Thiagarajar College of Engineering

where quality and ethics matter

Since 1957

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

Details of Centres of Excellence

Thiruparankundram, Madurai 625015
Tamil Nadu, India
Phone and Fax: +91 452 2482240, 2482241, 2482242
www.tce.edu

Chairman & Correspondent

Mr. K. Hari Thiagarajan

Principal

Dr. L. Ashok Kumar

Professor

Department of EEE

Dean (CoE& CCE) Dr.

S. Parthasarathy

Professor & Head

Department of AMCS

Coordinator

Dr. J. Felicia Lilian

Assistant Professor

Department of Computer Science and Business Systems

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 ona 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 soon. 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 26 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 there by 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, Cyber security).
b) Organize student boot camps, 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	8
2.	Centre of Excellence in Electronic Product Testing	9
3.	Centre of Excellence in Environmental Awareness and Education	10
4.	Centre of Excellence in Information Management Systems	11
5.	Centre of Excellence in Sustainability Management	12
6.	Centre of Excellence for Civil Infrastructure - BIM	13
7.	Centre of Excellence in Robotics	14
8.	Centre of Excellence in Visionary Learning Community of India	15
9.	Centre of Excellence in Amazon Web Services	16
10.	Centre of Excellence in Electronic System Design and Manufacturing	17
11.	Centre of Excellence in Tamil Virtual Academy	18
12.	Centre of Excellence in Multidisciplinary Tamil and AI Research for Innovation	19
13.	Centre of Excellence in Hydrogen Energy Research	20
14.	Centre of Excellence for Civil Infrastructure	21
15.	Centre of Excellence in E-Learning Content	22
16.	Centre of Excellence in Material Research and Energy Solutions	23
17.	Centre of Excellence in Foreign Languages	24
18.	Centre of Excellence in British Council	25

19.	**Cambridge University Press and Assessment Centre – Linguaskill**	**26**
20.	**Centre of Excellence for Youth Empowerment**	**27**
21.	**Centre of Excellence in Electronic Design and Automation Tools**	**28**
22.	**Centre of Excellence in Generative AI**	**29**
23.	**Thiagarajar Centre of Excellence in Sustainable Planning, Architecture, Community and Environmental Design**	**30**
24.	**Bajaj Engineering Skills Training (BEST) Centre**	**31**
25.	**Center of Excellence in AR/VR**	**32**
26.	**Fuji Electri Centre of Excellence – Innovation Hub for Automation and Drives**	**33**

TS Srinivasan Centre for Automotive Research (TSSCAR)

Department in-charge	:	Mechanical
Year of Establishment	:	29th 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.11Crores and Built-up area-16,400sq.ft. The inauguration of TSSCAR 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
- RFcomponent 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	:	January2018
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/EquipmentPurchased:

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 Tech Apps 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	:	Mechatronics
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. Robo DK 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/Mect
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–1Credit
Module2: Evolution of Modern Manufacturing	Semester:IV–1Credit
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–2Credits

Software / Equipment Purchased

- An exclusive VLCI Centre spanning 900sq.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, Boot camps 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 5000sq.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 2000Sq.ft - conference hall class room facility to support training of 60 students.

Centre of Excellence in Tamil Virtual Academy

Year of Establishment	:	2024
Faculty Coordinators	:	Dr. G. S. R. Emilselvan, 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 PlayStore (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 nano materials 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 setup
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	:	21st 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, Classroom and lab programme–10users.

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, Data video 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. Bottom of Form

Centre of Excellence in Foreign Languages

Department in-charge	:	English & Career Guidance Cell
Year of Establishment	:	2014
Faculty Coordinator	:	Dr. G. Jeya Jeevakani AP/ English
Institution Collaboration / Interface	:	Goethe Institute, Chennai

The Foreign Language Programme in German and Japanese, established in 2014, has been instrumental in equipping students with multilingual competencies those open doors to global opportunities in education, career, and cultural exchange. Over the years, more than 100 students have successfully cleared various proficiency levels with commendable scores, demonstrating both academic rigor and practical language skills. Many TCE students have pursued higher education in Germany with the support of these courses, and the programed continues to attract a large number of registrations from across departments.

