THE DEVELOPMENT OF INFORMATION SCIENCES AND TECHNOLOGY (IST) BACCALAUREATE PROGRAM STANDARDS FOR POTENTIAL USE AS ACCREDITATION GUIDELINES

by

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The Development of Information Sciences and Technology (IST) Baccalaureate Program Standards for Potential Use as IST Accreditation Guidelines

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Abstract

This study developed national standards for information sciences and technology (IST) baccalaureate programs in the United States. The advent and high utilization of e-commerce and other technologies used in the digital economy has significantly increased—at an expected rate of 110% from 2000 to 2010, (according to the United State Labor Bureau of Statistics)—the demand for technologically knowledgeable employees. Consequently, academic institutions have developed IST baccalaureate programs to educate these individuals. The intent of this study was to provide the Society of Information Technology Education (SITE) accreditation committee with preliminary standards from which to develop accreditation guidelines. The criteria were gleaned from accreditation guidelines for degree programs from which the IST program has evolved (i.e., Computer and Information Science (CAC), Business Administration (AACSB), Computer and Engineering Technology (TAC) and Library and Information Science (ALA)). Validity and reliability testing identified 15 categories containing 138 criteria as relevant to the IST program. This study surveyed 50 individuals affiliated with five IST-related accrediting bodies in the United States: the Accreditation Board for Engineering and Technology (ABET); the American Library Association (ALA); American Society for Information Science and Technology (ASIS&T); the Business Accreditation Committee (BAC); and the Computer Sciences Accreditation Board (CSAB). The survey response rate was 54% (N = 27). The results revealed that 96.3% (n = 26) of the respondents agreed or strongly agreed with the IST program standards outlined in this study. The remaining individual's mean score was 3.9 (near agree), which

suggests agreement with the survey statements. This high level of agreement may have been influenced by the source of the IST program criteria; however, the respondent's highest degree, academic discipline, faculty rank or job title, accrediting body, or department showed no significant relationship to the categorical responses. Regardless of their respective backgrounds, 96.3% of the respondents agreed that all 15 categories and their criteria should be considered standards and potential accreditation guidelines for the IST degree program.

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DEDICATION

Dedicated in loving memory to my dad, Leo Raymond Shields – my inspiration.

A very special man who touched many lives by just being himself.

CHAPTER 1

INTRODUCTION

"Respect for intellectual excellence, the restoration of vigor and discipline to our ideas of study, curricula which aim at strengthening intellectual fiber and stretching the power of young minds, personal commitment and responsibility—these are the preconditions of educational recovery in America today; and, I believe, they have always been the preconditions of happiness and sanity for the human race."

-Adlai E Stevenson, 1988

The 20th Century saw the advent of the Technology Revolution or the Digital Age which has precipitated an overwhelming demand for technologically skilled employees. The digital, global economy has driven "all organizations ...to rely on computer and information technology to conduct business and operate more efficiently," according to the 2002-2003 edition of the Career Guide to Industries (United States Department of Labor, 2002) and the Occupational Outlook Handbook (United States Department of Labor Bureau of Statistics, 2002a). The major contributing factor to this movement has been the ever-increasing utilization of electronic commerce by banks, government agencies, insurance companies, educational institutions, computer wholesale and retail vendors, computer manufacturers, and electronic component firms, just to name a few.

Who will provide technical support and expertise for these organizations as they continue to implement and update the latest and greatest technologies? According to the U.S. Department of Labor, the answer is information scientists, information systems

managers, software engineers, computer support specialists, system administrators, computer systems analysts, database administrators, network systems analysts and administrators, data communications analysts, programmers and other information specialists (see Appendix A – IST Occupation Descriptions). These occupations fall under the career category and educational discipline known as Information Sciences and Technology (IST).

The discipline of IST is an emerging field that has evolved to meet the employment needs of businesses in reaction to the ever-growing need for technologically skilled employees who understand not only information management, but also how to develop technology in order to manage business information and conduct business. IST has been described as an interdisciplinary undergraduate degree program that "prepares scholars, leaders, and mangers who will excel in the digital, global economy by building curricula that stress the integration of information, technology and people" (PSU, 2002b, p. 1). In this context, the term interdisciplinary refers to the integration of curricula from computer and information science, library and information science, computer technology, computer engineering technology and business administration degree programs as depicted in *Figure 1*.

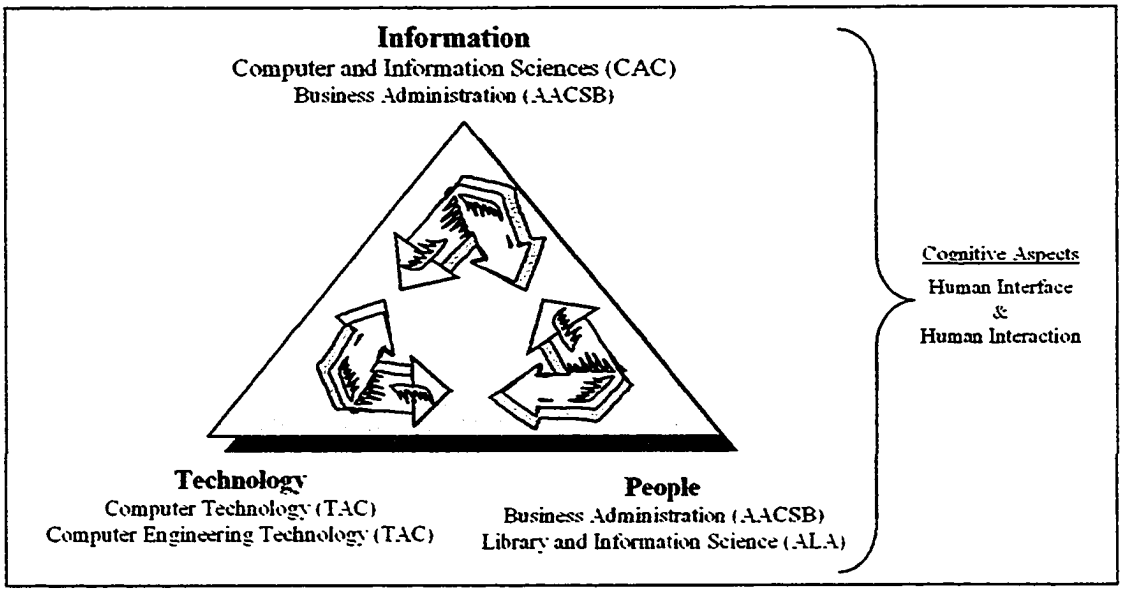

Figure 1. The IST Program Theoretical Model.

Embedded in this model are aspects of cognitive science or cognitive processes, specifically in relation to information processing or information retrieval. Information science, whether it is computer and information science or library and information science, considers the user-centered perspective (e.g., cognitive approach). The user-centered perspective envisions the user interacting with the system, considers the different information needs of users, and understands the various ways users process information (Williams, 1995). Cognitive science is relevant to the IST program in terms of addressing human interaction and human interface because information technology is developed for use by humans.

The merging of curricula from computer and information science, library and information science, computer technology, computer engineering technology and business administration degree programs is what makes the IST program unique and attractive, and what resulted in the increased growth of Schools and/or Colleges of

Information Science and Technology. To manage the quality of the IST program as it explodes into the marketplace, criteria need to be developed to ensure educational quality.

Institutions that offer computer and information science, library and information science, computer technology, computer engineering technology and business administration degree programs may voluntarily apply for certification or accreditation for these programs as a means of ensuring quality programs and leveraging their programs. Accreditation is achieved by meeting a set of standards designated by an accrediting body: in this case, a specialized accrediting body—a commission or group of content-related experts, who have been extracted from both academic and professional organizations to develop standardized criteria for specific accreditation.

The specialized accrediting bodies for the IST-related programs are as follows: computer and information science programs are accredited by Computing Accreditation Commission of ABET (CAC/ABET); library and information science programs are accredited by American Library Association (ALA); computer technology and computer engineering technology programs are accredited by the Technology Accreditation Commission of ABET (TAC/ABET); and business administration programs are accredited by The Association to Advance Collegiate Schools of Business (AACSB) International. Currently, an accrediting body has not been developed to create such criteria for the IST program. Therefore, the purpose of this study is to develop a set of standards for potential use as IST program accreditation criteria.

Significance of Study

In 2000, approximately 3.2 million individuals worked as IST professionals, earning a median annual salary of $57,600. There was a 40% increase of 1.3 million IST-related jobs from 1990 to 2000. Projection statistics indicate that occupations in the IST field are currently, and will continue to be, the fastest growing through 2010, with an average projected rate of growth of 101% within a ten (10) year period, resulting in approximately 3.7 million new jobs by 2010 (United States Department of Labor, 2002). These jobs are information scientists, information systems managers, software engineers, computer support specialists, system administrators, computer systems analysts, database administrators, network systems analysts and administrators, data communications analysts, programmers and other information specialists. The projected demand for each of these occupations is outlined in *Figure 2*. IST Employment Projections

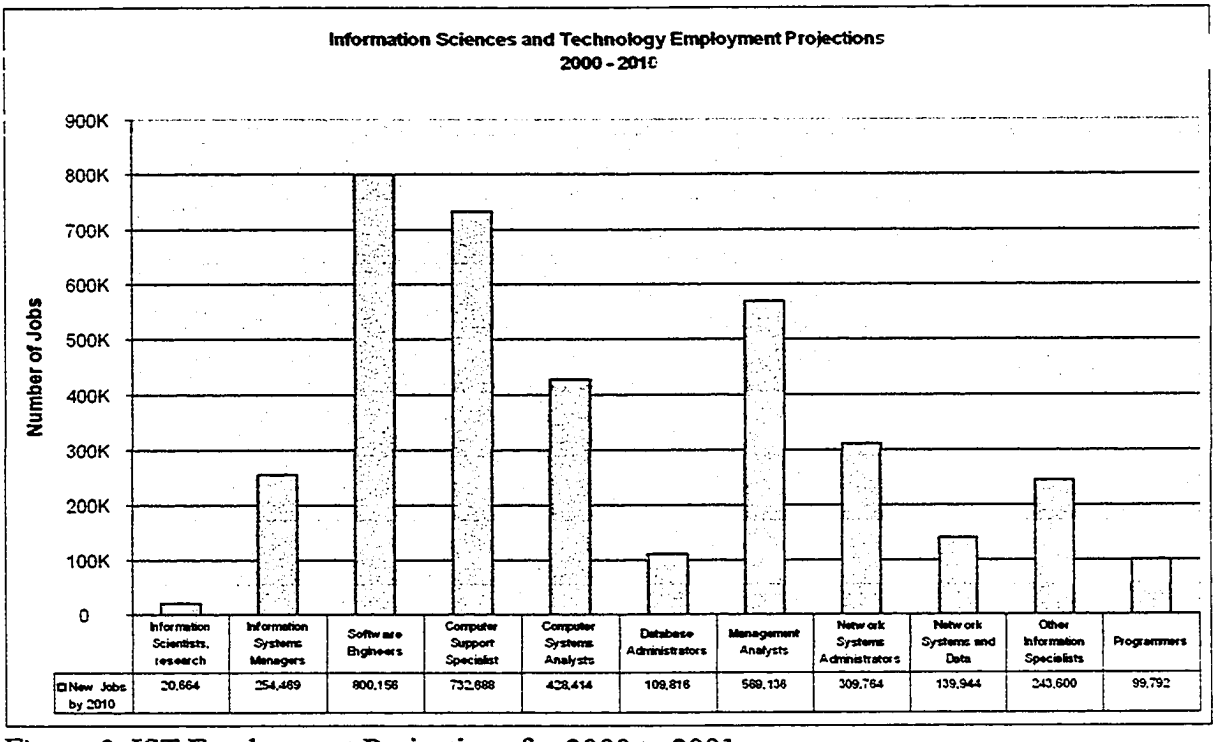

Figure 2. IST Employment Projections for 2000 to 2001.

Based on these projections, the demand for skilled IST workers will increase by an average of 370,844 per year. Colleges will need to educate these individuals, and so there is a significant need for IST degree programs. In response to these figures, The Pennsylvania State University instituted a School of Information Sciences and Technology in 1999, Drexel University opened a College of Information Science and Technology in 1995, and Temple University offered a degree in Information Science and Technology in 2001. To ensure the quality of these emerging IST programs, a set of standards needs to be developed. These standards could be used as potential specialized accreditation criteria.

Statement of Problem

The purpose of this study is to develop a set of standards that can be used to evaluate current and future IST programs as well as provide a foundation for the development of accreditation criteria. Therefore, the results of this study will provide:

1. Clear definition of information sciences and technology (IST).
2. Qualitative and quantitative data for future planning and development of IST education programs in the United States.
3. Information for educators, regulatory organizations, and other decision makers to improve existing IST programs in the United States.
4. Standards by which to expand and intensify the curriculum of the IST program to reflect ever-changing technological advances.
5. Assistance with establishing accreditation guidelines for IST undergraduate programs.
6. A baseline for comparative and evaluative studies about IST undergraduate programs nationwide.

Assumptions

The following assumptions are made about this study:

1. A sufficient number of IST experts and educators are interested in and willing to improve the quality of IST education nationwide.
2. The proposed standards are adequate to measure the quality of the IST undergraduate programs nationwide.
3. Participants in the study will be cooperative, accurate, and honest.

4. The positions held by the expert (i.e., professor, dean, director, business person) will not matter or influence the outcomes of the data analysis.

Limitations of the Study

This study will be limited to undergraduate programs in information sciences and technology (IST) in the United States of America and can only be generalized to such programs.

Delimitation of the Study

The emphasis of this study will be on the program's theoretical framework rather than identifying specific courses. Even though cognitive science degree programs are not represented in this study, the information science accreditation criteria take into account cognitive science curriculum, such as human factors and human interface (see *Figure 1*).

Future Research

It is proposed that the results of this study will provide a baseline from which to assess existing IST programs. Therefore, the next logical step is to conduct a comparative analysis of current IST programs to determine if they meet the proposed standards.

Definitions

The following definitions will be used for the purpose of this study:

Accreditation – a formal procedure used to certify a university program or degree as having met a set of standards designated by an accrediting body (Accent Software International, 1998; Blake & Hanley, 1995)—an association or institution that monitors or assesses the value of curriculum (Jarvis, 1990).

Computer Science – the study of both theoretical and practical aspects of engineering, electronics, information theory, mathematics, logic, and human behavior. Aspects of computer science include programming and computer architecture (hardware and software) systems analysis and design, application and system software design, information and its use, and artificial intelligence (Downing, Covington, & Covington, 2000; Microsoft Press, 1997).

Curriculum – the planned instructional content, instructional resources, and instructional process for attainment of a predetermined educational objective in school, college or university (Blake & Hanley, 1995; Reynolds & Iwinski, 1996).

Electronic Questionnaire – "a survey instrument for collecting data that is available on the computer" (Creswell, 2002, p. 643).

E-form – "Short for electronic form. An online document that contains blank spaces for a user to fill in with requested information that can be submitted through a network to the organization requesting the information. On the Web, e-forms are often coded in CGI script and secured via encryption" (Microsoft Press, 1997, p. 171).

Evaluation – "the process through which the worthwhileness and effectiveness of a training or education course is established. A strategy for evaluation may be based on qualitative and/or quantitative approaches. Thus, students may be asked to rate or comment on the quality and relevance of a course" (Blake & Hanley, 1995, pp. 55-56).

Facility – "Any equipment, structure, system, process, or activity that fulfills a specific purpose. Examples include accelerators, storage areas, fusion research devices, nuclear

reactors, production or processing plants, coal conversion plants, magnetohydrodynamics experiments, windmills, radioactive waste disposal systems and burial grounds, testing laboratories, research laboratories, transportation activities, and accommodations for analytical examinations of irradiated components"(United States Office of the Assistant Secretary for Nuclear Energy, United States Office of the Assistant Secretary for Nuclear Energy, & United States Office of Nuclear Safety Policy and Standards, 1992, p. 2)

Information Science – a discipline that investigates the properties and behavior of information and its uses, the forces that govern the flow and use of information, and the techniques, both manual and mechanical, of processing information for optimal storage retrieval, and dissemination (Borko, 1968; Downing et al., 2000; Microsoft Press, 1997).

Information science and technology (IST) – an interdisciplinary undergraduate degree program that "prepares scholars, leaders, and mangers who will excel in the digital, global economy by building curricula that stress the integration of information systems or computing, technology and people" (PSU, 2002b, p. 1). Interdisciplinary means integrating information, technology and organizational behavior (or people). Traditionally, information science education is provided by library and information science programs, technology education is offered by engineering technology related programs (ABET, 2002b), and organizational behavior education is obtained through business programs.

Information Services – the formal name for the department within an organization that performs the following functions: data processing, information processing, information

systems, information technology, management information services, management information systems (Microsoft Press, 1997).

Information Technology – encompasses all forms of technology used to process information including the creation, storage, exchange, and use of information in its various forms: business data, voice conversations, still images, motion pictures, multimedia presentations, and other forms, including those not yet conceived (Freedman, 2001; Thing, 2002).

Management Information System (MIS) – a computer-based system composed of people, software, hardware, and procedures that is used to provide various levels of management within an organization with accurate and timely information needed for supervision activities, tracking progress, making decisions, and isolating and solving problems (Kendall & Kendall, 2002; Microsoft Press, 1997).

Mission – the specific purpose and philosophy of an organization in the form of a clear and compelling goal that serves as a tangible, energizing, highly focused goal that draws the organization forward to unify an organization's efforts (Collins & Porras, 1998; Kotler, 1994).

Mission Statement – the expression of the mission or strategic objectives of an educational institution in a short statement which encapsulates the aspiration of the establishment (Blake & Hanley, 1995).

Objectives – are a means by which teachers can specify the outcomes they expect to result from instruction in terms of knowledge, skills and attitudes of desired educational outcomes (Blake & Hanley, 1995).

Program – the planned curriculum for a specific discipline that is prepared by an educational institution and completed by a student as a means of obtaining a baccalaureate diploma (Jarvis, 1990).

Standards – *Technical definition* – "a specification for hardware or software that is either widely used and accepted (de factor) or is sanctioned by a standards organization (de jure)" (Freedman, 2001, p. 926).

Student Admissions – a set of formal guidelines used for evaluating the acceptance of prospective students into a particular degree program (Jarvis, 1990).

Technology – the systemic and systematic application of machines and procedures in order to enhance or improve human conditions, or at least improve human efficiency in some respect as applied to the solutions of problems (Anglin, 1995; Microsoft Press, 1997).

Summary

The United States has adopted the practice of accreditation as a means of ensuring the quality of the nation's educational programs. Academic institutions choose to participate in this process in order to leverage their degree programs by voluntarily evaluating their curriculum against criteria established by specialized accrediting bodies.

The advent of the Information Age has sparked the need for a new educational discipline for which specialized accreditation does not exist.

The overwhelming demand put on academic institutions to educate "knowledge workers" who develop, maintain and integrate businesses' information and e-commerce technologies has caused the emergence of the information sciences and technology (IST) degree. IST integrates curriculum generally offered by computer and information science, computer technology, computer engineering technology, library and information science and business administration programs. Each of these programs is accredited by a specialized accrediting body.

Based on the fact that these programs have contributed to the evolution of the IST program and the fact that accreditation criteria exists for these programs, it is plausible to use these criteria as a foundation or model for the development of IST standards for potential use towards the development of IST accreditation criteria. Therefore, the purpose of this study is the development of a set of standards for the IST program.

CHAPTER II: LITERATURE REVIEW

This chapter is divided into three sections. The first section provides the reader with a historical perspective of the evolution of the information sciences and technology (IST) program. The second section provides insight into the origin and importance of program accreditation. The third final section offers a discussion of how the criteria for the proposed IST standards were developed.

The IST Baccalaureate Program

IST is an interdisciplinary undergraduate degree program that evolved from computer and information science, computer technology, computer engineering technology, library and information science and business administration degree programs. These programs sprang from the foundations of technology as a result of a watershed event—the industrial revolution of the late eighteenth century. In order to fully understand how these programs evolved, a discussion about the history of technology, as it developed from the industrial age and developed into the Information Age, is provided. Furthermore, a review of the growth of IST-related educational programs is offered as a means of understanding how the discipline of IST has emerged.

Evolution of Technology from the Industrial Age to the Information Age

The information age evolved in three stages (see *Figure 3*). The first stage of the technology evolution saw the development of rudimentary technology and a foundation of the language of technology. From the second stage sprang communication technology, computer programs, and the first networks. Communication technology provided a means

of transferring information at faster speeds. Computer programs managed and manipulated large amounts of data. The United States government created networks by interconnecting computers for the first time as a means of sharing information and data. In the third and final stage, the information age was born as a result of the rapid development of computer technology, the availability of public use of the Internet and the advent of e-commerce. Throughout each of these stages, entrepreneurs used technology to improve the way they conducted business. In the last two stages, businesses utilized technology, not only to automate and improve the business but also to conduct business.

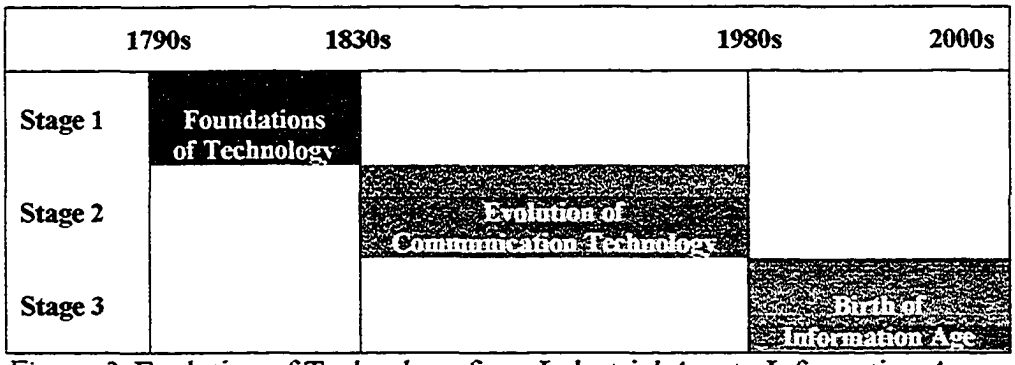

Figure 3. Evolution of Technology from Industrial Age to Information Age.

The first stage of the technology evolution began with the industrial age. According to Mokyr (2001), the industrial age set in motion technological changes that gathered speed and momentum. This momentum was a result of early experimentation and unsystematic discoveries that provided useful knowledge in the form of technology or applied science—where knowledge was used for service of commercial and manufacturing interests in the form of large technology used for transportation, communication, and power production. These technologies increased material progress and prosperity (Mokyr, 2001). Such technologies were developed by engineers and

entrepreneurs who also began to create the first technical vocabulary. Thus, the foundation of technology had been laid and was built upon as information science and computer technology emerged.

The second stage in the industrial evolution occurred in two steps. The first step took place in the early 1830s in the form of the railroad system that allowed information to travel faster than the speed of man and horse. Approximately a decade later, the first fax machine was used (Bissell & Bennett, 1997) in 1843; and Samuel Morse used technology to transmit information with the telegraph in 1844, increasing the transmission of information to what, at that time, seemed instantaneous speeds (Ambrose, 1996; Bissell & Bennett, 1997). As a result of railroad transportation, telegraphic communication, and the first fax machine, the nation began to experience what Hughes described as "technological momentum" (1983, p. 15), or the wide-scale use of technology by businesses, government agencies, professional societies and educational institutions (Little, 2000). This technological momentum has increased over time and has resulted in the highest rate of technological growth of all current fields, as reported by the United State Department of Labor's Career Guide to Industries (2002). In fact, it took radio almost 30 years and television 15 years to achieve a similar rate of growth and level of market penetration and saturation (Cook, Heath, & Thompson, 2000).

In 1845 information began to be managed by computers when Ada Byron wrote the first program for calculating numbers that was to be used in a computer designed by the "grandfather of computing," Charles Babbage ("The Forgotten", 1999). Unfortunately, the computer was never completed and Byron died before her program could be tested. Byron's efforts were recognized in 1979 when the U.S. Department of

Defense named their computer language ADA after her first name ("Computers", 1999; Karwatka, 1995; "The Forgotten", 1999; Thurber Jr., 1995).

In 1947 the first electronic digital computer—ENIAC (electronic numerical integrator and computer)—was created at the Moore School of Electrical Engineering at The University of Pennsylvania. The Army Air Corps Ballistic Research Laboratory of the Ordnance Department at Aberdeen contracted the University to design ENIAC for use in computing World War II ballistic firing tables (Crosby, 1999; Sobel, 2002; Thurber Jr., 1995; "Timeline", 1997; Weik, 1961). According to Weik,

> ENIAC was the prototype from which most other modern computers evolved. It embodied almost all the components and concepts of today's high-speed, electronic digital computers. Its designers conceived what has now become standard circuitry such as the gate (logical "and" element), buffer (logical "or" element) and used a modified Eccles-Jordan flip-flop as a logical, high-speed storage-and-control device. The machine's counters and accumulators, with more sophisticated innovations, were made up of combinations of these basic elements (1961).

Thus, the industrial technological age took its first step toward the evolution into the information age.

The second significant step during this stage took place in 1969 when the public broadcasting system (PBS) was founded, the first time-shared operating system on a microcomputer was marketed by Hewlett Packard, and the U.S. Department of Defense developed the ARPANET—the Advanced Research Projects Agency Network—to communicate and share valuable computer resources. At first ARPANET connected computers at four universities—University of California Los Angeles, Stanford Research Institute, University of California Santa Barbara, and University of Utah ("Timeline", 1997); then in 1985, the National Science Foundation (NSF) expanded ARPANET to

connect complete computer networks and formed the first "internet or internetwork," which is now known as the Internet. (Note: There is a distinction between the lower- and uppercased internet term. The lowercased term represents the internal computer connections, or what we call today the Intranet, used by the NSF. The uppercased term represents the public use of the Internet or its use outside the NSF.) The Internet became available outside the NSF internet in 1986, and by 1999 linked more than 50 million computers worldwide (Parsons & Oja, 2000) providing the ability to share data across great distances.

The third stage of the evolution of the industrial age to the information age occurred in the 1980's, when, according to U.S. Minster of Finance, the information age began with the "era of personal computing" (Brown, 2001, p. 86) and resulted in "the rapid development and use of the microcomputer and development of electronic technologies for the handling of massive amounts of information and data, and the convergence of computer and telecommunications technology" (Minister of Finance, 2000). The mid-1990's was known as the age of social computing, as the use of the Internet, World Wide Web (WWW), pagers, laptops, mobile phones, and personal digital assistants (PDAs) became prevalent (Brown, 2001).

Today's information technology has a foundation that was built upon engineering: chemical, mechanical, communication and electrical technologies. Chemical engineering can be seen in parchment-based information technology in the form of ink; both chemical and mechanical engineering was used for print-based information technology when the first printing press was developed; and communication and electrical engineering created electrical technology evidenced in the development of the telegraph and facsimile, which

evolved into computer-based information technology and the discipline of computer science with the early calculators that could perform mathematical calculations and store the results (Bissell & Bennett, 1997).

These technologies have some common factors. They are part of the scientific revolution (Bissell & Bennett, 1997); they influenced or were influence by many social factors (economic, scientific, political, organizational, and educational) (Little, 2000); they are all forms of communication through which people share, store, and retrieve information (Bissell & Bennett, 1997); and they have the ability to "modify, sometimes radically, the nature of time and space in human affairs...for the first time messages could be [accurately] relayed over great distances or times without entrusting them to the memories of messengers" (Bissell & Bennett, 1997, p. 271). Electrical communication technology, such as the telegraph, separated the message from the messenger. It offered the ability to send information nation wide, creating the illusion that "everyone was in the same place for the purpose of trade; time was opened up to the forces of commerce" (Bissell & Bennett, 1997, p. 271) in the form of e-commerce. The advent of e-commerce resulted in a significant increase of IST labor demands and the subsequent need for programs to educate technology professionals to meet these demands as depicted in *Figure 2*.

Evolution of Technology-Related Academic Programs

The stages discussed in the previous section and the timeline provided in *Figure 4*, are evidence of the evolution of IST. In stage one, technology or engineering science was born; in stage two, business administration, communication engineering, computer

science, information science and business information emerged and grew; and in stage three, computer technology and information sciences and technology began to make an appearance.

Technology found its roots in electrical engineering, which dates back to 1843, when the first facsimile was designed. Then, business degree programs emerged in 1935 when the British Academy formed its Department of Business Administration. After which, the electrical engineering field expanded into what was known as control engineering in 1940. Control engineering encompassed mechanical, electrical, and communication engineering programs. The next step in the evolution was the emergence of communication engineering which gave rise to computer science and information science, in 1963 and 1964, respectively. According to the Computer Society of the Institute for Electrical and Electronic Engineers (IEEE-CS) and the Association for Computing Machinery (ACM), the first programs in computer science and computer engineering were designed in 1960 and the relationship between engineering and computer science dates back to 1965 (ACM, 2001).

STAGE I	STAGE II					STAGE III	
1843	**1935**	**1940**	**1963**	**1964**	**1969**	**1991**	**1999**
Electrical Engineering	**Business Administration**	**Communication Engineering**	**Computer Science**	**Information Science**	**Business Information Systems**	**Computer Technology**	**Information Sciences and Technology**

Figure 4. IST Education Evolution Timeline.

A report published in the Communications of the ACM journal (Atchison et al., 1968) provides evidence of the evolution of information sciences programs from computer science programs. In this report, the National Science Foundation survey indicated that in 1964, computer science programs began to operate as information science and data processing programs. Also during this time, the first step toward integrating computer science and computer technology with business administration was taken by Georgia State University (GSU), when the first business information systems (BIS) program was offered (Chad & Techo, 1976). The University offered this program to accommodate business professionals who needed to understand enough about businesses systems so they could make decisions about what should be produced rather than how is should be produced. Students seeking a degree in BIS had two different program options: computer and business. The computer option included courses such as operating and control systems, compiler function and organization, systems programming and data structures. The business option offered courses such as administrative business information systems, system simulation, computer system architecture, and real-time systems. Both options required courses in algorithmic processes, data communications, and systems analysis and design.

In 1991, computer science curricula were updated to provide a sharpened focus on computing technologies. One aspect of this focus was more in-depth knowledge pertaining to networking in order to meet the demand for and mass marketing of access to the Internet (ACM, 2001). Finally, in 1999, The Pennsylvania State University formed the School of Information Sciences and Technology and opened the doors to students who wanted to pursue a bachelor of science in information sciences and technology

(PSU, 2002a). Temple University followed suit when they established their IS&T (Information Science & Technology) program in 2001.

To better understand the emergence of IST programs, a comprehensive review of the various information science and technology related programs available throughout the United States was completed. This examination covered 76 universities, eight colleges, and the institutes and their departments and majors relating to information science and/or information technology. There seemed to be no specific departmental designation for programs of information science and technology. Of the 87 academic institutions reviewed, there were 46 different department names as listed in Appendix B. Within these departments, there are 32 specific majors or degrees pertaining to information science and technology as illustrated in Appendix C. Of these programs, only two are specific to information sciences and technology.

The significance of these figures is that, over time, various program orientations have developed as a result of, what Judith Watkins, vice president of accreditation services, referred to as "historical accidents" (Watkins, 2002). An historical accident occurs when a new academic program or discipline emerges as a result of an institution's specific expertise, faculty interest, focus, and/or function. The IST program is an example of an historical accident that resulted from several factors: business and individual demands, technology innovations, and mass marketing of such innovations.

There are many variations in multidisciplinary programs, depending on the department and/or school from which the program is offered. Standards for these programs also vary according to the department, school, program focus or accreditation

criteria. For example, the information business systems program may receive specialized accreditation as a business program as long as it meets the business accreditation criteria requirements. On the other hand, the same program offered in the school of computer science may receive specialized accreditation from a computer science or information science accrediting body if it met their designated requirements, which usually had more of a quantitative and computer technology related focus.

An analysis of various types of IST-related specialized or program accreditation criteria shed some light on the relation between the programs and helped to identify a means by which a set of standards may be developed for the new IST programs. A discussion of this analysis is provided in the next section.

Accreditation

IST is a new field of study that has not been recognized as an accredited degree program. Before it can be accredited, a set of standards must be developed and approved by a group of experts in the field who form a commission or accrediting body. This commission must be recognized and approved by the United States national accreditation organization, the Council for Higher Education Accreditation (CHEA). Since such a commission does not currently exist, and since IST has evolved from several IST-related degree programs which have been approved and recognized by CHEA, existing IST-related degree program accreditation criteria or standards were used for the development of standards for the IST degree program. In order to fully comprehend the methodology used to develop these standards, it is important to understand the accreditation process and those organizations involved.

Definition of Accreditation

Accreditation is a formal procedure used to certify a university program or degree as having met a set of standards designated by an accrediting body (Accent Software International, 1998; Blake & Hanley, 1995)—an association or institution that monitors or assesses the value of curriculum (Jarvis, 1990). According to the CHEA, the United States has a

> collegial process of self-review and peer review for improvement of academic quality and public accountability of institutions and programs. This quality review process occurs on a periodic basis, usually every three to 10 years. Typically, it involves three major activities:
>
> - A self-evaluation by an institution or program using the standards or criteria of an accrediting organization.
> - A peer review of an institution or program to gather evidence of quality.
> - A decision or judgment by an accrediting organization to accredit, accredit with conditions, or not accredit an institution/program (2000).

Brief History of Accreditation

Before the late 19th century, state and local governments were responsible for higher education. As a result, education throughout the states often differed radically. "The unevenness of educational standards and practices led...to the beginnings of the modern system of accreditation " (Lenn, 1990, p. 213). Accreditation is given by various accrediting bodies in terms of national, regional, and specialization. These accrediting organizations were monitored by the Council on Post Secondary Education (COPA) until 1993, when COPA was dissolved and temporarily replaced with the Commission on recognition of Post Secondary Accreditation (CORPA). In 1996, a Council for Higher Education Accreditation (CHEA) was established by a group of university presidents and trustees (Summers, 1998). CHEA is "a private, nonprofit national organization that

coordinates accreditation activity in the United States and represents more than 3,000 colleges and universities and 60 national, regional, and specialized accreditors" (CHEA, 2000). CHEA requires that all accrediting bodies consist of both educators and practitioners as a means of ensuring public representation, and further requires that an independent body make judgments pertaining to accreditation status (Summers, 1998).

National accrediting organizations focus on specific types of institutions that may be located in any region throughout the nation. For example, the Accrediting Association of Bible Colleges (AABC) accredits bible colleges throughout the nation.

Regional accrediting organizations accredit educational institutions within a specific geographic region. For example, Duquesne University, the institution from which this study is being conducted, is accredited by the Middle States Association of Colleges and Schools (MSA), Middle States Commission on Higher Education, as is other higher education institutions within this region that choose to receive accreditation.

The specialized and professional accrediting organizations accredit degree programs within institutions. An institution may be recognized by a regional or national accrediting body, and some or all of the degree programs within the institution may be recognized by a specialized or professional accrediting body. The existing IST degree program is not accredited by a specialized or professional accrediting body; however, the institution through which it is obtained is accredited by MSA. Although there is no specialized or professional accrediting body for the IST program, there are several IST-related degree programs, from which IST has evolved, that are accredited by CHEA-recognized, specialized, or professional accrediting bodies.

The CHEA-approved organizations used in this study are Computing Accreditation Commission / Accreditation Board for Engineering and Technology (CAC/ABET) (information science programs) and/or American Library Association (ALA) (library and information science), Technology Accreditation Commission of ABET (TAC/ABET) (technology programs) and The Association to Advance Collegiate Schools of Business (AACSB) International (business programs) as outlined in Appendix D.

To gain a better understanding of the relationship between these organizations, a description of each of the IST-related accrediting bodies is described in the next section of this chapter. A set of common accreditation criteria was gleaned from these program standards as a means to identify criteria that would be relevant to the IST program.

IST-Related Program Accrediting Organizations

The accreditation criteria was established by specialized accrediting bodies for programs in library and information science, business administration, computer technology, computer engineering technology, and information sciences programs. These programs, over time, evolved into a new discipline of IST. As a new program, specialized accreditation criteria have yet to be established. There are, however, common categories that exist within each of these criteria. The statements within each of these categories outline specifications for that category. These categories and statements served as a foundation for the development of potential IST standards that may eventually be adopted as accreditation criteria for future programs.

American Library Association (ALA)

The American Library Association (ALA) is the CHEA approved "specialized" accrediting body for Schools of Library and Information Studies. In the beginning, ALA accreditation criteria were based on a set of standards developed between 1924 and 1933 by the Board of Education for Librarianship, which monitored the adherence to standards for a bachelor of arts in librarianship. These standards were expanded to include a Master's of Library Science degree in 1951, then were replaced in 1972 by a set of standards that also addressed discrimination issues. At the same time, the Committee on Accreditation (COA) was created to work with the ALA to make judgments about program accreditation. In 1992, the ALA Council approved a new set of standards that addressed higher education cost issues, the reduction in demand for professional librarians, the impact of computerization of library operations, the increase in diversity, and the reduction and/or elimination of academic programs. These ALA standards were subsequently adopted on January 1, 1993 (Summers, 1998).

The ALA accreditation guidelines are broken down into the following categories: mission, goals, objectives, curriculum, faculty, students, administration, financial support, and physical resources and facilities (see Appendix E), each containing a specific set of criteria for educational institutions to follow. Since the ALA accredits the information science and library degree programs from which IST has emerged, these categories were reviewed and evaluated for relevancy to the IST program.

The Association to Advance Collegiate Schools of Business (AACSB)

The Association to Advance Collegiate Schools of Business (AACSB) International is recognized by CHEA as providing specialized accreditation guidelines for educational institutions. "Eligible educational institutions are collegiate institutions offering baccalaureate or graduate degree programs in business administration, management or accounting...[with] current accreditation by an authorized institutional accreditation association" (AACSB International, 2001).

The AASCB standards were adopted on April 23, 1991, and were periodically revised and reprinted on the following dates: April 20, 1993 (revised), April 12, 1994 (reprinted), January 20, 1999 (reprinted), May 9, 2000 (revised), and February 14, 2001. The current version, February 14, 2001, of the AASCB standards outline accreditation guidelines for the following categories: mission, objectives, faculty composition and development, curriculum content and evaluation, instructional resources and responsibilities, students, and intellectual contributions (AACSB International, 1998). At the time this document was written, AASCB was working on a second working draft of a new version of AASCB standards, dated March 22, 2002. This version contains the following categories: mission, objectives, participants (students and faculty), responsibility for learning, assurance of learning, and enabling resources (AACSB International, 2001) (see Appendix F). Since the AACSB accredits business administration degree programs from which IST has emerged, these categories were reviewed and evaluated for relevancy to the IST program.

Accreditation Board for Engineering and Technology (ABET)

Accreditation Board for Engineering and Technology (ABET) is the CHEA approved organization that has developed criteria, or standards, for the evaluation of educational programs pertaining to engineering and technology. ABET is comprised of four commissions that perform the accreditation functions and determine accreditation actions for a distinct area of educational specialization: 1) The Engineering Accreditation Commission (EAC), which is responsible for engineering programs; 2) the Technology Accreditation Commission (TAC), which is responsible for engineering technology programs; 3) the Computing Accreditation Commission (CAC), which is responsible for computer science programs; and 4) the Applied Science Accreditation Commission (ASAC), which is responsible for applied science programs (ABET, 2001a). The programs accredited by each commission are outlined in Appendix D.

The Computer Sciences Accreditation Board (CSAB) performs the training and decision making functions for all of the ABET commissions (CSAB, 2001a). CSAB is governed by a board of directors that "consists of the Representative Directors, appointed by the Member Organizations. Four Representative Directors are appointed from each of the Member Organizations of CSAB -- ACM, IEEE-CS, and AIS. The terms of the Representative Directors are three years each...appointment durations are typically one year. The officers are elected by and from the Representative Directors for a one-year term" (Unger, 2000-01).

Two of these commissions oversee the accreditation criteria related to IST: 1) TAC, which accredits computer engineering technology (CET), telecommunications engineering technology (TET), and similarly named programs; and 2) CAC, which

accredits computer science (CS), information systems (IS), and similarly named programs.

Technology Accreditation Commission (TAC)

The criteria for accrediting computer engineering technology were drafted by the TAC, which is housed under ABET. TAC accreditation guidelines consist of conventional criteria and program criteria (ABET, 2001b). The conventional criteria outline the general standards for each of the programs accredited by TAC regardless of the specific focus. The program criteria address the specific technological requirements for the each program, which in this case is computer engineering technology.

The general criteria categories include program content and orientation, program level and course requirements, curriculum elements, technical currency, arrangement of baccalaureate programs, faculty, student body, administration, satisfactory employment, industrial advisory committee, and financial support and faculties. Program criteria categories may overlap those categories addressed in the general criteria to ensure that the specific standards of the specialized program are addressed. The computer engineering technology-specific categories are applicability, objective, outcomes, curriculum, and financial support and faculties. Since the TAC accredits the computer science degree programs from which IST has emerged, these categories were reviewed and evaluated for relevancy to the IST program (see Appendix G).

Computer Accreditation Commission (CAC)

The criteria for accrediting computing programs were drafted by CAC, formally known as Computer Science Accreditation Commission (CSAC) (CSAB, 2001b), which

is housed under the ABET. CAC accreditation guidelines consist of a specific set of criteria for both computing and information systems (ABAC, 2001). The criteria categories for computing programs include objectives and assessment, student support, faculty, general curriculum, computer science curriculum, mathematics science curriculum, additional areas of study, laboratory and computing facilities, institutional support and financial resources, and institutional facilities (see Appendix H and I).

The criteria categories for information systems programs include objectives and assessment, student support, faculty, curriculum, general, information systems, information systems environment, quantitative analysis, additional areas of study, technology infrastructure, institutional support and financial resources, program delivery and institutional facilities. Since the CAC accredits the computer science degree programs from which IST has emerged, these categories were reviewed and evaluated for relevancy to the IST program (see Appendices E and F).

