PANEL ON COMPUTING CURRICULA: COMPUTER ENGINEERING

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Abstract: - The purpose of this panel is to provide an up-to-date description of the work done by the task force on Computer Engineering curriculum so far and to invite further public comments to be used for the final version of the document.

In 1998, the Association for Computing Machinery (ACM) and the Computer Society of the Institute for Electrical and Electronic Engineers (IEEE-CS) convened a joint curriculum task force called Computing Curricula 2001, or CC2001 for short. The CC2001 Task Force was asked to develop a set of curricular guidelines that would “match the latest developments of computing technologies in the past decade and endure through the next decade.” Over the past fifty years, computing has become an extremely broad designation that extends well beyond the boundaries of computer science to encompass many independent disciplines, including computer engineering, software engineering, information systems, and many others. The final CC-2001 report is planned to be organized into five volumes: Volume I: Overview, Volume II: Computer Science, Volume III: Computer Engineering, Volume IV: Software Engineering, Volume V: Information Systems.

The Computer Engineering task force did not start from scratch. Instead it planned to build on the work of its predecessors. There are many aspects of the older reports that we intend to retain as we develop the new curriculum.

- We believe that the articulation of individual knowledge units serves a valuable purpose in providing a framework for the design of individual courses and the curriculum as a whole.
- We support the integration of professional practice and design into the undergraduate curriculum along the lines outlined in the appendices to Curriculum ’91.

However, as the computing technologies have been changing faster than our best ability to keep pace, and computer applications have changed the structure of society significantly, we ought to invest much thought in deciding and defining what will go into the recommended curriculum in order to produce computer engineers competent to further the technology and its applications to benefit mankind in the future. As curriculum developers, we must decide which basic knowledge is essential to the performance of computer engineers at a required level of competence, and thus must be retained. On the other hand, as a discipline grows more and more mature and the body of knowledge compounds daily, the curriculum cannot contain everything; future computer engineers must be equipped with essential knowledge and well tested methods and techniques, not just transient technologies.

The primary focus of this panel is the Computer Engineering volume. A committee has been established in the beginning of 2001 to define the body of knowledge that constitutes computer engineering as well as to flesh out course outlines to suit different curricula in computer engineering. The task force has developed the first draft of the computer Engineering curricula and the associated body of knowledge for public review; a reviewer workshop, sponsored by NSF, was held in Boston in November in conjunction with FIE-2002 to provide critic on the draft. The task force is now in the process of digesting the feedback to come up with the next version of the curricula for further public review. The purpose of the proposed panel is to present the final report of the work in computer engineering curriculum development and to invite suggestions, comments and feedback from the participants. The panel will serve to raise the awareness of the project among computer engineering educators and practitioners and motivate them to be involved in the process. It is to be noted that the committee has planned a series of meeting prior to the conference in November and by that time they expect to present a nearly final complete draft of the entire document containing the fundamental concepts, computer engineering special tracks as well as some implementation issues in terms of course design and curriculum design in the context of different universities and colleges.

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