The programme aims to provide,

- Academic & Professional Growth: Preparing students for higher studies abroad by meeting foreign language requirements in leading universities and institutions.
- Cross-Cultural Competence: Enabling learners to engage with German and Japanese culture, history, and society through immersive training and communication practice.
- Career Opportunities: Enhancing employability in multinational companies, industries, and research organizations where multilingual skills are highly valued.
- Skill Enrichment: Conducting interactive classes, workshops, and assessments that promote confidence in speaking, reading, writing, and listening.
- Global Readiness: Supporting students in expanding their horizons through foreign language certifications that strengthen international mobility.

Through this initiative, TCE's Department of English reinforces its commitment to holistic education, enabling students not only to excel in English but also to master additional world languages, thereby broadening their prospects in higher studies, global careers, and lifelong learning.

Cambridge University Press and Assessment Centre – Linguaskill

Department in-charge	:	English
Year of Establishment	:	2025
Faculty Coordinators	:	Dr. A. Tamilselvi, Professor / English
Faculty in-charge	:	Dr. S. Subash, AP / English
Industry Collaboration / Interface	:	Cambridge University Press and Assessment, UK

The Centre of Excellence in Linguaskill has been established to enhance English language proficiency assessment and training in collaboration with Cambridge University Press and Assessment, UK. Linguaskill is a state-of-the-art AI-powered English testing solution designed to evaluate all four language skills—Reading, Writing, Listening, and Speaking—with precision, speed, and reliability.

The Centre aims to provide:

- International Standard Testing: Offering globally recognized Linguaskill assessments for students, faculty, and professionals.
- Skill Development: Conducting preparatory workshops, mock tests, and training programs to strengthen communicative competence.
- Research & Innovation: Facilitating studies on language testing, assessment technologies, and pedagogical practices in ELT.
- Industry Readiness: Supporting students with certified English proficiency scores required for placements, higher education, and global mobility.
- Capacity Building: Organizing Faculty Development Programs (FDPs) and specialized training for English educators.

Through this initiative, TCE's Department of English reinforces its commitment to bridging academic excellence with global industry standards, ensuring students are prepared to thrive in competitive international environments.

Centre of Excellence in British Council

Department in-charge	:	English
Year of Establishment	:	2025
Faculty Coordinators	:	Dr. A. Tamilselvi, Professor / English
Faculty in-charge	:	Dr. RS. Swarnalakshmi, AP / English
Industry Collaboration / Interface	:	British Council Education India Private Limited.

The Centre of Excellence in British Council has been established to enhance English language proficiency assessment and training in collaboration with British Council Education India Private Limited.

Aptis ESOL is an innovative English language proficiency test developed by the British Council, designed to assess communication skills for practical, real-life contexts. It is a flexible and reliable assessment tool used globally by educational institutions, employers, and training organizations to evaluate English proficiency across the four skills – Reading, Writing, Listening, and Speaking – along with a core component on Grammar and Vocabulary.

What makes Aptis ESOL unique is its adaptive nature and modular design, allowing test takers to focus on specific skills or take a complete assessment based on their requirements. The test is delivered on a computer, ensuring efficiency, faster results, and a user-friendly experience.

Recognized worldwide, Aptis ESOL helps institutions benchmark English language levels against the CEFR (Common European Framework of Reference for Languages). It supports our students in identifying strengths and areas for improvement, thereby fostering both academic and workplace success. With its international credibility, flexibility, and practical approach, Aptis ESOL has become a preferred choice for those seeking to validate their English proficiency for education, career advancement, and global mobility.

Through this initiative, the Department of English at TCE reaffirms its dedication to integrating academic excellence with global industry benchmarks, equipping students with the skills and confidence to excel in today’s competitive international landscape.

Centre of Excellence for Youth Empowerment

Department in-charge	:	Department of Information and Technology
Year of Establishment	:	30 September 2025
Faculty Coordinators	:	Dr. S. Muthuramalingam, Prof/IT
Faculty in-charge	:	Dr. D. Tamil Selvi, Prof/IT & Dr.S.Vijayalakshmi, Prof(CAS)/CA
Industry Collaboration / Interface	:	ICT Academy

The Department of Information and Technology, Thiagarajar College of Engineering, in association with ICT Academy and its authorized industry-training partners, has established the "Centre of Excellence for Youth Empowerment"

The objective of this initiative is to upgrade the skill sets of the student community in the emerging domain of Data Analytics by providing hands-on exposure to advanced tools, techniques, and industry-relevant practices. The CoE designed to bridge the gap between academic learning and industry expectations by nurturing students with analytical thinking, problem-solving abilities, and data-driven decision-making skills.

