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Documenting Knowledge to the Undergraduate Education of Professional Engineers: A Case Study in Microcontroller Education

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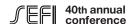---

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Any type of written documentation is beyond doubt an important tool for every engineer. While documenting knowledge for professionals (e.g., reference manuals, user guides, etc.) may be considered a straightforward procedure, the authoring of a book that is intended for engineering students is certainly much more complicated. It is widely accepted that the information provided in a book should help readers understand the main ideas easily. In consideration of the engineering books it is also important to help readers identify what should be the focus of their attention, in order to support the application of theory to practice. Moreover, the transfer of knowledge to the undergraduate education of professional engineers, in an age of rapidly advancing technology, should be provided with more flexibility. The question is, how is this possible when the writing of a book could last for years, while in just a few years' time the technology of today will most commonly be obsolete?

In this paper the authors share their research experience on the undergraduate engineering education which was initiated in 2004, and concluded in 2011 with the publication of a book that involves microcontroller technology [1]. The authors' research has been primarily focused on the sophomore students of the Department of Informatics & Telecommunications, Epirus Educational Institute of Technology (Greece), in an attempt to reinforce the educational level of the tutees on the software and hardware design issues for embedded computer systems. Through an in-depth examination of the subject matter [2-4], the authors discuss the strategies addressed for surmounting the barriers to effective learning. A comparative discussion on relevant books is addressed, while a generalized working plan towards the authoring of a well-organized book in microcontroller education is also recommended. ■

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