introduction to Mechatronic Systems" and the "Robotics Laboratory" course. The Centre also supports research in robot path planning, path optimization, cooperative robots, autonomous and intelligent robot systems and handles consultancy projects involving robot simulation and validation. Moreover, the centre is capable of:

- (i) Development of wheeled robots,
- (ii) Modelling and Simulation of any complex dynamic Mechatronic Systems,
- (iii) Industrial Robot Programming, and
- (iv) PLC Programming.

### **Software / Equipment Purchased**

#### **Equipment**

1. GP12 Industrial Robot with robot controller
2. MH5LS Industrial Robot with robot controller
3. SIEMENS S71200 Programmable Logic Controller
4. Panasonic PV200 Image Grabber
5. Conveyors with motors
6. Kobuki Mobile Robot Base (2 Quantities)

#### **Software**

1. RoboDK Simulator
2. MotoSim Simulator
3. GP-Pro Human Machine Interface Software

## **Centre of Excellence in Visionary Learning Community of India (VLCI)**

Department in-charge	:	Mechanical
Year of Establishment	:	2019
Faculty Coordinators	:	Dr. K. Srithar, Prof & Head / Mech Dr. C. Vignesh, AP/Mech
Additional Faculty		
Members	:	Dr. C. Paramasivam, Prof(CAS)/Mech Dr. M. Karthic, AP/Mech Dr. H. Ramesh, AP/Mech
Faculty in-charge	:	Dr. C. Vignesh
Industry Collaboration / Interface	:	M/s. TAFE Pvt. Ltd., Madurai

A structured, industry-focused course is offered at the exclusive VLCI Centre to enhance practical skills and understanding of modern manufacturing systems. The program is open to interested students from III semester Mechanical and Mechatronics Engineering. The course follows a modular structure, progressing from basic observation skills to advanced manufacturing concepts. Enrollment begins in the III semester and continues through the VII semester.

### **Course Modules and Credit Allocation:**

Module 1: Observation Skills	Semester: III – 1 Credit
Module 2: Evolution of Modern Manufacturing	Semester: IV – 1 Credit
Module 3: Modern Manufacturing – Basic Knowledge and Skills	Semester: V – 1 Credit
Module 4: Material Flow Mapping	Semester: VI – 1 Credit
Module 5: Flow Management Concepts	Semester: VII – 2 Credits

### **Software / Equipment Purchased**

- An exclusive VLCI Centre spanning 900 sq. ft., offering a conducive environment for learning and team activities.
- Wall panels and sliding boards - to display charts, drawings, sticky notes, and group activities.

### **Centre of Excellence in Amazon Web Services**

Department in-charge	:	IT
Year of Establishment	:	2024
Faculty Coordinators	:	Dr. C. Deisy, Prof & Head/IT Dr. S. Padmavathi, Prof/IT
Faculty in-charge	:	Dr. S. Padmavathi
Industry Collaboration / Interface	:	ICT Academy

The Cloud Systems lab in department of Information Technology is recognized as an AWS Center of Excellence for Cloud Architecting. This prestigious recognition empowers TCE to provide cutting-edge Amazon Web Services in Cloud Computing education, preparing students for industry certifications and in-demand cloud jobs. Through this center, we can offer AWS Academy courses, Cloud Labs, AWS Global Certifications, Bootcamps and collaborate on real-time projects with industries and startups. Training the Trainer programs can be organized through this Center of Excellence with AWS-authorized instructors. It can serve as a regional resource hub for cloud education.

#### **Software / Equipment Purchased**

Access to AWS Academy portal on request.

(Based on the certification course, Nominal fees may be collected from the learners enrolled)



## **Centre of Excellence in Electronic System Design and Manufacturing**

Department in-charge	:	ECE & EEE
Year of Establishment	:	2025
Faculty Coordinators	:	Dr. L. Ashok Kumar, Prof/EEE & Principal, TCE Dr. V. Vinoth Thyagarajan, ASP/ECE Dr. D. Kavitha, ASP/EEE
Faculty in-charge	:	Dr. V. Vinoth Thyagarajan
Industry Collaboration / Interface	:	MeitY & Semiconductor Industries

The Centre of Excellence in Electronic System Design and Manufacturing will conduct high quality industry relevant skill training in industry simulated environment for faculty members and students on emerging technologies of Electronics systems. Identify the emerging trends in industry by conducting national level conferences, Hackathon/Project based learning, Technical meet up, workshops to promote innovation among aspiring candidates. To offer Certification programs equivalent from Associate level to Expert level. Evangelizing the emerging technology education among stake holders. Mentoring technology aspirants for promoting tech Startups. Curriculum and content Development on Industry-relevant skills.

