

Challenges and Opportunities for Introducing Basic Circuits And Systems in Electrical Engineering Education

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Abstract

Basic circuits and systems topics have been and still are essential ingredients of electrical engineering education at most universities around the world. However these topics are under threat at many places in much the same way as the basic mathematics like linear algebra, differential equations, and analysis is threatened. Much of it is caused by an urge for instant gratification from the side of the younger student generations in many countries. Of course with the advent of computers, mobilophony, and internet, students as well as professionals handle information in ways that are essentially different from the past. In the lecture this changing configuration will be discussed and situated, and new alternatives and avenues will be presented. Within the IEEE CAS Society a technical committee CASEO CAS Education and Outreach has been active for 4 years on innovative approaches that open up opportunities to deal with this problem. Moreover in mathematics a shortcut approach called "streetfighting mathematics" has been advocated. At various places in the world new methods of introducing circuits and systems have been experimented with. We can mention concepts inventories, web based learning, activated learning, Conceive Design Implement and Operate CDIO learning, shortcuts in frequency domain concepts. We will also discuss alternative ways of introducing concepts like first discrete time followed by continuous time versus the traditional way in reverse order.