Review of Accreditation Guidelines

The IST degree program integrates curriculum content from six existing degree programs. These programs are information science, library and information sciences, computer science, computer technology, computer engineering technology and business administration, which have existing accreditation guidelines provided by CAC and/or ALA, TAC and AACSB respectively. Therefore, their accreditation criteria categories were used for this study.

These accreditation criteria were reviewed to determine the feasibility of these criteria as a model for the IST program standards. The feasibility was determined by two

factors. The first factor was the existence of common and relevant criteria within each of the programs identified. The second factor was the outcomes of the validly test. The common criteria have been identified as illustrated in the table provided in Appendix J. The IST program categories include administration, curriculum content and requirements, curriculum evaluation, curriculum planning, faculty, financial support, industrial advisory committee, mission, program objectives, program assessment, physical resources and facilities, student selection, and student support. These categories vary slightly per program as is depicted in Appendix J.

The categories deemed relevant to the IST standards were gleaned from the existing IST programs offered at Penn State (2002b) and Temple University (2001). One category that varied the most across programs was the curriculum category, as seen in the curriculum comparison provided in Appendix J. Penn State's and Temple's IST curricula focused more on information science and technology, TAC's focus was engineering technology, CAC's focus was on computer science, ALA's focus was library science, and AACSB's focused on accounting and behavioral sciences. Another focus not indicated in this table was cognitive studies, which according to Sugar (1995) is prevalent in ALA, CAC and AACSB curricula in the form of user-centered approaches to system design and understanding.

As is evident in Appendix J, there are many similarities in the curricula of these programs. A majority of the programs required courses in some form of technology, qualitative or math requirements, science, general electives or humanities, and, in some cases, an internship or real-world application of program concepts.

Those curriculum requirements that specifically related to IST or information science, those that were identified as related to the program in the form cognitive and behavioral studies (user perspectives or people focused), and those that were common across programs were included in the research survey in order to match the theoretical framework depicted in the IST Program Theoretical Model (see *Figure 1*).

Relevancy and retention of these categories to the IST program were determined through content validity testing. The content validity instrument was developed based on the accreditation categories (see Appendix K). Each category contains a list of statements that were used to confirm categories designated as relevant to the standards for the IST program.

CHAPTER III

RESEARCH PROCEDURES

Methodology

This chapter outlines the methodology used for developing a set of proposed national standards for an emerging discipline or new degree program, information sciences and technology (IST). The IST program has been described as a multidimensional, interdisciplinary degree that integrates or merges curriculum content from several existing degree programs. These programs are computer and information science, library and information science, computer technology, computer engineering technology and business administration degrees, which are accredited by CAC (housed under ABET), ALA, TAC (housed under ABET) and AACSB, respectively.

Electronic surveying techniques were used as they provided an efficient and effect means of data collection (Cook et al., 2000; Creswell, 2002; Franceschini, 2000; Shannon & Bradshaw, 2002). According to a study conducted by Shannon and Bradshaw (2002), electronic surveys received significantly quicker response rates than those delivered by mail, "with over 80% of initial responses arriving before receipt of the first returned mail survey" (p. 179). Researchers have found that respondents tended to complete electronic surveys upon receipt because they were easy to access and complete, which contributes to quick response rates (Cook et al., 2000). Furthermore, "unlike a mail survey that can be easily mislaid, an electronic contact with a potential respondent remains in place until purposefully deleted" (Sheehan & Hoy, 1999). The fact that the

respondent may preview the file correspondence before deleting it could serve as a reminder to complete the survey, which could be viewed as a follow-up technique.

Because the members of the panel of experts were affiliated with a professional organization, and because the organization draws their members from technology-related businesses and/or universities, there was a strong indication that implementation of an electronic survey would be successful. Recent research comparing the use of postal and electronic surveys has indicated that an electronic survey will have a higher success rate when respondents are affiliated with businesses, universities or professional organizations, as they generally have e-mail accounts, access to the internet and a higher comfort level when it comes to using e-mail and the Internet (Cook et al., 2000; Shannon & Bradshaw, 2002).

Another benefit of using an electronic survey is the validity checking and null data entry options that may be programmed into the survey. Validity checking prevents incorrect data from being entered into the survey (Freedman, 2001). In this case, only one value may be selected for each survey statement. Null data entry occurs when a form is programmed to prompt the user to answer those statements that may have been left blank, providing a higher probability of all survey statements being answered, ensuring complete survey responses. And finally, the cost of delivering an electronic survey is less than that of a postal survey, as electronic pre-notification, initial contact, survey responses, and follow-up techniques do not require postage.

To address the risk of technical problems, such as undeliverable e-mail accounts, inability to access the survey, and inability to deliver the survey response, problem-solving techniques were utilized as recommended by Shannon and Bradshaw (2002). One

step was to debug the survey during pre-testing. When individuals responded to the survey during the survey pretest, any technical difficulties encountered were caught and fixed. The other step was to send a pre-notification e-mail message prior to data collection (Appendix M). The pre-notification e-mail enabled the researcher to determine if the e-mail addresses were valid. If an undeliverable message was received, the researcher either obtained the correct e-mail address or sent the survey via facsimile. These problem-solving techniques were employed for this study to reduce errors and to ensure a higher response rate.

Instrumentation

IST standards were established through the use of opinion polling whereby a panel of experts indicated their attitude or disposition towards a proposed set of IST standards by completing a newly developed survey. As the IST program is new and as it has evolved from several other programs, the model for the development of IST standards was based on common evaluation processes used by those programs from which the IST program evolved. This evaluation process is known as accreditation.

There are three forms of accreditation conducted by accrediting bodies: national, regional, and specialization. National accreditation focuses on specific types of educational institutions without regard to their location throughout the nation. Regional accreditation focuses on educational institutions within a specific geographic region. And specialized accreditation focuses on specific degree programs within educational institutions. An institution may be recognized by a regional or national accrediting body,

and some or all of the degree programs within the institution may be recognized by a specialized accrediting body.

The fact that specialized accreditation criteria focus on specific degree programs and such criteria exist for the programs from which the IST program has evolved, these program criteria were used for the development of the IST survey. These programs are computer and information science, library and information science, computer technology, computer engineering technology, and business administration. Their accrediting bodies are CAC/ABET (computer and information science programs), ALA (library and information science programs), TAC/ABET (computer technology and computer engineering technology programs) and AACSB International (business administration programs).

These organizations' accreditation criteria were reviewed to determine if it was feasible to use these criteria as a model for the IST program standards. The feasibility was determined by two factors. The first factor was the existence of common and relevant criteria within each of the programs identified. The common criteria were identified as indicated in Appendix J. These categories included administration, curriculum content and requirements, curriculum evaluation, curriculum planning, faculty, financial support, industrial advisory committee, mission, program objectives, program assessment, physical resources and facilities, student selection, and student support. These categories varied slightly per program as illustrated in Appendix J. The categories deemed relevant to the IST standards were gleaned from the existing IST programs offered at Penn State (2002b) and Temple University (2001) and confirmed during validity testing.

One category that differed the most across the IST-related programs was the curriculum category, which was to be expected as each program had a specific focus (i.e., business management, computer science, library and information science, etc.). There were some common curriculum requirements such as technology, mathematics, and science. These criteria were consolidated into a survey instrument used to gather data as to the relevancy of the established criteria, which leads to the next feasibility factor.

The second feasibility factor was the results of the instrument validity test. As a multidimensional program, IST required a comprehensive set of statements from which the validity experts selected those statements that designated criteria relevant to the IST program. These statements were reduced or expanded as the relevancy of all statements and categories were determined through content validity testing. The content validity instrument was developed based upon the accreditation categories listed in Appendix K.

A Likert scale was used for the survey (see Appendix P). It contained a collection of ordinal variables grouped by the categories. Each proposed standard or statement is considered a variable under each of these categories. Respondents indicated their agreement or disagreement with each statement using a five-point Likert scale anchored by 1 (strongly disagree) and 5 (strong agreement). The respondents also had the opportunity to suggest or recommend additional standard criteria for each category by typing their responses in the comment box provided.

Validity

The instrument validity was established through the use of content validity (Gay & Airasian, 2000; Leedy & Ormrod, 2001; Schloss & Smith, 1999). A group of

individuals, who serve in various capacities (i.e., professor, dean, business manager) in a school of information sciences and technology, reviewed the instrument and judged each statement on three different criteria: 1) the statement's relevance to the IST program, 2) the appropriate categorization of the statement, and 3) whether the statement measures what is intended. Respondents indicated their agreement or disagreement with each statement criteria by using a five-point Likert scale anchored by 1 (strongly disagree) and 5 (strong agreement). Respondents also had the opportunity to recommend and rate additional standard criteria for each category by writing their recommendations in the space provided at the end of each category. In addition, the respondents were able to indicate miscategorized items by putting the recommended category letter next to the statement. Furthermore, the respondents also had the opportunity to suggest and rate the inclusion of additional categories and/or statements by entering them in the space allotted on the form.

The validity data was evaluated based on the aggregate mean. Statements with a mean score of less than 3.0 were removed from the study as this value indicated that the respondents either disagreed with the statement's validity or had no opinion. Statements with a mean score of 3.0 to 3.5 inclusive, indicating that the respondents had no opinion about that statement, were reevaluated to determine if an anomaly existed that may warrant the retention of the statement. Statements with a mean score greater than 3.5, indicating that the respondents generally agreed with the statements, remained as they were in the instrument. The instrument was modified as indicated by the data analysis and uploaded to the Internet for reliability testing. The electronic version of the instrument is included in Appendix P.

Reliability

The instrument's reliability was established through the employment of a test-retest approach (Schloss & Smith, 1999). This method consisted of selecting a sample group to complete the survey on two different occasions. In this case, the test-retest was administered to a group of 44 individuals. The participants signed a Consent to Participate in Survey Pilot Test (see Appendix L) and received the electronic survey via a hyperlink in an e-mail. They completed the survey on the Internet within a designated time period. Two weeks later, the same individuals received a second e-mail asking them to complete the survey a second time. The scores for each individual were correlated to determine the reliability or stability of the overall instrument and each survey category or subscale. The correlation coefficient for the overall instrument is $r = 0.84$, which is also significant at $p < 0.001$. Following the completion of the test-retest procedure, results indicated that each section of the survey produced a highly significant ($p < 0.01$) correlation and combined to produce a composite survey reliability of $r\ (42) = .84$, $p = .002$. Subsequently, individual statements were further reviewed based on the reliability results and edited to produce further clarity and promote stronger reliability.

Participant Selection

A panel of experts was selected to complete the research survey. The number of individuals was based on the number of individuals serving on IST-related program accreditation boards or IST-related professional organizations that act as advisors to such boards within the United States. These accrediting organizations and professional organizations include: AACSB (an advisory board for ABET's BAC), ALA (the

accrediting body for library and information science), American Society for Information Science and Technology (ASIS&T)—a professional organization that advises the ALA, CSAB (a professional organization that developed accreditation criteria for ABET's CAC and TAC) and ABET (the organization that oversees CAC and TAC). All individuals currently holding a position on one of these accreditation or professional organizations boards who have a valid and working e-mail address were invited to serve as an expert on the panel and received the survey.

The population of this study consisted of 50 accreditation professionals, all of whom were invited to participate in the study. Twelve (24%) individuals declined participation, 11 (22%) chose not to respond and 27 (54%) submitted complete surveys. Table 1 provides a breakdown of the participants according to accrediting body.

Table 1
Participation Breakdown by Accrediting Body

Organization	Population	Number Responded	No. of Declines	No. of No Responses	% Responses per Organization
BAC	15	11	3	1	.22
CSAB	13	7	5	1	.14
ASIS&T	7	3	2	2	.06
ALA	11	2	2	7	.04
ABET	4	4	0	0	.08
Totals	50	27	12	11	.54
Percentages		.54	.24	.22	

Data Collection

Data collection was gathered using a web-based electronic survey (see Appendix P). The panel of experts was sent an e-mail containing an explanation of the study (see Appendix N), the Informed Consent letter (see Appendix O), and a hyperlink to the survey. When a respondent completed the survey via the web link, the data were stored in a data file located on the web server. The data were also sent to the researcher via e-mail as a precaution to ensure all responses were received. A thank you message was displayed to the respondent confirming the response was sent. The data were stored on a web server and email responses were retrieved by a research assistant. The data were compared to determine if all submissions were received. Once the comparison was completed, the responses were coded and respondents' e-mail addresses removed to ensure anonymity.

In order to achieve maximum response, a follow-up technique was used. Five days after sending the survey, the recipient was contacted via phone and asked if he or she received the survey and asked to test access to the survey. Sixty-eight percent of the population received follow-up phone calls, which resulted in an increased response rate. Thirty-two percent of the population were not available by phone and could not receive follow-up messages, as their contact information was not available to the research; these surveys were sent by a third party. One participant experienced technical difficulty which was resolved by receiving and completing the survey via fax. Reminder emails were sent every two weeks. The third reminder brought in zero responses, which indicated that the individuals had stopped paying attention to the messages.

Data Analysis

The data retrieved from the web server were compared to the data received via e-mail to confirm that all data were stored in the data file. It was cleaned by removing any duplicate or incomplete responses. The overall mean and frequency were calculated for each statement. The mean score will be used to identity the extent of agreement per statement for the overall sample set as well as the subgroups within the sample. The frequency will be used to determine the number of times each statement was rated a given score by the total sample and by subgroup. To determine if there is a difference in agreement across accrediting groups (AACSB, ALA, CAC, and TAC) and professional groups (deans, professors, business managers), the mean of each group will be compared using analysis of variance (ANOVA). Spearman's rank order correlation will also be used to determine the extent of the relationship between the groups and categorical results (Leedy & Ormrod, 2001).

Summary

A set of proposed IST program standards were developed through the use of an electronic survey containing accreditation criteria extracted from programs from which the IST program evolved. The programs and their respective accrediting bodies are computer and information science (CAC), library and information science (ALA), computer technology and computer engineering technology (TAC) and business administration (AACSB).

The IST standard criteria are based on existing accreditation criteria; the relevancy of the survey was established through content validity testing. The reliability of

the instrument was determined through a test-retest approach. The panel of experts consisted of individuals who held a position on one of these accreditation or professional organization boards: AACSB, ALA, ASIS&T and CSAB. The surveys were distributed via email and the instrument accessed through the Internet. Responses were stored on a web server and sent to the researcher via email to ensure that all responses are received. The data was analyzed using frequency statistics, ANOVA, and Spearman's rank order. The intent was to identify the extent of agreement held by the participants across the whole sample and within sample subgroups on the proposed IST standards.

CHAPTER IV

RESULTS

Introduction

This study examined criteria for evaluating and maintaining standards for information sciences and technology baccalaureate degree programs. This chapter presents a summary and analysis of the data relevant to each of the research questions investigated in this study and several pertinent variable relationships. This chapter is divided into the following sections: survey return rate overview, respondent demographics, survey results (overall and categorical), and comparative and correlation results. The survey return rate and the respondent demographics will be reviewed first, in order to provide the context for the research questions and the relationship between variables.

Survey Return Rate Overview

The IST Standards Research Survey was administered electronically as a web-based form. A hyperlink to the form was e-mailed to 50 members of five IST-related program accreditation organizations: BAC, CSAB, ASIS&T, ALA, and ABET. Of the 50 surveys sent, 27 were returned via e-mail and stored on a web server for a return rate of 54% (see Table 2).

Respondent Demographics

The 27 respondents had 10 different titles (see Table 5), worked in 25 departments (see Appendix Q) at 20 universities, 2 technical schools, 2 public libraries, 1

insurance company, and 1 technical innovation organization (see Appendix R), possessed a master or doctoral degree (see Table 3) in 20 disciplines (see Appendix S), taught courses in 17 curriculum areas or held administrative positions (see Appendix T), and held positions in one of the 5 accreditation organizations (see Table 2).

Responses to faculty rank or job title revealed that a majority of the respondents, 40.7% (n = 11), held the rank of dean or dean/professor; that one-third held the rank of professor, professor/chair or professor/director, 33.3% (n = 9); that 11.1% (n = 3) were directors; and that the remaining 14.8% (n = 4) respondents held management or administrative positions.

Responses to highest degree earned revealed that a majority of the respondents, 74.1% (n = 20), held doctoral a doctoral degree (see Table 3).

Responses to the academic discipline of highest degree earned showed that exact names of the discipline varied with the exception of computer science, library science, and management received two responses. The rest received one response (see Appendix T). For comparative analysis, the department titles were generalized to business management, computer science, engineering, library science, mathematics, and psychology. The results indicated that both business management and computer science degrees were held by 25.9% (n = 7) of the respondents and 22.2 (n = 6) held degrees in mathematics (see Table 4).

Table 2
Accrediting Body

Code	Accrediting Body	Frequency	Percent
1	ABET	4	8.0
2	ALA	2	4.0
3	ASIS&T	3	6.0
4	BAC	11	22.0
5	CSAB	7	14.0
Total		27	100.0

Note: Each accrediting body was assigned a code as indicated in the code column. This code will be used for comparative analysis.

Table 3
Highest Degree Earned

Code	Degree	Frequency	Percent
1	Doctorate	20	74.1
2	Master	7	25.9
Total		27	100.0

Note: Each degree type was assigned a code as indicated in the code column. This code will be used for comparative analysis.

Table 4
Academic Discipline—Generalized

Code	Academic Discipline	Frequency	Percent
1	Business Management	7	25.9
2	Computer Science	7	25.9
3	Engineering	2	4.7
4	Library Science	4	14.8
5	Mathematics	6	22.2
6	Psychology	1	3.7
Total		27	100.0

Note: Each department was assigned a code as indicated in the code column. This code will be used for comparative analysis.

Table 5
Faculty Rank or Job Title

Code	Rank/Title	Frequency	Percent
1	Coordinator	1	3.7
2	Dean	9	33.3
3	Dean/Professor	2	7.4
4	Director	3	11.1
5	Librarian	1	3.7
6	Manager	1	3.7
7	Professor	6	22.2
8	Professor/Chair	2	7.4
9	Professor/Director	1	3.7
10	Vice President	1	3.7
Total		27	100.0

Note: Each faculty rank or job title was assigned a code as indicated in the code column. This code will be used for comparative analysis.

Responses to the department question showed that exact names of the departments varied with only one, computer science, containing more than one response, 11.1% (n = 3) (see Appendix Q). For comparative analysis, the department titles were generalized to business, computer science, library science, information/information technology and industry. The results indicated that one-third of the respondents were affiliated with a business department, 33.3% (n = 9), that an equal number of the respondents, 22.2% (n = 6), were affiliated with a computer science or an information/information technology department, and the remaining respondents, 22.2% (n = 6), were affiliated with a library science department or worked in industry (see Table 6).

Table 6
Department—Generalized

Code	Department	Frequency	Percent
1	Business	9	33.3
2	Computer Science	6	22.2
3	Library Science	3	11.1
4	Information/Information Technology	6	22.2
5	Industry	3	11.1
Total		27	

Note: Each department was assigned a code as indicated in the code column. This code will be used for comparative analysis.

The respondents' demographic information will be used for comparative and correlation analysis to determine whether the results differ between groups (i.e., respondent's accrediting body, level of education, academic discipline, department, and rank or title) and whether there is a relationship between the groups and the categorical results.

Survey Results

A survey was developed to determine if IST-related program accreditation categorical criteria or statements could be used to define the IST program. The categories that emerged during validity and reliability testing were: mission statement; program objectives; program assessment; faculty recruitment selection, and orientation; faculty development, promotion, retention, and renewal; faculty size composition, and deployment; faculty qualifications, institutional support and financial resources; curriculum content and evaluation; curriculum planning and evaluation; instructional resources; faculty instructional responsibilities; intellectual contributions; student selection; and student support. Each category contained statements that represented accreditation criteria.

The survey asked the respondents to respond to the categorical statements by either selecting a value on a 5-point Likert scale anchored by 1 (strongly disagree) and 5 (strong agreement) or by entering a value in response to open-ended statements. Furthermore, the respondent had the opportunity to suggest and rate additional criteria in the space provided at the end of each category. The data results for each category were analyzed to determine the respondents' level of agreement per category. The level of

agreement was used to determine whether the category's criteria should be considered a potential standard for the information sciences and technology baccalaureate program. Comparative analysis was also conducted to determine if the respondent's accrediting body, level of education, academic discipline, department, and faculty rank or job title influenced the results. Furthermore, correlation analyses were conducted to determine if there was a relationship between these factors and the categorical results.

Overall Results

The IST Standards Research Survey consisted of 15 categories containing a total of 138 criteria or statements by which to define and evaluate each category. There were two types of statements in the survey. For the first type, the respondents were asked to indicate their level of agreement with the statement by selecting a number associated with a radio button on the electronic survey. The rating scale was as follows:

1 = Strongly Disagree
2 = Agree
3 = No Opinion
4 = Disagree
5 = Strongly Disagree

The second type required the respondent to enter a number in an open-ended statement. Only three categories contained open-ended statements, which consisted of 9.4% (13) of the 138 statements. These statements are addressed in the appropriate categorical sections and were not included in the cumulative categorical results as they required different statistical treatment.

The responses to the 125 Likert scale statements in the IST Standards Survey revealed that 96.3% (n = 26) of the overall mean scores ranged from 4.0 (agree) to 5.0

(strongly agree), indicating that 88.9% (n = 24) agreed and 7.4% (n = 2) strongly agreed with the IST standards (see *Figure 5*). The remaining respondent's score was 3.9, indicating near agreement to the overall standards.

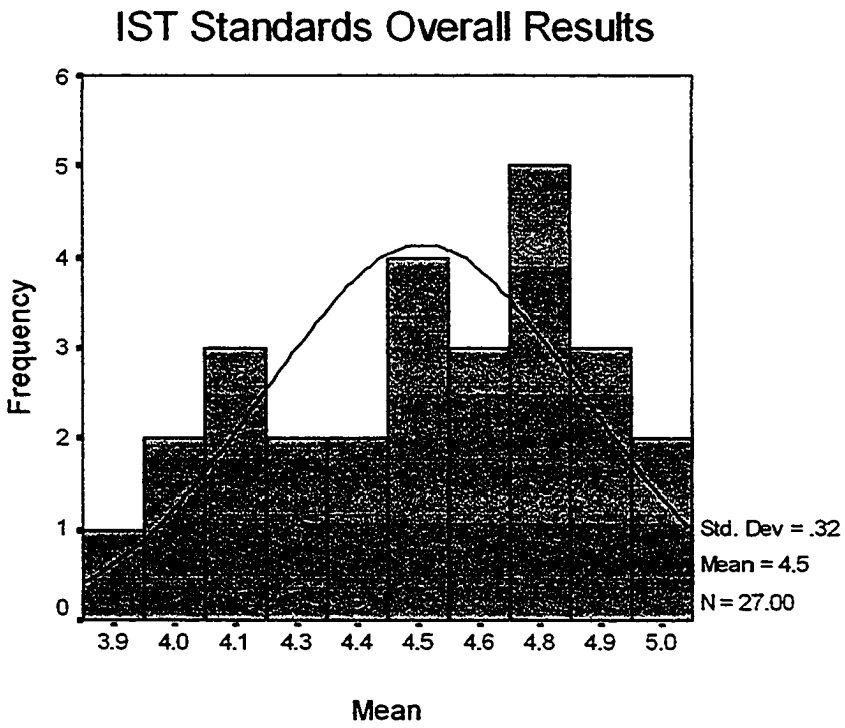

Figure 5. Distribution of the mean scores for the IST Standards representing the respondents' level of agreement to all criteria listed in the 15 categories. Scale: 1 = strongly disagree to 5 = strongly agree.

Furthermore, categorical analysis of the data revealed that the 27 respondents agreed with each category and its criteria. As is shown in Table 7, the mean score for each category ranged from 3.7 (near agree) to 4.7 (near strongly agree), indicating agreement to all the categories of the IST standards survey, which confirms the overall survey results. The categories with the highest level of agreement ($M = 4.7$) were mission statement, faculty size and composition, and deployment, curriculum planning and evaluation, faculty instructional responsibilities, and student support. The category with the lowest level of agreement ($M = 3.7$) was faculty qualifications. In-depth analysis of each category was conducted to provide further insight into the data for these results do not provide a complete picture because they do not include the open-ended statement results or other comments.

Table 7
IST Program Standards Categories

Category	Mean	SD	Min.	Max.
Mission Statement	4.7	.43	3.8	5.0
Faculty Size Composition, and Deployment	4.7	.35	4.0	5.0
Curriculum Planning and Evaluation	4.7	.40	3.9	5.0
Faculty Instructional Responsibilities	4.7	.36	4.0	5.0
Student Support	4.7	.40	4.0	5.0
Program Assessment	4.6	.43	4.0	5.0
Institutional Support and Financial Resources	4.6	.41	3.8	5.0
Instructional Resources	4.6	.46	4.0	5.0
Intellectual Contributions	4.6	.46	4.0	5.0
Student Selection	4.6	.41	3.8	5.0
Program Objectives	4.5	.50	3.4	5.0
Faculty Development, Promotion, Retention, and Renewal	4.4	.43	3.4	5.0
Curriculum Content and Evaluation	4.4	.34	3.8	5.0
Faculty Recruitment, Selection, and Orientation	4.3	.65	2.7	5.0
Faculty Qualifications	3.7	.55	2.6	5.0

Note. $N = 27$. Min. = Minimum. Max. = Maximum. Scale: 1 = Strongly Disagree to 5 = Strongly Agree

Categorical Results

Mission Statement

Likert Scale Results.

The mission statement category contained six survey statements (numbers 1 through 6) that represented criteria for the mission statement category (see Table 8). Responses to these statements ranged from 4.4 (near agree) to 4.9 (near strongly agree), resulting an overall categorical mean score of 4.7 (between agree and strongly agree).

The frequency statistics (see Appendix V and W) revealed that 55.6% (n = 15) of the respondents assigned all the statements in this category a score of 5.0, indicating that they strongly agreed with the statements; that 40.7% (n = 11) of the respondents' mean score ranged from 4.0 to 4.8, indicating agreement with the statements; and that 3.7% (n = 1) of the respondents' ratings resulted in a mean score of 3.8, indicating agreement or no opinion about this category. The mean scores for each statement (see Table 8) suggests that the 3.8 rating given by this respondent represents agreement with this category as none of the statements' mean scores dropped below 4.4. *Figure 6* illustrates the distribution of the respondents' agreement.

Table 8
Mission Statement: Likert Scale Results

Survey Statements	Mean	SD	Min.	Max.
1. The program must have a clear mission statement.	4.7	.53	3.0	5.0
2. The program mission statement must be appropriate to higher education.	4.9	.36	4.0	5.0
3. The program mission statement must be consistent with the mission of the parent institution.	4.7	.45	4.0	5.0
4. The program mission statement must be published.	4.5	.75	3.0	5.0
5. The program mission statement will be reviewed periodically.	4.7	.54	3.0	5.0
6. The program mission statement will be revised as needed.	4.4	.97	2.0	5.0
Overall Mean	4.7	.43	3.8	5.0

Note. $N = 27$. Min. = Minimum. Max. = Maximum. Scale: 1 = Strongly Disagree to 5 = Strongly Agree.

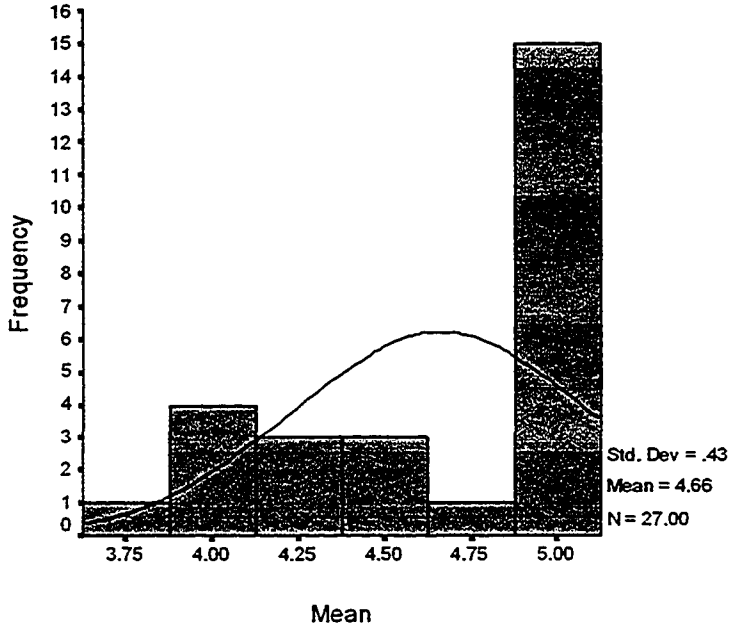

Figure 6. Distribution of the mean scores for the mission statement category representing the respondents' level of agreement for this category. Scale: 1 = strongly disagree to 5 = strongly agree.

Respondents' Suggested Criteria

The participants were given an opportunity to suggest additional criteria for the mission statement category. Four individuals exercised this option as outlined in Table 9. These statements have not been viewed or rated by the other participants. Therefore, they may not be considered standards based on this study. They may be used in future studies.

Table 9
Mission Statement: Suggested Criteria

Respondent Comment
• It must be consistent with the mission of the institution and available or obtainable resources.
• The mission must be assessed as to attainment.
• The setting and viewing of mission statement should include participation by stakeholders, including business interests who are likely to employ students.
• There must be a clear process for changing the mission statement.

Note: These statements were entered by the respondent in the comment field for the mission statement category. $N = 1$ and each statement received a rating of 5.0. These statements need to be tested for relevancy and validity, and evaluated in future research studies.

Program Objectives

Likert Scale Results.

The program objectives category contained eight survey statements (numbers 7 through 14) that represented criteria for the program objectives category. Responses to these statements (see Table 10) ranged from 4.1 (near agree) to 4.8 (near strongly agree) with an overall categorical mean score of 4.5 (between agree and strongly agree).

The frequency statistics (see Appendix V and W) revealed that 25.9% (n = 7) respondents gave all the statements in the program objectives category a score of 5.0, indicating that they strongly agreed with the statements; that 59.3% (n = 16) of the respondents' ratings resulted in a mean score ranging from 4.00 to 4.88, indicating the respondents agreed with the statements; and that 14.8% (n = 4) of respondents' ratings resulted in a mean score ranging from 3.4 to 3.9, indicating that they may have had no opinion about the statements. The mean scores for each statement, however, suggests that the lower scores represent agreement with this category as none of the statements' mean scores dropped below 4.1. *Figure 7* illustrates the distribution of the respondents' agreement.

Table 10
Program Objectives: Likert Scale Results

Survey Statement	Mean	SD	Min.	Max.
7. The educational objectives of the program must be clearly specified.	4.8	.42	4.0	5.0
8. The characteristics of students must be identified.	4.3	.87	2.0	5.0
9. The emphasis on intellectual contributions (research) must be clearly specified.	4.5	.75	2.0	5.0
10. The emphasis on service must be clearly specified.	4.1	1.1	1.0	5.0
11. Emphases should be placed on a high quality education.	4.7	.54	3.0	5.0
12. Programs must demonstrate implementation of continuous improvement processes and procedures for the program.	4.6	.56	3.0	5.0
13. The program content should provide an integrated educational experience directed toward development of the ability to apply pertinent knowledge to the solution of practical problems in the graduate's information sciences and technology specialty.	4.5	.75	2.0	5.0
14. The program's technical currency is important and must be assured by such means of an active industrial advisory committee.	4.2	.80	3.0	5.0

Table 10 (continued)
Program Objectives: Likert Scale Results

Survey Statement	Mean	SD	Min.	Max.
Overall Mean	4.5	.50	3.4	5.0

Note. $N = 27$. Min. = Minimum. Max. = Maximum. Scale: 1 = Strongly Disagree to 5 = Strongly Agree

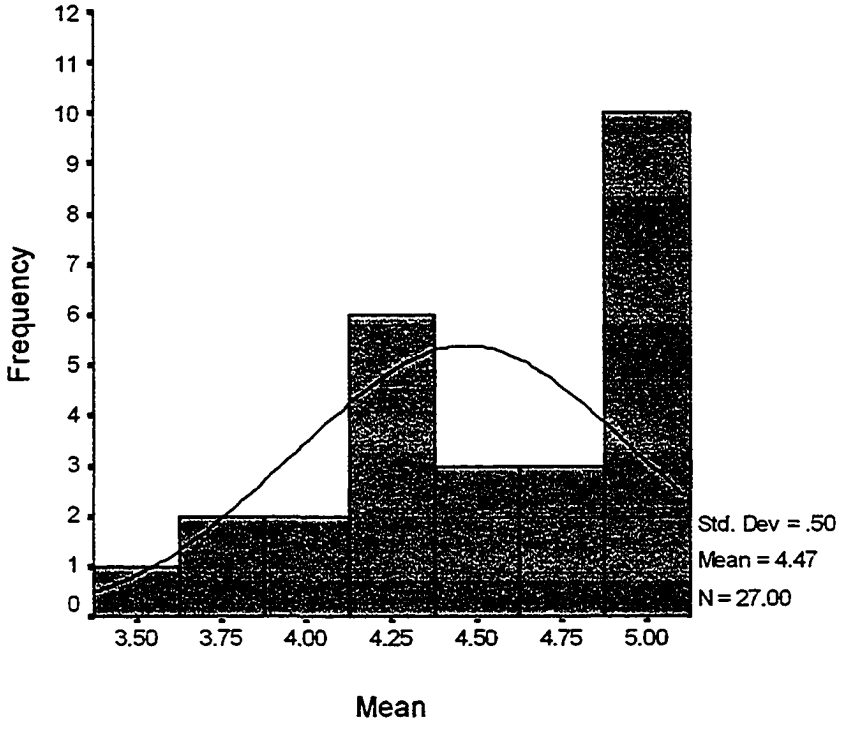

Figure 7. Distribution of the mean scores for the program objectives category representing the respondents' level of agreement for this category. Scale: 1 = strongly disagree to 5 = strongly agree.

Respondents' Suggested Criteria.

The participants were given an opportunity to suggest additional criteria for the program objectives category. Two individuals exercised this option as outlined in Table 11. These statements have not been viewed or rated by the other participants. Therefore, they may not be considered standards based on this study. They may be used in future studies.

Table 11
Program Objectives: Suggested Criteria

Respondent Comment
• Experimental learning, coupled with high quality teaching should be an important component of an IST program.
• There should be an assessment process to measure the achievement of the objectives.

Note: These statements were entered by the respondent in the comment field for the program objective category. $N = 1$ and each statement received a rating of 5.0. These statements need to be tested for relevancy and validity, and evaluated in future research studies.

Program Assessment

Likert Scale Results.

The program assessment category contained five survey statements (numbers 15 through 19) that represented criteria for the program assessment category. Responses to these statements (see Table 12) by the 27 respondents ranged from 4.5 (between agree and strongly agree) to 4.7 (near strongly agree) and had an overall categorical mean score of 4.6 (near strongly agree).

The frequency statistics (see Appendix V and W) revealed that 51.9% (n = 14) respondents gave all the statements in program assessment category a score of 5.0, indicating that they strongly agreed with the statements; and that 48.1% (n = 13) of the respondents' ratings resulted in a mean score ranging from 4.0 to 4.6, indicating the respondents agreed with the statements. *Figure 8* illustrates the distribution of the respondents' agreement.

Table 12
Program Assessment: Likert Scale Results

Survey Statement	Mean	SD	Min.	Max.
15. The program must have documented, measurable outcomes.	4.6	.56	3.0	5.0
16. The program's objectives must include expected outcomes for graduating students.	4.6	.49	4.0	5.0
17. The extent to which each program objective is being met must be periodically assessed.	4.7	.55	3.0	5.0
18. The results of the program's periodic assessments must be used to help identify opportunities for program improvement.	4.7	.45	4.0	5.0
19. The results of the program's assessments and the actions taken based on the results must be documented.	4.5	.64	3.0	5.0
Overall Mean	4.6	.43	4.0	5.0

Note. N = 27. Min. = Minimum. Max. = Maximum. Scale: 1 = Strongly Disagree to 5 = Strongly Agree.

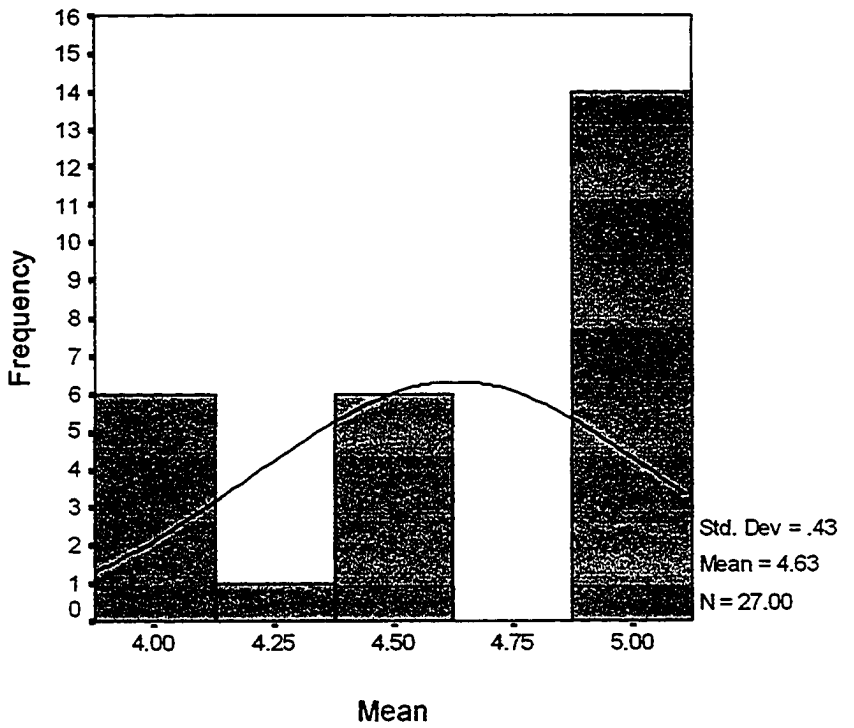

Figure 8. Distribution of the mean scores for the program assessment category representing the respondents' level of agreement for this category. Scale: 1 = strongly disagree to 5 = strongly agree.

Respondents' Suggested Criteria

The participants were given an opportunity to suggest additional criteria for the program assessment category. One individual exercised this option as outlined in Table 13. This statement has not been viewed or rated by the other participants. Therefore, it may not be considered an IST program standard based on this study; however, it may be used in future studies.

Table 13
Program Assessment: Suggested Criterion

Respondent Comment
• Program must not spend a lot of time stating the obvious as above.

Note: This statement was entered by the respondent in the comment field for the program assessment category. $N = 1$ and the statement received a rating of 5.0. This statement needs to be tested for relevancy and validity, and evaluated in future research studies.

Faculty Recruitment, Selection, and Orientation

The faculty recruitment, selection, and orientation category contained six survey statements (numbers 20 through 25) that represented criteria for the faculty recruitment, selection, and orientation category. Responses to these statements (see Table 14) by the 27 respondents ranged from 4.2 (near agree) to 4.6 (near strongly agree) with an overall categorical mean score of 4.3 (near agree).

The frequency statistics (see Appendix V and W) revealed that 25.9% (n = 7) of the respondents gave all the statements in faculty recruitment, selection, and orientation category a score of 5.0, indicating that they strongly agreed with the statements; that 55.6% (n = 15) of the respondents' ratings resulted in a mean score ranging from 4.0 to 4.83, indicating the respondents agreed with the statements; and that 18.5% (n = 5) of the respondents' ratings resulted in a means score of less that 4.0, indicating that they may have had no opinion about or disagreed with this category. *Figure 9* illustrates the distribution of the respondents' agreement.

The mean scores for each statement (see Table 14) and the histogram (see *Figure 9*) suggest that a majority of the respondents agreed with this category. Even though all the statements' mean scores are greater than or equal to 4.2, the fact that four of the statement's mean scores fell below 4.0 may not be ignored. On the other hand, the presence of these scores does not indicate that the category should be removed from the IST program standards, especially when the category's mean score does not fall below 4.3.

Table 14
Faculty Recruitment, Selection, and Orientation: Likert Scale Results

Survey Statement	Mean	SD	Min.	Max.
20. Faculty recruitment practices must be clearly defined.	4.3	.83	2.0	5.0
21. Faculty recruitment practices should be consistent with the program's mission.	4.6	.64	3.0	5.0
22. Faculty selection practices must be clearly outlined.	4.2	.88	2.0	5.0
23. Faculty selection practices should be consistent with the program's mission.	4.5	.70	3.0	5.0
24. Faculty orientation practices should be consistent with the program's mission.	4.2	.92	2.0	5.0
25. The program should demonstrate continuous efforts to achieve demographic diversity in its faculty by recruiting faculty from multicultural, multiethnic, and multilingual backgrounds.	4.2	.72	3.0	5.0
Overall Mean	4.3	.65	2.7	5.0

Note. $N = 27$. Min. = Minimum. Max. = Maximum. Scale: 1 = Strongly Disagree to 5 = Strongly Agree.

