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Integrated Teaching of Hardware Courses for the Undergraduates of Computer Science and Engineering to Attain Focused Outcomes

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Abstract : Computer systems play an integral role in all facets of the engineering profession. This calls for an understanding of the processor-level components of computer systems, their design and operation, and their impact on the overall performance of the systems. Systems users are always in need of faster, more powerful, yet cheaper computer systems. The focus of Computer Science engineering graduates is inclined towards software oriented base. To be an efficient programmer there is a need to understand the role of hardware architecture towards the same. It is essential for the students of Computer Science and Engineering to know the basic building blocks of any computing device and how the digital principles can be used to build them. Hence two courses Digital Electronics of 3 credits, which is associated with lab of 1.5 credits and Computer Organization of 5 credits, were introduced at the sophomore level. Activity was introduced with the objective to teach the hardware concepts to the students of Computer science engineering through structured lab. The students were asked to design and implement a component of a computing device using MultiSim simulation tool and build the same using hardware components. The experience of the activity helped the students to understand the real time applications of the SSI and MSI components. The impact of the activity was evaluated and the performance was measured. The paper explains the achievement of the ABET outcomes a, c and k.

Keywords : digital, computer organization, ABET, structured enquiry, course activity
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