

# **New Approach of Teaching Engineering Laboratory at Undergraduate Level with Emphasizing on Creativity, Teamwork, and Communication**

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## **Abstract**

Traditional undergraduate engineering education has been focused on transferring knowledge from textbooks to students. In today's highly competitive real world, creativity, teamwork, cutting-edge knowledge, effective communication skills, and leadership ability become critical factors for success. Engineering laboratory courses provide unique opportunities to address above issues. This paper reports a new teaching approach for engineering laboratory at undergraduate level, discusses the philosophy behind the teaching approach, and reviews the effect of the teaching methodology on the learning process of the students and their ability to handle real world challenges. The teaching approach actively engaged students in learning process, fostered their enthusiasm about the course topics, challenged them to think critically and creatively, helped them build connections between what they learned in classroom environment and real world. In addition, the teaching method helped students develop effective teamwork and communication skills. This paper will also explore further improvement on the new approach, which will include incorporation of modern technology and outreach programs in traditional engineering lab courses. Introducing modern technology to undergraduate level laboratories will help students to keep abreast with new development of science and technology through engineering laboratory courses. Involve students in outreach programs will provide opportunities to students for further improving their communication skills and potentially attract high school students and increase university enrollment.