I. Source

GAPS IN THE COMPUTER SCIENCE CURRICULUM: AN EXPLORATORY STUDY OF INDUSTRY PROFESSIONALS by Chris B. Simmons, Department of Computer Science, University of Memphis and Lakisha L. Simmons, School of Business Administration, University of Mississippi

II. Credibility of Source

No information on where this was published, but article contains eight references to scholarly journals. Article also reports on interviews with IT professionals. They conducted 20 interviews that consisted of 7 open-ended questions related to what technical industry professionals described as being an important need for future computer science professionals. Interviews were conducted with IT professionals such as 6 Sigma Black Belts, Senior Project Analysts, Quality Assurance Analysts, Computer Scientists and one president of a nonprofit organization. The professionals were from 8 Fortune 500 businesses, 9 small-to-medium businesses, and 2 non-profit organizations.

III. Summary of Content and Conclusions

The analysis concludes that modifying computer science curriculum to provide more emphasis on written and verbal communication skills, gathering and eliciting customer requirements effectively (80% of respondents emphasized), the ability to be flexible and the ability to deal with varying personalities were highly emphasized. Negotiation skills, time management, cultural differences, outsource management, and information assurance trainings were some of the most notable skills in addition to a strong technical background. All of these skills will aid in improving graduates' ability to communicate on all levels of the organization when entering industry in an IT capacity position. Companies continue to outsource. The ability to provide well-rounded computer scientists is vital in these situations. With the current literature aiming to improve various aspects of the computer science curriculum, there is a grave need to focus on the customer. The authors propose enhancing the computer science curriculum to include more customer elicitation techniques, albeit potentially through a business, to improve the ability for computer scientists to hone in on the art of requirement elicitation and project management through communication skills. Future research can further quantify the needs of

industry. Elicitation, communication, and project management skills within the computer science curriculum are some of the potential areas to make a great impact in the career success of computer science graduates.

WRT technical skills interviewees discussed the importance of object oriented programming, decoupling understanding, analytical skills, and integrity in programming. Specific languages such as Java, JavaScript, Ruby, Perl, HTML, CSS, SQL, Python, JUnit, .Net, C++, and UML were identified. Other concepts such as web services, network administration, server administration, database administration, and requirement engineering were stated.

IV.   **Relevance to the Department of ECE**
Rather than identify gaps these authors articulated what the professionals they interviewed considered to be an appropriate undergraduate curriculum in computer science. Thus the task of identifying gaps is left to the Department based upon offerings in the current curriculum. The methodology used by the authors appear to be rigorous and well-founded. The relevance of this article to ECE is not large as it mostly pertains to computer science which is in the College of Natural Sciences and Mathematics rather than computer engineering which is in the Cullen College of Engineering.

Nevertheless the modern engineer must be well-versed and facile in the use of computers which are integral to the way engineering is practiced today. Thus the boundary between software expertise and hardware expertise is dissolving and may eventually disappear. That is the trend. In many industries the most valuable engineer is the one who is expert in both hardware and software.

V.   **Recommendations for the Department or the IAB**
Make proficiency in software a graduation requirement for EE's and insure that the curriculum supports the requirement. Audit the present curriculum for undergraduate and graduate courses in TCAD, testing protocols (and languages) and ECAD. Integrate the use of the appropriate software tools into the course and capstone projects.

VI. Contact Information
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The full article can be found here:

http://lakishasimmons.com/images/publications/simmons_curriculum.pdf