Computer Science BS Degree Program

(Draft 3 – February 10, 2002)

Note: Additions to the CpE document are high-lighted in yellow. Deletions from the CpE document are struck-through.

Educational Objectives and Outcomes

- Objective 1) Provide undergraduate students with an opportunity to learn and develop fundamental principles and techniques to solve scientific and engineering problems. The graduated engineering computer science student should achieve
 - Outcome 1a) a working knowledge of basic mathematics, science and engineering topics
 - Outcome 1b) an ability to identify, formulate and solve engineering problems
 - Outcome 1c) an ability to design and conduct experiments, and analyze and interpret data
 - Outcome 1d) an ability to effectively communicate technical material
 - Outcome 1e) an ability to function on a multidisciplinary team

[NOTE: In the outcomes for Objective 2 below, I think we need to mention somewhere *algorithms* and computer science *theory* (or *foundations*, if you prefer that term). Why? The CS program requires CS332 and CS302 while CpE doesn't.

Outcomes 2a, 2c, 2d, 2e below seem to address what we want our core CS courses to cover, so maybe we re-write these as we see fit.]

- Objective 2) Provide undergraduate students with an opportunity to acquire in-depth knowledge in the domain area of computer engineering science. The graduated computer engineering science student should achieve
 - Outcome 2a) a working knowledge of essential fundamentals in Computer Science and Electrical Engineering.
 - Outcome 2b) a working knowledge of advanced topics in mathematics.
 - Outcome 2c) a working knowledge of the hardware and software design process.
 - Outcome 2d) the ability to specify, design, analyze and validate a computer-based system to meet a set of desired goals, within the context of a broader system application.
 - Outcome 2e) an understanding of computer and networked system organization and architecture, computation theory, analysis of algorithms, and knowledge of recent advances, current practices and trends in computer systems these areas.
 - Outcome 2f) specialized knowledge in topical areas of Electrical Engineering and Computer Science and Software Engineering.
 - Outcome 2g) preparation for graduate study in computer science, computer engineering or electrical software engineering.
- Objective 3) Provide undergraduate students with an understanding of the Jeffersonian principles of free enquiry, ethical awareness, creativity, and professionalism necessary for successful careers and responsible engineering professional practice. The graduated student should
 - Outcome 3a) recognize the need for and be capable of engaging in lifelong learning.
 - Outcome 3b) receive a broad education in the humanities and social sciences, to gain an understanding of contemporary issues.
 - Outcome 3c) understand the interrelationships between technology and contemporary society.
 - Outcome 3d) understand the ethical and professional responsibilities of an engineering computing practitioner or researcher.