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Undergraduate computational science and engineering education.

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The authors require an especially curricula program for computational science and engineering education (CSE). That means an opposite to the integration of computational education into engineering education. The basis of CSE should a collection of core competencies: - simulation and modelling conceptual models, use of modelling tools, assessment of models, ... - programming and algorithms - parallel programming - applied mathematics - scientific visualization - research experience. Such a CSE program should be valid state wide. But, the authors see that the successful development of a specific style of a CSE program depends on the structure and mission of a particular university, the collection of faculty expertise, and most importantly on pragmatic considerations. And therefore we ask the question here: Is there a contradiction in terms? The authors themselves see several different models for CSE at the undergraduate level. These cover a wide range of possibilities from a small number of courses, through a minor to a fully developed B.S.-level degree. Often local conditions may dictate the level of commitment that individual departments or institutions will be able or willing to adopt. The reasons for developing such a program are seen by the authors as many. The impact is discussed in terms of a pipeline of suitable graduates to fill educational, research, and industrial needs.

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