



GUJARAT TECHNOLOGICAL UNIVERSITY

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CIRCULAR

Interested faculty members and students may register for the following webinar which is going to be held on Tue, Jul 12, 2016 3:30 PM - 4:30 PM IST.

Virtual Academy: Automotive Electronics: Enhancing the learning through integrated laboratory

Tue, Jul 12, 2016 3:30 PM - 4:30 PM IST

Registration URL: <https://attendee.gotowebinar.com/register/7643185086056156676>

Description:

Present days“ automotive embedded systems have become multifaceted in nature, and their performance has been enabled by introduction of electronics at all levels of design and manufacturing. The purpose of introducing a course on automotive electronics at under graduate level for the electrical sciences stream was to address the needs of embedded and automotive industries and hence providing the necessary knowledge and skills required for those industries.

This paper discusses the process of mixing cognitive and performance learning objectives into one course; which is realized by integrating laboratory with the theory. The laboratory had a focus of building automotive electronics development and test environment for three main domains of automotive which includes power train, comfort/safety and In-vehicle networking. The paper also discusses about the development of in-house experimental trainer modules which demonstrate the entire working of engine management systems.

The lab had four different levels of experiments which enabled the students to experience typical automotive embedded system design process. At the same time it is observed that all the levels also address the major three domains of automotive as mentioned earlier. The level one included experiments belonging to automotive sub-systems, demonstration of cut-away modules, level two included model based simulation experiments using MATLAB/SIMULINK & CANalyzer. Level three included experiments on sub module development using sensors, actuators, embedded boards- ARM cortex M3/M4 boards; the last level four was realized through system integration an extended activity which included the integration of sub-modules developed in earlier levels.

The integration of lab to the theory course enabled to achieve both technical and professional outcomes of ABET[1]. The outcomes b, c, d, g, i, j, and k were achieved. The paper presents the details of attainment of these outcomes.

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