

2. Engineering and Stream Foundation Courses for Motivating the Students

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Engineering education in our country has really evolved over the past few decades. Today, in the prime educational institutes there are students who have gone through rigorous coaching to crack the entrance examination. Some of these students quickly lose their motivation to excel in their engineering education even after getting admission to these prime institutes. On the other hand, there is also a plethora of engineering institutes which cater to students who have lower marks in the entrance examination. Some of such students are not well-equipped to undergo the rigors of engineering education. Also, lots of the students just take up engineering education without having a real motivation for it, maybe, just because their parents want them to be Engineers.

Today in India most of the technical education accreditation agencies are promoting an Outcome Based Education [OBE] system. In outcome based educational pedagogy the emphasis is on a learner centric system where the onus is on the learner. The teacher acts as a mentor and facilitator to facilitate learning in OBE. Due to large classes and higher Student to Faculty Ratio [SFR] norms declared by the relevant educational authorities, the faculty is not in a position to

individually cater to students in the class.

It is observed that there are a large number of unmotivated students in the course. In spite of various warnings these students do not attend lectures/labs or only bodily attend without paying any attention to the proceedings in the class. These students do not really have a desire to become engineers nor do they have any deep inclination towards the branch in which they are enrolled for study. Some of these students leave the institute after 1-2 years, being unable to clear their courses. Some of them are not able to get promoted to higher classes due to multiple failures in examination. There are also a large number of students who scrap through the exams of the lower years, but find the going tough as they move on to the higher semesters. Education seems to be a burden and they are clueless if they really wish to attain the outcomes of the program and for what purpose.

The objective of this article is to propose techniques to overcome this dilemma in OBE in the current educational system. Can we somehow motivate the students who have landed in the engineering education system but are distracted into other activities and addictions, other than education and learning? Students who have no motivation or eagerness to score and attain the outcomes in OBE, can we create an interest in them towards the courses and the teaching and learning activities?

We propose the introduction of two foundation courses in the first year of engineering. The first course proposed is on

“Foundations of Engineering Education.” The objective of this course would be to motivate the students to the discipline of Engineering. The students should become aware of the challenges of engineering educations and the benefits of it. They should understand their roles and responsibilities in the society as an Engineer. Basically the course should prepare the students on what to expect in the coming 4 years and how they have to prepare themselves for the efforts to be put in, and then finally the benefits that will accrue from being an Engineer. The second course proposed is on “Foundation of <stream> Engineering” e.g.,

Foundation of Computer Engineering, Foundation of Electrical Engineering, etc. This course should motivate the students to study in the chosen stream of engineering. The course should introduce the stalwarts in the field who can be role models to the students. It should clearly highlight the benefits to the individual students and also to the society at large of the chosen stream of study. It should prepare the students for the effort they have to put in to excel in the chosen stream and provide them with career options available. It should provide the student with an introduction to the structure of the program, the core courses, and the electives, and prepare the students to make the correct choices during their later semesters on the electives and project/dissertation topics. It should prepare the students to plan their study and their career after graduation, right in the first year. This will keep them motivated to achieve their goals.

It is advised that both the courses should have seminars/expert talks taken by experienced and expert people who could be distinguished professors and professionals from industry and research, in addition to the course instructor. Both the foundation courses could have some laboratory component where students are exposed to hands on work with tools and equipment to further expose them to the chosen engineering domain without getting into details. It is expected that by undergoing these two foundation courses, the students will have a better understanding of what is engineering, and what is the chosen stream all about. This will motivate the students by clearly showcasing them the benefits of studying. This will bring interest in the learner and enable a learner centric system to succeed, which in turn would provide success to an outcome based educational system. It will also better align the students towards the outcomes of the program and how they can benefit from the education and achieve success in future.