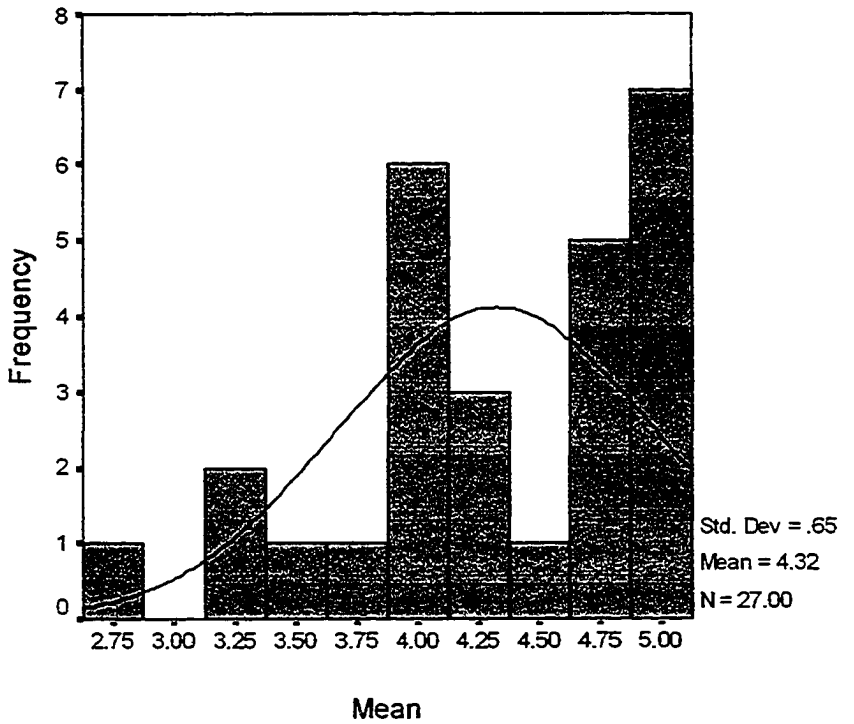

Figure 9. Distribution of the mean scores for the faculty recruitment, selection, and orientation category representing the respondents' level of agreement for this category. Scale: 1 = strongly disagree to 5 = strongly agree.

Faculty Development, Promotion, Retention, and Renewal

The faculty development, promotion, retention, and renewal category contained 13 survey statements (numbers 26 through 38) that represented criteria for the faculty development, promotion, retention, and renewal category. Responses to these statements (see Table 15) by the 27 respondents ranged from 3.9 (near agree) to 4.7 (near strongly agree), resulting in an overall categorical mean score of 4.4 (near agree).

The frequency statistics (see Appendix V and W) revealed that 14.8% (n = 4) of the respondents gave all the statements in faculty development, promotion, retention, and renewal category a score of 5.0, indicating that they strongly agreed with the statements; that 71.4% (n = 20) of the respondents' ratings resulted in a mean score ranging from 4.0 to 4.9, indicating the respondents agreed with the statements; and that 11.1% (n = 3) of the respondents' ratings resulted in a mean score ranging from 3.4 to 3.9, indicating that the respondent may have had no opinion about this category. *Figure 10* illustrates the distribution of the respondents' agreement.

The mean scores for each statement (see Table 15) and the histogram (see *Figure 10*) suggests that a majority of the respondents agreed with this category. Even though all the statements' mean scores are greater than or equal to 3.9, the fact that three of the statements' mean score were below 4.00 may not be ignored. On the other hand, the presence of an 3.9% (n = 1) no opinion does not indicate that the statement or category should be removed from the IST program standards, especially when the category's overall means does not fall below 4.4.

Table 15
Faculty Development, Promotion, Retention, and Renewal: Likert Scale Results

Survey Statement	Mean	SD	Min.	Max.
26. A process should be developed to determine appropriate teaching assignments.	4.2	.74	3.0	5.0
27. A process should be developed to determine appropriate service workloads.	3.9	.75	2.0	5.0
28. A process should be developed to guide and mentor faculty.	4.3	.78	2.0	5.0
29. A process should be developed to provide adequate support for activities that implement the program's mission.	4.3	.62	3.0	5.0
30. A formal, periodic review process should exist for reappointment decisions.	4.6	.64	3.0	5.0
31. A formal, periodic review process should exist for promotion decisions.	4.6	.69	3.0	5.0
32. A formal, periodic review process should exist for tenure decisions.	4.7	.62	3.0	5.0
33. Course development should be part of the reappointment, promotion and tenure decision process.	4.3	.78	30.	5.0
34. Effective teaching should be taken into consideration as part of the reappointment, promotion and tenure decision process.	4.7	.54	3.0	5.0

Table 15 (continued)
Faculty Development, Promotion, Retention, and Renewal: Likert Scale Results

Survey Statement	Mean	SD	Min.	Max.
35. Instructional innovations should be taken into consideration as part of the reappointment, promotion and tenure decision process.	4.3	.72	2.0	5.0
36. Service should be taken into consideration as part of the reappointment, promotion and tenure decision process.	4.3	.62	3.0	5.0
37. Advising duties must be a recognized part of faculty members' workloads.	4.2	.92	2.0	5.0
38. There should be clearly defined policies for adjunct faculty.	4.6	.50	4.0	5.0
Overall Mean	4.4	.43	3.4	5.0

Note. $N = 27$. Min. = Minimum. Max. = Maximum. Scale: 1 = Strongly Disagree to 5 = Strongly Agree

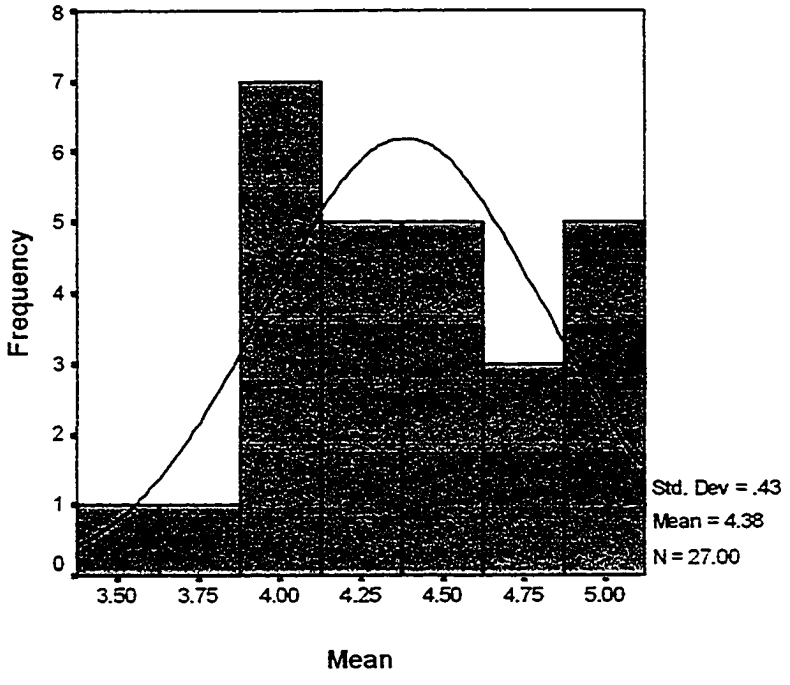

Figure 10. Distribution of the mean scores for the faculty development, promotion, retention, and renewal category representing the respondents' level of agreement for this category. Scale: 1 = strongly disagree to 5 = strongly agree.

Faculty Size, Composition, and Deployment

Likert Scale Results.

The faculty size, composition, and deployment category contained four survey statements (numbers 39 through 42) that represented criteria for the faculty size, composition, and deployment category. Responses to these statements (see Table 16) by the 27 respondents ranged from 4.5 (near agree) to 4.9 (near strongly agree) with an overall categorical mean score of 4.7 (near strongly agree).

The frequency statistics (see Appendix V and W) revealed that a majority of the respondents, 40.7% (n = 11), gave all the statements in faculty size, composition, and deployment category a score of 5.0, indicating that they strongly agreed with the statements; and that the remaining 59.3% (n = 16) of the respondents' ratings resulted in a mean score ranging from 4.0 to 4.8, indicating the respondents agreed with the statements. *Figure 11* illustrates the distribution of the respondents' agreement.

Table 16
Faculty Size, Composition, and Deployment: Likert Scale Statements

Survey Statement	Mean	SD	Min.	Max.
39. The school should have a faculty capable of accomplishing program objectives.	4.9	.32	4.0	5.0
40. There should be a full-time faculty sufficient to provide stability for the program.	4.8	.42	4.0	5.0
41. Part-time faculty, when appointed, should balance and complement the teaching competencies of the full-time faculty.	4.6	.51	4.0	5.0
42. Particularly in the teaching of specialties that are not represented in the expertise of the full-time faculty, part-time faculty should enrich the quality and diversity of a program.	4.4	.58	3.0	5.0
Overall Mean	4.7	.35	4.0	5.0

Note. $N = 27$. Min. = Minimum. Max. = Maximum. Scale: 1 = Strongly Disagree to 5 = Strongly Agree

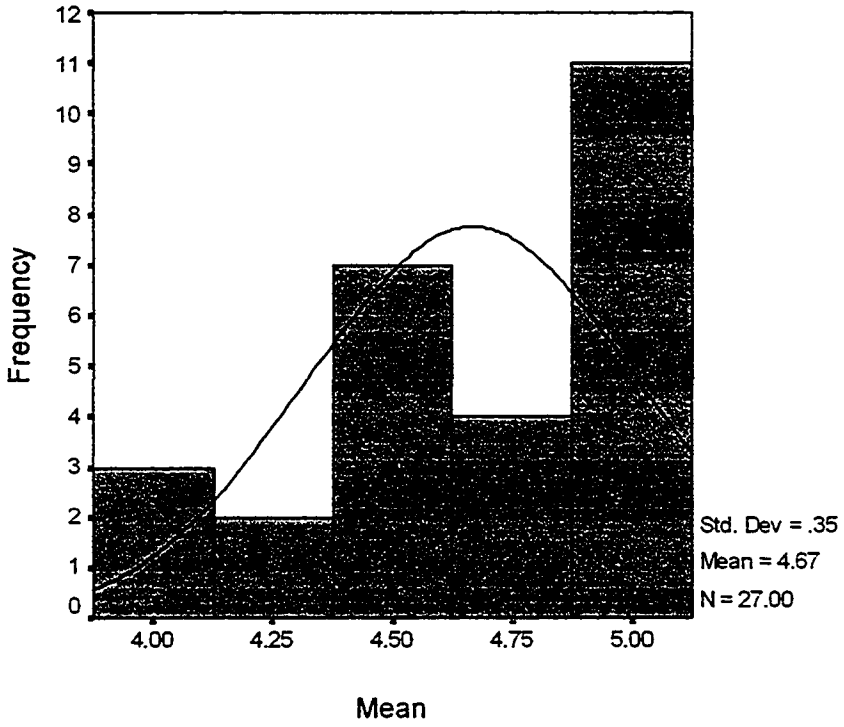

Figure 11. Distribution of the mean scores for the faculty size, composition, and deployment category representing the respondents' level of agreement for this category. Scale: 1 = strongly disagree to 5 = strongly agree.

Open-Ended Responses.

The faculty size, composition, and deployment category contained an additional five survey statements (numbers 43 through 47) that required the respondent to enter an open-ended numeric value rather than rate the statement on the Likert scale as used for the category's other statements. The responses to the statements are provided in Table 17. Each statement's results will be discussed separately.

Table 17
Faculty Size, Composition, and Deployment: Open-Ended Results

Survey Statement	Mean	SD	Min.	Max.
43. ENTER the minimum PERCENT of the student credit hours that you AGREE should be taught by full-time faculty.	66.0	13.2	30.0	90.0
44. ENTER the minimum PERCENT of credit hours that you AGREE should be taught by full-time faculty in the day program.	66.0	18.1	20.0	100.0
45. ENTER the minimum PERCENT of credit hours that you AGREE should be taught by full-time faculty in the evening program.	57.3	20.5	0.0	90.0
46. ENTER the NUMBER of credit hours, per term, that you AGREE should be the normal teaching load for faculty.	8.67	2.5	0.0	12.0
47. ENTER the NUMBER you AGREE should be the credit hour reduction for faculty who are working on intellectual contributions in the form of a public manuscript.	3.30	2.1	0.0	9.0

$N = 27$.

Responses to statement 43, pertaining to the percent of student credit hours that should be taught by full-time faculty, revealed that of the 27 respondents, 33.3% (n = 9), agreed that approximately 80% of the student credit hours should be taught by full-time faculty, whereas 25.9% (n = 7) agreed that approximately 60% should be taught by full-time faculty (see *Figure 12*). The average response to this statement was 66.0 credit hours with multiple modes of 60.0 and 75.0 and a median of 66.0.

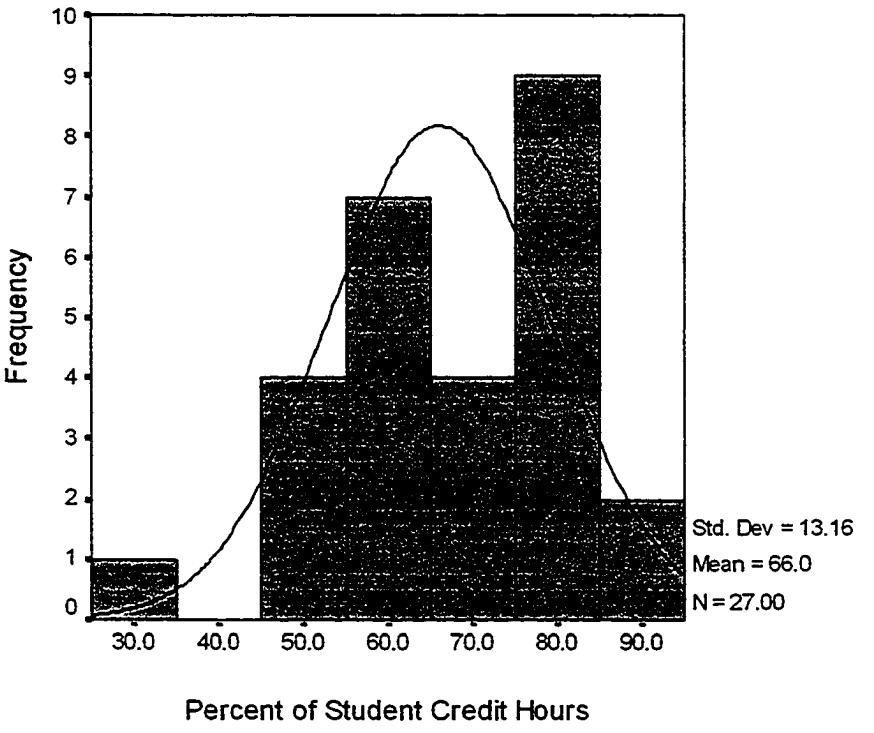

Figure 12. The distribution of the minimum percent of student credit hours that should be taught by full-time faculty. Scale: 1 = strongly disagree to 5 = strongly agree.

Responses to statement 44, pertaining to the percent of credit hours that should be taught by full-time faculty in the day program, revealed that of the 27 respondents, 29.6% (n=8), agreed that approximately 80% of the day program credit hours should be taught by full-time faculty, whereas, 22.2% (n = 6), agreed that approximately 60% should be taught by full-time faculty (see *Figure 13*). The average response to this statement was 66.0 credit hours with a mode of 75.0 and a median of 80.0

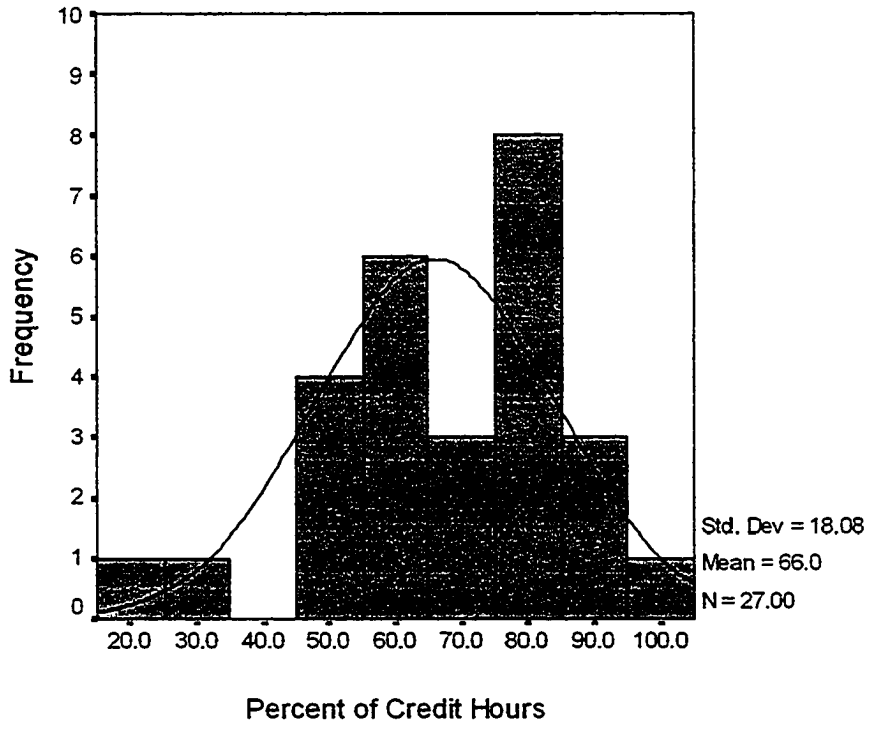

Figure 13. The distribution of the minimum percent of credit hours that should be taught by full-time faculty in the day program.

Responses to statement 45, pertaining to the percent of credit hours that should be taught by full-time faculty in the evening program, revealed that of the 27 respondents, 29.6% (n = 8), agreed that approximately 55% of the evening program credit hours should be taught by full-time faculty and an additional 29.6% (n = 8), agreed that approximately 65% should be taught by full-time faculty (see Figure *14*). The average response to this statement was 57.3 credit hours with a mode of 50.0 and a median of 60.0.

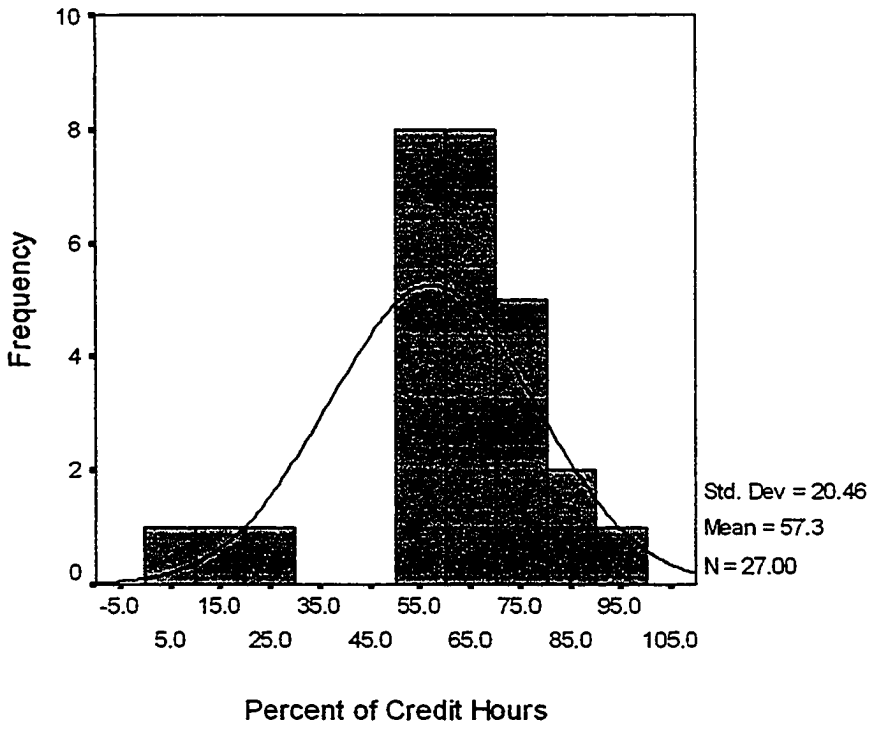

Figure 14. The distribution of the minimum percent of credit hours that should be taught by full-time faculty in the evening program.

Responses to statement 46, pertaining to the number of credit hours, per term, that should be the normal teaching load for faculty, revealed that of the 27 respondents, a majority of the respondents, 59.3% (n = 16), agreed that approximately 9 to 12 credits should be the normal teaching load for faculty (see Figure *15*). The average response to this statement was 8.7 credit hours with a mode of 9.0 and a median of 9.0.

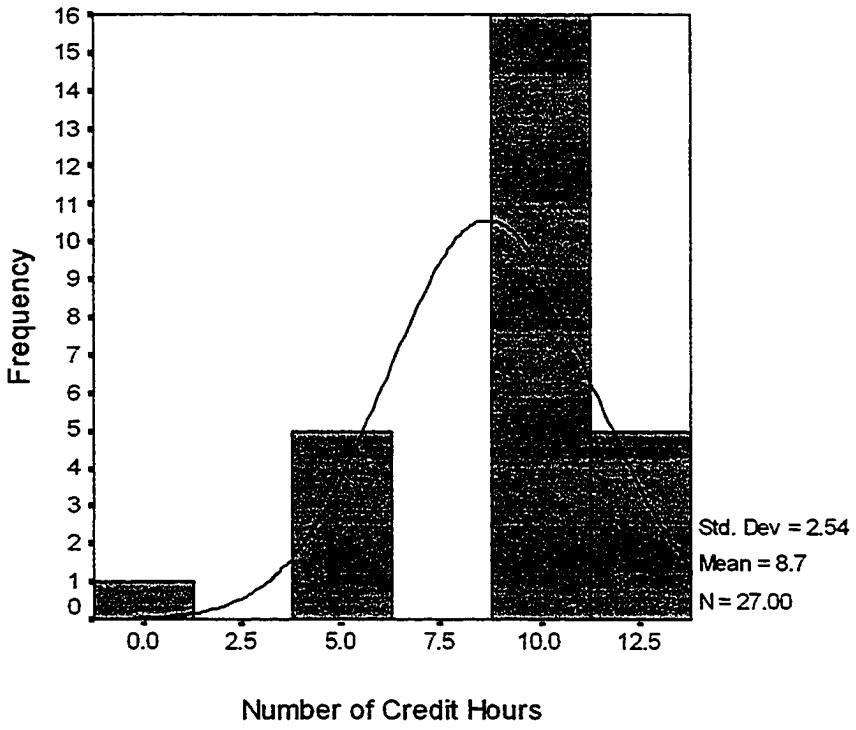

Figure 15. The distribution of the number of credit hours, per term, that should be the normal teaching load for faculty.

Responses to statement 47, pertaining to what should be the credit hour reduction for faculty who are working on intellectual contributions in the form of published manuscripts, revealed that of the 27 respondents, a majority of the respondents, 59.3% (*n* = 16), agreed that 3 credits should be the credit hour reduction for faculty who are working on intellectual contributions in the form of published manuscripts (see *Figure 16*). The average response to this statement was 3.3 credit hours with a mode of 3.0 and a median of 3.0.

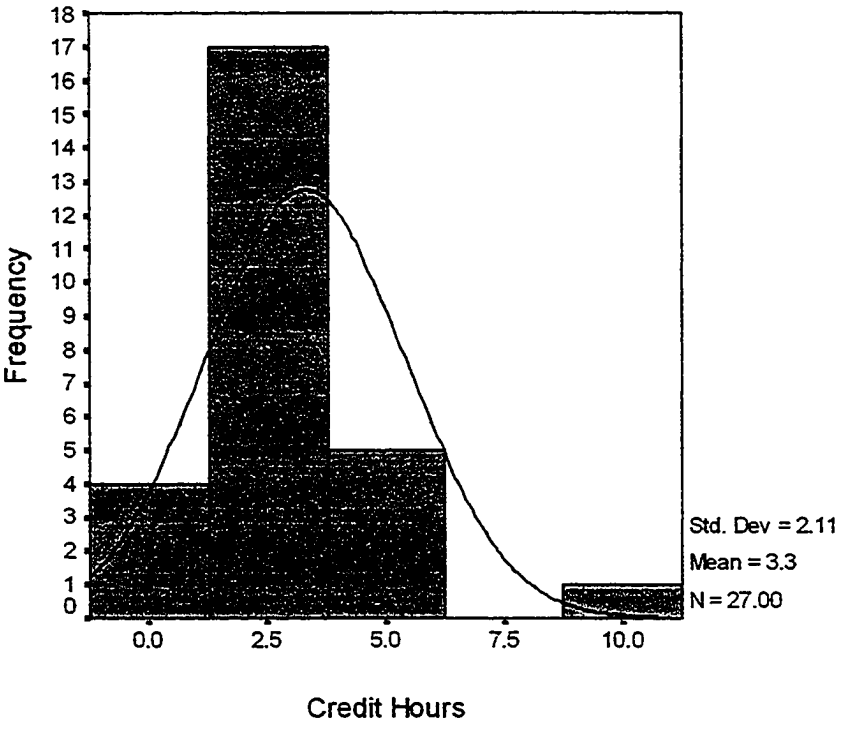

Figure 16. The distribution of the number that should be the credit hour reduction for faculty who are working on intellectual contributions in the form of a public manuscript.

Respondents' Suggested Criteria.

The participants were given an opportunity to suggest additional criteria for the faculty size, composition, and deployment category. Two individuals exercised this option as outlined in Table 18. These statements have not been viewed or rated by the other participants. Therefore, they may not be considered IST standards criteria based on this study; however, they may be used in future studies.

Table 18
Faculty Size, Composition, and Deployment: Suggested Criteria

Respondent Comment
• In the above [the faculty size, composition, and deployment category] the teaching load should be 9 hours if teaching a graduate course and/or publishing.
• Reduced loads generally required.

Note: These statements were entered by the respondent in the comment field for the faculty size, composition, and deployment category. $N = 1$ and these statements received a rating of 5.0. These statements need to be tested for relevancy and validity, and evaluated in future research studies.

Faculty Qualifications

Likert Scale Results.

The faculty qualifications category contained seven survey statements (numbers 48 through 54) that represented criteria for the faculty qualifications category. Responses to these statements (see Table 19) by the 27 respondents ranged from 3.2 (near no opinion) to 4.9 (near strongly agree) with an overall categorical mean score of 3.7 (near agree).

The frequency statistics (see Appendix V and W) revealed that only one respondent strongly agreed with all the statements; that 33.3% (n = 9) agreed with the statements by giving them a mean score ranging from 4.0 to 4.6; and that a majority of the 51.9% (n = 14) respondents had no opinion about the statements by giving them a rating ranging from 2.6 to 3.9. *Figure 17* illustrates the distribution of the respondents' agreement.

Table 19.
Faculty Qualifications: Likert Scale Results

Survey Statement	Mean	SD	Min.	Max.
48. Faculty should have sufficient academic and professional qualifications to accomplish the program's mission.	4.9	.36	4.0	5.0
49. Faculty should hold a doctoral degree in the area in which the individual teaches.	3.9	.89	2.0	5.0
50. Faculty should hold a masters degree, have industry experience, and be enrolled in a doctoral program in the area in which the individual teaches.	3.2	1.12	1.0	5.0
51. Faculty can hold a doctoral degree outside the area in which the individual teaches as long has they have industry experience in the area in which the individual teaches.	3.7	.92	2.0	5.0
52. Faculty can hold a doctoral degree outside the area in which the individual teaches as long has the individual receives supplement preparation in the form of professional development.	3.6	.84	2.0	5.0

Table 19. (continued)
Faculty Qualifications: Likert Scale Results

Survey Statement	Mean	SD	Min.	Max.
53. Faculty can have specialized coursework in the field of primary teaching responsibilities but no doctoral degree.	3.3	1.03	1.0	5.0
54. Faculty can have specialized industry experience in the field of primary teaching responsibilities but no doctoral degree.	3.4	1.04	1.0	5.0
Overall Mean	3.7	.55	2.6	5.0

Note. $N = 27$. Min. = Minimum. Max. = Maximum. Scale: 1 = Strongly Disagree to 5 = Strongly Agree.

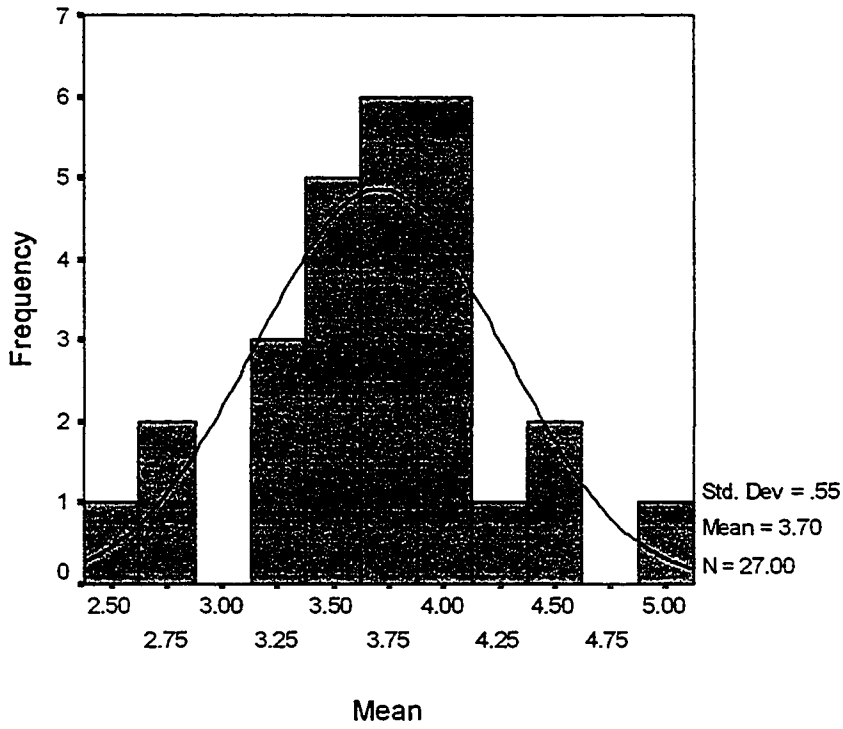

Figure 17. The distribution of the mean scores for the faculty qualifications category representing the respondent's level of agreement. Scale: 1 = strongly disagree to 5 = strongly agree.

Open-Ended Responses.

The faculty qualifications category contained an additional two survey statements (numbers 55 and 56) that required the respondent to enter an open-ended numeric value rather than rate the statement on the Likert scale as used for the category's other statements. The mean, mode and median response to the statements are provided in Table 20. Each statement's results will be discussed separately.

Table 20
Faculty Qualifications: Open-ended Results

Survey Statement	Mean	SD	Min.	Max.
55. ENTER the PERCENT that you AGREE must constitute the total number of full-time equivalent faculty.	74.1	20.92	10.0	100.0
56. ENTER the PERCENT that you AGREE should not be exceeded in terms of the total full-time equivalent faculty who are academically qualified but who do not possess doctoral degrees.	23.6	23.00	0.0	90.0

N = 27

Responses to statement 55, which pertained to the percent of faculty who must constitute the total number of full-time equivalent, revealed that 23 of the 27 respondents provided a percentage in response to this statement; four of the respondents had no opinion. Of the 23 who provided a specific response, 26.1% (n = 6) agreed that approximately 90% of the faculty should constitute the total number of full-time faculty equivalent; 21.7% (n=5) agreed that it should be 75%; 17.4% (n = 4) agreed it should be 80%; 9% (n=2) agreed it should be 100%; and the remaining respondents, 26.1% (n=6), agreed it should be 10.0% to 60.0%. The average response to this statement was 74.1% with a mode of 90.0% and a median of 80.0% (see *Figure 18* and Table 20).

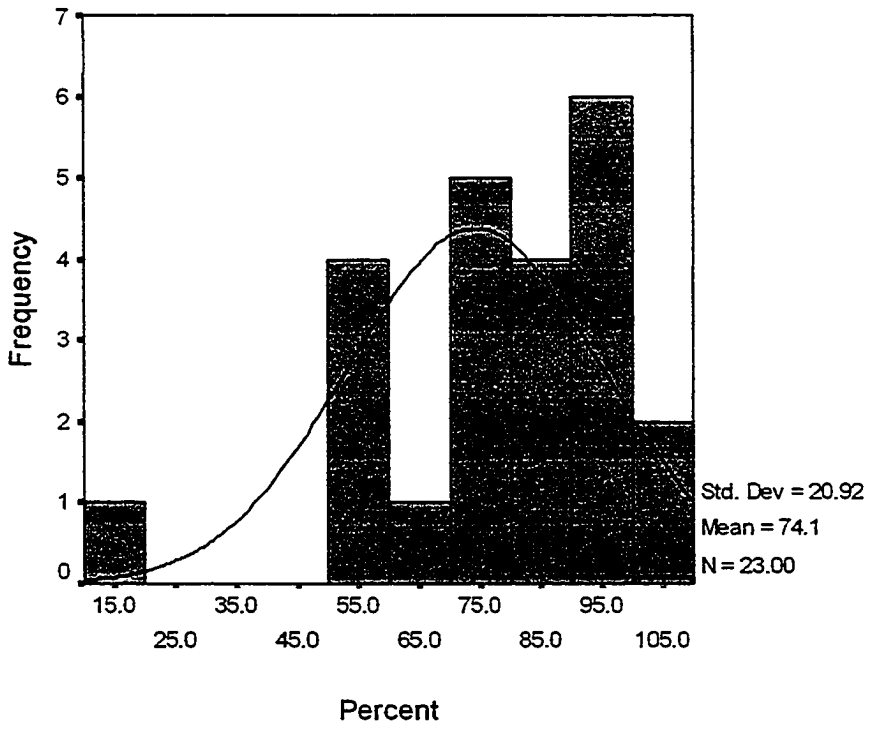

Figure 18. The distribution of the percent of faculty that must constitute the total number of full-time equivalent. *Note:* The N = 23 indicates that 4 individuals had no opinion.

Responses to statement 56, which pertained to the maximum percent of faculty who are academically qualified but who do not possess a doctoral degree as part of the full-time faculty equivalent, revealed that 26 of the 27 respondents provided a specific percentage in response to this statement. The one respondent had no opinion. Of the 26 specific responses, 40.7% (n = 11) agreed that a maximum of between 20 to 25% of the faculty should constitute the total number of full-time faculty equivalent who are academically qualified but do not possess a doctoral degree, whereas 29.6% (n = 8) agreed that the maximum percentage should be 10%. The average response to this statement was 23.6% with a mode of 10.0% and a median of 20.0% (see *Figure 19* and Table 20).

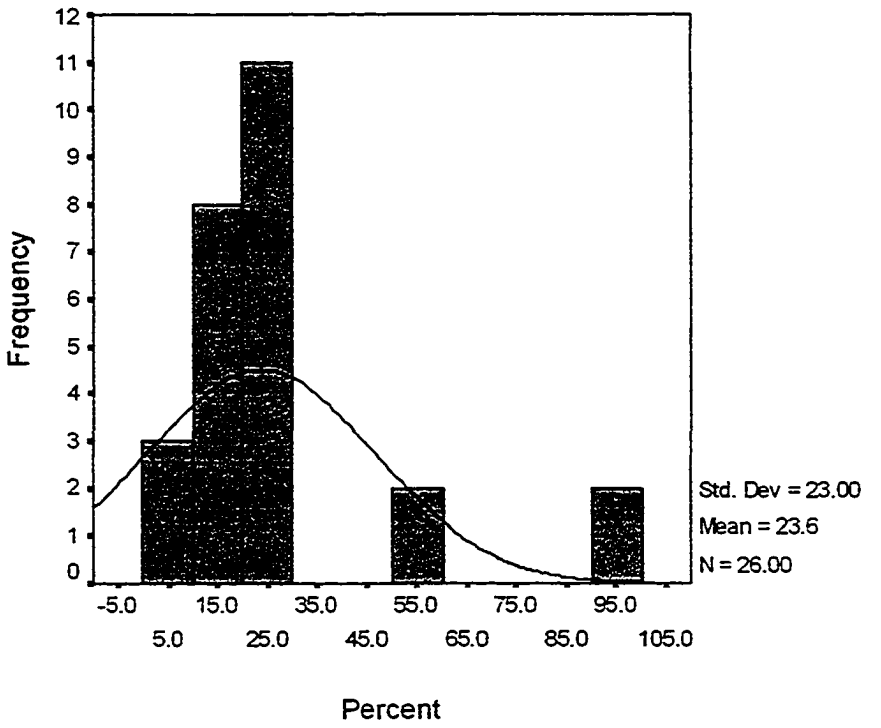

Figure 19. The distribution of the percent that should not be exceeded in terms of the total full-time equivalent faculty who are academically qualified but who do not possess a doctoral degree. *Note:* The $N = 26$ indicates that 1 individual had no opinion.

Institutional Support and Financial Resources

Likert Scale Results.

The institutional support and financial resources category contained 17 survey statements (numbers 57 through 73) that represented criteria for the institutional support and financial resources category. Responses to these statements (see Table 21) by the 27 respondents ranged from 4.3 (near agree) to 4.8 (near strongly agree) with an overall categorical mean score of 4.6 (between agree and strongly agree). *Figure 20* illustrates the distribution of the respondents' agreement.

Table 21
Institutional Support and Financial Resources: Likert Scale Results

Statement	Mean	SD	Min.	Max.
57. Support for faculty must be sufficient to enable the program to attract and retain high-quality faculty capable of supporting the program's objectives.	4.8	.42	4.0	5.0
58. There must be sufficient support and financial resources to allow all faculty members to attend national technical meetings with sufficient frequency to maintain competence as teachers and scholars.	4.6	.64	3.0	5.0
59. Adequate time must be assigned for the administration of the program.	4.6	.58	3.0	5.0
60. Upper levels of administration must provide the program with the resources and atmosphere to function effectively with the rest of the institution.	4.6	.49	4.0	5.0
61. Resources must be provided to acquire and maintain laboratory facilities that meet the needs of the program.	4.7	.48	4.0	5.0

Table 21 (continued)
Institutional Support and Financial Resources: Likert Scale Results

Statement	Mean	SD	Min.	Max.
62. Resources must be provided to support library and related information retrieval facilities that meet the needs of the program.	4.7	.47	4.0	5.0
63. The school's faculty, staff, and students must have the same opportunity for representation on the institution's advisory or policy-making bodies as do those of comparable units throughout the institution.	4.4	.78	2.0	5.0
64. The school's administrative relationships with other academic units enhance the intellectual environment and support interdisciplinary interaction.	4.4	.75	2.0	5.0
65. These administrative relationships encourage participation in the life of the parent institution.	4.3	.76	2.0	5.0
66. The school's executive officer nurtures an intellectual environment that enhances the pursuit of the school's mission and program goals and the accomplishment of its program objectives.	4.6	.51	4.0	5.0

Table 21 (continued)
Institutional Support and Financial Resources: Likert Scale Results

Statement	Mean	SD	Min.	Max.
67. Within its institutional framework the school uses effective decision-making processes that are determined mutually by the executive officer and the faculty, who regularly evaluate these processes and use the results.	4.4	.64	3.0	5.0
68. Classrooms must be adequately equipped for the courses taught.	4.6	.50	4.0	5.0
69. Documentation for hardware and software must be readily accessible to faculty and students.	4.4	.64	3.0	5.0
70. All faculty members must have access to adequate computing resources for class preparation and for scholarly activities.	4.7	.48	4.0	5.0
71. There must be adequate support personnel to install and maintain computing resources.	4.6	.50	4.0	5.0
72. Instructional assistance must be provided for the computing resources.	4.5	.51	4.0	5.0

Table 21
Institutional Support and Financial Resources: Likert Scale Results

Statement	Mean	SD	Min.	Max.
73. Faculty offices must be adequate to enable faculty members to meet their responsibilities to students and for their professional requirements.	4.6	.49	4.0	5.0
Overall Mean	4.6	.41	3.8	5.0

Note: $N = 27$. Min. = Minimum Max. = Maximum. Scale: 1 = Strongly Disagree to 5 = Strongly Agree.

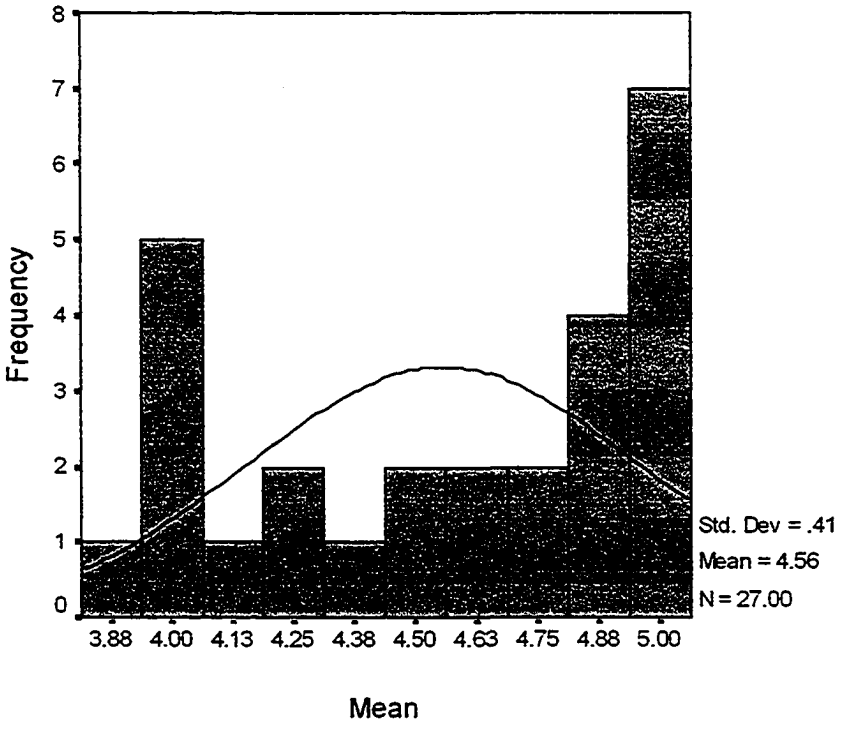

Figure 20. The distribution of the mean scores for the institutional support and financial recourse category, representing the respondents' level of agreement. Scale: 1 = strongly disagree to 5 = strongly agree.

Respondents' Suggested Criteria.

The participants were given an opportunity to suggest additional criteria for the institutional support and financial resources category. One individual exercised this option as outlined in Table 22. This statement has not been viewed or rated by the other participants. Therefore, it may not be considered an IST program standard based on this study; however, it may be used in future studies however.

Table 22
Institutional Support and Financial Resources: Suggested Criterion

Respondent Comment
• Faculty experiential learning with industries representative of their teaching specialties is as important as attending national technical meetings to keep current with needs and environment.

Note: This statement was entered by the respondent in the comment field for the institutional support and financial resources category. $N = 1$ and the statement received a rating of 5.0. This statement needs to be tested for relevancy and validity, and evaluated in future research studies.