Objectives

- To establish a structured learning and training ecosystem in the field of Data Analytics.
- To provide students with industry-standard tools, software, and datasets for practical exposure.
- To conduct specialized training programs, workshops, and certification courses in Data Analytics in association with ICT Academy.
- To enhance employability by equipping students with industry-ready competencies in data handling, visualization, statistical analysis, and machine learning techniques.

Software / Tools / Infrastructure Support

- Access to licensed Data Analytics software and platforms (Python, R, Tableau, Power BI, SQL, Hadoop, Spark, etc.)
- High-performance computing facilities for large-scale data analysis.
- Industry-grade datasets for hands-on projects.
- Training modules and certifications supported by ICT Academy.

Centre of Excellence in EDA Tools

Department in-charge	:	Department of ECE
Year of Establishment	:	2025
Faculty Coordinators	:	Dr. S. Rajaram, Professor (CAS)/ECE & Registrar
Faculty in-charge	:	Dr. N. B. Balamurugan, Prof. / ECE
Industry Collaboration / Interface	:	-

The Centre aims to strengthen TCE's capabilities in VLSI design, semiconductor device modelling, electronic system automation, and next-generation chip design methodologies. With support from industry partners and access to globally recognised EDA platforms, the Centre functions as a hub for research, training, innovation, and industry collaboration.

Objectives of the Centre

1. To provide hands-on training in industry-standard EDA tools for UG, PG, and PhD students to enhance their employability in the semiconductor and VLSI sectors.
2. To support research and prototype development in IC design, SoC development, device simulation, signal integrity, PCB design, RF modelling, and semiconductor device characterization.
3. To create a collaborative ecosystem connecting academia, industry, start-ups, and research laboratories for high-impact projects in emerging electronic technologies.
4. To promote innovation and entrepreneurship by organizing design challenges, hackathons, internships, and certification courses in advanced EDA workflows.
5. To facilitate interdisciplinary learning by integrating EDA tools across domains such as electronics, electrical engineering, computer engineering, and applied sciences.
6. To enable faculty development, capacity building, and curriculum advancement in sync with industry trends and semiconductor mission initiatives.

EDA Tools and Software Available in the Centre

The Centre is equipped with a comprehensive suite of world-class EDA software, enabling end-to-end electronic design and verification:

1. **Synopsys** - Sentaurus Device Simulation Tools: Sentaurus Process, Structure Editor (SDE), Visual / Inspect, Workbench, Quantum, Monte Carlo Simulator,Medici (Legacy), Taurus Tools (Legacy). Used for digital IC design, synthesis, PnR, STA, RTL verification, and design sign-off. Tools include Design Compiler, PrimeTime, ICC2, VCS, Verdi.
2. **Cadence Design Systems** - Supports analog, digital, mixed-signal IC design, verification, and PCB development. Tools include Virtuoso, Spectre, Innovus, Allegro.
3. **Siemens EDA (Mentor Graphics)** - Solutions for verification, formal checks, DFT, and PCB design. Tools include QuestaSIM, Calibre, PADS, HyperLynx.
4. **Silvaco TCAD** - Simulation environment for semiconductor devices and materials. Used for HEMTs, FinFETs, MOSFETs, emerging 2D materials, and process/device modelling.
5. **Keysight ADS** - High-frequency/RF, microwave, and communication system simulation. Useful for antenna modelling, RF circuits, filters, and high-speed systems.
6. **ANSYS** - Electromagnetic, thermal, and multiphysics simulation. Tools include HFSS, Maxwell, and SIwave.
7. **Xilinx -** FPGA design, synthesis, and embedded system development using Vivado and Vitis.

Centre of Excellence in Generative AI

Department in-charge : Department of AMCS

Year of Establishment : 13 October 2025

Faculty Coordinators : Dr. S. Parthasarathy
Prof, Head & Dean (CoE&CCE) / DS, AMCS
Dr. S. T. Padmapriya, AP/DS, AMCS

Faculty in-charge : Dr. S. T. Padmapriya

Industry Collaboration / Interface : Conversight.AI, Coimbatore

The Department of Applied Mathematics and Computational Sciences has signed a Memorandum of Understanding (MoU) with ConverSight.ai India Pvt. Ltd. to establish a Centre of Excellence in Generative AI aimed at strengthening academic–industry collaboration and fostering advancements in artificial intelligence and data-driven technologies. Through this partnership, the department facilitates advanced research, experimentation, and solution development in emerging domains such as Data Engineering, Prompt Engineering, Augmented Analytics, Data Modelling, Full Stack Development, Cloud Automation, Machine Learning, Deep Learning, and Generative AI. ConverSight.AI extends its support to faculty and students through mentorship, technical training, and industry internships, enabling the design and deployment of intelligent assistants, predictive analytics systems, cognitive automation tools, and decision-support platforms across sectors including healthcare, finance, manufacturing, and business analytics. Under the TCE–ConverSight.AI Academic Initiative, a range of academic and professional development activities are organized, including online seminars, one-credit courses, faculty development programmes, and student internships, thereby fostering innovation, enhancing technical competencies, and bridging the gap between academic research and industrial practice.

