



## **Institutional Report on the Activities of Teaching Learning Center 2023-24**

**Name of the Center: TCE Academic Process**



Thiagarajar College of Engineering, Madurai, popularly known as TCE, aims at creating quality professionals to meet the emerging industrial and social engineering needs through innovative teaching, applied research and industrial interaction with a vision of “World class quality technical education with strong ethical values”.

**TLC@TCE:**

### **Vision**

- ✚ Evolve into a center of excellence in engineering education

### **Mission**

- ✚ Promoting innovations in academic process through capacity building for CDIO based curriculum design, effective content delivery, and skill-based assessment and evaluation.
- ✚ Exploring the use of ICT based tools for enhancing the learning outcomes of millennial learners.
- ✚ Establishing Engineering Education Department in the College to promote Engineering Education Research

Submitted by,

**Dr. S.J. Thiruvengadam**, Director (Academics and Accreditation),

**Dr. D. Anitha**, Associate Dean, Academic Process.

**Dr. C. Jeyamala**, College Level Coordinator, Academic Process,

**Dr. A.M. Abirami**, IQAC Coordinator,

Thiagarajar College of Engineering, Madurai

[directoraap@tce.edu](mailto:directoraap@tce.edu), Ph: 9865079402

## Table of Contents

1. [Executive summary](#)
2. [Letter by the Director \(Academics and Accreditation\)](#)
3. [Programs and Services & Professional Development Initiatives](#)
4. [Research and Innovation](#)
5. [Community Engagement](#)
6. [Challenges and lessons learnt](#)
7. [Financial summary](#)
8. [Future goals](#)
9. [Acknowledgements](#)
10. [Contact information](#)

### 1. Executive Summary

The report showcases significant milestones, key achievements, and the overall impact of our Center's initiatives. Highlights include the successful launch of new programs in AI & ML, Design, and Planning, which strengthen our academic offerings and align with industry trends. Faculty development was prioritized, with impactful workshops on advanced teaching methods, AI integration, and the CDIO framework, enhancing our commitment to innovative pedagogy. Our faculty received prestigious IUCEE awards and contributed to NAAC A++ accreditation, confirming our dedication to academic excellence. Through active engagement with IUCEE, faculty took on roles as reviewers, editors, and certification mentors, elevating our Center's academic influence. These achievements strengthen the Center's impact on fostering quality education and professional growth.

### Highlights of the year 2023-2024

- **Preparation for the new Programs launched in 2024-2025**
  - ✚ New B.Tech. programme on AI & ML
  - ✚ New B.Des. Programme and M.Plan programme
- **Workshops Held:**
  - ✚ TCE 3rd Faculty conclave - May 3, 2024
  - ✚ Half-day workshop on "Designing E-tivities and Designing authentic assessments" - March 5, 2024
  - ✚ Two-day faculty workshop on "Teaching Programming: Leveraging AI" - Nov 23 & 24, 2023
  - ✚ Two-day in-house Faculty workshop on "Effective Educational Practices Of CDIO Framework In OBE Implementation" - August 1 & 2, 2023
- **Awards Received**
  - ✚ IUCEE Teaching Learning Leadership award
    - Dr. S.J. Thiruvengadam, Dr. C. Jeyamala, Dr. D. Anitha
  - ✚ IUCEE Teaching and Learning Award
    - Dr. A.M. Abirami, Dr. D. Kavitha, Dr. B. Yogameena
  - ✚ NAAC A++ Accreditation with 3.77/4 for criterion 1 and 3.68/4 for criterion 2 as contributed by the TCE Academic Process team
  - ✚ ICTIEE 2024 Best Paper Awards: 3
- **Support in IUCEE Activities**
  - ✚ IIEECP - Assistant Faculty - 5
  - ✚ Associate Editor for Journal of Engineering Education Transformations: 2
  - ✚ Reviewers for ICTIEE 2024 - 12
  - ✚ Count of IIEECP Certified Faculty: 4 Count of Certification in EER: 2

## 2. Letter from the Director (Academics and Accreditation)

As we reflect on a productive and challenging year 2023-2024, I am pleased to share key milestones, achievements, and the resilience shown by our community. Together, we have catered to new demands and enhanced our academic offerings while facing challenges that prompted us to adapt and grow.

**Academic Expansion:** This year, we launched B.Tech. in Artificial Intelligence and Machine Learning and new programs in Design (B.Des.) and Planning (M.Plan). These additions were not without challenges, particularly in developing specialized curriculum and recruiting faculty in emerging fields. However, our teams worked tirelessly to establish high standards that align with industry needs.

