CHAPTER 56

TECHNOLOGY INSTRUMENTARION AND CONTROL ENGGINEERING

Doctoral Theses

01. GADRE (Dhananjay V.)
Challenges and Transformations in Engineering Education.
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Abstract

Amongst several options for professional courses, engineering education is quite popular and much sought after by Indian parents and students. The reason for this popularity is the belief that engineering education provides the shortest route towards employment which helps the parents to fulfil their responsibility of educating their children and at the same time, a hope to see the returns from the investment into their children's education in the shortest period of time. Since the late 90s, when engineering education in India opened up in a significant way to privatisation and incidentally, this phase coincided with the booming Computer and Internet age, the belief of Indian parents in engineering education towards fulfilling their above mentioned objectives, further consolidated. In recent times, Indian engineering education is at a strange dilemmatic crossroad. There is a huge uproar due to perceived lack of jobs but survey after survey shows unemployable graduating engineers with lack of skills. On top of this dilemma, there is a third problem being faced by non-computer engineering streams - lack of interest amongst students of non-computer engineering streams such as electronics, instrumentation, mechanical, civil etc. There is a dire need to address the shortcomings that Indian engineering education faces. In this thesis an attempt has been made to address these shortcomings through a smorgasbord of approaches as listed below. There is no doubt that any attempt at improving Indian engineering education must address the problem of stale and outdated syllabus. We suggest various methods of Improving teaching and learning through innovative changes to the syllabi. We propose that not only the syllabus be updated but to begin with, the students should be appropriately conditioned so that they are receptive of the course content. We show how using physical models and project demonstrations is a perfect way of influencing the students positively and making them interested in the course. One of the shortcomings of Indian engineering education has been the lack of hands-on, practical involvements with the real world. Project based learning has been recognised as an influential method of improving learning outcomes. In this thesis, we discuss how creating opportunities and support for project based learning can change engineering education for the better. We also discuss ways of creating flipped classroom material since flipped classroom approach has been recommended for better learning outcomes. We also focus on development of open workshops since workshops fulfil the needs that cannot be met with available courses due to various reasons. Next, we focus our attention on industry academia interaction since this topic has been proposed as a robust method of improving engineering education.

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