Objectives

- To promote academic–industry collaboration for knowledge sharing and research excellence in Generative AI and related domains.
- To provide mentorship, training, and internship opportunities that enhance the technical skills and employability of students and faculty.
- To organize academic programmes and knowledge dissemination activities including seminars, workshops, and one-credit courses to foster continuous learning.

T'SPACED – Thiagarajar Centre of Excellence in Sustainable Planning, Architecture, Community and Environmental Design

Department in-charge : Thiagarajar School of Environmental Design and Architecture (T'SEDA)

Year of Establishment : 2025

Faculty Coordinator : Dr. Jinu Louishidha Kitchley Prof and Head/T'SEDA

Faculty In-charge : Ar. S. Karthiyeya Raja, ASP/T'SEDA
Mr. R. Saravana Raja, Prof/ T'SEDA

Industry / Institutional Collaborations : Professional bodies, Government agencies, NGOs, and Industry partners

The Thiagarajar School of Environmental Design and Architecture (T'SEDA) has established T'SPACED – Thiagarajar Centre of Excellence in Sustainable Planning, Architecture, Community and Environmental Design as a multidisciplinary consultancy platform integrating design practice, research, and community engagement. The Centre extends T'SEDA's academic and professional expertise to industry partners, government departments, NGOs, and civic institutions, bridging the gap between academia and real-world application.

T'SPACED focuses on developing innovative, climate-responsive, and inclusive solutions for the built environment through four key domains:

- T'SPACED–ARCH: Architectural and environmental design consultancy, including sustainable buildings, urban infrastructure, heritage conservation, landscape design, and community-based projects.
- T'SPACED–DESIGN: Interior and product design, visual communication, and documentation for enhanced spatial and user experiences.
- T'SPACED–URBAN PLANNING: Strategic urban planning, GIS-based mapping, policy research, and participatory development projects.
- T'SPACED–UPSKILL: Capacity-building programs, workshops, and professional training for architects, planners, and civic agencies.

Infrastructure and Facilities –

T'SPACED is supported by advanced infrastructure including a **Climatology Lab** equipped with weather and environmental monitoring instruments (weather stations, pyrometers, anemometers, data loggers, sound level meters, and heat stress meters) and a **Computer Lab** with hardware such as HP Design Jet Plotter, 3D Printer, VR Headsets; Licensed software including AutoCAD 2025, Revit 2025, QGIS and Rhino 6

Bajaj Engineering Skills Training (BEST) Centre

Department in-charge : Mechatronics, Mechanical, ECE, EEE

Year of Establishment : 2025

Faculty Coordinators : Dr.M.Meenakshi Devi, AP/ EEE

Faculty in-charge : Dr.M.Meenakshi Devi, AP/ EEE

Industry Collaboration / Interface : Bajaj Auto Ltd

Thiagarajar College of Engineering (TCE), Madurai, and Bajaj have formally signed a Memorandum of Understanding (MoU) to establish state-of-the-art laboratories that will serve as a Center of Excellence for students of TCE as well as other engineering institutions across the region. This collaboration marks a significant step towards bridging industry and academia, and towards nurturing future-ready engineers.

The initiative will emerge as a major skill training hub for South Tamil Nadu, focusing on advanced manufacturing and next-generation technologies. In total, six verticals have been identified under this partnership:

- Vertical 1 (V1): Advanced Manufacturing – Robotics & Automation
- Vertical 2 (V2): Advanced Manufacturing – Industry 4.0 & IIoT
- Vertical 3 (V3): Electronic Manufacturing Systems
- Vertical 4 (V4): Firmware Development
- Vertical 5 (V5): Electronic Reliability
- Vertical 6 (V6): E-Mobility

As part of Phase 1, the MoU signing covers V1 (Advanced Manufacturing – Robotics & Automation) and V3 (Electronic Manufacturing Systems). Students of Mechatronics, Mechanical Engineering, and Electronics & Communication Engineering (ECE) departments will be the primary beneficiaries in this phase. The activities under V1 and V3 will come into effect from January 2026, operating in the allotted temporary facilities.