### **Software / Equipment Purchased**

- An exclusive ESDM Lab spanning 5000 sq. ft
- PCBMATE Pro PCB and Antenna Designing M/C
- Semi-Automatic Stencil printer
- PCB Assembly line with loader, Automatic SMT pick and place, Reflow Oven and unloader.
- SMT layout verification accessories
- Computers with PCB design and antenna design software 2000 Sq.ft - conference hall class room facility to support training of 60 students.

## **Centre of Excellence - Tamil Virtual Academy**

Year of Establishment	:	2024
Faculty Coordinators	:	Dr G.S.R. Emil selvan, ASP/CSE
Faculty in-charge	:	Dr G.S.R. Emil selvan
Industry Collaboration / Interface	:	Tamil Virtual Academy

Tamil Virtual Academy (TVA) was established as Tamil Virtual University as per the Tamil Nadu Co-operative Societies Act and functioning under the administrative control of the Information Technology Department to provide Tamil education through Internet for the Tamil Diaspora and to promote Tamil Computing. Tamil Virtual Academy has setup Tamil Center of Excellence (CoE) at TCE wherein students can enroll for self-paced certificate courses to learn Tamil language in depth which could be useful for competitive examinations organized by the Government of Tamil Nadu. Non-native students, students who have not studied Tamil as second language and students interested in getting in depth knowledge in Tamil language can use this platform to enhance their proficiency.

## **Centre of Excellence in Multidisciplinary Tamil and AI Research for Innovation**

Department in-charge	:	CSE, IT, AMCS & CSBS
Year of Establishment	:	2024
Faculty Coordinators	:	Dr. S. Mercy Shalinie, Prof, Head & Dean (MIS)/CSE Dr. C. Deisy, Prof & Head/IT Dr. S. Parthasarathy, Prof, Head & Dean (CoE & CCE)/DS, AMCS
Faculty in-charge	:	Mr. S. Santhana Hari, AP/CSE
Industry Collaboration / Interface	:	Nil

MuthirAI (Multidisciplinary Tamil and AI Research for Innovation) is a dedicated initiative to integrate Tamil and artificial intelligence in meaningful and impactful ways. Our journey begins with the creation of clean, well-annotated Tamil datasets, enabling researchers and developers to train and evaluate AI models with confidence. Building on this foundation, our team conducts in-depth research and publishes papers detailing our methodologies, findings, and the challenges that remain. We then move toward developing customized AI models across modalities - including text, speech, and handwriting. To ensure real-world impact, these models are deployed through accessible mobile and web applications, allowing the public to benefit from our work immediately. By repeating this cycle of data collection, analysis, model development, and deployment, we transform research into practical, everyday solutions. MuthirAI is committed to empowering Tamil speakers through AI and advancing tools for a historically low-resource language.

### **Mobile App published in Play Store (Android)**

1. Agam
2. Mozhimathi

### **Software / Equipment Purchased**

1. GPU Server P100 Machine (On-Prem.)
2. E2E Cloud GPU Access – H100 Machine

## Centre of Excellence in Hydrogen Energy Research

Department in-charge	:	Chemistry
Year of Establishment	:	2025
Faculty Coordinators	:	Dr. M. Kottaisamy, Prof & Head/Chem Dr. P. Velusamy, AP/Phy Dr. P. Ramkumar, AP/Chem
Faculty in-charge	:	Dr. P. Ramkumar
Industry Collaboration / Interface	:	Seeking collaboration with a hydrogen fuel manufacturer and individuals involved in green hydrogen-based electric vehicles. Research partnerships with professors at CECRI-Karaikudi.

The Centre for Hydrogen Energy Research focuses on designing and developing safe, efficient electrochemical systems for hydrogen production. A significant thrust lies in synthesizing and optimizing novel nanomaterials for high-performance electrodes and evaluating their hydrogen conversion efficiency using advanced electrochemical and analytical techniques. The Centre actively integrates photovoltaic systems with electrolyzers to produce green hydrogen while fabricating sustainable, nanomaterial-based solar cells for indoor and outdoor energy harvesting. Emphasis is placed on developing scalable photocatalytic and hybrid solar-hydrogen technologies that can transition from lab-scale to industrial implementation. The research further includes creating high-density, low-light responsive solar cells suited for innovative energy environments. Collaborations with industries facilitate technology transfer, scale-up, and commercialization. Overall, the Centre advances sustainable materials and systems to enable a carbon-neutral hydrogen economy.