Curriculum Content and Evaluation

Likert Scale Results.

The curriculum content and evaluation category contained 19 survey statements (numbers 74 through 92) that represented criteria for the curriculum content and evaluation category. Responses to these statements (see Table 23) by the 27 respondents ranged from 3.6 (near agree) to 4.7 (near strongly agree) with an overall categorical mean score of 4.4 (near agree) and multiple modes of 5.0 (strongly agree) and 4.4 (near agree).

The frequency statistics (see Appendix V and W) revealed that a majority of the respondents, 77.8% (n = 21), agreed or strongly agreed with the statements in curriculum content and evaluation category by giving them score ranging from 4.0 to 5.0; and that 11.1% (n = 3) may have had no opinion about these statements by assigning them a mean score ranging from 3.84 to 3.9. *Figure 21* illustrates the distribution of the respondents' agreement.

Table 23
Curriculum Content and Evaluation: Likert Scale Results

Survey Statement	Mean	SD	Min.	Max.
74. Undergraduate curricula should provide an understanding of perspectives that form the context for information sciences and technology.	4.7	.48	4.0	5.0
75. The curricula should include ethical and global issues.	4.6	.56	3.0	5.0
76. The curricula should include the influence of political, social, legal, regulatory, environmental and technological issues.	4.6	.49	4.0	5.0
77. The curricula should include the impact of demographic diversity on organizations.	4.2	.92	2.0	5.0
78. The curriculum should include foundation knowledge for information systems application.	4.7	.47	4.0	5.0
79. The curriculum should include foundation knowledge for information science.	4.6	.54	3.0	5.0
80. The curriculum should include foundation knowledge for software and computer systems (network architectures, operating systems, systems analysis).	4.5	6.4	3.0	5.0

Table 23 (continued)
Curriculum Content and Evaluation: Likert Scale Results

Survey Statement	Mean	SD	Min.	Max.
81. The curriculum should include foundation knowledge for information society and public policy.	4.5	.51	4.0	5.0
82. The curriculum should provide direction for future development of the field.	4.3	.73	3.0	5.0
83. The curriculum should respond to the needs of a rapidly changing technological and global society.	4.5	.50	4.0	5.0
84. The curriculum should integrate the theory, application, and use of technology.	4.6	.49	4.0	5.0
85. The core materials must provide basic coverage of algorithms, data structures, software design, programming language concepts, and computer organization and architecture.	4.4	.69	3.0	5.0
86. Theoretical foundations, problem analysis, and solution design must be stressed within the program's core materials.	4.6	.49	4.0	5.0

Table 23 (continued)
Curriculum Content and Evaluation: Likert Scale Results

Survey Statement	Mean	SD	Min.	Max.
87. Students must be exposed to a variety of programming languages and systems and must become proficient in at least one higher-level language.	4.2	.75	2.0	5.0
88. Course work in mathematics must include discrete mathematics, differential and integral calculus, and probability and statistics.	3.6	1.04	1.0	5.0
89. The oral communications skills of the student must be developed and applied in the program.	4.7	.62	3.0	5.0
90. The written communications skills of the student must be developed and applied in the program.	4.7	.52	3.0	5.0
91. The curriculum includes as appropriate cooperative degree programs, interdisciplinary coursework and research, experiential opportunities, and other similar activities.	4.0	.85	2.0	5.0
92. The curriculum should include foundation knowledge for behavioral science.	4.0	.85	2.0	5.0
Overall Mean	4.4	.34	3.8	5.0

Note: N = 27. Min. = Minimum. Max. = Maximum. Scale: 1 = Strongly Disagree to 5 = Strongly Agree.

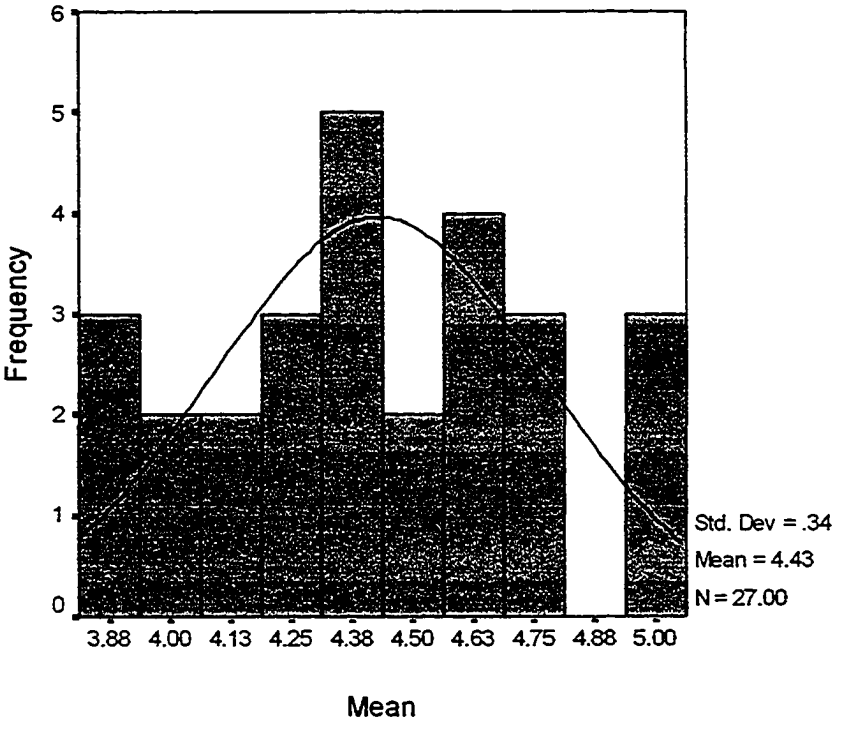

Figure 21. The distribution of the mean scores for the curriculum content and evaluation category which represents the respondents' level of agreement for this category. Scale: 1 = strongly disagree to 5 = strongly agree.

Open-Ended Responses.

The curriculum content and evaluation category contained an additional six survey statements (numbers 93 through 98) that required the respondent to enter an open-ended numeric value rather than rate the statement on the Likert scale as used for the category's other statements. The responses to the statements are provided (see Table 24). Each statement's results will be discussed separately.

Table 24
Curriculum Content and Evaluation: Open-Ended Results

Survey Statement	Mean	SD	Min.	Max.
93. ENTER what you AGREE should be the minimum number of total semester hour credits for the baccalaureate of Information Sciences and Technology degree.	117.4	13.2	0.0	220.0
94. ENTER the minimum NUMBER of semester hours of study in humanities, social sciences, arts and other disciplines that serve to broaden the background of the student that you AGREE must be included in the curriculum.	43.3	30.0	9.0	120.0
95. ENTER the minimum NUMBER of semester hours of study in the major of information sciences and technology that you AGREE must be included in the curriculum.	38.3	13.3	15.0	64.0
96. ENTER the minimum NUMBER of semester hours of quantitative studies that you AGREE must be included in the curriculum.	14.5	6.9	6.0	30.0
97. ENTER the minimum NUMBER of semester hours of science that you AGREE must be included in the curriculum.	10.0	4.6	0.0	20.0
98. ENTER the PERCENT of credit hours for the IST degree that you AGREE should be earned at the degree-awarding institution.	47.9	18.3	10.0	80.0

Note. $N = 27$.

Responses to statement 93, which pertained to the minimum number of total semester hour credits for the IST degree, revealed that 22 of the 27 respondents provided specific numbers in response to this statement. The other 5 respondent had no opinion. Of the 22 specific responses, 37.0% (n = 10) indicated that 120 credit hours should be the minimum number of total semester hour credits for the IST degree. The remaining respondents recommended a number ranging from 50 to 220. The average response to this statement was 117.4 credit hours with a mode of 120 and a median of 120 (see Table 24 and *Figure 22*).

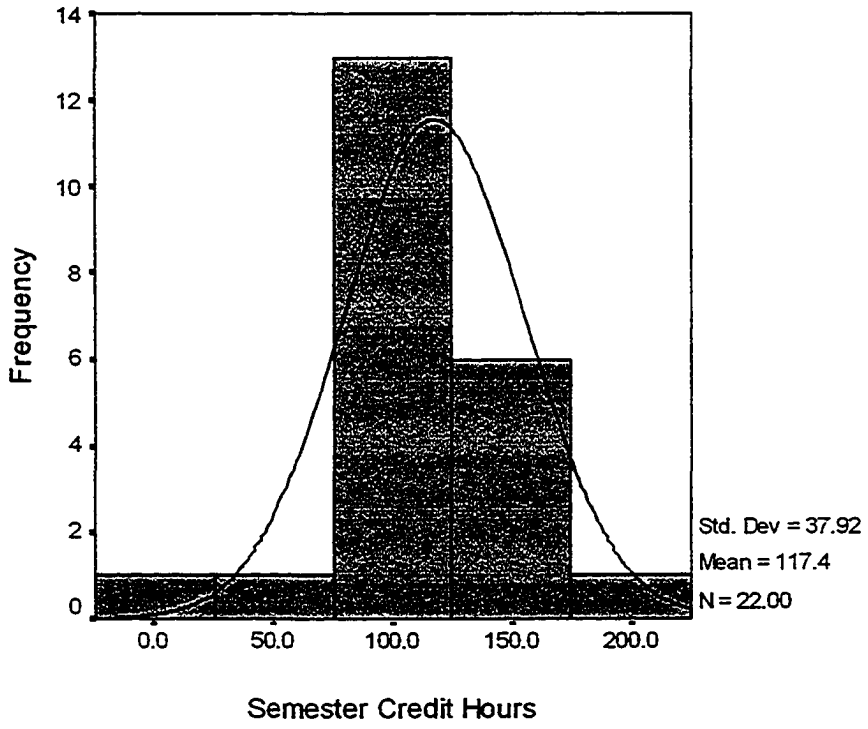

Figure 22. The distribution of responses for the minimum number of total semester hour credits for the IST degree. *Note:* The $N = 22$ means that 5 individuals had no opinion.

Responses to statement 94, which pertained to the minimum number of total semester hours of study in the humanities, social sciences, arts and other disciplines that serve to broaden the background of the student, revealed that 22 of the 27 respondents provided specific numbers; the other 5 had no opinion. Of the 22 specific responses, 22.2% (n = 6) indicated that 30 credit hours should be the minimum number of semester hours of study in the humanities, social sciences, arts and other disciplines, the remaining respondents recommended a number ranging from 9 to 120. The average response to this statement was 43.3 credit hours (see Table 24 and *Figure 23*).

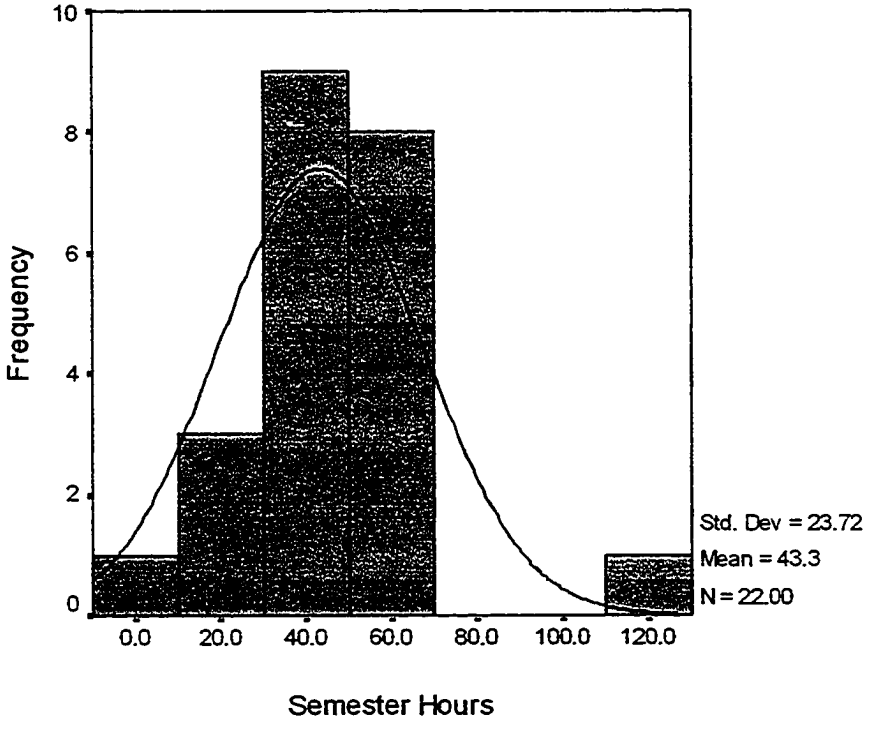

Figure 23. The distribution of the responses to the minimum number of total semester hours of study in the humanities, social sciences, arts and other disciplines that serve to broaden the background of the student. *Note:* The $N = 22$ means that 5 individuals had no opinion.

Responses to statement 95, which pertained to the minimum number of semester hours of study in the major of information sciences and technology, revealed that 22 of the 27 respondents provided specific numbers. The other five respondents had no opinion. Of the 22 specific responses, 14.8% (n = 4) indicated that 24 credit hours should be the minimum number of semester hours of study in the major of information sciences and technology. The remaining respondents recommended a number ranging from 15 to 64. The average response to this statement was 38.3 semester hours (see Table 24 and *Figure 24*).

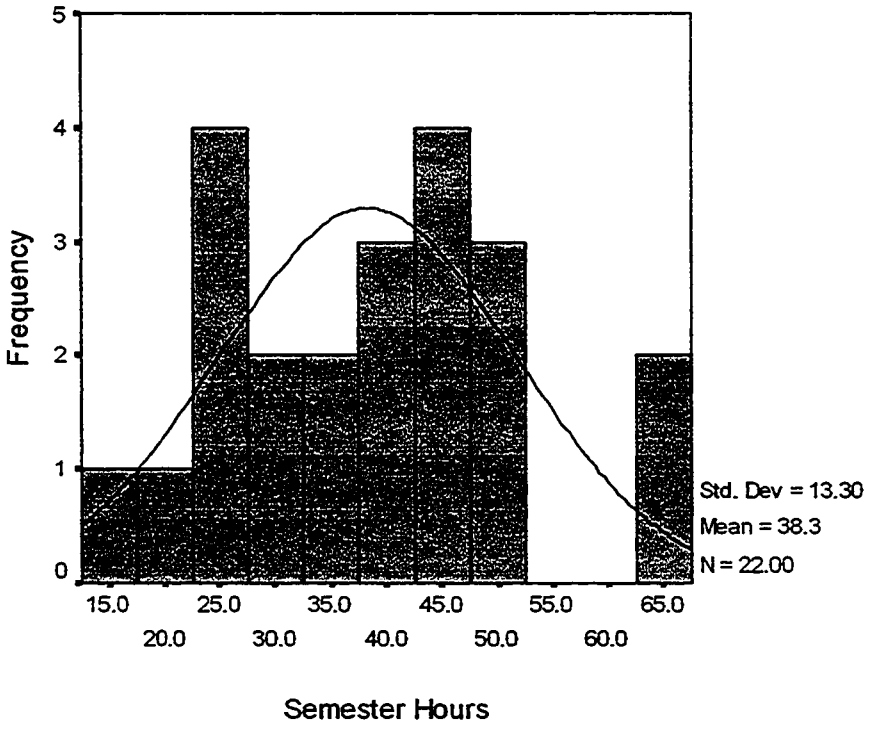

Figure 24. The distribution of responses to the minimum number of semester hours of study in the major of information sciences and technology. *Note:* The $N = 22$ means that 5 individuals had no opinion.

Responses to statement 96, which pertained to the minimum number of semester hours of quantitative studies that must be included in the IST curriculum, revealed that 22 of the 27 respondents provided specific responses to this statement. The other five respondents indicated no opinion. Of the 22 responses, 18.5% (n = 5) indicated that 12 credit hours should be the minimum number of semester hours of quantitative studies that must be included in the IST curriculum. The remaining respondents recommended a number ranging from 6.0 to 30.0. The average response to this statement was 14.5 semester hours (see Table 24 and *Figure 25*).

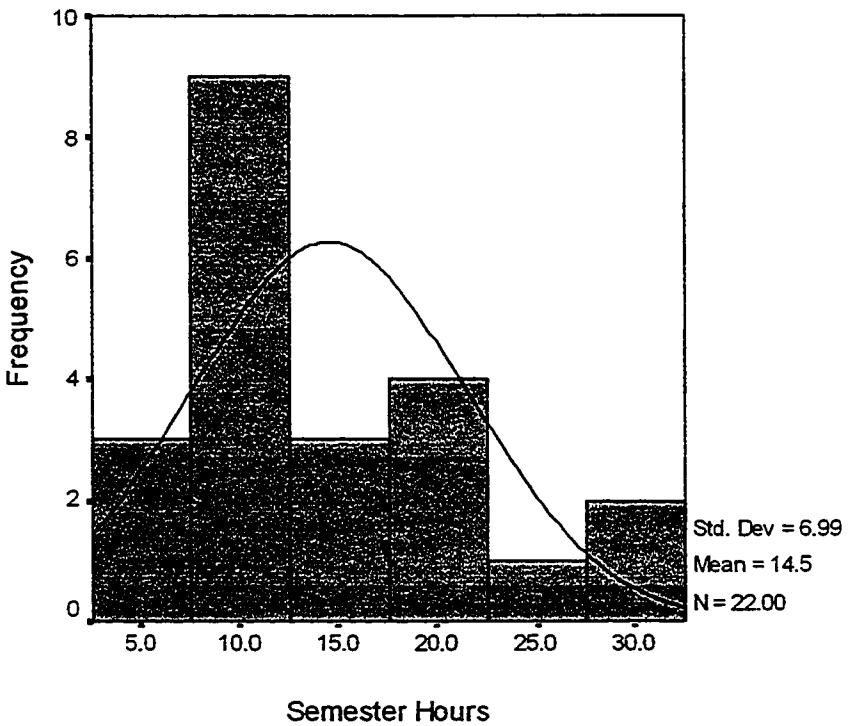

Figure 25. The distribution of responses to the minimum number of semester hours of quantitative studies that must be included in the IST curriculum. *Note:* The $N = 22$ means that 5 individuals had no opinion.

Responses to statement 97, which pertained to the minimum number of semester hours of science that must be included in the IST curriculum, revealed that 22 of the 27 respondents provided specific responses to this statement. The other five respondents indicated no opinion. Of the 22 responses, 14.8% (n = 4) indicated that 8 credit hours should be the minimum number of semester hours of science that must be included in the IST curriculum. The remaining respondents recommended a number ranging from 0.0 to 20.0. The average response to this statement was 10.0 semester hours with a mode of 8.0 and a median of 9.0 (see Table 24 and *Figure 26*).

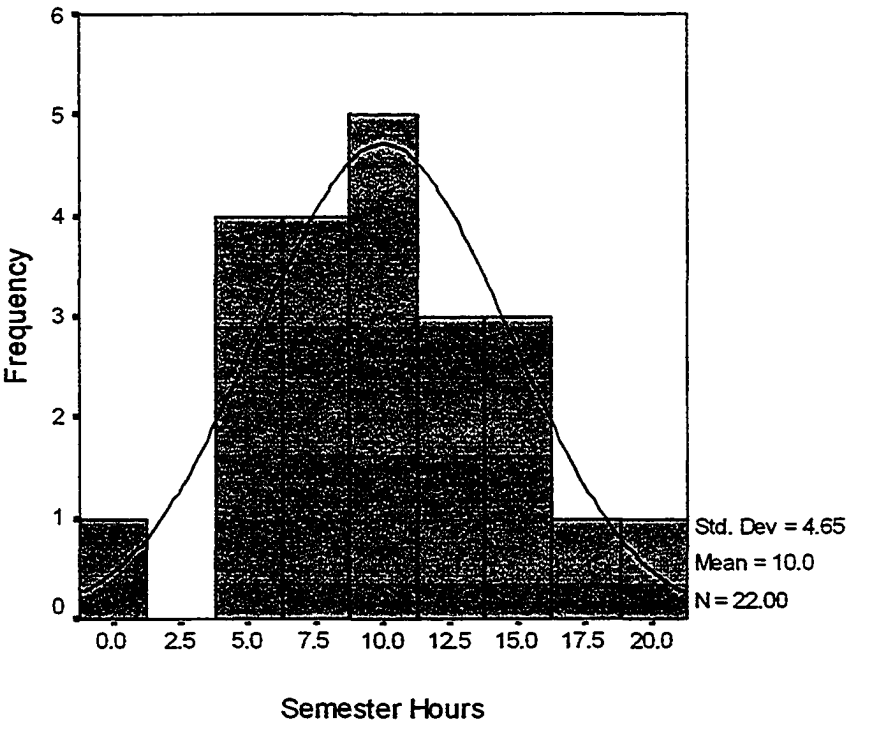

Figure 26. The distribution of responses to the minimum number of semester hours of science that must be included in the IST curriculum. *Note:* The N = 22 means that 5 individuals had no opinion.

Responses to statement 98, which pertained to the minimum number of credit hours that should be earned at the degree-awarding institution, revealed that 24 of the 27 respondents provided specific responses to this statement. The other three respondents indicated that they had no opinion. Of the 24 responses, 25.9% (n = 7) indicated that 50.0 credit hours should be the minimum number of credit hours earned at the degree-awarding institution. The remaining respondents recommended a number ranging from 10.0 to 80.0. The average response to this statement was 47.9 credit hours with a mode of 50.0 and a median of 50.0 (see Table 24 and *Figure 27*).

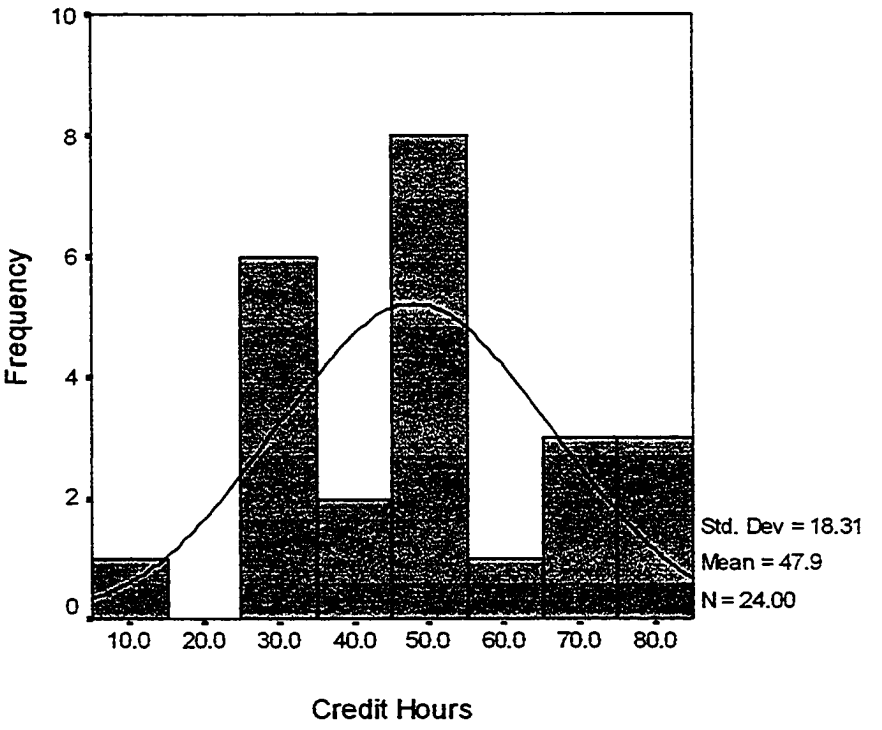

Figure 27. The distribution of responses to the minimum number of credit hours that should be earned at the degree-awarding institution. *Note:* The N = 22 means that 5 individuals had no opinion.

Curriculum Planning and Evaluation

Likert Scale Results.

The curriculum planning and evaluation category contained eight survey statements (numbers 99 through 106) that represented criteria for the curriculum planning and evaluation category. Responses to these statements (see Table 25) by the 27 respondents ranged from 4.6 (near strongly agree) to 4.9 (near strongly agree) with an overall categorical mean score of 4.7 (near strongly agree).

The frequency statistics (see Appendix V and W) revealed that a majority of the respondents, 59.3% (n = 16), gave all the statements in curriculum planning and evaluation category a score of 5.0, indicating that they strongly agreed with the statements. Thirty-seven percent (n = 10) of the respondents' ratings resulted in a mean score ranging from 4.0 to 5.0, indicating the respondents agreed with the statements. The remaining respondent gave this category a mean score of 3.9, indicating no opinion about this category. The categorical mean score of 4.7 suggests that the one respondent's score of 3.9 represents agreement rather than no opinion. *Figure 28* illustrates the distribution of the respondents' agreement.

Table 25
Curriculum Planning and Evaluation: Likert Scale Results

Survey Statement		Mean	SD	Min.	Max.
99.	The curriculum for the degree program should be the result of a curriculum planning process.	4.9	.36	4.0	5.0
100.	The curriculum planning process should be consistent with the program's mission.	4.8	.51	3.0	5.0
101.	The program curriculum should be systematically monitored to assess its effectiveness.	4.7	.45	4.0	5.0
102.	The program curriculum should be revised to reflect new objectives.	4.7	.48	4.0	5.0
103.	The program curriculum should be revised to incorporate improvements based on contemporary theory and practice.	4.7	.48	4.0	5.0
104.	Evaluation of the curriculum includes assessment of students' achievements and their subsequent accomplishments.	4.6	.49	4.0	5.0

Table 25 (continued)
Curriculum Planning and Evaluation: Likert Scale Results

Survey Statement	Mean	SD	Min.	Max.
105. The curriculum is continually reviewed and receptive to innovation; its evaluation is used for ongoing appraisal, to make improvements, and to plan for the future.	4.6	.49	4.0	5.0
106. Evaluation involves those served by the program: students, faculty, employers, alumni, and other constituents.	4.7	.45	4.0	5.0
Overall Mean	4.7	.40	3.9	5.0

Note: N = 27. Min. = Minimum. Max. = Maximum. Scale: 1 = Strongly Disagree to 5 = Strongly Agree.

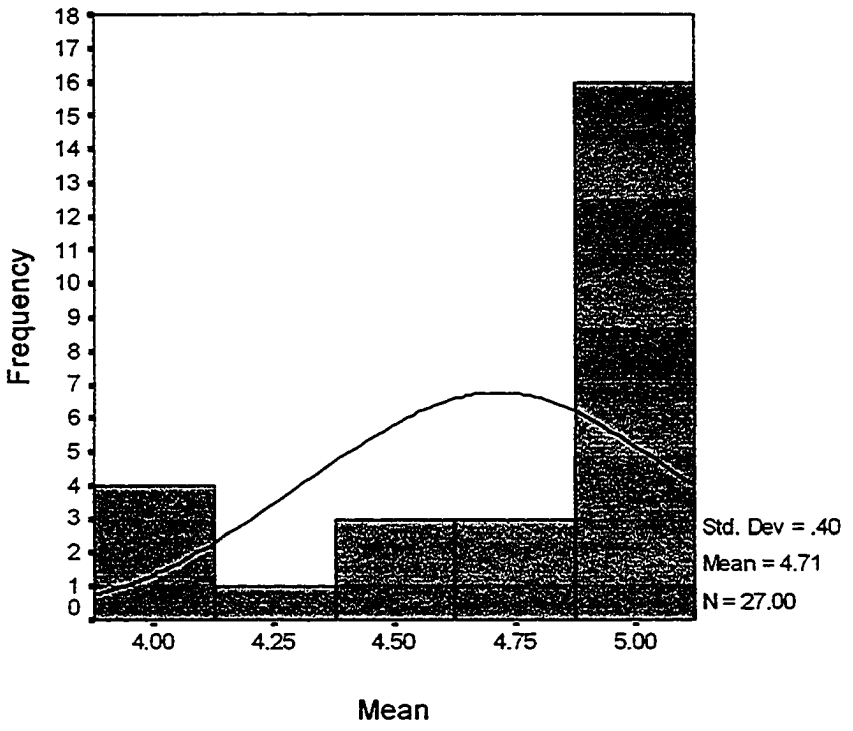

Figure 28. The distribution of the mean scores for the curriculum planning and evaluation category, representing the respondents' level of agreement for this category. Scale: 1 = strongly disagree to 5 = strongly agree.

Respondents' Suggested Criteria.

The participants were given an opportunity to suggest additional criteria for the curriculum planning and evaluation category. One individual exercised this option as outlined in Table 26. This statement has not been viewed or rated by the other participants. Therefore, it may not be considered an IST program standard based on this study; however, it may be used in future studies.

Table 26
Curriculum Planning and Evaluation: Suggested Criterion

Respondent Comment
• The on-going and continuous element of the curriculum planning process should be stressed.

Note: This statement was entered by the respondent in the comment field for the institutional support and financial resources category. $N = 1$ and the statement received a rating of 5.0. This statement needs to be tested for relevancy and validity, and evaluated in future research studies.

Instructional Resources

The instructional resources category contained five survey statements (numbers 107 through 111) that represented criteria for the instructional resources category. Responses to these statements (see Table 27) by the 27 respondents ranged from 4.5 (near strongly agree) to 4.7 (near strongly agree) with an overall categorical mean score of 4.6 (near strongly agree).

The frequency statistics (see Appendix V and W) revealed that 48.1% (n = 13) of the respondents gave all the statements in the instructional resources category a score of 5.0, indicating that they strongly agreed with the statements and that the remaining 51.9% (n = 14) of the respondents' ratings resulted in a mean score ranging from 4.0 to 4.8, indicating the respondents' agreed with the statements. *Figure 29* illustrates the distribution of the respondents' agreement.

Table 27
Instructional Resources: Likert Scale Results

Statement	Mean	SD	Min.	Max.
107. The school/institution should provide and manage instructional technologies and related support to faculty.	4.56	.51	4.0	5.0
108. The school/institution should provide and manage student access to library resources.	4.52	.58	3.0	5.0
109. The school/institution should provide and manage student access to computer facilities.	4.59	.57	3.0	5.0
110. The school/institution should provide and manage student access to information technology.	4.67	.48	4.0	5.0
111. The school/institution should provide and manage space, facilities, and staff support adequate to meet program goals and objectives.	4.59	.50	4.0	5.0
Overall Mean	4.59	.46	4.0	5.0

Note: N = 27. Min. = Minimum. Max. = Maximum. Scale: 1 = Strongly Disagree to 5 = Strongly Agree.

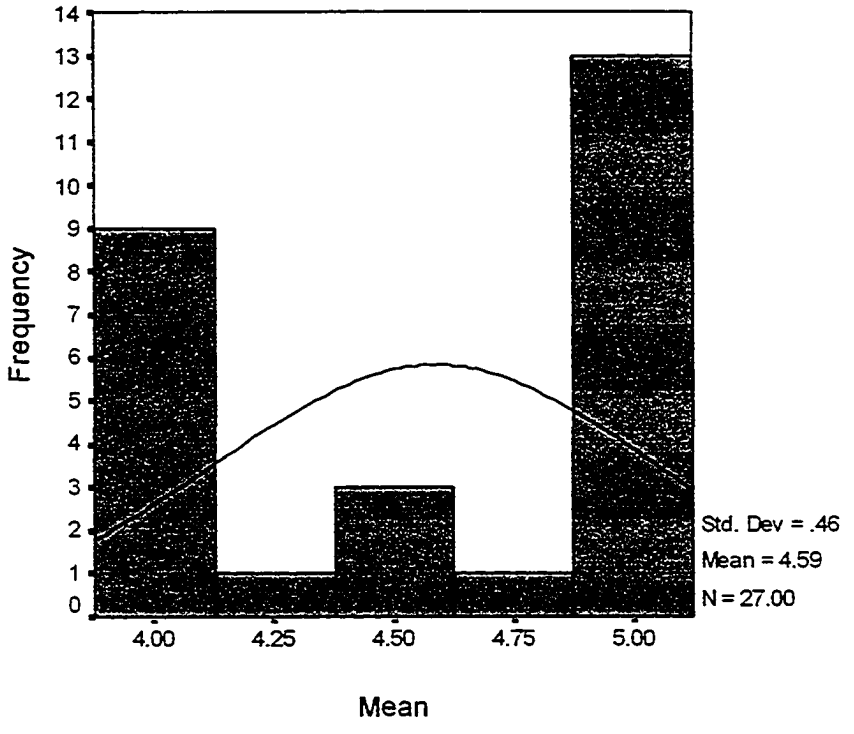

Figure 29. The distribution of the mean score for the instructional resources category, representing the respondents' level of agreement for this category. Scale: 1 = strongly disagree to 5 = strongly agree.

Faculty Instructional Responsibilities

Likert Scale Results.

The faculty instructional responsibilities category contained six survey statements (numbers 112 through 117) that represented criteria for the faculty instructional responsibilities category. Responses to these statements (see Table 28) by the 27 respondents ranged from 4.6 (near strongly agree) to 4.8 (near strongly agree) with an overall categorical mean score of 4.7 (near strongly agree).

The frequency statistics (see Appendix V and W) revealed that a majority of the respondents, 44.4% (n = 12), gave all the statements in faculty size, composition, and deployment category a score of 5.0, indicating that they strongly agreed with the statements; and that the remaining 55.6% (n = 15) of the respondents' ratings resulted in a mean score ranging from 4.0 to 4.4, indicating the respondents agreed with the statements. *Figure 30* illustrates the distribution of the respondents' agreement.

Table 28
Faculty Instructional Responsibilities: Likert Scale Results

Survey Statements	Mean	SD	Min.	Max.
112. The faculty should be responsible for effective creation and delivery of instruction.	4.8	.42	4.0	5.0
113. The faculty should be responsible for evaluation of instructional effectiveness and student achievement.	4.7	.48	4.0	5.0
114. The faculty should be responsible for continued improvement of instructional programs.	4.7	.45	4.0	5.0
115. The faculty should be responsible for innovation in instructional processes.	4.6	.64	3.0	5.0
116. The individual members of the faculty should be responsible for currency in their instructional field(s).	4.8	.40	4.0	5.0
117. The individual members of the faculty should be responsible for accessibility to students consistent with the program's expectations.	4.7	.55	3.0	5.0
Overall Mean	4.7	.36	4.0	5.0

Note: N = 27. Min. = Minimum. Max. = Maximum. Scale: 1 = Strongly Disagree to 5 = Strongly Agree.

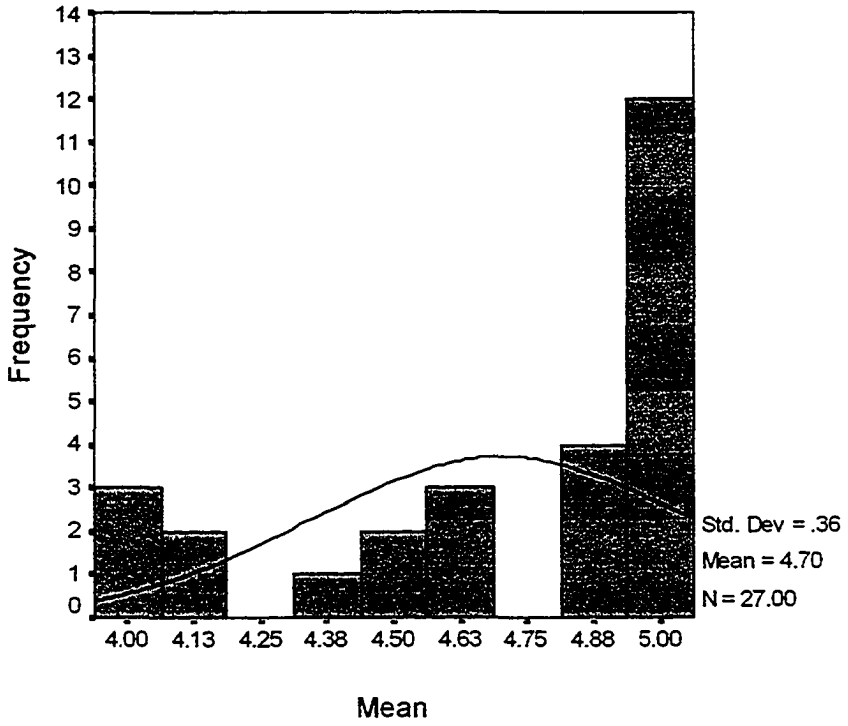

Figure 30. The distribution of the mean scores for the faculty instructional responsibilities category, representing the respondents' level of agreement for this category. Scale: 1 = strongly disagree to 5 = strongly agree.

Respondents' Suggested Criteria.

The participants were given an opportunity to suggest additional criteria for the faculty instructional responsibilities category. One individual exercised this option as outlined in Table 29. This statement has not been viewed or rated by the other participants. Therefore, it may not be considered an IST program standard based on this study; however, it may be used in future studies.

Table 29
Faculty Instructional Responsibilities: Suggested Criterion

Respondent Comment
• Oversight and assurance of faculty quality and engagement in the classroom is an important element of administrative accountability.

Note: This statement was entered by the respondent in the comment field for the faculty instructional responsibilities resources category. $N = 1$ and the statement received a rating of 5.0. This statement needs to be tested for relevancy and validity, and evaluated in future research studies.

Intellectual Contributions

The intellectual contributions category contained six survey statements (numbers 118 through 123) that represented criteria for the intellectual contributions category. Responses to these statements (see Table 30) by the 27 respondents ranged from 4.3 (near agree) to 4.8 (near strongly agree) with an overall categorical mean score of 4.6 (near strongly agree).

The frequency statistics (see Appendix V and W) revealed that a majority of the respondents, 48.1% (n = 13), gave all the statements in intellectual contributions category a score of 5.0, indicating that they strongly agreed with the statements; and that the remaining 51.9% (n = 14) of the respondents' ratings resulted in a mean score ranging from 4.0 to 4.8, indicating the respondents agreed with the statements. *Figure 31* illustrates the distribution of the respondents' agreement.

Table 30
Intellectual Contributions: Likert Scale Results

Survey Statements	Mean	SD	Min.	Max.
118. Faculty members should make intellectual contributions on a continuing basis appropriate to the program's mission.	4.7	.55	3.0	5.0
119. The outputs for intellectual contributions should be available for public scrutiny by academic peers or practitioners.	4.6	.51	4.0	5.0
120. Instructional contributions for instructional development should enhance the educational value of instructional efforts of the institution or discipline.	4.8	.64	3.0	5.0
121. Applied scholarship should pertain to the application, transfer, and interpretation of knowledge to improve IST practice and teaching.	4.3	.72	3.0	5.0
122. Intellectual contributions for instructional development should enhance the educational value of instructional efforts of the institution or discipline.	4.3	.73	3.0	5.0

Table 30 (continued)
Intellectual Contributions: Likert Scale Results

Survey Statements	Mean	SD	Min.	Max.
123. Basic scholarship should result in the creation of new knowledge relating to the program's mission.	4.3	.87	2.0	5.0
Overall Mean	4.6	.46	4.0	5.0

Note: N = 27. Min. = Minimum. Max. = Maximum. Scale: 1 = Strongly Disagree to 5 = Strongly Agree.

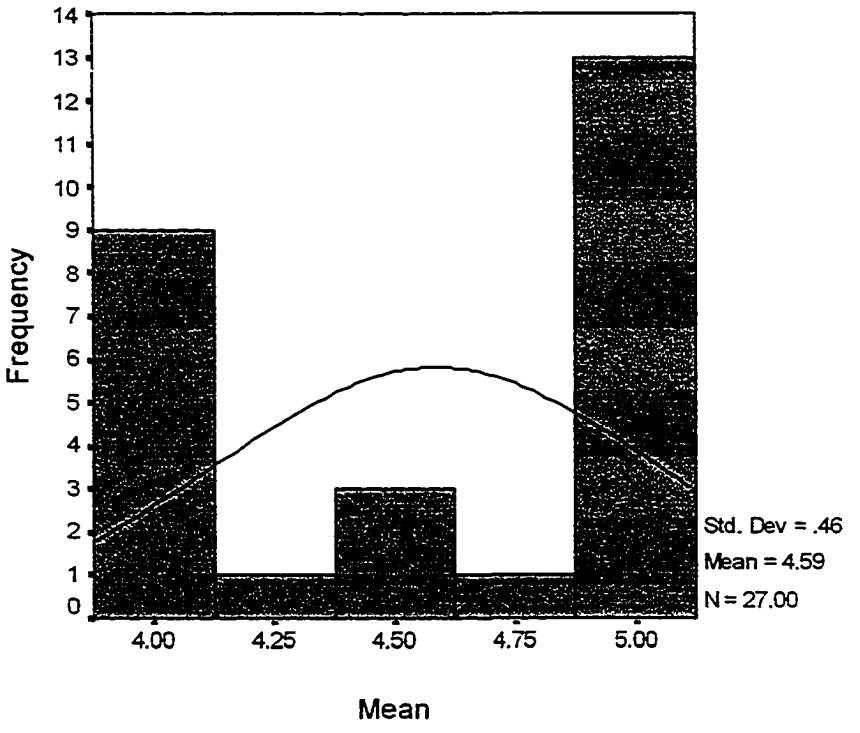

Figure 31. The distribution representing the respondents' level of agreement for the intellectual contributions category. Scale: 1 = strongly disagree to 5 = strongly agree.

Student Selection

Likert Scale Results.

The student selection category contained eight survey statements (numbers 124 through 131) that represented criteria for the student selection category. Responses to these statements (see Table 31) by the 27 respondents ranged from 4.2 (near agree) to 4.7 (near strongly agree) with an overall categorical mean score of 4.6 (near strongly agree).

The frequency statistics (see Appendix V and W) revealed that 25.9% (n = 7) of the respondents gave all the statements in the student selection category a score of 5.0, indicating that they strongly agreed with the statements and that the majority, 70.4% (n = 16), of the respondents' ratings resulted in a mean score ranging from 4.0 to 4.9, indicating the respondents agreed with the statements. One respondent's mean score for this category was 3.8. The categorical mean score of 4.6 indicates that the 3.8 score represents agreement. *Figure 32* illustrates the distribution of the respondents' agreement.