By September 2026, all six verticals will be fully functional in a dedicated permanent infrastructure of nearly 1,00,000 sq.ft. At that stage, students across multiple disciplines—Mechatronics, Mechanical, ECE, EEE, CSE, IT, and related engineering branches—will have access to cutting-edge learning and training opportunities. In terms of investment, TCE is contributing the infrastructure and building facilities of around Rs 20 crore and Bajaj is providing advanced equipment worth around Rs 40 crore. This joint effort ensures that the facility will be among the most advanced skill development ecosystems in the region. With this collaboration, it is expected that around 5,000 students will benefit annually, equipping them with the technical expertise, practical exposure, and industry-aligned competencies needed to excel in a rapidly evolving engineering landscape.

Centre of Excellence in AR/VR

Department in-charge : Department of Computer Science and Engineering

Year of Establishment : 08 October 2025

Faculty Coordinator : Dr. N. Shivakumar, ASP/CSE

Industry Collaboration / Interface : Unity Technologies

The Department of Computer Science and Engineering, Thiagarajar College of Engineering, in association with Unity Technologies and its authorized industry-training partners, has established the "Centre of Excellence in AR/VR". The department of CSE have applied and received an Educational Grant License from Unity Technologies to use its software and courseware access for free from July 2025 and renewable every year.

It offers the following benefits to the institution:

- Core Unity real-time development platform with access to essential features for creating and optimizing high-end games and interactive experiences.
- Manage multiple seats to provide learners with the optimal Unity experience on school-issued computers or servers – regardless of classroom size.
- Provides engaging curricula for game development or interactive applications at secondary and post-secondary levels with the Unity Curricular Framework.

Objectives

- To include AR and VR technologies in B.E curriculum for creating immersive experiences for any industry.
- To promote research innovation and product development in AR and VR.
- To develop multiplatform deployable 2D and 3D games.
- Facilitate interdepartmental projects involving students and faculty across engineering domains.
- To conduct workshops, training programs and hackathons to nurture technical competency among students.

Software / Tools / Infrastructure Support

- Integrate Unity software into the curriculum with 60 user license to access Unity Editor for innovative teaching and learning.
- Unity offers a wide range of courses, tutorials, and pathways through its official Unity Learn platform.
- Ark Infosolutions Ltd Bangalore, which is an authorized educational partner for Unity Technologies will support in conducting training programs.

Fuji Electric Centre of Excellence – Innovation Hub for Automation and Drives

Department in-charge	: Department of EEE
Year of Establishment	: 2025
Faculty In-charge	: Dr.L.Ashok Kumar, Prof/EEE & Principal/TCE.
Faculty Coordinator	: Dr.M.Meenakshi Devi, AP/EEE
Industry Collaboration / Interface	: Fuji Electric

The Fuji Electric Centre of Excellence (CoE) – Innovation Hub for Automation and Drives, established in collaboration with Fuji Electric India Pvt. Ltd., stands as a strategic initiative to elevate technical education, research, and industry-ready skill development at Thiagarajar College of Engineering (TCE), Madurai. This state-of-the-art facility is set up under Fuji Electric's CSR initiative, reflecting a shared commitment to advancing engineering education in cutting-edge domains such as industrial automation, servo systems, variable frequency drives, and PLC technologies.

The CoE is equipped with an extensive range of industrial-grade components, including AC Drives, Servo Motors, Servo Amplifiers, SPH and SPE PLC modules, and WSZ I/O units. The laboratory aims to serve as a multidisciplinary innovation space for the Departments of Electrical and Electronics Engineering and Mechatronics Engineering. It is designed to support academic laboratory sessions, student projects, research activities, and industry-oriented training programs. The Centre will also facilitate workshops, internships, and collaborative projects with Fuji Electric, empowering students to work on contemporary industrial challenges and develop solutions using modern automation technologies.

For further details, please contact

Thiagarajar College of Engineering, Madurai – 625 015
TamilNadu, India.

Principal	:Dr L Ashok Kumar - principal@tce.edu
Dean (CoE& CCE)	:Dr S Parthasarathy - deancce@tce.edu
Coordinator	:Dr J Felicia Lilian - jflcse@tce.edu
Co–Coordinator	:Dr R Sivanesan–rsnds@tce.edu