**Faculty Development and Engagement:** We organized impactful faculty workshops, such as the 3<sup>rd</sup> Faculty Conclave, Teaching Programming with AI, and sessions on CDIO Framework for OBE and designing e-activities, focused on modernizing teaching practices. Although the transition to these innovative methodologies posed an adjustment challenge, the faculty shown remarkable participation. These workshops targeted young faculty and hence building a resilient teaching community for achieving longer goals.

**Recognition and Accreditations:** Our collective dedication earned prestigious awards, including the IUCEE Teaching Learning Leadership and Teaching and Learning Awards at ICTIEE 2024. Our institution also achieved NAAC A++ accreditation with strong ratings in critical areas of academic process. These recognitions underscore our commitment to quality, though achieving these benchmarks required extensive documentation, faculty effort, and teamwork.

**IUCEE Contributions and Professional Certifications:** Our partnership with IUCEE involved significant contributions, with faculty members serving in roles such as Assistant Faculty for IIEECP, Associate Editors for the Journal of Engineering Education Transformations, and Reviewers for ICTIEE 2024. Four faculty members achieved IIEECP certification, and two earned certification in Engineering Education Research (EER). Supporting such extensive involvement in external academic communities is essential, though balancing these responsibilities with institutional commitments was demanding.

While the year presented challenges, the resilience and dedication each of the academic process team members showed are commendable. Their contributions to the academic process go above and beyond their departmental responsibilities and personal professional growth efforts. At this juncture, I must record my sincere thanks for their hard work and commitment to our shared goals. As a team, TCE continues to advance together, supporting each other as we pursue academic excellence.

Handwritten signature of S. J. Thiruvengadam in blue ink, dated 23/10/2024.

Prof. S.J. Thiruvengadam,  
Director (Academics and Accreditation),  
Thiagarajar College of Engineering, Madurai.

### 3. Programs and Services:

#### 3.1 TCE Faculty Conclave 2024 for Sharing of Best practices in Teaching Learning

Date: 3 May 2024

Count of Presentations : 18 Count of Participants: 80 Venue: CSE Conference Hall

Agenda:

Venue : CSE Seminar Hall		Time: 9:10 am to 1:30 pm	
Time	AGENDA		
09:10 am	Prayer Song		
09:12 am	Welcome address & About TCE Faculty Conclave-2024 -Dr. D. Anitha, Associate Dean, Academic Process		
09:15 am	Presidential Address-Dr. M. Palaninatharaja, Principal i/c		
09:25 am	TCE Academic Process : A Journey of continuous improvement – Dr. S.J. Thiruvengadam, Dean Academic Process		
9:35 am	Faculty presentations – Session 1		
11:00 am	Refreshment Break		
11:15 am	Faculty presentations – Session 2		
12:30 pm	Faculty presentations – Session 3		
1:15 pm.	Closing session Feedback by the Participants Announcement of Best Presentations Vote of Thanks-Dr. C. Jeyamala, Associate Dean, Academic Process		

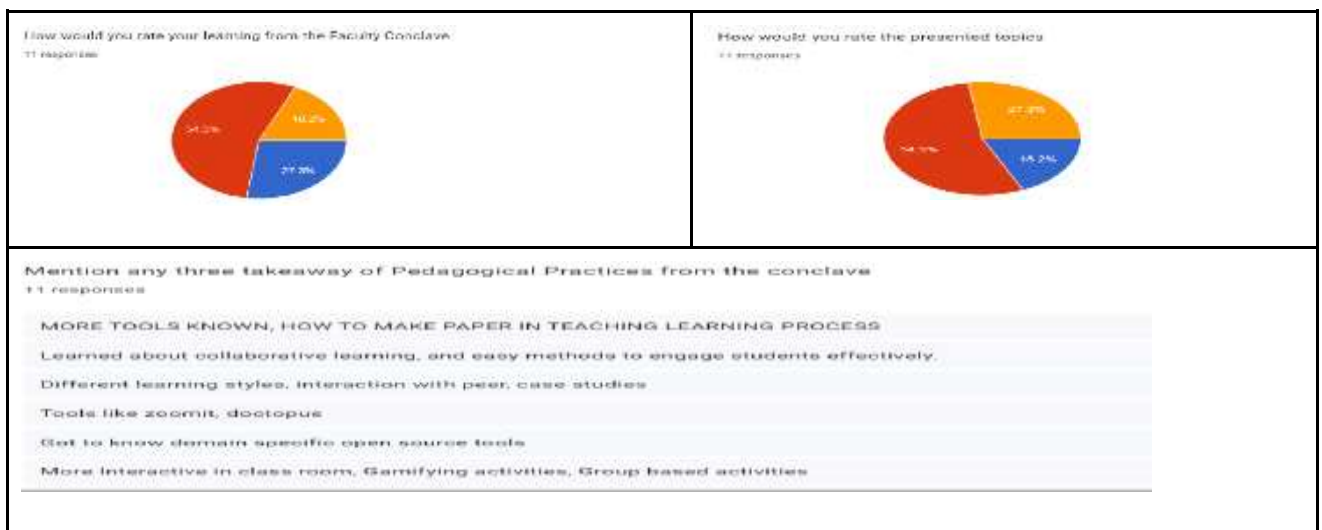
#### Best Presentation Awards:

- ✚ Enhancing Engagement and Learning Outcomes in Mathematics through Collaborative Gamification: A Case Study – Ms. S. Srimathi / AMCS
- ✚ Cloud Computing - A Cost-effective Approach – Ms. S. Thiruchadai Pandeewari & Dr. S. Padmavathi / IT
- ✚ Enhancing Learning: Effective Assignment Frameworks in Theoretical courses – Dr. D. Kavitha / EEE



- Excellent
- Very Good
- Good
- Satisfied

Feedback:



Significant Outcome:

A longitudinal study on the 3 faculty conclaves is done and published in JEET 2024 ([Published article](#)) Detailed report on Third TCE faculty conclave is presented in the [link](#)

### 3.2 Professional Development Initiatives - I

**Workshop Title:** Effective Educational Practices for CDIO Framework in OBE implementation

**Date :** Aug 1 & 2 , 2023

**Resource Persons:** TCE Experts

**Count of Participants:** 70

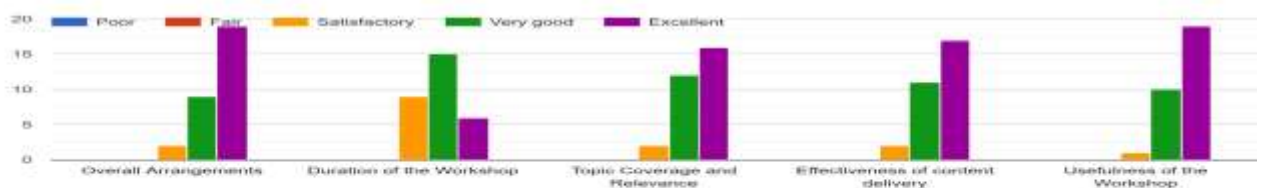
#### Agenda

Date	Time	Session
August 1 2023 (Tuesday)	9:30 am – 10:30 am	Need of transformation in teaching - Dr M. Palaninatharaja, Principal i/c
	11:00 am – 1 pm	CDIO Implementation : A Journey ahead. - Dr. S.J. Thiruvengadam, Dean Academic Process
	2:15 pm – 3:45 pm	Creating ecosystem for Outcome Based Education (OBE) - Dr. S. Baskar, Dean R & D
	4:00 pm – 4:15 pm	Summary
August 2 2023 (Wednesday)	9:30 am – 11:00 am	Creating Dynamic classroom with active student engagement practices - Dr. D. Anitha (Academic Process Team)
	11:30 am – 1 pm	Designing intertwining curriculum for CDIO - Dr. S.J. Thiruvengadam, Dean Academic Process
	2:00 pm – 3:00 pm	Effective Assessment for Higher Order Thinking Skills - Dr. C. Jeyamala (Academic Process Team)
	3:00 pm – 3:30 pm	NRF – A guide for self-improvement - Dr. A.M. Abirami (Academic Process Team)
	3:45 pm – 4:15 pm	Reflective discussion and concluding remarks - Dr. S.J. Thiruvengadam, Dean Academic Process



*Feedback from Participants:*

Please rate the workshop using the following parameters:



### 3.3 Professional Development Initiatives -II

**Workshop Title:** Teaching Programming: Leveraging AI

**Program Date:** 23 to 24 Nov 2023

**Resource Person:** Dr.Sudarshan Iyengar, Associate Professor and Head, IIT Ropar

**Count of Participants:** 52

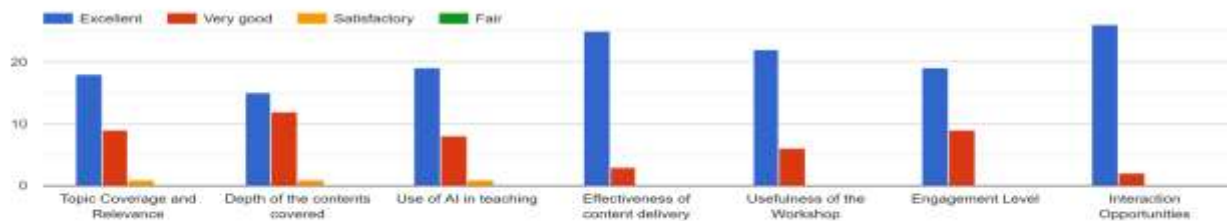
**Objectives:**

The "Teaching Programming: Leveraging AI" workshop was designed to empower educators with innovative techniques to enhance programming instruction through Artificial Intelligence.



## Feedback from the Participants:

Please rate the workshop using the following parameters



## 3.4 Student Support Programmes

### IUCEE Student programs

- IASF Student Chapter
- Engineering without Border – chapter
- NEP courses
  - Design Thinking and Community-Based Design – 8 completions
  - Introduction to Entrepreneurial Thinking – 14 completions
  - Artificial Intelligence for All – 10 completions
  - Social Emotional Learning – 10 completions
  - Leadership and Sustainability – 10 completions
  - Overview of Emerging technologies – 10 completions
  - Smart, Clean and Green Learning spaces – 18 completions
  - Self Service Analytics – 6 completions
- Support for Learners with learning difficulties
  - Week end classes specifically for Mathematics
  - Special classes for Vernacular students

## 4. Research and Innovation

### 4.1 Journal and Book Publications in EER:

- Anitha, D., Jeyamala, C., Abirami, A. M., & Thiruvengadam, S. (2024). Creating teaching dynamics with In-house Faculty conclaves--a longitudinal study. *Journal of Engineering Education Transformations*, 37.
- Parkavi, R., Karthikeyan, P., Sujitha, S., & Abdullah, A. S. (2024). Enhancing Educational Assessment: Predicting and Visualizing Student Performance using EDA and Machine Learning Techniques. *Journal of Engineering Education Transformations*, 37(IS2), 240–245. <https://doi.org/10.16920/jeet/2024/v37is2/24046>
- Parkavi, R., & Karthikeyan, P. (2024). Enhancing Student Performance Prediction in Higher Education: A Data-Driven Approach. *Journal of Engineering Education Transformations*, 37(IS2), 271–279. <https://doi.org/10.16920/jeet/2024/v37is2/24050>
- Parkavi, R., & Karthikeyan, P. (2023). Measuring Emotional Intelligence Competency of Undergraduate Students during Online Class learning. *Journal of Engineering Education Transformations*, 36(S2), 214–220. <https://doi.org/10.16920/jeet/2023/v36is2/23030>
- Ramesh, H., & Fusic, S. J. (2024). Introducing Analysis of Experiments in Electrical Machines Laboratory. *Journal of Engineering Education Transformations*, 37(Special Issue 2).
- Julius Fusic S, Rajalakshmi, R., Kavitha, D., Sugumari, T., & Nivetha, S. (2024). A design thinking approach to develop entrepreneurial skills in the field of Mechatronics Engineering. *Journal of Engineering Education Transformations*, 37.
- Ishwarya, M., NS, Sri Roopika., Julius Fusic, S., & Ramesh, H. (2024). Effect of project-based learning method for improving students problem-solving ability in the experiment of power electronics course. *Journal of Engineering Education Transformations*, 37.
- Anitha, D., Ahirao, P., Ananthamurthy, R., & Ullas, V. P. (2023). Exploration of gender specific and learning environment specific comfort level in collaborative learning. *International*

Journal of Continuing Engineering Education and Life Long Learning, 33(6), 536-553. (Results after collaborative effort in Engineering Education Research course offered by IUCEE)

- Edited Book on "Adopting Artificial Intelligence Tools in Higher Education: Teaching and Learning", Dr.M.Thangavel, Dr.P.Karthikeyan, Dr. A M Abirami, published by CRC Press (Scopus Indexed)

## 4.2 Student satisfaction survey

As a part of continuous improvement at Thiagarajar College of Engineering, the student satisfaction survey is conducted by the end of every academic year. The voice of the students on the effectiveness of teaching learning process is recorded through the survey. The questionnaire has been designed with specific focus on curriculum, content delivery, assessment and support system/infrastructure. Google form with the links

