Addressing the Mathematics Problem within Engineering Education: New Approaches being Piloted at a UK University

Abstract *—*

The engineering profession requires a clear understanding of mathematics, science and technology. However, work by the UK's Engi neering Council in 2000, suggests that the past decade has seen a serious decline in students' basic mathematical skill and level of preparation on entry into higher education in the UK. This decline is reportedly due to the widening of access to higher e ducation and inadequate mathematics preparation in pre -university education. A study by the Institute of Mathematics and its Applications, conducted in 1995, suggests that this decline in mathematical preparation is perceived as threatening to undermine t he quality of Engineering Degrees in the UK.

As part of the work of the Mathematics Education Centre at Loughborough University, new measures are being implemented to help address the diversity of mathematical skill amongst students studying Electronic an d Electrical Engineering. These measures include pre -sessional courses, one -to-one action planning with students identified as at risk of failing or underachieving, and workshops in key mathematical topics. These new measures are designed to complement e xisting practices at the University, including diagnostic testing. The paper discusses the rationale for the measures being implemented, and provides details on how pre -sessional courses for upcoming students with non -traditional mathematical backgrounds are run. The paper also discusses the effect of these measures, the lessons learnt from their implementation and makes suggestions for how these measures could be transferable to other institutions