Table 31
Student Selection: Likert Scale Results

Survey Statements		Mean	SD	Min.	Max.
124.	There should be a systematic process for student selection consistent with the program's mission.	4.6	.49	4.0	5.0
125.	Practices for student requirement and selection should reflect efforts to achieve demographic diversity in student enrollment by recruiting students from multicultural, multiethnic, and multilingual backgrounds.	4.2	.91	2.0	5.0
126.	Adequate information concerning admission policies must be available to relevant interested constituencies.	4.6	.50	4.0	5.0
127.	Student retention policies should be consistent with an objective of producing high quality graduates.	4.5	.58	3.0	5.0
128.	The composition of the student body should foster a learning environment consistent with the school's mission and program goals and objectives.	4.6	.49	4.0	5.0

Table 31 (continued)
Student Selection: Likert Scale Results

Survey Statements		Mean	SD	Min.	Max.
129.	Standards for admission should be applied consistently.	4.7	.53	3.0	5.0
130.	The policies and procedures for waiving any admission standard or academic prerequisite should be stated clearly and applied consistently.	4.7	.47	4.0	5.0
131.	Students should receive systematic, multifaceted evaluation of their achievements.	4.5	.58	3.0	5.0
Overall Mean		4.6	.41	3.8	5.0

Note: N = 27. Min. = Minimum. Max. = Maximum. Scale: 1 = Strongly Disagree to 5 = Strongly Agree.

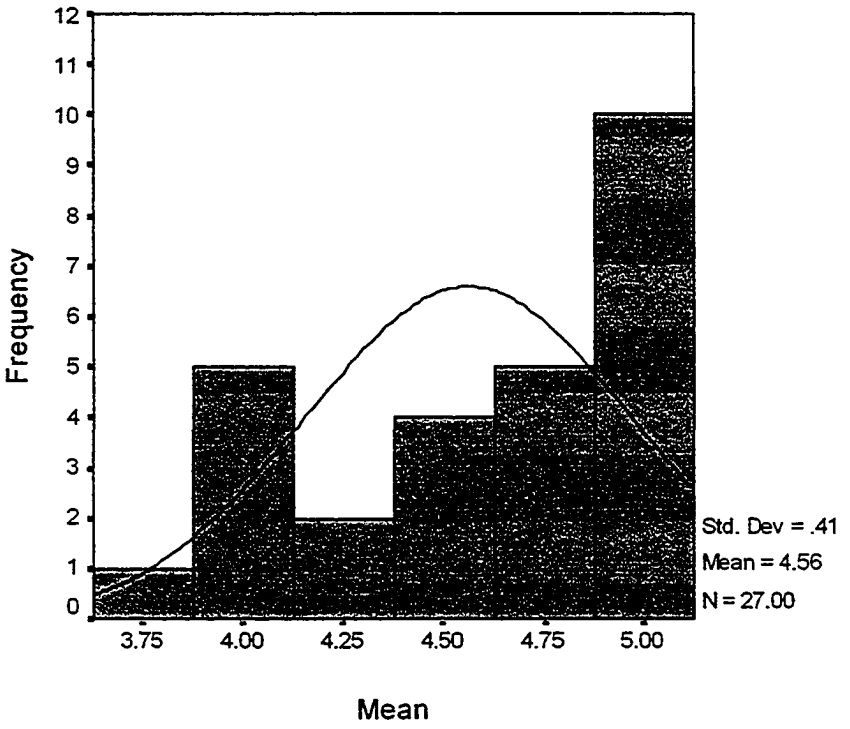

Figure 32. The distribution of the mean scores for the student selection category, representing the respondents' level of agreement for this category. Scale: 1 = strongly disagree to 5 = strongly agree.

Respondents' Suggested Criteria.

The participants were given an opportunity to suggest additional criteria for the student selection category. One individual exercised this option as outlined in Table 32. This statement has not been viewed or rated by the other participants. Therefore, it may not be considered an IST program standard based on this study; however, it may be used in future studies.

Table 32
Student Selection: Suggested Criterion

Respondent Comment
• Waiving admission standards or academic prerequisites should be granted infrequently.

Note: This statement was entered by the respondent in the comment field for the student selection category. $N = 1$ and the statement received a rating of 5.0. This statement needs to be tested for relevancy and validity, and evaluated in future research studies.

Student Support

The student support category contained seven survey statements (numbers 132 through 138) that represented criteria for the student support category. Responses to these statements (see Table 33) by the 27 respondents ranged from 4.6 (near strongly agree) to 4.8 (near strongly agree) with an overall categorical mean score of 4.7 (near strongly agree).

The frequency statistics (see Appendix V and W) revealed that a majority of the respondents, 51.9% (n = 14), gave all the statements in student support category a score of 5.0, indicating that they strongly agreed with the statements; and that the remaining 48.1% (n = 13) of the respondents' ratings resulted in a mean score ranging from 4.0 to 5.0, indicating the respondents' agreed with the statements. *Figure 33* illustrates the distribution of the respondents' agreement.

Table 33
Student Support: Likert Scale Results

Survey Statement		Mean	SD	Min.	Max.
132.	Courses must be offered with sufficient frequency for students to complete the program in a timely manner.	4.8	.42	4.0	5.0
133.	Courses must be structured to ensure effective interaction between faculty/teaching assistants and students in lower division courses and between faculty and students in upper division courses.	4.6	.49	4.0	5.0
134.	Each student must have adequate and reasonable access to the systems needed for each course.	4.7	.47	4.0	5.0
135.	Guidance on how to complete the program must be available to all students.	4.7	.48	4.0	5.0
136.	Students must have access to qualified advising when they need to make course decisions and career choices.	4.7	.47	4.0	5.0
137.	There must be established standards and procedures to ensure that graduates meet the requirements of the program.	4.7	.48	4.0	5.0

Table 33 (continued)
Student Support: Likert Scale Results

Survey Statement	Mean	SD	Min.	Max.
138. There should be a systematic plan and clear identification of the services available for career advisement and placement for students.	4.6	.57	3.0	5.0
Overall Mean	4.7	.40	4.0	5.0

Note: N = 27. Min. = Minimum. Max. = Maximum. Scale: 1 = Strongly Disagree to 5 = Strongly Agree.

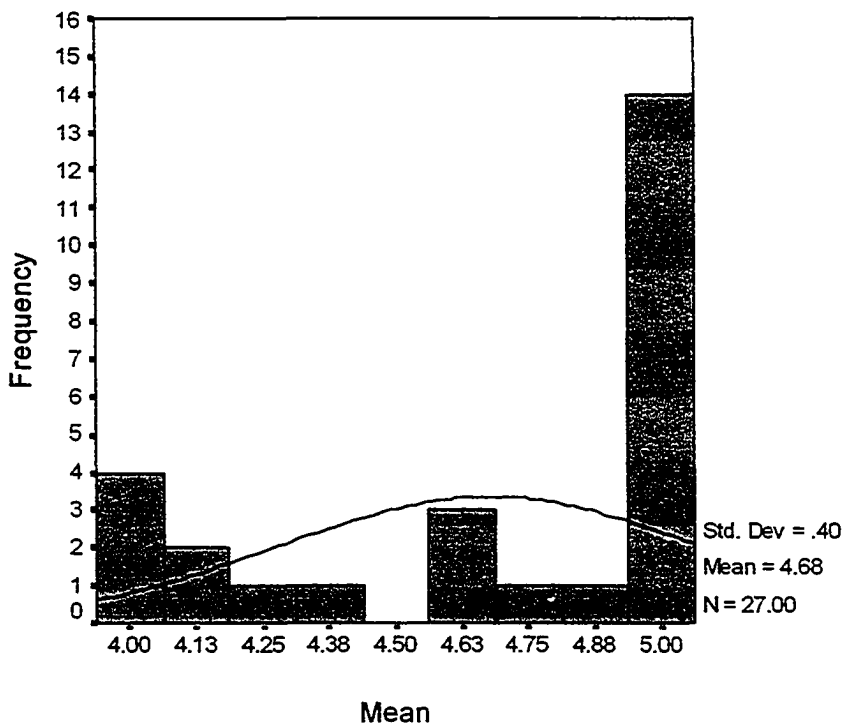

Figure 33. The distribution of the mean scores for the student support category, representing the respondents' level of agreement for this category. Scale: 1 = strongly disagree to 5 = strongly agree.

Comparative and Correlation Results

The study participants had varying backgrounds and academic affiliations. These characteristics may have impacted the results of this study. Therefore, the next step was to conduct a one-way ANOVA procedure to determine if the survey results varied by accrediting body, highest degree earned, academic discipline, title, and department.

Due to the large number of comparisons or family of *n* hypotheses conducted, a false discovery or an increase in type I error, otherwise known as the familywise error rate, may result. Therefore, the Bonferroni correction procedure was utilized to control for a potentially inflated alpha rate. Specifically, the familywise error rate was set at .05, which produced an individual needed level of significance of $p < .001$ (145 comparisons / .05).

A series of Spearman correlations were conducted to determine if a significant relationship existed. Again, given the large number of calculated correlations, the familywise error rate was set at $p < .05$. An examination of Appendix AC and AD revealed only one significant correlation, specifically a correlation coefficient of .476 ($p < .02$), between the respondent's highest degree and the number of semester hours of study in the major of IST (survey statement 95).

Results by Accrediting Body

A one-way ANOVA and Bonferroni procedure were conducted to determine if the survey results per category varied as a result of the respondent's affiliation to an accrediting body. The accrediting bodies consisted of ABET, ALA, ASIS&T, BAC, and

CSAB (see Table 2). The one-way ANOVA revealed no significant difference between (see Appendix X).

Results by Highest Degree Earned

Independent Samples Tests were conducted to determine if the survey results per category varied as a result of the respondent's highest degree earned. The highest degrees earned consist of doctorate and master (see Table 3). The Independent Samples Test (see Appendix Y) revealed no significant difference between the highest degrees earned for any of the categories. On the other hand, Spearman's rho correlation revealed a significant correlation coefficient of $r_s = .476$ ($p < .02$) between the respondent's highest degree and the number semester hours of study in the major of IST (survey statement 95). Due to the high number of correlations, the Bonferroni correction procedure changes the significance level to $p < .01$. At this level .476 is no longer significant.

Results by Academic Discipline

A one-way ANOVA (see Appendix Z) and Bonferroni procedure were conducted to determine if the survey results per category varied as a result of the respondent's affiliation to an accrediting body. The academic disciplines consisted of Business Management, Computer Science, Engineering, Library Science, Mathematics and Psychology (see Table 4). The one-way ANOVA revealed no significant difference between groups with the exception of statement 46, pertaining to the number of credit hours, per term, that should be the normal teaching load for faculty, ($F (5, 21) = 4.477$,

$p < .006$), under the faculty size, composition, and deployment category; and statement 95, pertaining to the number of semester hours of study in the major of IST that must be included in the curriculum, ($F(5, 21) = 3.721$, $p < .024$), under the curriculum content and evaluation category (see Appendix Z). The Bonferroni correction procedure suggests this significance may be due to chance.

Results by Title

A one-way ANOVA was conducted to determine if the survey results, per category, varied as a result of the respondent's title. The titles consist of coordinator, dean, dean/professor, director, librarian, manager, professor, professor/chair, professor/director, and vice president (see Table 5). The one-way ANOVA revealed no significant difference between the respondents' faculty rank or job title for any of the categories with (see Appendix AA).

Results by Department

A one-way ANOVA and Bonferroni correction procedure was conducted to determine if the survey results, per category, varied as a result of the respondent's department. The departments consisted of business, computer science, library science, information/information technology, and industry (see Table 6). The one-way ANOVA revealed no significant difference between the respondents' department for all of the categories with the exception of statement 55, pertaining to the percent of faculty that must constitute the total number of full-time equivalent, ($F(4, 22) = 3.017$, $p < .046$), of the faculty qualifications category (see Appendix AB). The Bonferroni procedure revealed that this significant difference may be due to chance.

CHAPTER V: DISCUSSION

Introduction

This chapter provides a discussion and summary of the study on standards for the information sciences and technology (IST) baccalaureate program. This chapter reviews the study, presents and discusses the results, summarizes the findings, reviews the implications, discusses the limitations, and recommends further research.

Review of Study

The purpose of this study was to identify national standards for the IST baccalaureate program. The advent and high utilization of e-commerce and other technologies used in the digital economy has significantly increased—at an expected rate of 110% of increase from 2000 to 2010 (United States Department of Labor Bureau of Statistics, 2002b)—the demand for technologically knowledgeable employees. Consequently, academic institutions have developed degree programs to educate these individuals. In fact, the number of IST programs has increased since the beginning of this study. There are now IST programs at Doane College in Nebraska (Doane College Department of Information Science and Technology), Drexel University in Pennsylvania (Drexel University, 2002), Kenya School of Professional Studies in Kenya (Kenya School of Professional Studies, 2001), Massey University in New Zealand (Massey University, 1999), Mercer University in Georgia (Mercer University, 2003), Nanjing University of Science & Technology in China (Nanjing University of Science and Technology), the Pennsylvania State University in Pennsylvania (PSU, 2002b), Radford

University in Virginia (University, 2002), Temple University (Temple University, 2001) and the University of Tokyo in Japan (University of Tokyo, 2001).

This study was conducted with the intent of providing the Society for Information Technology Education (SITE) (SITE, 2002) accreditation committee with preliminary standards from which to build accreditation guidelines. SITE appointed an accreditation committee in December 2002 to develop accreditation guidelines for maintaining, monitoring and evaluating academic standards in the information technology field.

This study surveyed 50 individuals affiliated with five IST-related accrediting bodies in the United States: BAC, CSAB, ASIS&T, ALA, and ABET. The survey response rate was 54% ($N = 27$). The survey was administered via an Internet-based form from August through December of 2002. The survey consisted of 15 standard categories which contained a total of 138 statements (see Appendix O); each statement represented a standard criterion. The criteria were gleaned from those accreditation guidelines for degree programs from which the IST program has evolved and tested for relevancy to the IST program. The 15 categories that emerged were: 1) mission statement, 2) program objectives, 3) program assessment, 4) faculty recruitment, selection, and orientation, 5) faculty development, promotion, retention, and renewal, 6) faculty size composition, and deployment, 7) faculty qualifications, 8) institutional support and financial resources, 9) curriculum content and evaluation, 10) curriculum planning and evaluation, 11) instructional resources, 12) faculty instructional responsibilities, 13) intellectual contributions, 14) student selection, and 15) student support. These categories and their corresponding criteria comprise the IST standards survey.

Respondents were asked to provide three types of responses: (a) rank each statement or criterion on a scale of 1 (strongly disagree) to 5 (strongly agree), (b) enter a variable in response to an open-ended statement, and (c) enter additional criteria in a comments box. Three of the 15 categories contained open-ended statements which constituted 9.4% (13) of the 138 survey statements. Each of the categories contained a comments section of which 53% (8) constituted suggested criteria.

Discussion of Results

The IST survey data were compiled and analyzed to identify the criteria the respondents agreed represented the IST program. Further analyses were conducted to determine if the respondent's background and experience influenced the results of the survey.

Demographics

The respondent demographics investigated in this study included questions pertaining to affiliation to accrediting body, academic discipline, faculty rank or job title, department, and highest degree earned. Members of the BAC board of directors showed the highest response rate, 22% ($n = 11$), while ALA had the lowest at 4% ($n = 2$) as illustrated in Table 2. The response rate was influenced by two major factors: (a) availability of contact information and (b) timing. The researcher had access to the contact information for ASIS&T, BAC and CSAB, two of which had the highest response rates. Access to contact information enabled the researcher to employ follow-up techniques (e.g., reminder e-mails, and phone calls) to improve the response rate. Such techniques could not be used for the other organizations (i.e., ABET and ALA), as the

contact information was not public knowledge. Even though ABET and ALA representatives agreed to send reminders to their committee members, the response rate from these organizations was very low due to accreditation activities. As it happened, according to the representatives who sent the surveys and reminders, both ABET and ALA members were in the process of completing accreditation reviews, which may have influenced the response rate.

Deans (40.7%) and professors (33.3%) made up a majority of the respondents (see Table 5). This made sense because all members of BAC, the organization with the highest response rate, were deans and because university professors are generally selected to participate in accreditation activities. In addition, the faculty rank percentage corresponded with the highest degree earned percentages. In other words, the percentage of deans and professors (74.0%) equaled the percentage of respondents who possessed doctoral degrees (74.1%). Again, this stands to reason as both deans and professors tend to be doctors of their field of study.

The response to the department question had unique results. A majority of the responses came from business (33.3%, $n = 9$), computer science (22.2%, $n = 6$), and information/information technology (22.2%, $n = 6$) departments. What is unique about this is the fact that 11 respondents were affiliated with the business administration accrediting body (BAC), while 7 were affiliated with the computer science accrediting body (CSAB), and 4 were affiliated with the technology accrediting body. The results suggest that a respondent's department may not correspond with his or her respective accrediting body. Furthermore, as indicated by Appendix B and C, business departments may offer information technology related degrees (i.e., management of information

technology) just as information technology departments may offer business related options for their students.

Overall results

The mean score for all 125 Likert scale statements was calculated to determine each respondent's level of agreement with the IST program's overall standards criteria. The results revealed that 96.3% (n = 26) of the respondents agreed or strongly agreed with the IST program standards (see *Figure 5*). The remaining individual's mean score was 3.9 (near agree), which suggests agreement with the survey statements.

This high level of agreement may have been influenced by the source of the program criteria. The categories and statements included in the survey were gleaned from existing accreditation guidelines for those degree programs from which the IST program has evolved. Most of the categories would be required by most degree programs. As indicated by one of the respondent's comments, the "program must not spend a lot of time stating the obvious as above" (see Table 13). The individual was referring to the program assessment statements. But many of the categories do apply to other degree programs; however, there are differences in criteria between programs. These differences appeared in the following categories: program objectives; faculty size, composition, and deployment; faculty qualifications; institutional support and financial resources; curriculum content and evaluation; instructional resources; and intellectual contributions.

Categorical Results

The mean scores for the Likert statements per category were calculated to determine the level of agreement per category. The mean score for the IST standards categories ranged from 4.7 to 3.7 (see Table 7). These ratings indicated that the respondents agreed with all but one category—faculty qualifications—which received a score of 3.7 (near agree).

The IST standards categories of are similar to those used for developing organizational strategic and continuous improvement plans used by businesses (Dolence & Norris, 1995; Morrison & Norris, 1997; Norris, 2000). Successful organizations use similar structures and methods of operation; however, each may vary in the product and/or service provided. Thus, the business resources (i.e., facilities, employees, etc.) tend to vary across organizations. In Norris and Morrison's text, *Mobilizing for Transformation: How campuses Are Preparing for the Knowledge Age*, they refer to such practices as "leveraging the forces for transformation on campus" (Morrison & Norris, 1997, p. 1). The same holds true with the IST academic program.

Mission Statement

Similar to the mission statement of a business, a mission statement of an academic program is extremely important for maintaining focus, setting objectives, and evaluating progress. The participants of this study strongly agree as they rated this category a mean score of 4.7 (see Table 8). Therefore, the IST program standards should include all items listed in this category. The participants also recommended that four additional criteria be added to the mission statement category:

- "It must be consistent with the mission of the institution and available or obtainable resources."
- "The mission must be assessed as to attainment."
- "The setting and viewing of mission statement should include participation by stakeholders, including business interests who are likely to employ students."
- There must be a clear process for changing the mission statement.

These criteria have not been viewed or rated by any of the other respondents. As a result, they may not be considered IST program standard criteria; however, they could be used in future studies.

Program Objectives

Clear and specific program objectives are a necessity to achieve the program's mission. Again, the participants agreed as they assigned this category a mean score of 4.5 (see Table 10). Therefore, the IST program standards should include this category and its criteria. They also recommended two additional criteria (see Table 11):

- "Experimental learning, coupled with high quality teaching should be an important component of an IST program."
- "There should be an assessment process to measure the achievement of the objectives."

These criteria have not been viewed or rated by any of the other respondents. As a result, they may not be considered IST program standard criteria; however, they could be used in future studies however.

Program Assessment

Assessment is the means by which an organization may determine if their objectives are being met. This supports the respondents' high level of agreement for the program assessment category (M = 4.6) (see Table 12). Therefore, the IST program standards should include this category and its criteria. One respondent felt that some of these criteria were obvious (see Table 13). This may be true, but sometimes the obvious are the first to be overlooked or taken for granted, which may be why most of the accrediting bodies included them in their accreditation guidelines. Therefore, this category and its criteria should be included in the IST standards.

Faculty Recruitment, Selection and Orientation

In order to have a successful program, there must be a process through which to obtain the necessary human resources. The participants of this study agreed that recruiting and selecting faculty were important, but did feel as strong about the orientation process. The accreditation organizations understand the need to acclimate individuals to the organization, which is why this criterion is included in their guidelines and why they should be included in the IST standards.

Faculty Development, Promotion, Retention, and Renewal

It is very important to develop, promote, retain and renew faculty. It is costly, both financially and intellectually, to continually replace employees. Therefore, the institution of practices to develop, promote and retain faculty is a must in the IST program. Furthermore, it is just as important to have a process by which to fill positions

that become available through normal attrition activities. The respondents seem to agree, as they assigned this category a mean score of 4.4

Faculty Size, Composition, and Deployment

Like any business plan, it is important to have an academic plan that outlines how many employees are needed, what their roles and responsibilities should be, and where they will be most effective in order to achieve the organizational objectives. This is evident in the respondents' level of agreement ($M = 4.7$) with this category.

Depending on the focus and objectives of the academic program, each organization will have criteria specific to its mission. This holds true for faculty size, composition and deployment. The respondents suggested the following faculty composition for the IST program:

- A majority of the respondents agreed that the minimum percent of the student credit hours that should be taught by full-time faculty ought to be 75% to 85% (see *Figure 12*).
- A majority of the respondents agreed that the minimum percent of the credit hours that should be taught by full-time faculty in the day program ought to be 75% to 85% (see *Figure 13*).
- A majority of the respondents agreed that the minimum percent of the student credit hours that should be taught by full-time faculty in the evening program ought to be 50% to 70% (see *Figure 14*).

- A majority of the respondents agreed that the number of credit hours, per term, that should be the normal teaching load for faculty ought to be 9 to 12 credits (see *Figure 15*).
- A majority of the respondents agreed that the number of credit hour reduction for faculty who were working on intellectual contributions in the form of a public manuscript ought to be 3 credits (see *Figure 16*)

Two additional criteria have been suggested by respondents (see Table 18):

- In the above, the teaching load should be 9 hours if teaching a graduate course and/or publishing.
- Reduced loads are generally required.

These items explain the difference in range of 9 to 12 credit teaching load and could be used in future studies.

Faculty Qualifications

Like the qualification for any business or organization, the employee qualifications for academic programs may vary. In this case the participants agreed, but not as strongly as in the other categories. The mean score of 3.7 (near agree) for the faculty qualifications category is not enough to indicate that the respondents agreed with the criteria (see Table 19). Each of the seven statements in this category received different levels of agreement. The respondents did not agree that: (a) faculty should hold a masters degree, have industry experience, and be enrolled in a doctoral program in the area in which the individual teaches, (b) faculty can have specialized course work in the

field of primary teaching responsibilities but no doctoral degree, or (c) faculty can have specialized industry experience in the field of primary teaching but no doctoral degree.

The respondents clearly agreed that faculty should have sufficient academic and professional qualifications to accomplish the program's objectives, and that faculty should hold a doctoral degree in the area in which the individual teaches or may hold a doctoral degree outside the area as long has they have industry experience or receive supplemental preparation. In response to the open-ended statements in the faculty qualifications category, the respondents indicated that: (a) 75% to 90% of the faculty must constitute the total number of full-time equivalent (see *Figure 18*), and (b) 20% to 25% should be the maximum total of full-time faculty equivalent who are academically qualified but do not possess a doctoral degree (see *Figure 19*).

The response to the open-ended questions suggest that, even though the respondents could not agree on the qualifications of faculty who did not possess a doctoral degree, faculty with such qualifications may make up approximately one forth (23.6) of the faculty full-time equivalent (see *Figure 19*).

Institutional Support and Financial Resources

Budget and academic resources are key to any organization as is evident by the respondents' strong agreement ($M = 4.6$) for the institutional support and financial resources category. It was not clear, however, whether the funds should be provided by the institution or the school or college of IST.

Curriculum Content and Evaluation

Curriculum is the major defining factor for the IST program. The respondents defined the curriculum as follows: (a) 120 credit hours should be the minimum number of total semester hour credits for the IST degree; (b) the minimum number of total semester hours of study in the major of information sciences and technology should be 25 to 45 credit hours (see *Figure 24*); (c) the minimum number of total semester hours of study in the humanities, social sciences, arts and other disciplines that serve to broaden the background of the student should be 30 to 70 credit hours (see *Figure 23*); (d) the minimum number of total semester hours of quantitative study should be approximate 10 credit hours (see *Figure 25*); (e) the minimum number of total semester hours of science should be 3 to 16 credit hours (see *Figure 26*); and (f) the minimum number of total credit hours that should be earned as the degree-awarding institution should be 50 credit hours (see *Figure 27*).

The level of agreement indicates that these criteria should be included in the IST program standard. Further research may be necessary to reduce the credit-hour ranges. On the other hand, institutions may be more comfortable with less specificity and more freedom to work within these ranges.

Other requirements may be added as emerging information technologies are developed and need incorporated into the IST program. Furthermore, this study may not include all curriculum requirements. The program is very new and still evolving. The Pennsylvania State University, for example, has redesigned their curriculum and will implement it in the spring of 2003.

Curriculum Planning and Evaluation

It is difficult know where the program is going without a curriculum plan, and even more difficult to know if the curriculum is effective without an evaluation process. Following the evaluation criteria will be necessary for continuous improvement of the IST curriculum. The respondents seemed to strongly agree by assigning a mean score of 4.7 to this category. One individual emphasized the need for "on-going and continuous element of the curriculum planning process should be stressed" (see Table 26).

Instructional Resources

Again, while this category may seem obvious, it needs to be stated. Faculty cannot be effective without the necessary instructional resources. The respondents agreed ($M = 4.6$). This is extremely important for the IST program for access to appropriate technology and related resources are imperative to success.

Faculty Instructional Responsibilities

One of the respondents eloquently stated the need for faculty instructional responsibilities in the IST programs by stating that "oversight and assurance of faculty and engagement in the classroom is an important element of administrative accountability" (see Table 29). The respondents strongly agreed ($M = 4.7$) that faculty need to be effective, available, and innovative, and that they should maintain currency in their instructional field.

Intellectual Contributions

To remain competitive in this fast-growing field, faculty will need to contribute to the IST program through instructional developments and applied scholarship. Intellectual contributions may vary, but all respondents agreed it is necessary ($M = 4.6$).

Student Selection

Again, like any business, clients or consumers are important to the IST program. There needs to be a systematic process for student selection and retention. The respondents agreed ($M = 4.6$). However, one participant strongly cautioned against exceptions by stating that "waiving admission standards or academic prerequisites should be granted infrequently," (see Table 32). In doing so, the institution may reduce the quality of the program and affect the student's ability to succeed.

Student Support

Students are an integral part of the IST program and critical to its success, which is why student support is so important. The participants agree with a mean score of 4.7. Without the students, the IST program would not be necessary.

Objectives of Study

The six objectives guiding this study on the development of standards for the IST baccalaureate program were to provide:

1. A clear definition of information sciences and technology (IST) program.
2. Qualitative and quantitative data for future planning and development of IST education programs in the United States.

3. Information for educators, regulatory organizations, and other decision makers to improve existing IST programs in the United States.
4. Standards by which to expand and intensify the curriculum of the IST program to reflect ever-changing technological advances.
5. Assistance with establishing accreditation guidelines for IST undergraduate programs.
6. A baseline for comparative and evaluative studies about IST undergraduate programs nationwide.

Objective 1

The first objective of this study was to define the IST Degree Program. The definition has been based on categories containing criteria gleaned from IST-related program accreditation criteria. The categories that emerged during validity and reliability testing were: mission statement; program objectives; program assessment; faculty recruitment, selection, and orientation; faculty development, promotion, retention, and renewal; faculty size, composition, and deployment; faculty qualifications; institutional support and financial resources; curriculum content and evaluation; curriculum planning and evaluation; instructional resources; faculty instructional responsibilities; intellectual contributions; student selection; and student support.

As indicated in Table 7, the mean scores for each category ranged from 3.7 (near agree) to 4.7 (near strongly agree), indicating that all respondents agree the IST program should contain all of the criteria listed in the categories.

There are no lines of demarcation, in terms of categories that delineate the IST program from any other; however, the criteria or statements within the categories are what differentiate the program.

Several categories were considered generic and would apply to any degree program, whereas others contained more defining factors specific to the IST program. These categories are as follows: program objectives; faculty size, composition, and deployment; faculty qualifications; institutional support and financial resources; curriculum content and evaluation; instructional resources; and intellectual contributions.

Objective 2

The second objective was to provide qualitative and quantitative data for future planning and development of IST education programs in the United States. The outcomes of this study are a list of 138 specific criteria that may be used as a checklist for implementing IST baccalaureate programs within the United States. Furthermore, these criteria may be serve as a foundation to the development of standards for IST distance education, IST adult education and international IST programs.

Objective 3

The third objective of this study was to provide factual information for educators, regulatory organizations, and other decision makers to improve existing IST programs in the United States. The data provided in this study may be used to evaluate existing and future IST baccalaureate programs within the United States. The results of this study will be submitted to the SITE accreditation committee for consideration as potential accreditation guidelines. Furthermore, these standards may be used to evaluate existing

program. If these programs lack any of the criteria listed, the addition of such requirements may improve or enhance these program.

Objective 4

The fourth objective of this study was to provide standards by which to expand and intensify the curriculum of the IST program in order to reflect ever-changing technology advances. Several of the categories contain criteria that require review and evaluation of the program, the curriculum, the faculty, and the resources. Furthermore, the program is to be revised, faculty to be trained, resources obtained, and curriculum updated or revised based on such review and evaluation processes. As the review and revision process occurs, the IST program standards should also be reviewed and updated to reflect technological changes and industry needs. In other words, these standards act as a guide to continuous improvement.

Objective 5

The fifth objective of this study was to provide assistance with establishing accreditation guidelines for IST undergraduate programs. The results of this study will be presented to the accreditation committee of the Society of Information Technology Education (SITE), which has been commissioned to develop information technology accreditation guidelines.

Objective 6

The sixth objective of this study was to provide a baseline for comparative and evaluative studies about IST undergraduate programs nationwide. Researchers, academic

institutions, and accrediting bodies may find the IST standards developed in this study useful as a starting point for assessing existing and future IST baccalaureate programs. In fact, the next item on the researcher's research agenda is to compare this study's results with data collected from faculty members of The Pennsylvania State University that offers the IST program defined in this study.

Study Limitations

The results of this study may apply to academic institutions in the United States that offer IST or IST-related degrees. This study did not include criteria for continuing education programs or distance education programs. Being a very new field, all possible categories and criteria may not have been identified and included in this study. The lack of IST-specific professors, deans, and directors in accreditation programs may have influenced the results. This will not be known until four to six years from now, when current IST doctoral candidates complete their degrees and begin to participate in the re-evaluation and revision processes.

Implications of the Study

The results of this study provide a set of criteria by which to plan, develop, implement, evaluate, and improve IST programs in the United States. In essence, this study provided an outline for strategically planning and continuously improving the IST degree programs in the United States. Furthermore, this study may serve as a foundation for the development of international or global standards for IST degree programs.

Future Research

There are several areas in which future research may be conducted. First, during the review, evaluation and revision process, additional criteria may be identified. These criteria, along with those offered during this study, will need to be tested and evaluated. Second, standards criteria will need to be developed for IST continuing education and distance learning programs. Third, current IST programs may be evaluated based on these criteria. Fourth, the result of this study may be compared to the data collected from a university that offers the IST program. Finally, similar standards will need to be developed for IST master and doctoral programs and even international programs.

Summary

The unprecedented growth, development and implementation of information technology driven by e-commerce have resulted in an increased demand for technologically skilled knowledge works. In response to degree-dependent employment requirements, academic intuitions have fallen prey of the laws of supply and demand. The increased interest in obtaining technology-related positions has prompted students to enroll in information technology degree programs. The government has supported universities interested in developing such programs by providing grants to build schools and colleges of IST.

As IST programs grow by leaps and bounds, universities and accreditation organizations have been scrambling to develop accreditation guidelines by which to monitor and maintain academic standards. This study identified 138 criteria that may be used as a checklist for planning, developing, implementing, evaluating and improving

IST programs. Furthermore, these criteria will be submitted to the SITE, the organization commissioned to develop accreditation standards for undergraduate information technology programs, and submitted for presentation at the Conference on Information Technology Education to be hosted by Purdue University in the fall of 2003.

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APPENDIX A

IST Occupation Descriptions

IST Occupation Descriptions

The following descriptions have been extracted from the United States Department of Labor Career Guide to Industries (United States Department of Labor Bureau of Statistics, 2002b).

Programmers write, test, and maintain the detailed instructions, called programs or software that computers must follow to perform their functions. These programs tell the computer what to do, such as which information to identify and access, how to process it, and what equipment to use. Programmers write these commands by breaking down each step into a logical series, converting specifications into a language the computer understands. While some still work with traditional programming languages like COBOL, object-oriented programming languages, such as C++ and Java, computer-aided software engineering (CASE) tools, and artificial intelligence shells, now are being used to create and maintain programs. These languages and tools allow portions of code to be reused in programs that require similar routines. Many programmers also customize a package to clients' specific needs or create better packages.

Computer engineers design, develop, test, and evaluate computer hardware and related equipment, software programs, and systems. Although programmers write and support programs in new languages, much of the design and development now is the responsibility of software engineers or software developers. Software engineers must possess strong programming skills, but are more concerned with developing algorithms and analyzing and solving programming problems than with actually writing code. These professionals develop many types of software, including operating systems software, network distribution software, and a variety of applications software. Computer systems software engineers coordinate the construction and maintenance of a company's computer systems, and plan their future growth. They develop software systems for control and automation in manufacturing, business, and other areas. They research, design, and test operating system software, compilers—software that converts programs for faster processing—and network distribution software. Computer applications software engineers analyze users' needs and design, create, and modify general computer applications software or specialized utility programs. They analyze user needs and develop software solutions. Computer hardware engineers, on the other hand, usually design, develop, and test computer hardware, such as computer chips, and supervise its manufacture and installation. One of the goals of computer hardware engineering is to design and produce computing devices that function efficiently and economically.

Systems analysts study business, scientific or engineering data processing problems and design new flows of information. Computers need to be connected to each other and to a control server to allow communication among users, thus enhancing use of their computing power. Systems analysts tie together hardware and software to give an organization the maximum benefit from its investment in machines, personnel, and

business processes. To do this, they may design entirely new systems or add a single new software application to harness more of the computer's power. They use data modeling, structured analysis, information engineering, and other methods. Systems analysts prepare charts for programmers to follow for proper coding and also perform cost-benefit analyses to help management evaluate the system. They ensure that the system performs to its specifications and test it thoroughly.

Database administrators determine ways to organize and store data and work with database management systems software. They set up computer databases and test and coordinate changes to them. Because they also may be responsible for design implementation and system security, database administrators often plan and coordinate security measures.

Computer and information scientists work as theorists, researchers, or inventors. They apply a higher level of theoretical expertise and innovation and develop solutions to complex problems relating to computer hardware and software.

Computer and information systems managers direct the work of systems analysts, computer programmers, and other computer-related workers. They analyze the computer and information needs of their organization and determine personnel and equipment requirements. These managers plan and coordinate activities such as the installation and upgrading of hardware and software; programming and systems design; the development of computer networks; and the implementation of Internet and Intranet sites. As electronic commerce becomes more common, how and when companies use technology are critical issues. Computer and information systems managers play a vital role in the technological direction of their organizations. They do everything from constructing the business plan to overseeing network and Internet operations.

Computer support specialists provide technical assistance, support, and advice to customers and users. This group of occupations includes workers with a variety of titles, such as technical support specialists and help-desk technicians. These troubleshooters interpret problems, and provide technical support for hardware, software, and systems. Support specialists may work either within a company or other organization or directly for a computer hardware and software vendor. They answer phone calls, analyze problems using automated diagnostic programs, and resolve recurrent difficulties encountered by users.

Network systems and data communications analysts, for example, design, and evaluate network systems, such as local area networks, wide area networks, and the Internet. They perform network modeling, analysis, and planning and may deal with the interfacing of computer and communications equipment. With the explosive growth of the Internet, this group includes a variety of occupations relating to design, development, and maintenance of websites and their servers. Web developers are responsible for day-to-day site design and creation while webmasters are responsible for the technical aspects

of the website, including performance issues such as speed of access, and for approving site content.

Network or computer systems administrators install, configure, and support an organization's LAN, WAN, network segment, or Internet system. They maintain network hardware and software, analyze problems, and monitor the network to ensure availability to system users. Administrators also may plan, coordinate, and implement network security measures. In some organizations, **computer security specialists** are responsible for the organization's information security.

Other computer specialists include a wide range of related professionals who specialize in operation, analysis, education, application, or design for a particular piece of the system. Many are involved in the design, testing, and evaluation of network systems such as local area networks (LAN), wide area networks (WAN), Internet, and other data communications systems. Specialty occupations reflect an emphasis on client-server applications and end-user support; however, occupational titles shift rapidly to reflect new developments in technology.

APPENDIX B

Departments Containing Majors or Degree Programs

Relating to Information Science and Technology

Departments Containing Majors or Degree Programs
Relating to Information Science and Technology

Business (6)
Business Administration (6)
Business Administration and Economics (1)
Business and Computer Technology (1)
Business and Economics (1)
Business and Technology (1)
Business Computer Information Systems (3)
Business- Department of Information Systems (1)
Community and Technical College- Technology Department (1)
Computer and Information Science (7)
Computer Information Science (1)
Computer Information Systems (4)
Computer Science (4)
Computer Science, Mathematics and Physics (1)
Computing and Information Sciences (2)
Computing and System Sciences (1)
Decision and Information Technologies (1)
Decision Sciences (1)
Economics and Decision Science (1)
Electrical and Computer Engineering (1)
Electrical Engineering Technology (1)
Engineering, Electronics, and Telecommunicaions (1)
Information and Decision Technology Management and Accounting (1)
Information and Decision Systems (1)
Information Science and Technology (2)
Information Studies (1)
Information Systems (1)
Information Systems / Business Education (1)
Information Systems and Operations Management (1)
Information Systems and Technology (1)
Information Systems Technologies (1)
Information Technology (4)

Note: The number in the parenthesis indicates the number of departments.

APPENDIX C

Degree Programs Relating To

Information Sciences & Technology

Degree Programs Relating To Information Sciences & Technology

Applied Technology (1)
Business Administration with Information Systems emphasis (1)
Business Computer Information Systems (3)
Computer and Information Sciences (2)
Computer Applications and Information Systems (1)
Computer Information Science (1)
Computer Information Systems (10)
Computer Information Systems Technology (1)
Computer Information Technology (1)
Computer Information Systems/ Information Science (1)
Computer Science with Information Systems (1)
Computer Science with Information Technology (1)
Computer Technology (1)
Education Information Management and Analysis
Information and Decision Technology Management (1)
Information Management and Technology (1)
Information Sciences and Technology (1)
Information Systems (10)
Information Systems Analysis (1)
Information Systems and Technology (2)
Information Systems or Technology Information Systems (1)
Information Systems Research (1)
Information Systems Technology (1)
Information Technology (9)
Information Technology Management (1)
Information Technology specialty (1)
Management Information Systems (10)
Management of Information Technology (1)
Management of Technology (2)
Technology (3)
Technology Management (3)

Note: The number in the parenthesis indicates the number of degree programs.

APPENDIX D

List of IST-Related Accredited Programs and Their Accrediting Bodies

List of IST-Related Accredited Programs and Their Accrediting Bodies

Accreditation Organizations	Accredited Programs
The Association to Advance Collegiate Schools of Business (AACSB) International's Business Accreditation Committee (BAC)	Business Administration Accounting
ABET (ABET, 2002a)	Consists of Four Accreditation Commissions are responsible for the following programs:
Applied Science Commission of ABET (ASAC/ABET)	Applied Sciences Programs Environmental and Occupational Health Science Industrial Management Occupational Safety and Health Functional Major Safety Sciences
Computing Accreditation Commission (CAC/ABET) CAC, formally known as the Computer Science Accreditation Commission (CSAC), is responsible for the accreditation of programs in computer science and information systems.	Computer Sciences Programs Applied Computer Science, Computer Science Sequence Computer and Information Sciences Computer and Information Sciences, Computer Science Specialization Computer Science and Engineering Computer Science General, Mathematics/Science and Systems Options Electrical Engineering and Computer Science
Engineering Accreditation Commission of ABET (EAC/ABET)	Engineering Programs Computer Engineering Computer Science and Engineering Computer Systems Engineering Electrical and Computer Engineering Industrial and Systems Engineering Systems and Control Engineering Systems Engineering Systems Science Engineering
Technology Accreditation Commission of ABET (TAC/ABET)	Engineering Technology Computer Engineering Technology Computer Engineering Technology Concentration in Engineering Technology Computer Systems Option in Electrical/Electronic(s) Engineering Technology Computer Technology Electronics and Computer Engineering Technology Facilities Engineering Technology Interdisciplinary Engineering Technology Telecommunications Engineering Technology
American Library Association Advised by American Society for Information Science and Technology (ASIS&T)	Library and Information Sciences

APPENDIX E

ALA Accreditation Standards

ALA Accreditation Standards

ALA accreditation categories: mission, goals, objectives, curriculum, students, administration, financial support, physical resources and facilities (ALA, 1992).