- ✚ UG Programmes: <https://forms.gle/yGev6JxpuLizNSkN6>
- ✚ PG Programmes: <https://forms.gle/Bf46BKE6rePRExJZ9>
- ✚ Architecture (B.Arch /M.Arch): <https://forms.gle/bZHSPmhZRZxn2SwaA>

The feedback was collected in anonymous mode. Around 1888 UG, 189 PG students, 223 students from the Architecture department participated in the survey. The responses have been carefully analyzed and an appropriate action plan has been prepared by the Academic Process team of the institute to enhance the quality of Teaching Learning Process. Analysis of the same and the action plan has been submitted to ICTIEE 2025. The detailed report is presented in the [link](#).

### ***Action Plan in terms of curriculum, content delivery and assessment:***

- ✚ Industry supported course, Interdisciplinary courses, Audit courses and Industry internships shall be crafted with appropriate content, conduct and assessment
- ✚ More awareness on ICT based teaching shall be made with training programs ; Laboratory facilities shall be improved to accommodate the latest trends
- ✚ Communication, Critical thinking, Collaboration, Creativity are to be given more importance in assessments

## 4.3 Structured Feedback

TCE Academic Process has facilitated obtaining structured feedback from different stakeholders to improve the curriculum ([Feedback report](#))

## 5. Community Engagement

### 5.1 IUCEE Annual Student Forum 2024:

- 20 students attended bootcamps on interdisciplinary discovery, design thinking, and engineering excellence during Jan 2-4, 2024, KLE Tech, Hubli.
- Five teams from TCE participated, and one team was awarded 3rd Prize in Project Exhibition for their "Innovative Waste Segregation Model"
- Krithikaa R K also earned recognition as an "Inventor" in the Promising Gift category.

### 5.2 Sustainable Technovation Expo (Oct 16, 2024):

Organized by the IETSC-IUCEE EWB TCE Student Chapter at Thiagarajar College of Engineering Expo showcased 19 projects aligned with the UN Sustainable Development Goals.



IASF 2024



SUSTAINABLE TECHNOVATION EXPO

## 6. Challenges and Lessons Learnt

- 🚧 Streamlining of data Capturing mechanism
- 🚧 Creation of value-added courses apart from regular curriculum
- 🚧 Sustainability in practicing innovative pedagogical practices
- 🚧 Balancing workload with NAAC and NBA accreditation

## 7. Financial Overview

Summary of expenditures incurred by TCE Management on TCE Academic Process activities in addition to the funding provided to regular academic activities like Board of Studies and Academic Council conduct for the academic year 2023-2024:

S.No.	Programme Name	Date of conduct	Amount granted (INR)
1	Effective Educational Practices in CDIO framework for OBE implementation	August 1 & 2, 2023	7521
2	Teaching Programming: Leveraging AI (Resource Person: Prof. Sudarshan Iyengar, IIT Ropar)	November 23 & 24, 2023	57462
3	Designing E-tivities (Resource Person: Dr. Bibiana Lim Chiu Yiong, Head, T&L Unit, Swinburne University)	March 05, 2024	16333
4	3rd Faculty Conclave 2024	May 03, 2024	19847
5	Sponsorship to attend ICITIEE 2024	19 Papers	187000
6	IUCEE Consortium Annual Fee	One time/Year	75000
7	EWB Activities		6000
		<b>Total</b>	<b>363163</b>

## 8. Future Goals

- TCE Online EER mentorship forum - Launched on Oct 23, 2024
- TCE MOOC courses offering to external participants - Feb 2025
- Video content repository for learners with learning difficulties
- New Online course creation - May 2025
- Collaborative opportunities with GEDC Universities - June 2025
- Scheme for conduct of Value-Added Courses (one / Dept/semester) - Launched on Oct 3, 2024
- In-house workshops (one per semester)
- Pedagogical workshops to external participants with IIEECP faculty as resource persons(one per year)



## 9.Acknowledgments

- Thanking our Chairman and Correspondent Mr. K. Hari Thiagarajan and the Management for supporting all our endeavours; we thank our Principal, Deans, Heads of the Departments, members of the Academic Process Team, Faculty members and students for supporting our new initiatives.

## 10. Contact Information

- Center address: Office of the Director Academics and Accreditation Process, TCE
- Nodal Person: Dr. S.J. Thiruvengadam (Director Academics and Accreditation), TCE  
[directoraap@tce.edu](mailto:directoraap@tce.edu)
- Website: <https://www.tce.edu/academics>