### Software / Equipment Purchased

1. DC Power Sources
2. Solar panel
3. Spin coater
4. Solar Simulator
4. Pyrolysis set up
5. Magnetic stirrers
6. UV Chamber
7. Hot air oven & Muffle furnace

## **Centre of Excellence for Civil Infrastructure**

Department in-charge	:	CIVIL
Year of Establishment	:	21 <sup>st</sup> March 2025
Faculty Coordinators	:	Dr. S. Arulmary, Prof & Head/Civil Dr. G. Angelin Lincy, AP/Civil
Faculty in-charge	:	Dr. G. Angelin Lincy
Industry Collaboration / Interface	:	MIDAS R&D Centre, India Pvt., Ltd, and its authorized training partner TechApps Consulting Pvt., Ltd, Chennai

The Center of Excellence (CoE) in Civil Infrastructure has initiated several key activities aimed at bridging the gap between academia and industry, particularly in the field of bridge engineering utilizing MIDAS Civil software. These activities are structured to enhance the knowledge and skills of both students and professionals in the field.

### **Software / Equipment Purchased**

MIDAS Civil Software– Bridges, Class room and lab programme – 10 users.

### **Centre of Excellence in E-Learning Content (CELC)**

Department in-charge	:	ECE
Year of Establishment	:	2011
Faculty Coordinators	:	Dr. S. Md. Mansoor Roomi, Prof & Dean(Infrastructure)/ECE
Faculty in-charge	:	Dr. M. Senthilarasi, AP/ECE
Industry Collaboration / Interface	:	Nil

The Centre for E-Learning Content (CELC) is a dedicated hub for the creation, production, and delivery of high-quality digital learning resources. It supports initiatives like the development of bridge courses for engineering students across Tamil Nadu, massive open online course (MOOC) creation, and expert video content. Equipped with professional tools such as Panasonic video cameras, Datavideo mixers, Adobe Premiere, and Lifesize video conferencing systems, CELC enables seamless audio-visual production. Its facilities include editing suites, recording studios, and digital storage systems. CELC plays a pivotal role in enhancing digital education and supporting e-learning initiatives across institutions.

#### **Hardware Facilities**

1. Panasonic Video cameras
2. Data video Brand Live Analog Video Mixer
3. Video editing system
4. Adobe Premiere Video editing software
5. Cool Edit Pro Audio editing software
6. Canara Lighting System
7. Panasonic Professional Display
8. HP Dual Monitors
9. Storage Devices
10. Lifesize video conferencing device

## **Centre for Materials Research and Energy Solutions (CMRES)**

Department in charge	: Physics
Year of Establishment	: 2025
Faculty Coordinators	: Dr. M. Mahendran, Pro & Head, Physics Dr. S. Karthickprabhu, AP / Physics
Faculty in-charge	: Dr. P. Sivakumar,
Industry Collaboration/ Interface	: Nil

To foster research in the vibrant and multidisciplinary field of physics of materials, the Materials Science Research Laboratories were established in 2008 within the Department of Physics at Thiagarajar College of Engineering, Madurai. In 2025, it was renamed to the CMRES. With an emphasis on creating cutting-edge materials and novel technologies to meet the growing demand for clean, sustainable energy worldwide, CMRES is designed to be a vibrant research centre. The design, synthesis, and thorough characterisation of a wide variety of functional materials, including semiconductors, smart materials, nanomaterials, and multifunctional composites, are the primary areas of focus for the Centre's research activities. The potential uses of these materials in important energy-related domains, such as advanced hydrogen energy technologies, high-performance supercapacitors, efficient fuel cells, and next-generation batteries, are investigated. Finding and developing materials that can enhance energy conversion, storage, and utilisation processes with increased effectiveness, robustness, and environmental compatibility is given particular attention.

### **Objectives of CMRES:**

- ✓ To design and synthesize advanced nanostructured materials, smart materials, and composites for energy generation, energy storage, and environmental applications.
- ✓ To build sustainable materials capable of fulfilling multiple roles thereby enabling integrated, scalable, and eco-friendly solutions for future energy challenges.
- ✓ To foster collaborative research by connecting academia, industry, and research organisations, with a focus on green technologies and sustainable energy solutions.
- ✓ To enhance research capacity through FDPs, workshops, interdisciplinary training, hands-on experimentation, and eco-friendly prototype products development.



**For further details, please contact**

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