	Mission
1.	The program must have a clear mission
2.	The program mission statement must be consistent with the mission of the parent institution
3.	The program mission statement must be consistent the culture and values of the school
4.	The program mission statement must be appropriate to higher education
	Program objectives:
5.	The program objectives should reflect the philosophy, principles, and ethics of the field
6.	The program objectives should reflect the principles of specialization identified in applicable policy statements and documentation of relevant professional organizations
7.	The program objectives should reflect and result in the value of teaching and service to the advancement of the field
8.	The program objectives should reflect and result in research to advance the field's knowledge base
9.	The program objectives should reflect the importance of contributions of other fields of knowledge to library and information studies
10.	The program objectives should reflect the role of library and information services in a rapidly changing multicultural, multiethnic, multilingual society, including the role of serving the needs of underserved groups
11.	The program objectives should reflect the role of library and information services in a rapidly changing technological and global society
12.	The program objectives should reflect the needs of the constituencies that a program seeks to serve
13.	The program objectives should be clearly defined
14.	The program objectives should be publicly stated
15.	The program objectives should reflect regularly reviewed
16.	The evaluation of the program objectives should involve the students, faculty, employers, alumni, and other constituents.
	Curriculum
17.	The curriculum of library and information studies encompasses information and knowledge creation, communication, identification, selection, acquisition, organization and description, storage and retrieval, preservation, analysis, interpretation, evaluation, synthesis, dissemination, and management.
18.	fosters development of library and information professionals who will assume an assertive role in providing services
19.	emphasizes an evolving body of knowledge that reflects the findings of basic and applied research from relevant fields
20.	integrates the theory, application, and use of technology
21.	responds to the needs of a rapidly changing multicultural, multiethnic, multilingual society including the needs of underserved groups
22.	responds to the needs of a rapidly changing technological and global society
23.	provides direction for future development of the field

24.	promotes commitment to continuous professional growth
25.	The curriculum provides the opportunity for students to construct coherent programs of study that allow individual needs, goals, and aspirations to be met within the context of program requirements established by the school and that will foster development of the competencies necessary for productive careers
26.	The curriculum includes as appropriate cooperative degree programs, interdisciplinary coursework and research, experiential opportunities, and other similar activities
27.	Course content and sequence relationships within the curriculum are evident
28.	When a program includes study of services and activities in specialized fields, these specialized learning experiences are built upon a general foundation of library and information studies
29.	The design of specialized learning experiences takes into account the statements of knowledge and competencies developed by relevant professional organizations.
30.	The curriculum is continually reviewed and receptive to innovation; its evaluation is used for ongoing appraisal, to make improvements, and to plan for the future.
31.	Evaluation of the curriculum includes assessment of students' achievements and their subsequent accomplishments.
32.	Evaluation involves those served by the program: students, faculty, employers, alumni, and other constituents.
	Faculty
33.	The school has a faculty capable of accomplishing program objectives.
34.	Full-time faculty members are qualified for appointment to the graduate faculty within the parent institution and are sufficient in number and in diversity of specialties to carry out the major share of the teaching, research, and service activities required for a program, wherever and however delivered.
35.	Part-time faculty, when appointed, balance and complement the teaching competencies of the full-time faculty.
36.	Particularly in the teaching of specialties that are not represented in the expertise of the full-time faculty, part-time faculty enrich the quality and diversity of a program.
37.	The school demonstrates the high priority it attaches to teaching, research, and service by its appointments and promotions; by encouragement of innovation in teaching, research, and service; and through provision of a stimulating learning and research environment
38.	The school has policies to recruit and retain faculty from multicultural, multiethnic, and multilingual backgrounds.
39.	Explicit and equitable faculty personnel policies and procedures are published, accessible, and implemented
40.	The qualifications of each faculty member include competence in designated teaching areas, technological awareness, effectiveness in teaching, and active participation in appropriate organizations
41.	For each full-time faculty member the qualifications include a sustained record of accomplishment in research or other appropriate scholarship
42.	The faculty holds advanced degrees from a variety of academic institutions.
43.	The faculty evidence diversity of backgrounds, ability to conduct research in the field, and specialized knowledge covering program content.
44.	Faculty demonstrate skill in academic planning and evaluation, have a substantial and pertinent body of relevant experience, interact with faculty of other disciplines, and maintain close and continuing liaison with the field.
45.	The faculty nurture an intellectual environment that enhances the accomplishment of program objectives
46.	These characteristics apply to faculty regardless of forms or locations of delivery of programs.
47.	Faculty assignments relate to the needs of a program and to the competencies and interests of individual faculty members.
48.	These assignments assure that the quality of instruction is maintained throughout the year and

	take into account the time needed by the faculty for teaching, student counseling, research, professional development, and institutional and professional service.
49.	Procedures are established for systematic evaluation of faculty; evaluation considers accomplishment and innovation in the areas of teaching, research, and service.
50.	Within applicable institutional policies, faculty, students, and others are involved in the evaluation process.
	Students
51.	The school formulates recruitment, admission, financial aid, placement, and other academic and administrative policies for students that are consistent with the school's mission and program goals and objectives; the policies reflect the needs and values of the constituencies served by a program.
52.	The school has policies to recruit and retain a multicultural, multiethnic, and multilingual student body from a variety of backgrounds.
53.	The composition of the student body is such that it fosters a learning environment consistent with the school's mission and program goals and objectives.
54.	Current, accurate, and easily accessible information on the school and its program is available to students and the general public.
55.	This information includes announcements of program goals and objectives, descriptions of curricula, information on faculty, admission requirements, availability of financial aid, criteria for evaluating student performance, assistance with placement, and other policies and procedures.
56.	The school demonstrates that it has procedures to support these policies.
57.	Standards for admission are applied consistently.
58.	Students admitted to a program have earned a bachelor's degree from an accredited institution
59.	The policies and procedures for waiving any admission standard or academic prerequisite are stated clearly and applied consistently.
60.	Assessment of an application is based on a combined evaluation of academic, intellectual, and other qualifications as they relate to the constituencies served by a program, a program's goals and objectives, and the career objectives of the individual.
61.	Within the framework of institutional policy and programs, the admission policy for a program ensures that applicants possess sufficient interest, aptitude, and qualifications to enable (successful) completion of a program and subsequent contribution to the field.
62.	Students construct coherent programs of study that allow individual needs, goals, and aspirations to be met within the context of program requirements established by the school.
63.	Students receive systematic, multifaceted evaluation of their achievements.
64.	Students have access to continuing opportunities for guidance, counseling, and placement assistance.
65.	The school provides an environment that fosters student participation in the definition and determination of the total learning experience.
66.	Students are provided with opportunities to form student organizations and to participate in the formulation, modification, and implementation of policies affecting academic and student affairs.
67.	The school applies the results of evaluation of student achievement to program development.
68.	Procedures are established for systematic evaluation of the degree to which a program's academic and administrative policies and activities regarding students are accomplishing its objectives.
69.	Within applicable institutional policies, faculty, students, staff, and others are involved in the evaluation process.
	Administration
70.	The school is an integral yet distinctive academic unit within the institution.
71.	Its autonomy is sufficient to assure that the intellectual content of its program, the selection and

	promotion of its faculty, and the selection of its students are determined by the school within the general guidelines of the institution.
72.	The parent institution provides the resources and administrative support needed for the attainment of program objectives.
73.	The school's faculty, staff, and students have the same opportunity for representation on the institution's advisory or policy-making bodies as do those of comparable units throughout the institution.
74.	The school's administrative relationships with other academic units enhance the intellectual environment and support interdisciplinary interaction
75.	These administrative relationships encourage participation in the life of the parent institution.
76.	The executive officer of a program has title, salary, status, and authority comparable to heads of similar units in the parent institution
77.	In addition to academic qualifications comparable to those required of the faculty, the executive officer has leadership skills, administrative ability, experience, and understanding of developments in the field and in the academic environment needed to fulfill the responsibilities of the position.
78.	The school's executive officer nurtures an intellectual environment that enhances the pursuit of the school's mission and program goals and the accomplishment of its program objectives
79.	that environment also encourages faculty and student interaction with other academic units and promotes the socialization of students into the field
80.	The school's administrative and other staff is adequate to support the executive officer and faculty in the performance of their responsibilities.
81.	The staff contributes to the fulfillment of the school's mission and program goals and objectives.
82.	Within its institutional framework the school uses effective decision-making processes that are determined mutually by the executive officer and the faculty, who regularly evaluate these processes and use the results.
	Financial Support
83.	The parent institution provides continuing financial support sufficient to develop and maintain library and information studies education in accordance with the general principles set forth in these Standards.
84.	The level of support provides a reasonable expectation of financial viability and is related to the number of faculty, administrative and support staff, instructional resources, and facilities needed to carry out the school's program of teaching, research, and service.
85.	Compensation for a program's executive officer, faculty, and other staff is equitably established according to their education, experience, responsibilities, and accomplishments and is sufficient to attract, support, and retain personnel needed to attain program goals and objectives.
86.	Institutional funds for research projects, professional development, travel, and leaves with pay are available on the same basis as in comparable units of the institution.
87.	Student financial aid from the parent institution is available on the same basis as in comparable units of the institution.
88.	The school's planning and evaluation process includes review of both its administrative policies and its fiscal policies and financial support.
89.	Within applicable institutional policies, faculty, staff, students, and others are involved in the evaluation process.
90.	Evaluation is used for ongoing appraisal to make improvements and to plan for the future.
	Physical Resources and Facilities
91.	A program has access to physical resources and facilities that are sufficient to the accomplishment of its objectives.
92.	Physical facilities provide a functional learning environment for students and faculty; enhance the opportunities for research, teaching, service, consultation, and communication; and promote efficient and effective administration of the school's program, regardless of the forms or

	locations of delivery
93.	Instructional and research facilities and services for meeting the needs of students and faculty include access to library and multimedia resources and services, computer and other information technologies, accommodations for independent study, and media production facilities.
94.	The staff and the services provided for a program by libraries, media centers, and information technology facilities, as well as all other support facilities, are sufficient for the level of use required and specialized to the degree needed.
95.	These facilities are appropriately staffed, convenient, accessible to the disabled, and available when needed, regardless of forms or locations of delivery of the school's program.
96.	The school's planning and evaluation process includes review of the adequacy of access to physical resources and facilities for the delivery of a program.
97.	Within applicable institutional policies, faculty, staff, students, and others are involved in the evaluation process.

APPENDIX F

AACSB Accreditation Standards

AACSB Accreditation Standards

AACSB accreditation categories: mission, objectives, faculty composition and development, curriculum content and evaluation, instructional resources and responsibilities, students, intellectual contributions (AACSB International, 2002).

	The mission statement:
1.	The program must have a clear mission statement
2.	The program mission statement must be appropriate to higher education
3.	The program mission statement must be consistent with the mission of the parent institution
4.	The program mission statement must be published
5.	The program mission statement will be reviewed periodically
6.	The program mission statement will be revised as needed
7.	The mission statement
	Program objectives:
8.	The educational objectives of the program must be clearly specified
9.	The characteristics of students my be identified
10.	The emphasis on teaching must be clearly specified
11.	The emphasis on intellectual contributions (research) must be clearly specified
12.	The emphasis on service must be clearly specified
13.	Emphases should be placed on a high quality education
	Faculty composition:
14.	A faculty plan must be developed
15.	The faculty plan should specify the faculty size
16.	The faculty plan should specify the faculty composition
17.	The faculty plan should specify the faculty qualifications
18.	The faculty plan should specify the faculty development activities
19.	The faculty plan should specify the faculty teaching responsibilities
20.	The faculty plan should specify the faculty intellectual contribution responsibilities
21.	The faculty plan should specify the faculty professional service responsibilities
	Faculty recruitment, selection, and orientation:
22.	Faculty recruitment practices must be clearly defined
23.	Faculty recruitment practices should be consistent with the program's mission
24.	Faculty selection practices must be clearly outlined
25.	Faculty selection practices should be consistent with the program's mission
26.	Faculty orientation practices must be clearly specified
27.	Faculty orientation practices should be consistent with the program's mission
28.	The program should demonstrate continuous efforts to achieve demographic diversity in its faculty
	Faculty development, promotion, retention, and renewal:
29.	A process should be to determine appropriate teaching assignments
30.	A process should be to determine appropriate service workloads

31.	A process should be to guide and mentor faculty
32.	A process should be to provide adequate support for activities that implement the program's mission
33.	A formal, periodic review process should exist for reappointment decisions
34.	A formal, periodic review process should exist for promotion decisions
35.	A formal, periodic review process should exist for tenure decisions
36.	Course development should be part of the reappointment, promotion and tenure decision process
37.	Effective teaching should be taken into consideration as part of the reappointment, promotion and tenure decision process
38.	Instructional innovations should be taken into consideration as part of the reappointment, promotion and tenure decision process
39.	Service should be taken into consideration as part of the reappointment, promotion and tenure decision process
40.	There should be clearly defined policies for outside faculty
	Faculty size, composition, and deployment:
41.	There should be a full-time faculty sufficient to provide stability for the program
42.	One full-time equivalent faculty for each 400 undergraduate student credit hours per term
43.	At least 60 percent of the student credit hours should be taught by full-time faculty
44.	The 60 percent credit hour minimum requirement should apply to day programs
45.	The 60 percent credit hour minimum requirement should apply to evening programs
46.	Faculty teaching loads normally should not exceed 12 hours per term
47.	Faculty who working in intellectual contributions should receive a 3 hours reduction in teaching load
	Faculty qualifications:
48.	Faculty should have sufficient academic and professional qualifications to accomplish the program's mission
49.	Academic qualifications requires a combination of original academic preparation (degree completion) augmented by subsequent activities that maintain or establish preparation for current teaching responsibilities.
50.	*(Rate the following as faculty academic qualifications)*
51.	Faculty should hold a doctoral degree in the area in which the individual teaches
52.	Faculty should hold a masters degree, have industry experience, and be enrolled in a doctoral program in the area in which the individual teaches
53.	Faculty can hold a doctoral degree outside the area in which the individual teaches as long has they have industry experience in the area in which the individual teaches.
54.	Faculty can hold a doctoral degree outside the area in which the individual teaches as long has the individual receives supplement preparation in the form of professional development
55.	Faculty can have specialized coursework in the field of primary teaching responsibilities but no doctoral degree
56.	Faculty can have specialized industry experience in the field of primary teaching responsibilities but no doctoral degree
57.	The total number of full-time equivalent faculty must constitute at least 90 percent of the faculty
58.	The number of full-time equivalent faculty who are academically qualified but who do not possess doctoral degrees should not exceed 10 percent of the total full-time equivalent faculty
	Curriculum content and evaluation:
59.	Undergraduate curricula should provide an understanding of perspectives that form the context for business
60.	The curricula should include ethical and global issues
61.	The curricula should include the influence of political, social, legal, and regulatory,

	environment and technological issues
62.	The curricula should include the impact of demographic diversity on organizations
63.	Each undergraduate curriculum should have a general education component that normally comprises at least 50 percent of the student's four-year program
64.	The curriculum should include foundation knowledge for accounting
65.	The curriculum should include foundation knowledge for behavioral science
66.	The curriculum should include foundation knowledge for mathematics and statistics
67.	The curriculum should include written and oral communication as an important characteristic
68.	Specializations should be consistent with the program mission
69.	50 percent of the business credit hours for the IST degree should be earned at the degree-awarding institution
	Curriculum planning and evaluation:
70.	The curriculum for the degree program should be the result of a curriculum planning process
71.	The curriculum planning process should be consistent with the program's mission
72.	The program curriculum should be systematically monitored to assess its effectiveness
73.	The program curriculum should be revised to reflect new objectives
74.	The program curriculum should be revised to incorporate improvements based on contemporary theory and practice
	Instructional resources:
75.	The school should provide and manage instructional technologies and related support to faculty
76.	The school should provide and manage student access to library resources
77.	The school should provide and manage student access computer facilities
78.	The school should provide and manage student access to information technology
79.	The school should provide and manage space, facilities, and staff support adequate to meet program goals and objectives
	Collective faculty instructional responsibilities:
80.	The faculty should be responsible for effective creation and delivery of instruction
81.	The faculty should be responsible for evaluation of instructional effectiveness and student achievement
82.	The faculty should be responsible for continued improvement of instructional programs
83.	The faculty should be responsible for innovation in instructional processes
	Individual faculty instructional responsibilities:
84.	The individual members of the faculty should be responsible for currency in their instructional field(s)
85.	The individual members of the faculty should be responsible for delivery of effective instruction
86.	The individual members of the faculty should be responsible for accessibility to students consistent with the program's expectations
	Students selection:
87.	There should be a systematic process for student selection consistent with its mission
88.	Practices for student requirement and selection should reflect efforts to achieve demographic diversity in student enrollment
89.	Adequate information concerning admission policies must be available to relevant interested constituencies
90.	Student retention policies should be consistent with an objective of producing high quality graduates

	Career planning and placement:
91.	There should be a systematic plan and clear identification of the services available for career advisement for students
92.	There should be a systematic plan and clear identification of the services available for student career placement
	Intellectual contributions:
93.	Faculty members should make intellectual contributions on a continuing basis appropriate to the program's mission
94.	The outputs for intellectual contributions should be available for public scrutiny by academic peers or practitioners
95.	Instructional contributions for instructional development should enhance the educational value of instructional efforts of the institution or discipline
96.	Applied scholarship should pertain to the application, transfer, and interpretation of knowledge to improve IST practice and teaching
97.	Intellectual contributions for instructional development should enhance the educational value of instructional efforts of the institution or discipline
98.	Basic scholarship should result in the creation of new knowledge relating to the program's mission

APPENDIX G

TAC Accreditation Criteria

TAC Accreditation Criteria (ABET, 2001a)

TAC general categories: program content and orientation, program level and course requirements, curriculum elements, technical currency, arrangement of baccalaureate programs, faculty, student body, administration, satisfactory employment, industrial advisory committee, and financial support and faculties.

TAC computer engineering technology specific categories: applicability, objective, outcomes, curriculum, and financial support and faculties.

	Program Content and Orientation
1.	Programs must have written goals which are consistent with overall institutional goals.
2.	These goals must, as a minimum, focus on the student body served, resource allocation, and other factors directly affecting the program.
3.	Articulation of goals should be accomplished through specification of objectives by which achievement toward goals can be measured.
4.	Programs must demonstrate achievements through various methods, e.g., student outcome assessments, graduate career performance and employer feedback.
5.	Programs must have plans for continuous improvement. The visiting team will be looking for evidence which demonstrates implementation of continuous improvement processes and procedures for each program.
6.	The program content should provide an integrated educational experience directed toward development of the ability to apply pertinent knowledge to the solution of practical problems in the graduate's engineering technology specialty.
7.	ABET requires a high degree of specialization for engineering technology programs with field orientation rather than task orientation.
8.	The technical orientation of specialization should be manifested by faculty qualifications and course content.
	Program Level and Course Requirements
9.	Engineering technology programs may be accredited at the associate degree level or at the baccalaureate level.
10.	Differential criteria are specified as the minimum course requirements for each level.
11.	This section of the criteria relates to the program performance in producing graduates from programs meeting minimum course criteria.
12.	A minimum of 124 semester hour credits or 186 quarter hour credits for a baccalaureate degree.
13.	Forty-eight semester hour or 72 quarter hour credits of technological courses including technical sciences, technical specialties, and technical electives.
14.	Twenty-four semester hour or 36 quarter hour credits of an appropriate combination of basic sciences and mathematics of the type, level, and subject coverage specified in these criteria and applicable program criteria.
15.	The basic sciences component must include at least eight semester hour or 12 quarter hour credits in the computer engineering technology specific criteria.

16.	The mathematics component must include at least 12 semester hour or 18 quarter hour credits in areas the computer engineering technology specific criteria.
17.	The remainder of the requirement may be met by appropriate course work in either basic sciences or mathematics.
18.	Twenty-four semester hour or 36 quarter hour credits consisting of social sciences and/or humanities and instruction in written and oral communications appropriate to the program, of which at least nine semester hour or 13 quarter hour credits are the study of communications and at least eight semester hour or 12 quarter hour credits are in social sciences and/or humanities.
19.	The remainder of the requirement may be met by appropriate course work in either area.
20.	The balance of the program should be designed to achieve an integrated and well-rounded engineering technology program.
21.	The additional time is available for the implementation of the educational objectives of the institution and/or the individual as they relate to ensuring adequate educational preparation for the graduate to function as an engineering technologist.
22.	This includes the ability to use the computer in solving technical problems.
23.	Additional course work in engineering technology or related areas will be needed to fulfill such an objective.
24.	The institution must address such needs and objectives in developing the program and its contents.
25.	A maximum of eight semester hours or 12 quarter hours of cooperative education experience, to enhance the professional development of the technologist, may be included in this portion of the curriculum toward meeting the minimum number of credit hours specified computer engineering technology criteria.
26.	More than half of the maximum (four semester or six quarter hours) co-op credit may be counted in the upper division (junior/senior years) of the program.
27.	ABET encourages innovative or novel program arrangements.
28.	Non-traditional programs will be evaluated against the above criteria to ascertain that the programs satisfy the intent of the minimums established.
	Elements
29.	Technical Sciences--Subject matter in an engineering technology program has its roots in mathematics and basic science and carries knowledge further toward application.
30.	Courses are designated to supply the core of technological knowledge students need in their chosen profession.
31.	The same subject areas are included, with more emphasis on application than the "engineering science" of an engineering program.
	Technical Specialties
	Technical Skills and Techniques
32.	These are courses in which the student would acquire the necessary skills and knowledge of appropriate methods, procedures, and techniques, such as graphics, problem solving, processes, construction techniques, instrumentation techniques, production methods, field operations, plant operations, safety, and maintenance.
33.	Technology laboratory manuals, experiments, projects, and activities should clearly reflect the orientation of the program toward the education of the student in the modern techniques of applied design, construction, operation, maintenance, testing, and some production processes.
34.	Among courses requiring laboratory work, sufficient written documentation of that work (such as formal reports, technical briefs, and engineering logbooks) is required to ensure that students become competent in communications.
35.	The documentation should be graded with respect to both technical content and writing skills.

	Technical Design Courses
36.	These are courses in practice-oriented standard design applied to work in the field, such as construction, in which students acquire experience in carrying out established design procedures in their own areas of specialization.
37.	The key to this type of technical design lies in the fact that the courses would follow established design concepts developed by engineering and that there would be prime emphasis on standard design procedures and practices.
38.	Many of these design methods have already been included in handbooks or standard computer methods for various branches of engineering.
39.	These courses would require an understanding of the application of mathematics and science, for example, to such activities as air conditioning systems design, duct design, piping design, amplifier design, computer component and circuit design, plant layout, materials handling operations, and/or civil engineering technology applications such as road design.
	Technical Electives
40.	Technical electives include any related technical courses which support the student's career interest (e.g., electronic circuits for a student in mechanical engineering technology).
	Sciences and Mathematics
41.	Allocations within this group between basic sciences and mathematics will depend partly upon the specific program needs. For example, electronics might require a higher fraction of the total in mathematics than environmental engineering technology which may have a greater basic sciences requirement.
42.	Courses in computer programming may not be included in the category of basic sciences and mathematics in satisfying the minimum quantitative requirements.
	Basic Sciences
43.	In a study of science, the objective is to acquire fundamental knowledge about nature and its phenomena.
44.	Toward this end, the courses should emphasize the understanding, measurement, and quantitative expression of the phenomena of nature.
45.	Laboratory work, including experimentation, observation, and accurate measurement, is a required part of the study of physical science.
46.	The basic sciences component of an engineering technology program may include physics, chemistry, and the life and earth sciences in accordance with specific program needs.
	Mathematics
47.	College algebra is the normal beginning point for the study of mathematics in engineering technology programs, and is the basis for the specified minimum mathematics credit and competence requirements.
48.	Program requirements should include carefully selected topics, suited to the individual program, from algebra through trigonometry to higher levels of mathematics.
49.	Competence in the application of algebra and trigonometry to problem solving must be demonstrated in appropriate technical courses.
50.	In baccalaureate programs, particularly, the study of the concepts of calculus must be included in the program to ensure that students are professionally literate.
51.	Upper-level technical courses must include applications of calculus in technical problem solving where appropriate in the curriculum.
52.	Study of the concepts of calculus must also be included in associate degree programs unless alternative subjects in mathematics beyond algebra and trigonometry are specified in the appropriate specific program criteria as developed by the professional societies and approved by ABET.

	Humanities, and Social Sciences
	Communications
53.	Good oral and written communications are considered by ABET to be a necessary achievement of a college graduate.
54.	Technically trained individuals should not be considered educated regardless of the depth of their technical capability if they cannot communicate, both orally and in writing, their technical findings, thoughts, and philosophy to others around them.
55.	Since it is by practice that the real importance of a specific aspect of educational endeavor is demonstrated to the student, a good technical educator will insist that reports be neat, grammatically correct, and lucid.
56.	It must be evident to the visiting team that graduates are proficient in the use of the English language and have developed the ability to communicate ideas and understand those of others.
57.	Course work in English composition, including both written and oral presentation, literature, and especially technical writing, is appropriate for meeting the quantitative requirement.
58.	The visiting team will be looking for evidence that both oral and written communications have been taken into account in the review and evaluation of student technical work.
	Social Sciences/Humanities
59.	It is important that the student acquire an appreciation and understanding of our rich cultural heritage, the complexities of interpersonal relationships, and understanding of the interrelationship between technology and society, and a system of values essential for intelligent and discerning judgments.
60.	There will be variation in the specific courses offered in this general area from institution to institution.
61.	Skill courses such as physical education or military drill do not qualify as social-humanistic studies.
	Computer Competency
62.	Engineering technicians and technologists are dependent upon the computer to effectively perform their job functions.
63.	It is therefore essential that students acquire a working knowledge of computer usage.
64.	Instruction in applications of software for solving technical problems and student practice within appropriate technical courses is required for all programs.
65.	Additionally in Baccalaureate degree programs, instruction must be included in one or more of the computer languages commonly used in the practice of engineering technology.
66.	Following formal instruction or demonstrated proficiency in computing skills, baccalaureate students should gain experience using programming skills in technical courses to an extent appropriate for the discipline.
	Cooperative Education Experience
67.	Flexibility in the development of appropriate work experiences, such as a formal cooperative program, as part of an engineering technology program is encouraged.
68.	Work experience components will be evaluated as part of the evaluation of an entire engineering technology program, but credit for work experience may not be counted toward the minimum credit hour requirements.
69.	Cooperative course credit may be included in the balance of the program.
70.	Where cooperative education experience is counted toward meeting the minimum total number of credit hours.
71.	The cooperative education experience must include an appropriate academic component such as a seminar or written formal report addressing the experience and the educational benefits derived therefrom.

72.	This academic component must be graded by the faculty of the department responsible for the program's technical content.
73.	Material relating to the academic component must be provided for the visiting team's review.
	Remedial Work
74.	Remedial courses, designed to remove deficiencies in the background of entering students, are inherently at a level lower than expected in college credit work.
75.	Such courses, particularly in the areas of mathematics and communications, are not to be used to meet the minimums in curricular content requirements.
	Technical Currency
76.	In engineering technology programs, technical currency is important and must be assured by such means as a competent and inquisitive faculty, an active industrial advisory committee, an adequately funded budget which encourages continuing faculty development, and a modern library collection with an adequately funded program for continuous renewal.
77.	Positive procedures must be established and closely monitored to safeguard against technical obsolescence.
78.	These procedures should be described in the self-study questionnaire and demonstrated to the evaluation team during the visit.
	Faculty
79.	The technical faculty, which may be the single most important factor in an educational program, will be evaluated individually and as a whole.
80.	For those programs which incorporate evening or off-campus offerings, the evening and off-campus faculty members are considered as part of the overall program faculty and must satisfy the provisions of this section of the criteria.
81.	Strong programs will have technical faculty members whose qualifications exceed what is described here as "basic credentials."
82.	Each program must have appropriately qualified technical faculty members. Basic credentials are prescribed to assure the program is appropriately quantitative in nature and includes proper engineering and industrial emphases.
83.	A technical faculty member who has the following qualifications is viewed as having basic credentials with regard to technical competence, degree level, and industrial experience. Basic credentials consist of three years of relevant industrial experience and one of the following: A master's degree in engineering or engineering technology, which is considered as the appropriate terminal degree. Or A master's degree in a closely related field if the degree is primarily analytical and the subject clearly appropriate, e.g., a degree in physics for certain areas of electronics.
84.	The number of faculty members needed in a program depends on the number of students in the program, the portion of students in evening or co-op programs, other duties assigned to the technical faculty and the teaching support the program receives from related programs.
85.	The number of faculty members must be great enough to provide a breadth of perspective, program continuity and proper frequency of course offerings.
86.	In establishing the Full-Time Equivalents (FTE) listed below, faculty members whose primary commitment is to a program count fully for that program unless the institution chooses to divide their time between programs.
87.	No single faculty member can total more than one FTE, even if an overload is carried for extra compensation.
88.	Each baccalaureate degree program must have at least two faculty members with basic credentials whose primary commitment is to the program and a total of at least three FTE faculty members.
89.	Each upper-division only baccalaureate degree program must have at least one faculty member

	with basic credentials whose primary commitment is to the program and a total of at least two FTE faculty members.
90.	Closely related programs often share faculty members, facilities, and courses which enable them to satisfy the intent of paragraphs a. through c. with fewer faculty.
91.	Programs may be recognized as closely related if they share administrative and support services and if at least 50 percent of the technical courses are common.
92.	Each dependent closely related program must have at least one additional faculty member with basic credentials whose primary commitment is to the program.
93.	If an institution convincingly demonstrates that breadth of perspective, program continuity, and proper frequency of course offerings are provided by alternate means.
94.	Not only does a technical faculty require minimum numbers to adequately carry out its task, the group also must have balance, variety, and overall strength.
95.	For a baccalaureate degree program at least two-thirds of the FTE faculty must have basic credentials.
96.	Engineering technology education emphasizes problem solving, laboratories, and technical skills. A sufficient number of faculty members are required to give adequate attention to each student in this environment.
97.	The student-faculty ratio depends on the nature of the program and courses.
98.	Conventional Criteria should not exceed the institutional ratio in science-related areas.
99.	Student-faculty ratios for non-technical studies should follow normal institutional patterns.
100.	Each accredited program must have a full-time faculty member assigned as department head, program coordinator, or similar term designating leadership responsibility and should have basic credentials.
101.	The overall competence and effectiveness of faculty members may be judged by such factors as the level of academic achievement; the diversity of their backgrounds; the extent to which they further their own education in relevant areas; industrial experience; teaching experience; being technically current; interest in and enthusiasm for improving instruction; involvement in laboratory development; publication and other scholarly activities; active participation in professional and scientific societies; favorable evaluations from students, graduates, and peers; the ability to communicate effectively in English; exemplary ethical and professional behavior; and involvement with students in extracurricular activities.
102.	Faculty members must maintain current knowledge of their field and understanding of the tasks industry expects technicians and technologists to perform.
103.	Faculty members normally remain current by active participation in professional societies; reading the literature; continuing education; applied research; consulting and periodic return to industry. The institution should have a well-planned, adequately funded, and effective program for the professional development of its faculty.
	Student Body
104.	Entrance requirements should include high school graduation or the equivalent.
105.	Institutional policies and procedures on credit for scholastic work (including transfer credit), retention, probation, and graduation must ensure that all graduates of a program accredited by TAC of ABET meet these criteria in addition to satisfying all program and institutional requirements.
106.	Proper academic advising must be provided to ensure that students are adequately prepared to meet the requirements of the program.
107.	The institution must maintain up-to-date admissions and academic records for all students and graduates.
108.	Adequate placement services must be available to assist graduates in seeking employment.
	Administration
109.	The administration should demonstrate effective leadership and satisfactory support for

	engineering
110.	A capable faculty can perform its functions best in an atmosphere of good relations with the administration.
111.	This requires good communication between faculty members and administrators, and a mutual concern with policies that affect the faculty.
112.	The college administration should have four basic roles: selection, supervision, and support of the faculty; selection and supervision of the students; operation of the facilities for the benefit of the faculty and students; and interpretation of the college to members of the profession and to the public.
113.	In performing many of these functions, the administrators should not operate alone, but should seek advice from individual faculty members, faculty committees, and special consultants.
114.	Each program in engineering technology must have an identifiable, qualified person who has direct responsibility for program coordination and curriculum development. Such a person must be a full-time employee of the institution.
	Satisfactory Employment
115.	One of the distinguishing features of engineering technology programs is the desire to provide their graduates with enough acumen that there will be a minimum training period required in industry.
116.	An accreditable program must demonstrate employer satisfaction with recent graduates, graduate satisfaction with employment, career mobility opportunities, appropriate starting salaries, and appropriate job titles.
117.	Evidence of the above must be made available to the evaluation team during the visit.
	Industrial Advisory Committee
118.	Each accredited program must have an industrial advisory committee composed of industrial representatives, which must meet at least annually.
119.	Records and minutes of this committee should be maintained and be made available to the accreditation evaluation team.
120.	Industrial advisory committees can contribute significantly to the growth and development of engineering technology programs as a means of assuring technical currency of the program and maintaining close liaison with the supporting and employing industries.
121.	An effective industrial advisory committee should be broad-based and composed primarily of practicing engineers and senior engineering technicians with active interests in the institution and the program it offers and with intimate knowledge of the current work of engineering technicians and the work they are likely to do in the near future.
122.	An effective industrial advisory committee should meet regularly with the administration and the faculty to discuss program needs, progress, and problems, and to recommend solutions.
123.	Periodically review program offerings and course content to ensure that the current and future needs of engineering technicians in industry are being met.
124.	Industrial advisory committees should be encouraged to assist in the recruitment of a competent faculty and of potentially capable students.
125.	Industrial advisory committees should be encouraged to assist in the placement of graduates.
126.	Industrial advisory committees should be encouraged to assist in obtaining financial aid and part-time employment for needy students.
127.	Industrial advisory committees should be encouraged to assist in obtaining financial and material resources for the institution and in assuring a high level of community awareness and support of the program offerings.
128.	To be effective, advisory committees must be properly supported, logistically and administratively.
129.	They should be given meaningful assignments that are properly within their areas of expertise, and their advice must be given serious consideration.
130.	Whenever their advice cannot be taken, such decision must be supported by good reasons.

	Financial Support and Facilities
131.	The institution must demonstrate that adequate facilities and financial support for each program are available.
132.	Faculty salaries sufficient to attract desirable candidates for open positions and to provide a reasonably stable staff at the institution and within technology departments are a major factor.
133.	Adequate facilities in classrooms and laboratories are central to effective achievement of educational goals.
134.	Provisions for updating equipment in response to changing practices in technology are important.
135.	The availability of sufficient expendable materials to give students proper learning experiences is another essential to achieving goals.
136.	Laboratory manuals, experiments, and projects should clearly indicate that the facilities are being used to educate the student in modern techniques of applied design, construction, operation, maintenance, testing, production processes, etc.
137.	It is particularly important that instruction in engineering technology be conducted in an atmosphere of realism.
138.	Theory courses should stress problem identification and solution, with emphasis on the quantitative, analytical approach, including the making of "order of magnitude" estimates quickly.
139.	They should be accompanied by coordinated laboratory experiences, including measurement, collection, analysis, interpretation, and presentation of data.
140.	Laboratory equipment and computers should be of the type that would be encountered in industry and practice.
141.	All students should be thoroughly familiar with the use and operation of analytical or measurement equipment common to their major field of study.
142.	Equipment catalogs, professional magazines, journals, and manuals of industrial processes and practices should be readily accessible and used by technology students in addition to the usual library resources.
143.	Students should be familiar with the literature of their technology and encouraged to use it as a principal means of staying abreast of the state of the art in their technological field.
144.	Library usage is one indication of faculty interest in developing student skills in locating and utilizing information.
145.	Library holdings must include a sufficient number of appropriate books, periodicals, reference books and indexes, and standards documents to support the engineering technology programs.
146.	Library holdings may be in paper, microform, or electronic formats. Resources owned by the institution and physically present in the library may be supplemented by other resources, such as electronic information databases and full-text document delivery systems, which are not physically present in the library but which have been licensed for access via online networks.
147.	Satisfactory secretarial/clerical support must be provided for the engineering technology faculty and administration.
148.	Satisfactory procedures and/or qualified support personnel for repair and maintenance of laboratory and other instructional equipment and for general laboratory assistance must be provided.
	Program Specific Criteria
	Curriculum
	Technical Sciences
149.	Technical science courses must be applications-oriented with a majority having an accompanying laboratory with emphasis on measurement, data collection and analysis, documentation, and written/oral report preparation/ presentation.
150.	Course work must include the fundamentals of electricity/electronics and digital Principles.

	Technical Specialties.
151.	Technical skills and techniques courses must include, topics, as appropriate, to meet the stated goals and objectives of the program. They must be a balanced treatment of computer software and hardware evidenced by courses reflecting each aspect of the discipline.
152.	Courses at the associate degree level must prepare the student for immediate employment, and must include sufficient foundation to enable the student to continue in upper-division studies without penalty.
153.	Upper-division course work must complement and expand lower-division work.
154.	Technical design courses must emphasize flow charting, documentation, and the use of manuals, handbooks, language/ equipment specifications, and computers where applicable.
	Basic Sciences and Mathematics
155.	The basic sciences must include physics (with laboratory) presented in a rigorous algebra/trigonometry environment (as a minimum).
156.	A minimum coverage in mathematics includes beginning college-level algebra, linear algebra/matrices, and trigonometry.
157.	Baccalaureate programs must include differential/integral calculus, and instruction in numerical methods is strongly encouraged.
158.	Applied differential equations, transform methods, linear programming, and probability/statistics are appropriate electives. Application-oriented textbooks are preferred.
	Financial Support and Facilities
159.	Laboratory equipment, computers, and software should be of the type that would be encountered in industry and practice.
160.	All students should be thoroughly familiar with the tools of computer-based software development, test and verification, simulation, data acquisition, and documentation, as well as the basic electronic analytical or measurement test equipment and specialized digital test instruments.
161.	Experience in the operation of standard or basic shop equipment such as lathes, welders, and engines does not, in itself, meet this requirement.

APPENDIX H

CAC Accreditation Criteria Computing Programs

CAC Accreditation Criteria Computing Programs

CAC accreditation categories: objectives and assessment, student support, faculty, general curriculum, computer science curriculum, mathematics science curriculum, additional areas of study, laboratories and computing facilities, institutional support and financial resources, and institutional facilities (ABAC, 2001).

	Objectives and Assessment
1.	program must have documented, measurable objectives
2.	The program's objectives must include expected outcomes for graduating students.
3.	Data relative to the objectives must be routinely collected and documented, and used in program assessments.
4.	The extent to which each program objective is being met must be periodically assessed.
5.	The results of the program's periodic assessments must be used to help identify opportunities for program improvement.
6.	The results of the program's assessments and the actions taken based on the results must be documented.
	Student Support
7.	Courses must be offered with sufficient frequency for students to complete the program in a timely manner.
8.	Computer science courses must be structured to ensure effective interaction between faculty/teaching assistants and students in lower division courses and between faculty and students in upper division courses.
9.	Guidance on how to complete the program must be available to all students.
10.	Students must have access to qualified advising when they need to make course decisions and career choices.
11.	There must be established standards and procedures to ensure that graduates meet the requirements of the.
	Faculty
12.	There must be enough full-time faculty members with primary commitment to the program to provide continuity and stability.
13.	Full-time faculty members must oversee all course work.
14.	Full-time faculty members must cover most of the total classroom instruction
15.	The interests and qualifications of the faculty members must be sufficient to teach the courses and to plan and modify the courses and curriculum.
16.	All faculty members must remain current in the discipline.
17.	All faculty members must have a level of competence that would normally be obtained through graduate work in computer science.
18.	Some full-time faculty members must have a Ph.D. in computer science.
19.	All full-time faculty members must have sufficient time for scholarly activities and professional development.
20.	Advising duties must be a recognized part of faculty members' workloads.
	General Curriculum

21.	The curriculum must include at least 40 semester hours of up-to-date study in computer science topics.
22.	The curriculum must contain at least 30 semester hours of study in mathematics and science as specified below under Mathematics and Science.
23.	The curriculum must include at least 30 semester hours of study in humanities, social sciences, arts and other disciplines that serve to broaden the background of the student.
24.	The curriculum must be consistent with the documented objectives of the program.
	Computer Science Curriculum
25.	All students must take a broad-based core of fundamental computer science material consisting of at least 16 semester hours.
26.	The core materials must provide basic coverage of algorithms, data structures, software design, concepts of programming languages, and computer organization and architecture.
27.	Theoretical foundations, problem analysis, and solution design must be stressed within the program's core materials.
28.	Students must be exposed to a variety of programming languages and systems and must become proficient in at least one higher-level language.
29.	All students must take at least 16 semester hours of advanced course work in computer science that provides breadth and builds on the core to provide depth.
	Mathematics and Science Curriculum
30.	The curriculum must include at least 15 semester hours of mathematics.
31.	Course work in mathematics must include discrete mathematics, differential and integral calculus, and probability and statistics.
32.	The curriculum must include at least 12 semester hours of science.
33.	Course work in science must include the equivalent of a two-semester sequence in a laboratory science for science or engineering majors.
34.	Science course work additional to that specified in Standard IV-13 must be in science courses or courses that enhance the student's ability to apply the scientific method.
	Additional Areas of Study
35.	The oral communications skills of the student must be developed and applied in the program.
36.	The written communications skills of the student must be developed and applied in the program.
37.	There must be sufficient coverage of social and ethical implications of computing to give students an understanding of a broad range of issues in this area.
	Laboratories and Computing Facilities
38.	Each student must have adequate and reasonable access to the systems needed for each course.
39.	Documentation for hardware and software must be readily accessible to faculty and students.
40.	All faculty members must have access to adequate computing facilities for class preparation and for scholarly activities.
41.	There must be adequate support personnel to install and maintain the laboratories and computing facilities.
42.	Instructional assistance must be provided for the laboratories and computing facilities.
	Institutional Support and Financial Resources
43.	Support for faculty must be sufficient to enable the program to attract and retain high-quality faculty capable of supporting the program's objectives.
44.	There must be sufficient support and financial resources to allow all faculty members to attend national technical meetings with sufficient frequency to maintain competence as teachers and scholars.
45.	There must be support and recognition of scholarly activities.
46.	There must be office support consistent with the type of program, level of scholarly activity, and

	needs of the faculty members.
47.	Adequate time must be assigned for the administration of the program.
48.	Upper levels of administration must provide the program with the resources and atmosphere to function effectively with the rest of the institution.
49.	Resources must be provided to acquire and maintain laboratory facilities that meet the needs of the program.
50.	Resources must be provided to support library and related information retrieval facilities that meet the needs of the program.
51.	There must be evidence that the institutional support and financial resources will remain in place throughout the period of accreditation.
	Institutional Facilities
52.	The library that serves the computer science program must be adequately staffed with professional librarians and support personnel.
53.	The library's technical collection must include up-to-date textbooks, reference works, and publications of professional and research organizations such as the ACM and the IEEE Computer Society.
54.	Systems for locating and obtaining electronic information must be available.
55.	Classrooms must be adequately equipped for the courses taught.
56.	Faculty offices must be adequate to enable faculty members to meet their responsibilities to students and for their professional

APPENDIX I

CAC Accreditation Criteria Information Systems

CAC Accreditation Criteria Information Systems

CAC accreditation categories: objectives and assessment, student support, faculty, curriculum, general, information systems, information systems environment, quantitative analysis, additional areas of study, technology infrastructure, institutional support and financial resources, program delivery and institutional facilities (ABAC, 2001).

