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Chapter 18

Information Systems and Computer Science Model Curricula: A Comparative Look

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Computer science and information systems are interrelated disciplines that both cover the technical and functional aspects of computing. They are fields of study in high demand by students and employers. Yet, many colleges do not have the resources to offer multiple computing departments. So, professional organizations have developed model curriculums to help define the knowledge necessary for information technology majors. This chapter provides a discussion of model IS and CS curricula. It is hoped that IT departments will be able to develop an information technology curriculum, which suits their student's needs.

INTRODUCTION

Computer science, information systems, and management information systems are in high demand. Industry needs the graduates. The shortage of qualified information technology specialist is well known. Students want an information technology education to be able to fill the demand.

The demand for information technology (IT) workers will not decrease in the near future. It is fueled by the decrease in physical size of IT hardware, the decrease in price of information technology hardware and software, and the in-

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crease in performance, reliability, and flexibility. These affordability factors have caused IT to become critical to business operations and personal daily activities. This demand is not limited to the United States, the raising world wide demand is pushing the shortage to a global problem (Freeman & Aspray, 1999; Watson, Taylor, Higgins, Kadlec & Meeks, 1999).

All organizations today depend on information technology. Computers and information systems are essential to business and government. The information itself is a resource similar to finances, personnel, material, and equipment, which must be managed. To effectively management information requires technical knowledge of hardware, software, and information production, distribution, and integration. Therefore, the information technologist requires both technical and organizational knowledge (Davis, Gorgone, Couger, Fienstein & Longnecker, 1997; IRMA, 1999; Freeman et al., 1999).

WHAT IS INFORMATION TECHNOLOGY

Information technology involves the "design, development, implementation, support or management of computer-based information systems, particularly software applications and computer hardware (ITAA, 1997)." An IT worker is someone who performs at least one of those activities as 50% of their job. IT workers can be further classified into one of four categories: conceptualizers developers, modifiers, and supporters (Freeman et al., 1999).

Conceptualizers are workers involved with the conception of the basic nature of an IT system or part of an IT system. Developers are people who specify, design, construct, and test IT. The workers who modify information technology work with existing hardware or software. Finally, there are those who support the existing systems by delivering, installing, operating, maintaining, or repairing. Undergraduate institutions should emphasize preparing students to work as developers, modifiers, or supporters or for further education to become conceptualizers.

IT is not a homogeneous field, it has many different and diverse academic and professional origins. IT uses as reference disciplines mathematics, management and engineering (Denning, 1998; Freeman et al., 1999; Myers & Beise, 1999; Watson et al., 1999). Depending on the interests of academic faculty the IT major originated from one of three reference disciplines. In business, computers were first used in accounting departments to track accounts receivable and accounts payable. This quickly led to university business departments investigating computing as it applied to management control and accounting. Mathematicians found the algorithmic and logical nature of programs to be a resurrection of these fields of mathematics. Mathematics departments began investigations into the theoretical aspects of software. Electrical engineering is of course necessary to construct the hardware components of the computer. From the academic per-