

Enhancing Teaching of Engineering Mathematics

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Abstract : Teaching of mathematics to engineering students is an open ended problem in education. The main goal of mathematics learning for engineering students is the ability of applying a wide range of mathematical techniques and skills in their engineering classes and later in their professional work. Most of the undergraduate engineering students and faculties feels that no efforts and attempts are made to demonstrate the applicability of various topics of mathematics that are taught thus making mathematics unavoidable for some engineering faculty and their students. The lack of understanding of concepts in engineering mathematics may hinder the understanding of other concepts or even subjects. However, for most undergraduate engineering students, mathematics is one of the most difficult courses in their field of study. Most of the engineering students never understood mathematics or they never liked it because it was too abstract for them and they could never relate to it. A right balance of application and concept based teaching can only fulfill the objectives of teaching mathematics to engineering students. It will surely improve and enhance their problem solving and creative thinking skills. In this paper, some practical (informal) ways of making mathematics-teaching application based for the engineering students is discussed. An attempt is made to understand the present state of teaching mathematics in engineering colleges. The weaknesses and strengths of the current teaching approach are elaborated. Some of the causes of unpopularity of mathematics subject are analyzed and a few pragmatic suggestions have been made. Faculty in mathematics courses should spend more time discussing the applications as well as the conceptual underpinnings rather than focus solely on strategies and techniques to solve problems. They should also introduce more 'word' problems as these problems are commonly encountered in engineering courses. Overspecialization in engineering education should not occur at the expense of (or by diluting) mathematics and basic sciences. The role of engineering education is to provide the fundamental (basic) knowledge and to teach the students simple methodology of self-learning and self-development. All these issues would be better addressed if mathematics and engineering faculty join hands together to plan and design the learning experiences for the students who take their classes. When faculties stop competing against each other and start competing against the situation, they will perform better. Without creating any administrative hassles these suggestions can be used by any young inexperienced faculty of mathematics to inspire engineering students to learn engineering mathematics effectively.

Keywords : application based learning, conceptual learning, engineering mathematics, word problem

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