	Objectives and Assessment
1.	The program must have documented educational objectives
2.	The program's objectives must include expected outcomes for graduating students.
3.	Mechanisms must be in place to periodically review the program and the courses.
4.	The results of the program's assessment must be used to help identify and implement program improvement.
5.	The results of the program's review and the actions taken must be documented.
	Students
6.	Courses must be offered with sufficient frequency for students to complete the program in a timely manner.
7.	Information systems programs must be structured to ensure effective interaction between teaching faculty and students.
8.	Advising on program completion, course selection and career opportunities must be available to all students.
9.	There must be established standards and procedures to ensure that graduates meet the requirements of the.
	Faculty
10.	The interests, qualifications, and scholarly contributions of the faculty members must be sufficient to teach the courses, plan and modify the courses and curriculum, and to remain abreast of current developments in information systems.
11.	All faculty members must have a level of competence that would normally be obtained through graduate work in information systems.
12.	A majority of the faculty members should hold terminal degrees. Some full-time faculty members must have a Ph.D. in information systems or a closely related area.
13.	All faculty members must remain current in the discipline.
	General Curriculum
14.	The curriculum must include at least 30 semester-hours of study in information systems topics.
15.	The curriculum must contain at least 15 semester-hours of study in an information systems environment, such as business.
16.	The curriculum must include at least 9 semester-hours of study in quantitative analysis as specified below under quantitative analysis.
17.	The curriculum must include at least 30 semester-hours of study in general education to broaden the background of the student.
18.	Information Systems Curriculum
19.	All students must take a broad-based core of fundamental information systems material

	consisting of at least 12 semester hours.
20.	The core materials must provide basic coverage of the hardware and software, a modern programming language, data management, networking and telecommunications, analysis and design, and role of IS in organizations.
21.	Theoretical foundations, analysis, and design must be stressed throughout the program.
22.	Students must be exposed to a variety of information and computing systems and must become proficient in one modern programming language.
23.	All students must take at least 12 semester hours of advanced course work in information systems that provides breadth and builds on the IS core to provide depth.
	Information Systems Environment Curriculum
24.	The 15 semester hours must be a cohesive body of knowledge to prepare the student to function effectively as an IS professional in the IS environment.
25.	Quantitative Analysis Curriculum
26.	The curriculum must include at least 9 semester-hours of quantitative analysis beyond pre-calculus.
27.	Statistics must be included.
28.	Calculus or discrete mathematics must be included.
29.	
30.	Additional Areas of Study
31.	The oral and written communications skills of the student must be developed and applied in the program.
32.	There must be sufficient coverage of global, economic, social and ethical implications of computing to give students an understanding of a broad range of issues in these areas.
33.	Collaborative skills must be developed and applied in the program.
34.	
35.	Technology Infrastructure
36.	Each student must have adequate and reasonable access to the systems needed for each course.
37.	Documentation for hardware and software must be readily accessible to faculty and students.
38.	All faculty members must have access to adequate computing resources for class preparation and for scholarly activities.
39.	There must be adequate support personnel to install and maintain computing resources.
40.	Instructional assistance must be provided for the computing resources.
41.	
42.	Institutional Support and Financial Resources
43.	Support for faculty must be sufficient to enable the program to attract and retain high-quality faculty capable of supporting the program's objectives.
44.	There must be sufficient support and financial resources to allow faculty members to attend national technical meetings with sufficient frequency to maintain competence as teachers and scholars.
45.	There must be support and recognition of scholarly activities.
46.	There must be office support consistent with the type of program, level of scholarly activity, and needs of the faculty members.
47.	Adequate time must be assigned for the administration of the program.
48.	Upper levels of administration must provide the program with the resources and atmosphere to function effectively with the rest of the institution.
49.	Resources must be provided to acquire and maintain laboratory facilities that meet the needs of the program.
50.	Resources must be provided to support library and related information retrieval facilities that meet the needs of the program.
51.	There must be evidence of continuity of institutional support and financial resources.
52.	

53.	Program Delivery
54.	There must be enough full-time faculty members with primary commitment to the program to provide continuity and stability.
55.	Full-time faculty members must oversee all course work.
56.	Full-time faculty members must oversee all course work.
57.	Full-time faculty members must cover most of the total classroom instruction.
58.	Faculty members must remain current in the discipline.
59.	All full-time faculty members must have sufficient time for scholarly activities and professional development.
60.	Advising duties must be a recognized part of faculty members' workloads.
	Institutional Facilities
61.	The library that serves the information systems program must be adequately staffed with professional librarians and support personnel.
62.	The library's technical collection must include up-to-date textbooks, reference works, and publications of professional and research organizations.
63.	Systems for locating and obtaining electronic information must be available.
64.	Classrooms must be adequately equipped for the courses taught in them.
65.	Faculty offices must be adequate to enable faculty members to meet their responsibilities to students and for their professional needs.

APPENDIX J

IST Program Accreditation Criteria Common Categories

IST Program Accreditation Criteria Common Categories

No.	Category	IST	AACSB	CAC IS	CAC CP	ALA	TAC
1	Administration					X	X
2	Curriculum Content and Requirements	X	X	X		X	X
	Computer Competency						X
	Computer Science	X			X		
	Cooperative Education Experience						X
	General			X	X		
	Quantitative Analysis	X		X	X		X
	Humanities	X					X
	Information Systems	X		X			
	Information Systems Environment			X			
	Sciences	X			X		X
	Social Sciences	X					X
	Technical Skills and Techniques	X	X	X	X	X	X
	Technical Currency	X	X	X	X		X
	Technical Design						X
	Technical Electives	X	X	X	X	X	X
	Technical Sciences						X
	Technical Specialties	X	X	X	X	X	X
	Additional Areas of Study	X		X	X		
3	Curriculum Evaluation	X	X				
4	Curriculum Planning	X	X				
5	Faculty		X	X	X	X	X
	Qualifications	X	X				
	Recruitment, Selection and Orientation	X	X				
	Development, Promotion, Retention, and Renewal	X	X				
	Size, Composition, and Deployment	X	X	X	X		X
	Instructional Responsibilities	X	X				
	Intellectual Contributions	X	X				
6	Financial Support	X		X	X	X	X
7	Industrial Advisory Committee	X					X
8	Mission	X	X	X		X	
9	Program Objectives	X	X	X	X	X	
10	Program Assessment	X				X	
11	Physical Resources and Facilities	X				X	X
	Institutional Facilities			X	X		
	Instructional Resources		X				
	Laboratories and Computing Facilities				X		
12	Student Selection	X	X	X		X	X
13	Student Support	X			X		
	Career Planning and Placement	X	X	X			X

APPENDIX K

Validity Test Survey and Results

Validity Test Survey and Results

Instrument Instructions:

Please indicate your agreement or disagreement for the criteria listed below by writing in the designated box the appropriate number on the 5-point Likert scale as follows:

1 = Strongly Disagree 2 = Disagree 3 = Neutral or No opinion 4 = Agree 5 = Strongly Agree

1. In the column marked R, indicate whether you agree that each statement is RELEVANT to the IST program.
2. In the column marked M, indicate whether you agree that each statement appears to MEASURE what is intended.
3. In the column marked C, please indicate whether you agree that each statement is in the appropriate CATAGORY in relation to the IST program.
4. If you have a category or statement you wish to add, feel free to add it in the extra rows provided at the end of each category or if more room is needed use an additional sheet of paper.
5. If you recommend a statement, please indicate under which category the statement should be included by putting the category letter next to the statement.
6. If you recommend a category, also include statements by which to measure criteria under that category.
7. If you believe a statement should be moved to another category, indicated so by writing the suggested category letter next to the statement.

	STATEMENT	R	M	C
A	**The mission statement:**			
1.	The program must have a clear mission statement	4.6	4.1	4.9
2.	The program mission statement must be appropriate to higher education	4.6	4.2	4.8
3.	The program mission statement must be consistent with the mission of the parent institution	4.6	4.4	4.8
4.	The program mission statement must be published	4.5	4.0	4.8
	*** the program mission statement must be communicated**			
5.	The program mission statement will be reviewed periodically	4.6	4.3	4.8
6.	The program mission statement will be revised as needed	4.6	4.4	4.7
B	**Program objectives:**			
7.	The educational objectives of the program must be clearly specified	4.8	4.5	4.7
8.	The characteristics of students must be identified	3.6	3.4	3.6
9.	The emphasis on teaching must be clearly specified	4.3	4.2	4.2
	*** the emphasis on learning must be clearly specified (5) rather than (2)**			
10.	The emphasis on intellectual contributions (research) must be clearly specified	4.3	3.9	3.7
11.	The emphasis on service must be clearly specified	4.0	4.0	4.1
12.	Emphases should be placed on a high quality education	4.6	4.4	4.5
13.	Programs must demonstrate implementation of continuous improvement processes and procedures for the program.	4.6	4.1	4.4
14.	The program content should provide an integrated educational experience directed toward development of the ability to apply pertinent knowledge to the solution of practical problems in the graduate's information sciences and technology specialty.	4.8	4.3	4.5
15.	The program's technical currency is important and must be assured by such means of an active industrial advisory committee.	4.6	4.4	4.5
	*** alumni, employers**			
C	**Program assessment:**			
16.	The program must have documented, measurable outcomes	4.7	4.6	5.0
17.	The program's objectives must include expected outcomes for graduating students	4.7	4.4	4.6
18.	The extent to which each program objective is being met must be periodically assessed	4.6	4.5	4.8

	STATEMENT	R	M	C
19.	The results of the program's periodic assessments must be used to help identify opportunities for program improvement.	4.7	4.3	4.7
20.	The results of the program's assessments and the actions taken based on the results must be documented	4.7	4.4	5.0
D	**Faculty composition:**			
21.	A faculty plan must be developed, published and available for review	3.6	3.8	4.7
22.	The faculty plan should specify the faculty size	3.7	3.8	4.3
23.	**The faculty plan should specify the faculty composition** *** unclear**	3.5	3.9	4.6
24.	The faculty plan should specify the faculty qualifications	4.1	4.2	4.6
25.	The faculty plan should specify the faculty development activities	3.6	3.9	4.7
26.	The faculty plan should specify the faculty teaching responsibilities	4.1	4.2	4.7
27.	The faculty plan should specify the faculty intellectual contribution responsibilities	3.6	3.7	4.5
28.	**The faculty plan should specify the faculty professional service responsibilities**	3.5	3.8	4.5
E	**Faculty recruitment, selection, and orientation:**			
29.	Faculty recruitment practices must be clearly defined	4.1	4.0	4.7
30.	Faculty recruitment practices should be consistent with the program's mission	4.1	4.4	4.8
31.	Faculty selection practices must be clearly outlined	4.3	4.3	4.6
32.	Faculty selection practices should be consistent with the program's mission	4.4	4.3	4.6
33.	**Faculty orientation practices must be clearly specified**	3.5	3.7	4.2
34.	Faculty orientation practices should be consistent with the program's mission	3.9	3.9	4.2
35.	The program should demonstrate continuous efforts to achieve demographic diversity in its faculty by recruiting faculty from multicultural, multiethnic, and multilingual backgrounds.	4.2	3.8	4.2
F	**Faculty development, promotion, retention, and renewal:**			
36.	A process should be developed to determine appropriate teaching assignments	3.9	3.7	4.0
37.	A process should be developed to determine appropriate service workloads	4.0	3.9	4.2
38.	A process should be developed to guide and mentor faculty	4.2	4.3	4.2
39.	A process should be developed to provide adequate support for activities that implement the program's mission	4.6	4.0	3.6
40.	A formal, periodic review process should exist for reappointment decisions	4.7	4.4	4.6
41.	A formal, periodic review process should exist for promotion decisions	4.8	4.5	4.7
42.	A formal, periodic review process should exist for tenure decisions	4.8	4.4	4.7
43.	Course development should be part of the reappointment, promotion and tenure decision process	3.9	3.8	4.5
44.	Effective teaching should be taken into consideration as part of the reappointment, promotion and tenure decision process	4.6	4.4	4.7
45.	Instructional innovations should be taken into consideration as part of the reappointment, promotion and tenure decision process	4.1	3.8	4.6
46.	Service should be taken into consideration as part of the reappointment, promotion and tenure decision process	3.9	4.0	4.7
47.	Advising duties must be a recognized part of faculty members' workloads.	4.2	3.8	4.2
48.	There should be clearly defined policies for **adjunct** faculty	4.4	3.9	4.2
Add	**Clearly define development policies for adjunct faculty**	5.0	5.0	5.0
G	**Faculty size, composition, and deployment:**			
49.	The school should have a faculty capable of accomplishing program objectives	4.9	4.4	4.6
50.	There should be a full-time faculty sufficient to provide stability for the program	4.8	4.6	4.8
51.	**One full-time equivalent faculty for each 400 undergraduate student credit hours per term**	3.2	3.7	4.1
52.	**At least 60 percent of the student credit hours should be taught by full-time faculty** ***majority of classes taught by full-time faculty;** ***make less specific** *** 50% ($n = 5$)** *** 80% ($n = 5$)** *** 75% ($n = 4$) from 2** *** most** *** 80% ($n = 4$) from 2**	3.3	4.2	4.6
53.	**The 60 percent credit hour minimum requirement should apply to day programs** ***majority of classes taught by full-time faculty;** ***make less specific** *** 80% ($n = 5$) from 2** ***75% ($n = 4$) from 2** *** 80% ($n = 4$) from 2**	3.4	4.2	4.6
54.	**The 60 percent credit hour minimum requirement should apply to evening programs** ***majority of classes taught by full-time faculty;** ***make less specific**	3.0	4.2	4.6

	STATEMENT	R	M	C
	*** 70% ($n = 5$) from 2**			
	*** 70% ($n = 4$) from 2**			
	*** 80% ($n = 4$) from 2**			
55.	Faculty teaching loads normally should not exceed 12 credit hours per term	3.6	4.2	4.3
	* 15 (4) from 2			
	* with no more than two preps			
56.	**Faculty who are working on intellectual contributions should receive a 3 hour reduction in teaching load**	3.3	3.6	4.2
	*** need to define level of contribution**			
	*** at least**			
57.	Part-time faculty, when appointed, should balance and complement the teaching competencies of the full-time faculty	4.6	4.3	4.3
58.	Particularly in the teaching of specialties that are not represented in the expertise of the full-time faculty, part-time faculty should enrich the quality and diversity of a program	4.0	3.6	4.0
H	**Faculty qualifications:**			
59.	Faculty should have sufficient academic and professional qualifications to accomplish the program's mission	5.0	4.2	5.0
60.	Academic qualifications require a combination of original academic preparation (degree completion) augmented by subsequent activities that maintain or establish preparation for current teaching responsibilities.	4.3	3.9	4.7
61.	Faculty should hold a doctoral degree in the area in which the individual teaches	3.8	3.9	4.5
62.	Faculty should hold a masters degree, have industry experience, and be enrolled in a doctoral program in the area in which the individual teaches	3.7	3.9	4.6
63.	Faculty can hold a doctoral degree outside the area in which the individual teaches as long has they have industry experience in the area in which the individual teaches.	3.7	3.9	4.6
64.	**Faculty can hold a doctoral degree outside the area in which the individual teaches as long has the individual receives supplement preparation in the form of professional development**	3.3	3.7	4.6
65.	Faculty can have specialized coursework in the field of primary teaching responsibilities but no doctoral degree	3.7	3.9	4.7
66.	Faculty can have specialized industry experience in the field of primary teaching responsibilities but no doctoral degree	3.6	3.	4.7
67.	**The total number of full-time equivalent faculty must constitute at least 90 percent of the faculty**	3.4	3.6	4.3
	*** 50% ($n = 4$)**			
	*** 75% ($n = 5$) from 3**			
	*** 75-80% ($n = 4$) from 2**			
68.	**The number of full-time equivalent faculty who are academically qualified but who do not possess doctoral degrees should not exceed 10 percent of the total full-time equivalent faculty**	3.0	3.9	4.6
	*** 50% ($n = 4$)**			
	*** 25% ($n = 5$) from 2**			
	*** 25% ($n = 5$) from 3**			
I	**Institutional Support and Financial Resources:**			
69.	Support for faculty must be sufficient to enable the program to attract and retain high-quality faculty capable of supporting the program's objectives.	5.0	4.4	4.9
70.	There must be sufficient support and financial resources to allow all faculty members to attend national technical meetings with sufficient frequency to maintain competence as teachers and scholars.	4.4	4.4	4.8
71.	Adequate time must be assigned for the administration of the program.	4.6	4.3	4.8
72.	Upper levels of administration must provide the program with the resources and atmosphere to function effectively with the rest of the institution.	4.7	4.2	4.7
73.	Resources must be provided to acquire and maintain laboratory facilities that meet the needs of the program.	4.7	4.4	4.7
74.	Resources must be provided to support library and related information retrieval facilities that meet the needs of the program.	4.7	4.4	4.7
75.	The school's faculty, staff, and students must have the same opportunity for representation on the institution's advisory or policy-making bodies as do those of comparable units throughout the institution.	4.5	3.8	4.7
76.	The school's administrative relationships with other academic units enhance the intellectual environment and support interdisciplinary interaction	4.6	3.8	4.4
77.	These administrative relationships encourage participation in the life of the parent institution	4.5	3.8	4.3
78.	The school's executive officer nurtures an intellectual environment that enhances the pursuit of the school's mission and program goals and the accomplishment of its program objectives	4.6	3.8	4.3
79.	Within its institutional framework the school uses effective decision-making processes that are determined mutually by the executive officer and the faculty, who regularly evaluate these	4.3	3.8	4.3

	STATEMENT	R	M	C
	processes and use the results.			
80.	Classrooms must be adequately equipped for the courses taught	4.7	4.2	4.8
81.	Documentation for hardware and software must be readily accessible to faculty and students.	4.5	4.2	4.8
82.	All faculty members must have access to adequate computing resources for class preparation and for scholarly activities.	4.8	4.4	4.8
83.	There must be adequate support personnel to install and maintain computing resources.	4.5	4.2	4.7
84.	Instructional assistance must be provided for the computing resources.	4.3	4.1	4.7
85.	Faculty offices must be adequate to enable faculty members to meet their responsibilities to students and for their professional requirements.	4.6	4.0	4.7
J	**Curriculum content and evaluation:**			
86.	Undergraduate curricula should provide an understanding of perspectives that form the context for information sciences and technology	4.6	3.9	4.8
87.	The curricula should include ethical and global issues	4.5	4.2	4.5
88.	The curricula should include the influence of political, social, legal, regulatory, environmental and technological issues	4.5	4.1	4.6
89.	The curricula should include the impact of demographic diversity on organizations	4.3	4.1	4.6
90.	A minimum of 124 semester hour credits for a baccalaureate of science degree *** 120 (5)**	4.2	4.2	4.6
91.	The curriculum must include at least 45 semester hours of study in humanities, social sciences, arts and other disciplines that serve to broaden the background of the student.	4.4	4.4	4.8
92.	**If you disagree with the 45 semester hour requirement, please indicate what hours you believe should be devoted to this curriculum ( )** *** 36-38** *** 36** *** 30**	**4.5**	**2.2**	**3.4**
93.	The curriculum must include at least 45 semester hours of study in the major of information sciences and technology.	3.7	4.5	4.8
94.	**If you disagree with the 45 semester hour requirement, please indicate what hours you believe should be devoted to this curriculum ( )** *** 54-56** *** 40** ***30 (5) or 37 (4)** *** 48**	**4.8**	**2.4**	**3.0**
95.	The curriculum should include a minimum of 15 semester hours of mathematics.	4.0	4.36	4.8
96.	**If you disagree with the 15 semester hour requirement, please indicate what hours you believe should be devoted to this curriculum ( )** *** 8 (5) or 12 (4)**	**4.0**	**2.0**	**2.5**
97.	The curriculum should include a minimum of 15 semester hours of science.	3.9	4.3	4.8
98.	**If you disagree with the 15 semester hour requirement, please indicate what hours you believe should be devoted to this curriculum ( )** *** 9** *** 9 including labs** *** 9** ***12**	**4.2**	**2.3**	**2.9**
99.	The curriculum should include foundation knowledge for information systems application	4.6	4.4	4.8
100.	The curriculum should include foundation knowledge for information science	4.6	4.4	4.8
101.	The curriculum should include foundation knowledge for software and computer systems (network architectures, operating systems, systems analysis)	4.6	4.5	4.8
102.	The curriculum should include foundation knowledge for information society and public policy	4.4	4.1	4.6
103.	The curriculum should provide direction for future development of the field	4.6	4.1	4.7
104.	The curriculum should respond to the needs of a rapidly changing technological and global society	4.6	3.9	4.6
105.	50 percent of the IST credit hours for the IST degree should be earned at the degree-awarding institution *** 90% ($n = 5$)** *** at least 50%** *** 25% ($n = 5$) from 2**	3.8	4.0	4.6
106.	The curriculum should integrate the theory, application, and use of technology	4.7	4.1	4.7
107.	The core materials must provide basic coverage of algorithms, data structures, software design, programming language concepts, and computer organization and architecture.	4.4	4.4	4.8
108.	Theoretical foundations, problem analysis, and solution design must be stressed within the program's core materials.	4.6	4.3	4.8
109.	Students must be exposed to a variety of programming languages and systems and must become proficient in at least one higher-level language.	4.6	4.3	4.8
110.	Course work in mathematics must include discrete mathematics, differential and integral calculus, and probability and statistics.	4.2	4.2	4.6

	STATEMENT	R	M	C
	*** remove differential and integral calculus (5) from 3**			
111.	The oral communications skills of the student must be developed and applied in the program.	4.7	4.4	4.8
112.	The written communications skills of the student must be developed and applied in the program.	4.9	4.4	4.8
113.	The curriculum includes as appropriate cooperative degree programs, interdisciplinary coursework and research, experiential opportunities, and other similar activities.	4.6	4.2	4.8
114.	The curriculum should include foundation knowledge for behavioral science	4.4	4.2	4.7
K	**Curriculum planning and evaluation:**			
115.	The curriculum for the degree program should be the result of a curriculum planning process	4.6	4.1	4.7
116.	The curriculum planning process should be consistent with the program's mission	4.7	4.1	4.6
117.	The program curriculum should be systematically monitored to assess its effectiveness	4.8	4.4	4.8
118.	The program curriculum should be revised to reflect new objectives	4.6	4.0	4.7
119.	The program curriculum should be revised to incorporate improvements based on contemporary theory and practice	4.6	4.0	4.7
120.	Evaluation of the curriculum includes assessment of students' achievements and their subsequent accomplishments.	4.6	4.2	4.6
121.	The curriculum is continually reviewed and receptive to innovation; its evaluation is used for ongoing appraisal, to make improvements, and to plan for the future.	4.6	4.2	4.7
122.	Evaluation involves those served by the program: students, faculty, employers, alumni, and other constituents.	4.6	4.3	4.7
L	**Instructional resources:**			
123.	The school should provide and manage instructional technologies and related support to faculty	4.6	4.0	4.7
124.	The school should provide and manage student access to library resources	4.4	3.7	4.6
125.	The school should provide and manage student access computer facilities	4.7	4.0	4.6
126.	The school should provide and manage student access to information technology	4.5	4.0	4.6
127.	The school should provide and manage space, facilities, and staff support adequate to meet program goals and objectives	4.5	3.7	4.6
M	**Collective faculty instructional responsibilities:**			
128.	The faculty should be responsible for effective creation and delivery of instruction	4.7	3.9	4.7
129.	The faculty should be responsible for evaluation of instructional effectiveness and student achievement	4.4	4.0	4.7
130.	The faculty should be responsible for continued improvement of instructional programs	4.7	4.1	4.7
131.	The faculty should be responsible for innovation in instructional processes *** with support (5)**	4.5	4.0	4.7
N	**Individual faculty instructional responsibilities:**			
132.	The individual members of the faculty should be responsible for currency in their instructional field(s) *** with support (5)**	4.7	4.2	4.8
133.	The individual members of the faculty should be responsible for delivery of effective instruction	4.9	4.2	4.8
134.	The individual members of the faculty should be responsible for accessibility to students consistent with the program's expectations	48	4.1	4.8
O	**Intellectual contributions:**			
135.	Faculty members should make intellectual contributions on a continuing basis appropriate to the program's mission	4.5	4.1	4.7
136.	The outputs for intellectual contributions should be available for public scrutiny by academic peers or practitioners	4.1	3.9	4.7
137.	Instructional contributions for instructional development should enhance the educational value of instructional efforts of the institution or discipline	4.8	3.6	4.2
138.	Applied scholarship should pertain to the application, transfer, and interpretation of knowledge to improve IST practice and teaching	3.8	3.6	4.6
139.	Intellectual contributions for instructional development should enhance the educational value of instructional efforts of the institution or discipline	4.2	3.8	4.6
140.	Basic scholarship should result in the creation of new knowledge relating to the program's mission	3.8	3.6	4.7
P	**Students selection:**			
141.	There should be a systematic process for student selection consistent with the program's mission	4.4	4.3	4.8
142.	Practices for student recruitment and selection should reflect efforts to achieve demographic diversity in student enrollment by recruiting students from multicultural, multiethnic, and multilingual backgrounds	4.3	4.2	4.7
143.	Adequate information concerning admission policies must be available to relevant interested constituencies	4.6	3.9	4.4
144.	Student retention policies should be consistent with an objective of producing high quality	4.7	4.3	4.7

	STATEMENT	R	M	C
	graduates			
145.	**Student retention policies should include program goals and objectives, descriptions of curricula, information on faculty, admission requirements, availability of financial aid, criteria for evaluating student performance, assistance with placement, and other policies and procedures.**	3.5	3.8	4.5
146.	The composition of the student body should foster a learning environment consistent with the school's mission and program goals and objectives	4.3	4.0	4.7
147.	Standards for admission should be applied consistently.	4.9	4.4	4.9
148.	The policies and procedures for waiving any admission standard or academic prerequisite should be stated clearly and applied consistently.	4.7	4.3	4.8
149.	Students should receive systematic, multifaceted evaluation of their achievements.	4.6	4.0	4.4
Q	**Students support:**			
150.	Courses must be offered with sufficient frequency for students to complete the program in a timely manner	4.9	4.1	4.6
151.	Courses must be structured to ensure effective interaction between faculty/teaching assistants and students in lower division courses and between faculty and students in upper division courses.	4.3	3.7	4.2
152.	Each student must have adequate and reasonable access to the systems needed for each course.	4.6	3.9	4.6
153.	Guidance on how to complete the program must be available to all students.	4.6	4.3	4.8
154.	Students must have access to qualified advising when they need to make course decisions and career choices.	4.6	4.5	4.8
155.	There must be established standards and procedures to ensure that graduates meet the requirements of the program.	4.7	4.1	4.4
156.	There should be a systematic plan and clear identification of the services available for career advisement for students	4.7	4.3	4.8
157.	There should be a systematic plan and clear identification of the services available for student career placement	4.4	4.2	4.7

APPENDIX L

Consent to Participate in a Survey Pilot Test

Consent to Participate in a Survey Pilot Test

TITLE: The Development of Program Standards for an Information Sciences and Technology Baccalaureate Program

INVESTIGATOR:
Elayne Shields
462-B Mower Drive
Pittsburgh, PA 15239
Phone: (412) 798-4968
Email: eas13@psu.edu

ADVISOR:
William Barone, Ph.D.
Department of Instruction and Leadership in Education
(412) 396-6111

PURPOSE: You are being asked to participate in a test of a research survey that will be used to identify a set of potential standards for an Information Sciences and Technology Baccalaureate Program. If you agree to take part in this research, you will be asked to complete an electronic survey via the internet, on two different occasions, within a two-week period. It will take approximately 20 minutes to complete each survey. Your response will be sent to me electronically via email.

These are the only requests that will be made of you.

RISKS AND BENEFITS: There are no risks or benefits to the participants.

COMPENSATION: There is no cost or compensation involved with completing this survey.

CONFIDENTIALITY: Your name will never appear on any survey or research instruments. No identity will be made in the data analysis. All written materials will be stored in a locked file in the researcher's home. Your response(s) will only appear in statistical data summaries. All materials will be destroyed at the completion of the research.

RIGHT TO WITHDRAW: You are under no obligation to participate in this study. You are free to withdraw your consent to participate at any time.

SUMMARY OF RESULTS: A summary of the results of this research will be supplied to you, at no cost, upon request.

VOLUNTARY CONSENT: I have read the above statements and understand what is being requested of me. I also understand that my participation is voluntary and that I am free to withdraw my consent at any time, for any reason. On these terms, I certify that I am willing to participate in this research project.

I understand that should I have any further questions about my participation in this study, I may call Dr. Paul Richer, Chair of the Duquesne University Institutional Review Board (412-396-6326).

_____ _____

Participant's Signature Date

_____ _____

Researcher's Signature Date

APPENDIX M

Pre-Notification Email Message

Pre-notification Email Message

Date Sent: Mon 10/14/2002 9:32 PM

Subject: Doctoral Dissertation Survey

As an **Accreditation Expert** I am requesting your participation in a doctoral dissertation research study to identify potential standards for a new baccalaureate program—**Information Sciences and Technology (IST)**. The results of this study will be used to develop criteria by which to measure the quality of education provided by institutions offering degrees in Information Sciences and Technology (IST). The resulting standards may be used as a foundation for the development of Accreditation criteria for the IST baccalaureate program.

In a few days you will receive another email containing a link to the electronic survey. As a token of my gratitude for participating in this study, you will be eligible to receive a Sony PEG-S360 PDA.

If you choose not to participate and would not like to receive the survey, please reply to this message asking to be removed from the mailing list. If a "Removal" response is not received from you by 10/16/02, the survey message will be sent to you.

A definition of IST as it pertains to this study is available at this link
http://www.elayneshields.com/definition.htm

Elayne Shields
****
Doctoral Cadidate
Duquesne University
School of Education
Instructional Leadership Doctoral Program
Pittsburgh PA 15283
Phone: (412) 798-4968
Email: prof@elayneshields.com

APPENDIX N

Survey Email Message

Survey Email Message

From: Elayne Shields [mailto:prof@elayneshields.com]
Sent: Thursday, October 17, 2002 9:03 PM
Subject: Accreditation Related Doctoral Dissertation Research Survey: Response Requested

As an **Accreditation Expert,** I am requesting your participation in a doctoral dissertation research study to identify potential standards for a new baccalaureate program—**Information Sciences and Technology (IST).** The results of this study will be used to develop criteria by which to measure the quality of education provided by institutions offering degrees in Information Sciences and Technology. The resulting standards may be used as a foundation for the development of future Accreditation criteria for the IST baccalaureate program.

Please read the following directions before clicking on the survey link:
http://site3.cwc.psu.edu/cgi-bin/consentForm.cgi?version=1
Directions:

- The survey will take approximately 20 minutes to complete.
- The survey works best when viewed using Internet **Explorer 5.5 or 6.0. It also works with Netscape Navigator 6.1.**
- Once you begin the survey, you will be asked to read an electronic Consent Form. Be sure to click the Check Box indicating your consent to participate, enter your name and Print the form before moving onto the survey. These items are at the bottom of the consent form and can be viewed by scrolling down.
- The survey will prompt you to answer all questions. If you do not choose to answer a question, click the No Opinion option to move on.
- However, if you need to take a call or walk away from the computer for a SHORT PERIOD of TIME, as long as you leave the web browser open, you will be able to continue from where you left off.
- If the browser time outs or pauses for an extended period of time, click Stop on the web browser tool bar and then click NEXT again or hit Reload and Next. This should solve the problem.
- Be sure to complete the survey by clicking the End button on the Thank You page.

Your participation is greatly appreciated.

Sincerely,

Elayne Shields
****
Doctoral Cadidate
Duquesne University
School of Education
Instructional Leadership Doctoral Program
Pittsburgh PA 15283
Phone: (412) 798-4968
Email: prof@elayneshields.com

APPENDIX O

Electronic Consent to Participate in a Research Study

Duquesne University
School of Education
Instructional Leadership Doctoral Program
Pittsburgh Pa 15283
Consent To Participate In A Research Study

TITLE	The Development of Program Standards for an Information Sciences and Technology Baccalaureate Progra
INVESTIGATOR	Elayne Shields 462-B Mower Drive Pittsburgh, PA 15239 Phone: (412) 795-4968 Email: [redacted]
ADVISOR	William Barone, Ph.D. Department of Instruction and Leadership in Education School of Education Duquesne University (412) 396-6111
PURPOSE	This study is being performed as partial fulfillment of the requirements for the Doctoral Degree of Educatio asked to participate in a research project that seeks to identify a set of potential standards for an Informat Program. If you agree to take part in this research, you will be asked to complete an electronic survey via 20 minutes to complete. Your response will be sent to me electronically via email. These are the only requests that will be made of you.
RISKS AND BENEFITS	Your participation will involve completing a survey on two different occasions, which will take approximatel response will be sent to the researcher electronically via email. Only the researcher will have access to the The benefits of participation will be an increased understanding of the program of the Information Science which institutions maintain standards for the program, and the potential employment opportunities for tho
COMPENSATION	There is no cost involved with completing this survey. Postage will not be required as responses will be ser One participant will receive a Sony PEG-S360 PDA. After responses have been received, a random number each of the responding participants. A random number generator will then select the winning number, bas address. The winner will receive the Sony PEG-S360 PDA. Only participants who have responded by Decen winner will be notified via email.
CONFIDENTIALITY	Your name will never appear on any survey or research instruments. No identity will be made in the data a in a locked file in the researcher's home. Your response(s) will only appear in statistical data summaries. A completion of the research. The results of this research may appear in a dissertation or other publications without identifying you in an
RIGHT TO WITHDRAW	You are under no obligation to participate in this study. You are free to withdraw your consent to particpat will result in the removal of any data you provided from this and any future studies.
SUMMARY OF RESULTS	A summary of the results of this research will be supplied to you, at no cost, upon request.
VOLUNTARY CONSENT	I have read the above statements and understand what is being requested of me. I also understand that n free to withdraw my consent at any time, for any reason. On these terms, I certify that I am willing to part I understand that should I have any further questions about my participation in this study, I may call Dr. F Institutional Review Board (412-396-6326). By checking the Agree box at the bottom of the online survey, aware that unless I click this box, I will not be able to complete the survey.

