THIAGARAJAR COLLEGE OF ENGINEERING, MADURAI 625015

Institutional Distinctiveness: Academic Year: 2018-19

The institutional distinctiveness activity in the academic year 2018-19, is the implementation of Conceive Design, Implement and Operate (CDIO) Curriculum. Our institution was granted autonomous status in the year 1987 by the University Grants Commission (UGC), New Delhi. This has given us the freedom to design and develop an innovative curriculum, content delivery and assessment methods in alignment with the guidelines of AICTE and Affiliating University. As a major initiative in the teaching and learning process, a competency-based curriculum, Bloom's taxonomy based course learning outcomes & assessment methodologies were introduced in 2008. As Outcome-Based Education (OBE) has been made mandatory for accrediting Engineering Programmes in India, the curriculum was suitably modified in the year 2014. Although the undergraduate program curriculum is designed based on the OBE framework, the hands-on practices, system/design thinking leading to product development, and interpersonal skills have not been much emphasized in the curriculum. Cognitive aspects are addressed to a greater extent than affective and psychomotor. In due course of time, due to rapid advancement in science and technology, engineering education drifted towards the teaching of engineering science than engineering practice. As a result, industries in recent years have found that graduating students, while technically adept, lack many abilities required in real-world engineering situations. To address the increasing gap between scientific and practical engineering demand and to meet the global requirements of professional Engineers, the CDIO curriculum was introduced.

After attending the 11th International CDIO conference at Chengdu, China, we realized that a CDIO based curriculum is organized around the disciplines, but with CDIO activities are interwoven. The CDIO activities include projects, internships in industry, and active learning in theory and practical courses in which modern state-of-art laboratories are considered as workspaces. CDIO framework has been implemented in many universities all over the world as it maps with the Washington Accord graduate attributes. It motivated us to introduce 'Engineering Design' and 'Capstone' courses in our OBE curriculum as an experimental basis to emphasize hands-on practices, system/design thinking, and interpersonal skills. These courses helped us to improve the attainment of graduate attributes/program outcomes and student engagement. However, we felt that the transition from the existing model to the CDIO framework would be more challenging. In the interaction with faculty members from various Universities at CDIO international conferences and Asian Regional meetings, we understood the challenges in implementing the CDIO framework first time in a country. This has given us the confidence to implement the CDIO curriculum first time in India, as we had strong support from the administration and commitment from the faculty members. With this motivation, we adapted

the CDIO syllabus for all seven undergraduate engineering programs at our institution from the academic year 2018-19. The courses are, namely, *Engineering Exploration*, *Lateral Thinking*, *Design Thinking*, *Project Management*, *System Thinking*, *Engineering Design Project*, *Capstone Design Project,* and *Major Project*. The course outcomes of all the courses in the curriculum are articulated by combining the knowledge, skill, and attitude domains of learning.