January 30, 2003 Print Form Go To Surv

Participant's Signature

Date

08/27/2002

Researcher's Signature Date

APPENDIX P

Electronic Survey

IST Standards Research Survey

This survey is designed to obtain your opinion for use in formulating national standards for an **Information Sciences and Technology (IST)** undergraduate degree. IST has been described as an interdisciplinary program that has evolved from and integrates curriculum from the degree programs such as Information Science, Computer Science, Computer Technology, Information Technology, Business Administration

Name:
E-mail Address:
Organization:
Title:
Department:
Highest Degree:
Discipline of Highest Degree:

Please enter the type of courses you teach below (e.g., information science, computer science, technology, etc.):

NEXT

Questions 1 through 6

IST Standards Research Survey

Please indicate your agreement or disagreement of each statement by clicking on the option box corresponding to the appropriate number on the 5-point Likert scale as follows:

(5) Strongly Agree (4) Agree (3) No Opinion (2) Disagree (1) Strongly Disagree

(A) The Mission Statement:	5	4	3	2	1
The program must have a clear mission statement.	○	○	○	○	○
The program mission statement must be appropriate to higher education.	○	○	○	○	○
The program mission statement must be consistent with the mission of the parent institution.	○	○	○	○	○
The program mission statement must be clearly communicated or published.	○	○	○	○	○
The program mission statement must be reviewed periodically.	○	○	○	○	○
The program mission statement must be revised as needed.	○	○	○	○	○
Please enter other criteria you deem necessary and rate its importance to the right.	○	○	○	○	○

NEXT

Page A of Q

Research Assistants: Michael Salaj, Alex Meyers, and Ed Ruffing, Penn State McKeesport
Revised: August 22, 2002

Questions 7 through 14

IST Standards Research Survey

Please indicate your agreement or disagreement of each statement by clicking on the option box corresponding to the appropriate number on the 5-point Likert scale as follows:

(5) Strongly Agree	(4) Agree	(3) No Opinion	(2) Disagree	(1) Strongly Disagree

(B) Program Objectives:	5	4	3	2	1
The educational objectives of the program must be clearly specified.	○	○	○	○	○
The emphasis on teaching must be clearly specified.	○	○	○	○	○
The emphasis on intellectual contributions (research) must be clearly specified.	○	○	○	○	○
The emphasis on service must be clearly specified.	○	○	○	○	○
Emphasis should be placed on a high quality education.	○	○	○	○	○
Programs must demonstrate implementation of continuous improvement processes and procedures for the program.	○	○	○	○	○
The program content should provide an integrated educational experience directed toward development of the ability to apply pertinent knowledge to the solution of practical problems in the graduate's information sciences and technology specialty.	○	○	○	○	○
The program's technical currency is important and must be assured by such means of an active industrial advisory committee.	○	○	○	○	○
Please enter other criteria you deem necessary and rate its importance to the right.	○	○	○	○	○

NEXT

Page B of Q

Research Assistants: Michael Salaj, Alex Meyers, and Ed Ruffing, Penn State McKeesport
Revised: August 22, 2002

Questions 15 through 19

IST Standards Research Survey

Please indicate your agreement or disagreement of each statement by clicking on the option box corresponding to the appropriate number on the 5-point Likert scale as follows:

(5) Strongly Agree (4) Agree (3) No Opinion (2) Disagree (1) Strongly Disagree

(C) Program Assessment:	5	4	3	2	1
The program must have documented, measurable outcomes.	○	○	○	○	○
The program's objectives must include expected outcomes for graduating students.	○	○	○	○	○
The extent to which each program objective is being met must be periodically assessed.	○	○	○	○	○
The results of the program's periodic assessments must be used to help identify opportunities for program improvement.	○	○	○	○	○
The results of the program's assessments and the actions taken based on the results must be documented.	○	○	○	○	○
Please enter other criteria you deem necessary and rate its importance to the right.	○	○	○	○	○

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Research Assistants: Michael Salaj, Alex Meyers, and Ed Ruffing, Penn State McKeesport
Revised: August 22, 2002

Questions 20 through 25

IST Standards Research Survey

Please indicate your agreement or disagreement of each statement by clicking on the option box corresponding to the appropriate number on the 5-point Likert scale as follows:

(5) Strongly Agree	(4) Agree	(3) No Opinion	(2) Disagree	(1) Strongly Disagree

(D) Faculty Recruitment, Selection, and Orientation:	5	4	3	2	1
Faculty recruitment practices must be clearly defined.	○	○	○	○	○
Faculty recruitment practices should be consistent with the program's mission.	○	○	○	○	○
Faculty selection practices must be clearly outlined.	○	○	○	○	○
Faculty selection practices should be consistent with the program's mission.	○	○	○	○	○
Faculty orientation practices should be consistent with the program's mission.	○	○	○	○	○
The program should demonstrate continuous efforts to achieve demographic diversity in its faculty by recruiting faculty from multicultural, multiethnic, and multilingual backgrounds.	○	○	○	○	○
Please enter other criteria you deem necessary and rate its importance to the right.	○	○	○	○	○

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Research Assistants: Michael Salaj, Alex Meyers, and Ed Ruffing, Penn State McKeesport
Revised: August 22, 2002

Questions 26 through 38

IST Standards Research Survey

Please indicate your agreement or disagreement of each statement by clicking on the option box corresponding to the appropriate number on the 5-point Likert scale as follows:

(5) Strongly Agree	(4) Agree	(3) No Opinion	(2) Disagree	(1) Strongly Disagree

(E) Faculty Development, Promotion, Retention, and Renewal:	5	4	3	2	1
A process should be developed to determine appropriate teaching assignments.	○	○	○	○	○
A process should be developed to determine appropriate service workloads.	○	○	○	○	○
A process should be developed to guide and mentor faculty.	○	○	○	○	○
A process should be developed to provide adequate support for activities that implement the program's mission.	○	○	○	○	○
A formal, periodic review process should exist for reappointment decisions.	○	○	○	○	○
A formal, periodic review process should exist for promotion decisions.	○	○	○	○	○
A formal, periodic review process should exist for tenure decisions.	○	○	○	○	○
Course development should be part of the reappointment, promotion and tenure decision process.	○	○	○	○	○
Effective teaching should be taken into consideration as part of the reappointment, promotion and tenure decision process.	○	○	○	○	○
Instructional innovations should be taken into consideration as part of the reappointment, promotion and tenure decision process.	○	○	○	○	○
Service should be taken into consideration as part of the reappointment, promotion and tenure decision process.	○	○	○	○	○
Advising duties must be a recognized part of faculty members' workloads.	○	○	○	○	○
There should be clearly defined policies for adjunct faculty.	○	○	○	○	○
Please enter other criteria you deem necessary and rate its importance to the right.	○	○	○	○	○

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Questions 39 through 47

IST Standards Research Survey

Please indicate your agreement or disagreement of each statement by clicking on the option box corresponding to the appropriate number on the 5-point Likert scale as follows:

(5) Strongly Agree (4) Agree (3) No Opinion (2) Disagree (1) Strongly Disagree

(F) Faculty Size, Composition, and Deployment:	5	4	3	2	1
The school should have a faculty capable of accomplishing program objectives.	○	○	○	○	○
There should be a full-time faculty sufficient to provide stability for the program.	○	○	○	○	○
Part-time faculty, when appointed, should balance and complement the teaching competencies of the full-time faculty.	○	○	○	○	○
Particularly in the teaching of specialties that are not represented in the expertise of the full-time faculty, part-time faculty should enrich the quality and diversity of a program.	○	○	○	○	○
ENTER the minimum PERCENT of the student credit hours that you AGREE should be taught by full-time faculty.					
ENTER the minimum PERCENT of credit hours that you AGREE should be taught by full-time faculty in the day program.					
ENTER the minimum PERCENT of credit hours that you AGREE should be taught by full-time faculty in the evening program.					
ENTER the NUMBER of credit hours, per term, that you AGREE should be the normal teaching load for faculty.					
ENTER the NUMBER you AGREE should be the credit hour reduction for faculty who are working on intellectual contributions in the form of a published manuscript.					
Please enter other criteria you deem necessary and rate its importance to the right.	○	○	○	○	○

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Questions 48 through 56

IST Standards Research Survey

Please indicate your agreement or disagreement of each statement by clicking on the option box corresponding to the appropriate number on the 5-point Likert scale as follows:

(5) Strongly Agree (4) Agree (3) No Opinion (2) Disagree (1) Strongly Disagree

(G) Faculty Qualifications:	5	4	3	2	1
Faculty should have sufficient academic and professional qualifications to accomplish the program's mission.	○	○	○	○	○
Faculty should hold a doctoral degree in the area in which the individual teaches.	○	○	○	○	○
Faculty should hold a masters degree, have industry experience, and be enrolled in a doctoral program in the area in which the individual teaches.	○	○	○	○	○
Faculty can hold a doctoral degree outside the area in which the individual teaches as long has they have industry experience in the area in which the individual teaches.	○	○	○	○	○
Faculty can hold a doctoral degree outside the area in which the individual teaches as long has the individual receives supplement preparation in the form of professional development.	○	○	○	○	○
Faculty can have specialized coursework in the field of primary teaching responsibilities but no doctoral degree.	○	○	○	○	○
Faculty can have specialized industry experience in the field of primary teaching responsibilities but no doctoral degree.	○	○	○	○	○
ENTER the PERCENT that you AGREE must constitute the total number of full-time equivalent faculty.	[ ]				
ENTER the PERCENT that you AGREE should not be exceeded in terms of the total full-time equivalent faculty who are academically qualified but who do not possess doctoral degrees.	[ ]				
Please enter other criteria you deem necessary and rate its importance to the right.	○	○	○	○	○

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Questions 57 through 63

IST Standards Research Survey

Please indicate your agreement or disagreement of each statement by clicking on the option box corresponding to the appropriate number on the 5-point Likert scale as follows:

(5) Strongly Agree	(4) Agree	(3) No Opinion	(2) Disagree	(1) Strongly Disagree

(H) Institutional Support and Financial Resources:	5	4	3	2	1
Support for faculty must be sufficient to enable the program to attract and retain high-quality faculty capable of supporting the program's objectives.	○	○	○	○	○
There must be sufficient support and financial resources to allow all faculty members to attend national technical meetings with sufficient frequency to maintain competence as teachers and scholars.	○	○	○	○	○
Adequate time must be assigned for the administration of the program.	○	○	○	○	○
Upper levels of administration must provide the program with the resources and atmosphere to function effectively with the rest of the institution.	○	○	○	○	○
Resources must be provided to acquire and maintain laboratory facilities that meet the needs of the program.	○	○	○	○	○
Resources must be provided to support library and related information retrieval facilities that meet the needs of the program.	○	○	○	○	○
The school's faculty, staff, and students must have the same opportunity for representation on the institution's advisory or policy-making bodies as *do those of comparable units throughout the institution.*	○	○	○	○	○
Please enter other criteria you deem necessary and rate its importance to the right.	○	○	○	○	○

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Research Assistants: Michael Salaj, Alex Meyers, and Ed Ruffing, Penn State McKeesport
Revised: August 22, 2002

Questions 64 through 73

IST Standards Research Survey

Please indicate your agreement or disagreement of each statement by clicking on the option box corresponding to the appropriate number on the 5-point Likert scale as follows:

(5) Strongly Agree (4) Agree (3) No Opinion (2) Disagree (1) Strongly Disagree

(I) Institutional Support and Financial Resources: (continued)	5	4	3	2	1
The school's administrative relationships with other academic units enhance the intellectual environment and support interdisciplinary interaction.	○	○	○	○	○
These administrative relationships encourage participation in the life of the parent institution.	○	○	○	○	○
The school's executive officer nurtures an intellectual environment that enhances the pursuit of the school's mission and program goals and the accomplishment of its program objectives.	○	○	○	○	○
Within its institutional framework the school uses effective decision-making processes that are determined mutually by the executive officer and the faculty, who regularly evaluate these processes and use the results.	○	○	○	○	○
Classrooms must be adequately equipped for the courses taught.	○	○	○	○	○
Documentation for hardware and software must be readily accessible to faculty and students.	○	○	○	○	○
All faculty members must have access to adequate computing resources for class preparation and for scholarly activities.	○	○	○	○	○
There must be adequate support personnel to install and maintain computing resources.	○	○	○	○	○
Instructional assistance must be provided for the computing resources.	○	○	○	○	○
Faculty offices must be adequate to enable faculty members to meet their responsibilities to students and for their professional requirements.	○	○	○	○	○
Please enter other criteria you deem necessary and rate its importance to the right.	○	○	○	○	○

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Questions 74 through 85

IST Standards Research Survey

Please indicate your agreement or disagreement of each statement by clicking on the option box corresponding to the appropriate number on the 5-point Likert scale as follows:

(5) Strongly Agree (4) Agree (3) No Opinion (2) Disagree (1) Strongly Disagree

(J) Curriculum Content and Evaluation:	5	4	3	2	1
Undergraduate curricula should provide an understanding of perspectives that form the context for information sciences and technology.	○	○	○	○	○
The curricula should include ethical and global issues.	○	○	○	○	○
The curricula should include the influence of political, social, legal, regulatory, environmental and technological issues.	○	○	○	○	○
The curricula should include the impact of demographic diversity on organizations.	○	○	○	○	○
The curriculum should include foundation knowledge for information systems application.	○	○	○	○	○
The curriculum should include foundation knowledge for information science.	○	○	○	○	○
The curriculum should include foundation knowledge for software and computer systems (network architectures, operating systems, systems analysis).	○	○	○	○	○
The curriculum should include foundation knowledge for information society and public policy.	○	○	○	○	○
The curriculum should provide direction for future development of the field.	○	○	○	○	○
The curriculum should respond to the needs of a rapidly changing technological and global society.	○	○	○	○	○
The curriculum should integrate the theory, application, and use of technology.	○	○	○	○	○
The core materials must provide basic coverage of algorithms, data structures, software design, programming language concepts, and computer organization and architecture.	○	○	○	○	○
Please enter other criteria you deem necessary and rate its importance to the right.	○	○	○	○	○

Questions 86 through 98

Box corresponding to the appropriate number on the 5 point Likert scale as follows:

(5) Strongly Agree (4) Agree (3) No Opinion (2) Disagree (1) Strongly Disagree

(K) Curriculum Content and Evaluation: (continued)	5	4	3	2	1
Theoretical foundations, problem analysis, and solution design must be stressed within the program's core materials	○	○	○	○	○
Students must be exposed to a variety of programming languages and systems and must become proficient in at least one higher-level language	○	○	○	○	○
Course work in mathematics must include discrete mathematics, differential and integral calculus, and probability and statistics	○	○	○	○	○
The oral communications skills of the student must be developed and applied in the program	○	○	○	○	○
The written and oral communications skills of the student must be developed and applied in the program	○	○	○	○	○
The curriculum includes as appropriate cooperative degree programs, interdisciplinary coursework and research, experiential opportunities, and other similar activities	○	○	○	○	○
The curriculum should include foundation knowledge for behavioral science	○	○	○	○	○
ENTER what you AGREE should be the minimum number of total semester hour credits for the baccalaureate of Information Sciences and Technology degree.					
ENTER the minimum NUMBER of semester hours of study in humanities, social sciences, arts and other disciplines that serve to broaden the background of the student that you AGREE must be included in the curriculum					
ENTER the minimum NUMBER of semester hours of study in the major of information sciences and technology that you AGREE must be included in the curriculum					
ENTER the minimum NUMBER of semester hours of quantitative studies that you AGREE must be included in the curriculum					
ENTER the minimum NUMBER of semester hours of science that you AGREE must be included in the curriculum.					
ENTER the PERCENT of credit hours for the IST degree that you AGREE should be earned at the degree-awarding institution.					
Please enter other criteria you deem necessary and rate its importance to the right.	○	○	○	○	○

Questions 99 through 106

IST Standards Research Survey

Please indicate your agreement or disagreement of each statement by clicking on the option box corresponding to the appropriate number on the 5-point Likert scale as follows:

(5) Strongly Agree (4) Agree (3) No Opinion (2) Disagree (1) Strongly Disagree

(L) Curriculum Planning and Evaluation:	5	4	3	2	1
The curriculum for the degree program should be the result of a curriculum planning process.	○	○	○	○	○
The curriculum planning process should be consistent with the program's mission.	○	○	○	○	○
The program curriculum should be systematically monitored to assess its effectiveness.	○	○	○	○	○
The program curriculum should be revised to reflect new objectives.	○	○	○	○	○
The program curriculum should be revised to incorporate improvements based on contemporary theory and practice.	○	○	○	○	○
Evaluation of the curriculum includes assessment of students' achievements and their subsequent accomplishments.	○	○	○	○	○
The curriculum is continually reviewed and receptive to innovation; its evaluation is used for ongoing appraisal, to make improvements, and to plan for the future.	○	○	○	○	○
Evaluation involves those served by the program: students, faculty, employers, alumni, and other constituents.	○	○	○	○	○
Please enter other criteria you deem necessary and rate its importance to the right.	○	○	○	○	○

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Research Assistants: Michael Salaj, Alex Meyers, and Ed Ruffing, Penn State McKeesport
Revised: August 22, 2002

Questions 107 through 111

IST Standards Research Survey

Please indicate your agreement or disagreement of each statement by clicking on the option box corresponding to the appropriate number on the 5-point Likert scale as follows:

(5) Strongly Agree	(4) Agree	(3) No Opinion	(2) Disagree	(1) Strongly Disagree

(M) Instructional Resources:	5	4	3	2	1
The school/institution should provide and manage instructional technologies and related support to faculty.	○	○	○	○	○
The school/institution should provide and manage student access to library resources.	○	○	○	○	○
The school/institution should provide and manage student access to computer facilities.	○	○	○	○	○
The school/institution should provide and manage student access to information technology.	○	○	○	○	○
The school/institution should provide and manage space, facilities, and staff support adequate to meet program goals and objectives.	○	○	○	○	○
Please enter other criteria you deem necessary and rate its importance to the right.	○	○	○	○	○

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Questions 112 through 117

IST Standards Research Survey

Please indicate your agreement or disagreement of each statement by clicking on the option box corresponding to the appropriate number on the 5-point Likert scale as follows:

(5) Strongly Agree	(4) Agree	(3) No Opinion	(2) Disagree	(1) Strongly Disagree

(N) Faculty Instructional Responsibilities:	5	4	3	2	1
The faculty should be responsible for effective creation and delivery of instruction.	○	○	○	○	○
The faculty should be responsible for evaluation of instructional effectiveness and student achievement.	○	○	○	○	○
The faculty should be responsible for continued improvement of instructional programs.	○	○	○	○	○
The faculty should be responsible for innovation in instructional processes.	○	○	○	○	○
The individual members of the faculty should be responsible for currency in their instructional field(s).	○	○	○	○	○
The individual members of the faculty should be responsible for accessibility to students consistent with the program's expectations.	○	○	○	○	○
Please enter other criteria you deem necessary and rate its importance to the right.	○	○	○	○	○

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Research Assistants: Michael Salaj, Alex Meyers, and Ed Ruffing, Penn State McKeesport
Revised: August 22, 2002

Questions 118 through 123

IST Standards Research Survey

Please indicate your agreement or disagreement of each statement by clicking on the option box corresponding to the appropriate number on the 5-point Likert scale as follows:

(5) Strongly Agree	(4) Agree	(3) No Opinion	(2) Disagree	(1) Strongly Disagree

(Q) Intellectual Contributions:	5	4	3	2	1
Faculty members should make intellectual contributions on a continuing basis appropriate to the program's mission.	○	○	○	○	○
The outputs for intellectual contributions should be available for public scrutiny by academic peers or practitioners.	○	○	○	○	○
Instructional contributions for instructional development should enhance the educational value of instructional efforts of the institution or discipline.	○	○	○	○	○
Applied scholarship should pertain to the application, transfer, and interpretation of knowledge to improve IST practice and teaching.	○	○	○	○	○
Intellectual contributions for instructional development should enhance the educational value of instructional efforts of the institution or discipline.	○	○	○	○	○
Basic scholarship should result in the creation of new knowledge relating to the program's mission.	○	○	○	○	○
Please enter other criteria you deem necessary and rate its importance to the right.	○	○	○	○	○

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Research Assistants: Michael Salaj, Alex Meyers, and Ed Ruffing, Penn State McKeesport
Revised: August 22, 2002

Questions 124 through 131

IST Standards Research Survey

Please indicate your agreement or disagreement of each statement by clicking on the option box corresponding to the appropriate number on the 5-point Likert scale as follows:

(5) Strongly Agree	(4) Agree	(3) No Opinion	(2) Disagree	(1) Strongly Disagree

(P) Students Selection:	5	4	3	2	1
There should be a systematic process for student selection consistent with the program's mission.	○	○	○	○	○
Practices for student recruitment and selection should reflect efforts to achieve demographic diversity in student enrollment by recruiting students from multicultural, multiethnic, and multilingual backgrounds.	○	○	○	○	○
Adequate information concerning admission policies must be available to relevant interested constituencies.	○	○	○	○	○
Student retention policies should be consistent with an objective of producing high quality graduates.	○	○	○	○	○
The composition of the student body should foster a learning environment and be consistent with the school's mission and program goals and objectives.	○	○	○	○	○
Standards for admission should be applied consistently.	○	○	○	○	○
The policies and procedures for waiving any admission standard or academic prerequisite should be stated clearly and applied consistently.	○	○	○	○	○
Students should receive systematic, multifaceted evaluation of their achievements.	○	○	○	○	○
Please enter other criteria you deem necessary and rate its importance to the right.	○	○	○	○	○

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Questions 132 through 138

IST Standards Research Survey

Please indicate your agreement or disagreement of each statement by clicking on the option box corresponding to the appropriate number on the 5-point Likert scale as follows:

(5) Strongly Agree (4) Agree (3) No Opinion (2) Disagree (1) Strongly Disagree

(Q) Students Support:	5	4	3	2	1
Courses must be offered with sufficient frequency for students to complete the program in a timely manner.	○	○	○	○	○
Courses must be structured to ensure effective interaction between faculty/teaching assistants and students in lower division courses and between faculty and students in upper division courses.	○	○	○	○	○
Each student must have adequate and reasonable access to the systems needed for each course.	○	○	○	○	○
Guidance on how to complete the program must be available to all students.	○	○	○	○	○
Students must have access to qualified advising when they need to make course decisions and career choices.	○	○	○	○	○
There must be established standards and procedures to ensure that graduates meet the requirements of the program.	○	○	○	○	○
There should be a systematic plan and clear identification of the services available for career advisement and placement for students.	○	○	○	○	○
Please enter other criteria you deem necessary and rate its importance to the right.	○	○	○	○	○

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Research Assistants: Michael Salaj, Alex Meyers, and Ed Ruffing, Penn State McKeesport
Revised: August 22, 2002

APPENDIX Q

Respondent Department Affiliation

Respondent Department Affiliation

	Criteria	Frequency	Percent
1	Bronx Borough Office	1	3.7%
2	College of Business Administration	1	3.7%
3	College of Business and Public Affairs	1	3.7%
4	College of Computing Sciences and Engineering	1	3.7%
5	College of Business	1	3.7%
6	Computer Science	3	11.1%
7	Computer Science and Engineering	1	3.7%
8	Computer Science and Software Engineering	1	3.7%
9	Department of Management	1	3.7%
10	Information Systems Engineering	1	3.7%
11	Information Technology Management	1	3.7%
12	Library Science	1	3.7%
13	Management	1	3.7%
14	Management and Information Systems	1	3.7%
15	Physics Research library	1	3.7%
16	Planning & Analysis	1	3.7%
17	School of Business	1	3.7%
18	School of Business Administration	1	3.7%
19	School of Business and Management	1	3.7%
20	School of Computer and Information Science	1	3.7%
21	School of Information	1	3.7%
22	School of Information Technology	1	3.7%
23	School of Library and Information Studies	1	3.7%
24	School of Management	1	3.7%
25	Solar Physics	1	3.7%
Total		27	100.0%

APPENDIX R

Respondent Organization Affiliation

Respondent Organization Affiliation

	Organization	Frequency	Percent
1	Air Force Institute of Technology	1	3.7%
2	Auburn University	1	3.7%
3	Battelle (Tech Innovation Organization)	1	3.7%
4	Brigham Young University	1	3.7%
5	Clemson University	1	3.7%
6	Georgia Southern University	1	3.7%
7	Georgia Tech	1	3.7%
8	Harvard University	1	3.7%
9	Louisiana State University	1	3.7%
10	Mississippi State University	2	7.4%
11	Morgan State University	1	3.7%
12	Murray State University	1	3.7%
13	Penn State Harrisburg	1	3.7%
14	Stanford University	1	3.7%
15	State Farm Mutual Insurance Company	1	3.7%
16	The New York Public Library	1	3.7%
17	University of Hawaii	1	3.7%
18	University of Houston-Clear Lake	1	3.7%
19	University of North Florida	1	3.7%
20	University of Oklahoma	1	3.7%
21	University of South Alabama	1	3.7%
22	University of South Florida	1	3.7%
23	University of Tennessee	1	3.7%
24	University of Texas	1	3.7%
25	Virginia Tech	1	3.7%
26	Wadsworth Public Library	1	3.7%
Total		27	100.0%

APPENDIX S

Discipline in Which Highest Degree was Earned

Discipline in Which Highest Degree was Earned

	Discipline	Frequency	Percent
1.	Accounting	1	3.7%
2.	Computer and Information Science	2	7.4%
3.	Computer Engineering	1	3.7%
4.	Computer Science	3	11.1%
5.	Computer Science/Business Administration	1	3.7%
6.	Economics	1	3.7%
7.	Electrical Engineering	1	3.7%
8.	Finance	1	3.7%
9.	Industrial Engineering	1	3.7%
10.	Library and Information Science	1	3.7%
11.	Library Science	3	11.1%
12.	Management	3	11.1%
13.	Management/Law	1	3.7%
14.	Marketing	1	3.7%
15.	Operations Management	1	3.7%
16.	Organizational Management	1	3.7%
17.	Psychology/HCI	1	3.7%
18.	Quantitative Business Analysis	1	3.7%
19.	Solar Physics	1	3.7%
20.	Statistics	1	3.7%
Total		27	100.0%

APPENDIX T

Courses Taught by Respondents

Courses Taught by Respondents

		Frequency	Percent
1	Administrator	2	7.4%
2	Computer Engineering	1	3.7%
3	Computer Science	3	11.1%
4	Computer Science, Software Engineering	2	7.4%
5	Corporate Financial Reporting	1	3.7%
6	Economics	1	3.7%
7	Graduate Marketing Management	1	3.7%
8	Industry	3	11.1%
9	Information Science	2	7.4%
10	Information Science and Technology	2	7.4%
11	Information Systems	2	7.4%
12	Librarian	1	3.7%
13	Management	1	3.7%
14	Organizational Behavior, Strategic Management, Organization Theory	2	7.4%
15	Software Engineering, Computer Science, Information Science	1	3.7%
16	Strategy/Information Technology	1	3.7%
17	Young Adult Literature, Merchandising and Marketing to Teens In Libraries	1	3.75
Total		27	100.00%

APPENDIX U

Descriptive Statistics

Descriptive Statistics

Survey Categories	N Valid	N Missing[b]	Mean	Median	Mode	Std. Deviation	Minimum	Maximum
Mission Statement	27	0	4.6605	5.0000	5.00	0.43235	3.83	5.00
Program Objectives	27	0	4.4676	4.5000	5.00	0.49951	3.38	5.00
Program Assessment	27	0	4.6296	5.0000	5.00	0.42500	4.00	5.00
Faculty Recruitment, Selection, and Orientation	27	0	4.3210	4.3333	5.00	0.65196	2.67	5.00
Faculty Development, Promotion, Retention, and Renewal	27	0	4.3846	4.3077	4.08	0.43462	3.38	5.00
Faculty Size, Composition, and Deployment	27	0	4.6667	4.7500	5.00	0.34669	4.00	5.00
(# 43) Minimum PERCENT of the student credit hours that should be taught by full-time faculty.	27	0	66.0000	66.0000	60.00	13.15587	30.00	90.00
(#44) Minimum PERCENT of credit hours that should be taught by full-time faculty in the day program.	27	0	65.9630	70.0000	75.00	18.08204	20.00	100.00
(#45) Minimum PERCENT of credit hours that should be taught by full-time faculty in the evening program.	27	0	57.2593	60.0000	50.00	20.45933	0.00	90.00
(#46) The NUMBER of credit hours, per term, that should be the normal teaching load for faculty.	27	0	8.6667	9.0000	9.00	2.64196	0.00	12.00
(#47) The NUMBER should be the credit hour reduction for faculty who are working on intellectual contributions in the form of a published manuscript.	27	0	3.2963	3.0000	3.00	2.10886	0.00	9.00
Faculty Qualifications	27	0	3.7037	3.7143	4.00	0.55176	2.57	5.00
(# 64) The PERCENT that must constitute the total number of full-time equivalent faculty.	23	4	74.1304	80.0000	90.00	20.92477	10.00	100.00
(# 66) The PERCENT that should not be exceeded in terms of the total full-time equivalent faculty who are academically qualified but who do not possess doctoral degrees.	26	1	23.6154	20.0000	10.00	23.00100	0.00	90.00
Institutional Support and Financial Resources	27	0	4.5556	4.6471	5.00	0.40503	3.82	5.00
Curriculum Content and Evaluation	27	0	4.4269	4.4211	4.42	0.33900	3.84	5.00
(# 93) The minimum NUMBER of total semester hour credits for the baccalaureate of Information Sciences and Technology degree.	22	5	117.4091	120.0000	120.00	37.91803	0.00	220.00
(# 94) The minimum NUMBER of semester hours of study in humanities, social sciences, arts and other disciplines that serve to broaden the background of the student that must be included in the curriculum.	22	5	43.3182	37.5000	30.00	23.71736	9.00	120.00
(# 95) The minimum NUMBER of semester hours of study in the major of Information Sciences and Technology that must be included in the curriculum.	22	5	38.2727	40.0000	24.00	13.30300	15.00	64.00
(# 96) The minimum NUMBER of semester hours of quantitative studies that must be included in the curriculum.	22	5	14.5000	12.0000	12.00	6.98809	6.00	30.00
(# 97) The minimum NUMBER of semester hours of science that must be included in the curriculum.	22	5	10.0000	9.0000	8.00	4.64963	0.00	20.00
(# 98) The PERCENT of credit hours for the IST degree that should be earned at the degree-awarding institution.	24	3	47.9167	50.0000	50.00	18.31112	10.00	80.00
Curriculum Planning and Evaluation	27	0	4.7130	5.0000	5.00	0.39803	3.88	5.00
Instructional Resources	27	0	4.5852	4.8000	5.00	0.46052	4.00	5.00
Faculty Instructional Responsibilities	27	0	4.7037	4.8333	5.00	0.36201	4.00	5.00
Intellectual Contributions	27	0	4.5852	4.8000	5.00	0.46052	4.00	5.00
Student Selection	27	0	4.5602	4.7500	5.00	0.40781	3.75	5.00
Student Support	27	0	4.6772	5.0000	5.00	0.39936	4.00	5.00
OVERALL	27	0	4.5094	4.5237	3.91	0.32494	3.91	4.99

a. Multiple modes exist. The smallest value is shown.

b. The values under the missing column the number of no opinion responses.

APPENDIX V

Frequency Statistics: Likert Scale

Frequency Table: Likert Scale

Category	Strongly Agree		Agree		No Opinion		Disagree		Strongly Disagree	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Mission Statement	15	55.6	11	40.7	1	3.7	0	0.0	0	0.0
Program Objectives	7	25.9	16	59.3	4	14.9	0	0.0	0	0.0
Program Assessment	14	51.9	13	48.1	0	0.0	0	0.0	0	0.0
Faculty Recruitment, Selection, and Orientation	7	25.9	15	55.6	4	14.8	1	3.7	0	0.0
Faculty Development, Promotion, Retention, and Renewal	4	14.8	20	74.1	3	11.1	0	0.0	0	0.0
Faculty Size, Composition, and Deployment	11	40.7	16	59.3	0	0.0	0	0.0	0	0.0
Faculty Qualifications	1	3.7	9	33.3	14	51.9	3	11.1	0	0.0
Institutional Support and Financial Resources	5	25.9	18	66.7	2	7.4	0	0.0	0	0.0
Curriculum Content and Evaluation	3	11.1	21	77.8	3	11.1	0	0.0	0	0.0
Curriculum Planning and Evaluation	16	59.3	10	37.0	1	3.7	0	0.0	0	0.0
Instructional Resources	13	48.1	14	51.9	0	0.0	0	0.0	0	0.0
Faculty Instructional Responsibilities	12	44.4	15	55.6	0	0.0	0	0.0	0	0.0
Intellectual Contributions	13	48.1	14	51.9	0	0.0	0	0.0	0	0.0
Student Selection	7	25.9	19	70.4	0	0.0	0	0.0	0	0.0
Student Support	14	51.9	13	48.1	0	0.0	0	0.0	0	0.0
Overall	0	0.0	25	92.6	0	0.0	0	0.0	0	0.0

N = 27

APPENDIX W

Frequency Statistics: Open-Ended Statements

Frequency Statistics: Open-Ended Statements

Question 43	Frequency	Percent
30	1	3.7
50	4	14.8
60	7	25.9
66	2	7.4
70	2	7.4
75	7	25.9
80	2	7.4
85	1	3.7
90	1	3.7
Total	27	100.0

Question 44	Frequency	Percent
20	1	3.7
25	1	3.7
50	4	14.8
60	6	22.2
66	1	3.7
70	2	7.4
75	7	25.9
80	1	3.7
85	1	3.7
90	2	7.4
100	1	3.7
Total	27	100.0

Question 45	Frequency	Percent
0	1	3.7
10	1	3.7
25	1	3.7
50	8	29.6
60	7	25.9
66	1	3.7
70	1	3.7
75	4	14.8
80	1	3.7
85	1	3.7
90	1	3.7
Total	27	100.0

Question 46	Frequency	Percent
0	1	3.7
6	5	18.5
9	16	59.3
12	5	18.5
Total	27	100.0

Question 47	Frequency	Percent
0	4	14.8
2	1	3.7
3	16	59.3
6	5	18.5
9	1	3.7
Total	27	100.0

Question 55	Frequency	Percent
No opinion	4	14.8
10	1	3.7
50	4	14.8
60	1	3.7
75	5	18.5
80	4	14.8
90	6	22.2
100	2	7.4
Total	27	100.0

Question 56	Frequency	Percent
No Opinion	1	3.7
0	2	7.4
5	1	3.7
10	8	29.6
20	5	18.5
24	1	3.7
25	5	18.5
50	2	7.4
90	2	7.4
Total	27	100.0

Question 93	Frequency	Percent
No Opinion	5	18.5
0	1	3.7
50	1	3.7
96	1	3.7
120	10	37.0
124	2	7.4
125	1	3.7
126	1	3.7
128	2	7.4
130	1	3.7
132	1	3.7
220	1	3.7
Total	27	100.0

Question 94	Frequency	Percent
No Opinion	5	18.5
9	1	3.7
18	2	7.4
24	1	3.7
30	6	22.2
35	1	3.7
40	1	3.7
48	1	3.7
50	3	11.1
60	2	7.4
63	1	3.7
64	2	7.4
120	1	3.7
Total	27	100.0

Question 95	Frequency	Percent
No Opinion	5	18.5
15	1	3.7
21	1	3.7
24	4	14.8
30	2	7.4
35	1	3.7
36	1	3.7
40	2	7.4
42	1	3.7
45	3	11.1
46	1	3.7
48	1	3.7
50	2	7.4
64	2	7.4
Total	27	100.0

Question 96	Frequency	Percent
No Opinion	5	18.5
6	3	11.1
9	4	14.8
12	5	18.5
15	3	11.1
18	2	7.4
20	2	7.4
24	1	3.7
30	2	7.4
Total	27	100.0

Question 97	Frequency	Percent
No Opinion	5	18.5
0	1	3.7
4	1	3.7
6	3	11.1
8	4	14.8
9	3	11.1
10	2	7.4
12	3	11.1
15	3	11.1
18	1	3.7
20	1	3.7
Total	27	100.0

Question 98	Frequency	Percent
No Opinion	3	11.1
10	1	3.7
25	2	7.4
30	4	14.8
40	2	7.4
48	1	3.7
50	7	25.9
60	1	3.7
66	2	7.4
70	1	3.7
75	2	7.4
80	1	3.7
Total	27	100.0

APPENDIX X

Accrediting Body ANOVA

Accrediting Body ANOVA Table

Survey Category: Likert Scale	N	df	F	Sig.
Mission Statement	27	3	0.231	0.874
Program Objectives	27	3	0.684	0.571
Program Assessment	27	3	1.927	0.153
Faculty Recruitment, Selection, and Orientation	27	3	1.698	0.195
Faculty Development, Promotion, Retention, and R	27	3	0.214	0.885
Faculty Size, Composition, and Deployment	27	3	0.624	0.607
Faculty Qualifications	27	3	0.934	0.440
Institutional Support and Financial Resources	27	3	0.475	0.703
Curriculum Content and Evaluation	27	3	0.496	0.689
Curriculum Planning and Evaluation	27	3	0.834	0.489
Instructional Resources	27	3	0.899	0.457
Faculty Instructional Responsibilities	27	3	0.869	0.471
Intellectual Contributions	27	3	0.899	0.457
Student Selection	27	3	1.592	0.219
Student Support	27	3	1.257	0.313
Overall	27	3	0.560	0.647

Survey Statement: Open-Ended	N	df	F	Sig.
Question 43	27	3	2.044	0.136
Question 44	27	3	2.876	0.058
Question 45	27	3	1.846	0.167
Question 46	27	3	2.125	0.125
Question 47	27	3	2.664	0.072
Question 55	27	3	1.017	0.407
Question 56	27	3	0.718	0.552
Question 93	27	3	0.576	0.638
Question 94	27	3	2.014	0.148
Question 95	27	3	2.024	0.147
Question 96	27	3	0.735	0.545
Question 97	27	3	0.058	0.981
Question 98	27	3	1.201	0.335

APPENDIX Y

Highest Degree Earned Independent Samples Test

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Mission Statement	Equal variances assumed	.684	.416	.289	25	.775	.0560	.19331	-.34217	.45407
	Equal variances not assumed			.259	8.863	.801	.0560	.21571	-.43317	.54507
Program Objectives	Equal variances assumed	.290	.595	.236	25	.816	.0527	.22346	-.40754	.51290
	Equal variances not assumed			.215	9.093	.834	.0527	.24486	-.50037	.60573
Program Assessment	Equal variances assumed	.016	.899	.414	25	.682	.0786	.18969	-.31210	.46924
	Equal variances not assumed			.401	9.955	.697	.0786	.19600	-.35840	.51554
Faculty Recruitment, Selection, and Orientation	Equal variances assumed	3.123	.089	.950	25	.351	.2726	.28685	-.31815	.86339
	Equal variances not assumed			.752	7.639	.474	.2726	.36231	-.56980	1.11504
Faculty Development, Promotion, Retention, and Renewal	Equal variances assumed	.000	.988	-.153	25	.880	-.0297	.19455	-.43036	.37102
	Equal variances not assumed			-.150	10.222	.884	-.0297	.19788	-.46928	.40994
Faculty Size Composition, and Deployment	Equal variances assumed	1.115	.301	.207	25	.838	.0321	.15513	-.28736	.35164
	Equal variances not assumed			.237	13.850	.816	.0321	.13572	-.25925	.32353
Faculty Qualifications	Equal variances assumed	2.389	.135	-1.086	25	.288	-.2622	.24148	-.75957	.23508
	Equal variances not assumed			-1.398	18.657	.179	-.2622	.18763	-.65544	.13095
Institutional Support and Financial Resources	Equal variances assumed	.168	.685	.766	25	.451	.1374	.17930	-.23188	.50667
	Equal variances not assumed			.703	9.165	.499	.1374	.19541	-.30344	.57823
Curriculum Content and Evaluation	Equal variances assumed	.131	.721	.728	25	.473	.1094	.15024	-.20002	.41882
	Equal variances not assumed			.721	10.335	.487	.1094	.15183	-.22743	.44622
Curriculum Planning and Evaluation	Equal variances assumed	.149	.703	.397	25	.695	.0705	.17770	-.29545	.43652
	Equal variances not assumed			.388	10.112	.706	.0705	.18189	-.33414	.47521
Instructional Resources	Equal variances assumed	5.310	.030	-1.681	25	.105	-.3286	.19550	-.73120	.07406
	Equal variances not assumed			-1.875	13.104	.083	-.3286	.17523	-.70683	.04969
Faculty Instructional Responsibilities	Equal variances assumed	1.709	.203	-.487	25	.631	-.0786	.16137	-.41091	.25377
	Equal variances not assumed			-.549	13.423	.592	-.0786	.14311	-.38675	.22961
Intellectual Contributions	Equal variances assumed	5.310	.030	-1.681	25	.105	-.3286	.19550	-.73120	.07406
	Equal variances not assumed			-1.875	13.104	.083	-.3286	.17523	-.70683	.04969
Student Selection	Equal variances assumed	1.175	.289	.049	25	.961	.0089	.18263	-.36721	.38506
	Equal variances not assumed			.054	12.907	.958	.0089	.16482	-.34741	.36527
Student Support	Equal variances assumed	4.815	.038	-.592	25	.559	-.1051	.17761	-.47090	.26070
	Equal variances not assumed			-.727	16.555	.477	-.1051	.14452	-.41065	.20044

APPENDIX Z

Academic Discipline ANOVA

Discipline ANOVA Table

Survey Category: Likert Scale	N	df	F	Sig.
Mission Statement	27	5	0.489	0.781
Program Objectives	27	5	1.494	0.234
Program Assessment	27	5	0.266	0.926
Faculty Recruitment, Selection, and Orientation	27	5	2.072	0.110
Faculty Development, Promotion, Retention, and Renewal	27	5	1.065	0.408
Faculty Size, Composition, and Deployment	27	5	0.622	0.684
Faculty Qualifications	27	5	1.040	0.420
Institutional Support and Financial Resources	27	5	0.410	0.837
Curriculum Content and Evaluation	27	5	0.820	0.549
Curriculum Planning and Evaluation	27	5	0.210	0.954
Instructional Resources	27	5	1.218	0.335
Faculty Instructional Responsibilities	27	5	0.339	0.884
Intellectual Contributions	27	5	1.218	0.335
Student Selection	27	5	0.751	0.595
Student Support	27	5	0.260	0.930
Overall	27	5	0.389	0.851

Survey Statement: Open-Ended	N	df	F	Sig.
Question 43	27	5	1.161	0.361
Question 44	27	5	0.767	0.584
Question 45	27	5	1.690	0.181
Question 46	27	5	4.477	0.006
Question 47	27	5	1.678	0.184
Question 55	27	5	0.851	0.511
Question 56	27	5	1.290	0.306
Question 93	27	5	0.775	0.557
Question 94	27	5	1.555	0.231
Question 95	27	5	3.721	0.024
Question 96	27	5	0.850	0.513
Question 97	27	5	0.990	0.440
Question 98	27	5	1.458	0.254

APPENDIX AA

Faculty Rank or Title ANOVA

Faculty Rank or Job Title ANOVA Table

Survey Category: Likert Scale	N	df	F	Sig.
Mission Statement	27	9	1.383	0.270
Program Objectives	27	9	1.085	0.421
Program Assessment	27	9	0.751	0.660
Faculty Recruitment, Selection, and Orientation	27	9	1.564	0.204
Faculty Development, Promotion, Retention, and Renewal	27	9	0.917	0.534
Faculty Size, Composition, and Deployment	27	9	0.930	0.524
Faculty Qualifications	27	9	0.529	0.834
Institutional Support and Financial Resources	27	9	1.639	0.182
Curriculum Content and Evaluation	27	9	2.293	0.067
Curriculum Planning and Evaluation	27	9	1.061	0.437
Instructional Resources	27	9	1.931	0.116
Faculty Instructional Responsibilities	27	9	0.630	0.757
Intellectual Contributions	27	9	1.931	0.116
Student Selection	27	9	1.408	0.260
Student Support	27	9	0.633	0.755

Survey Statement: Open-Ended	N	df	F	Sig.
Question 43	27	9	0.828	0.600
Question 44	27	9	0.396	0.920
Question 45	27	9	0.955	0.507
Question 46	27	9	1.806	0.140
Question 47	27	9	2.190	0.078
Question 55	27	9	0.199	0.990
Question 56	27	9	0.257	0.978
Question 93	27	7	0.103	0.997
Question 94	27	7	0.536	0.793
Question 95	27	7	0.598	0.748
Question 96	27	7	0.499	0.820
Question 97	27	7	1.547	0.231
Question 98	27	8	1.499	0.238

APPENDIX AB

Department ANOVA

Department ANOVA Table

Survey Category: Likert Scale	N	df	F	Sig.
Mission Statement	27	4	0.934	0.462
Program Objectives	27	4	1.020	0.419
Program Assessment	27	4	0.618	0.655
Faculty Recruitment, Selection, and Orientation	27	4	2.001	0.130
Faculty Development, Promotion, Retention, and Renewal	27	4	0.874	0.495
Faculty Size, Composition, and Deployment	27	4	1.462	0.248
Faculty Qualifications	27	4	0.674	0.617
Institutional Support and Financial Resources	27	4	1.210	0.335
Curriculum Content and Evaluation	27	4	1.413	0.263
Curriculum Planning and Evaluation	27	4	0.587	0.676
Instructional Resources	27	4	2.290	0.092
Faculty Instructional Responsibilities	27	4	0.882	0.491
Intellectual Contributions	27	4	2.290	0.092
Student Selection	27	4	1.255	0.317
Student Support	27	4	0.190	0.941

Survey Statement: Open-Ended	N	df	F	Sig.
Question 43	27	4	2.362	0.085
Question 44	27	4	1.039	0.410
Question 45	27	4	1.918	0.143
Question 46	27	4	2.074	0.119
Question 47	27	4	1.619	0.205
Question 55	27	4	3.017	0.046
Question 56	27	4	1.626	0.205
Question 93	27	4	0.314	0.865
Question 94	27	4	0.827	0.526
Question 95	27	4	1.607	0.218
Question 96	27	4	0.074	0.989
Question 97	27	4	1.245	0.329
Question 98	27	4	1.952	0.143

APPENDIX AC

Spearman Correlations: Likert Scale

Spearman's rho Correlations: Likert Scale

			Mission Statement	Program Objectives	Program Assessment	Faculty Recruitment, Selection, and Orientation	Faculty Development, Promotion, Retention, and Renewal	Faculty Size Composition, and Deployment	Faculty Qualifications	Institutional Support and Financial Resources
Spearman's rho	Highest Degree Earned	Correlation Coefficient	-0.042	-0.077	-0.088	-0.110	0.044	-0.091	0.219	-0.132
		Sig. (2-tailed)	0.836	0.703	0.661	0.584	0.829	0.652	0.273	0.513
		N	27	27	27	27	27	27	27	27
	Department	Correlation Coefficient	-0.284	-0.315	-0.297	-0.343	-0.157	-0.351	-0.066	-0.244
		Sig. (2-tailed)	0.152	0.110	0.132	0.080	0.435	0.073	0.743	0.220
		N	27	27	27	27	27	27	27	27
	Discipline	Correlation Coefficient	0.052	-0.092	-0.075	-0.183	-0.151	-0.074	-0.232	0.185
		Sig. (2-tailed)	0.797	0.648	0.708	0.362	0.452	0.715	0.245	0.356
		N	27	27	27	27	27	27	27	27
	Faculty Rank or Job Title	Correlation Coefficient	0.289	0.172	0.164	0.126	0.105	-0.041	-0.049	0.179
		Sig. (2-tailed)	0.144	0.391	0.412	0.532	0.601	0.840	0.807	0.370
		N	27	27	27	27	27	27	27	27
	Accrediting Body	Correlation Coefficient	0.108	0.174	0.325	0.138	0.084	0.273	0.093	0.216
		Sig. (2-tailed)	0.593	0.384	0.098	0.492	0.678	0.169	0.646	0.279
		N	27	27	27	27	27	27	27	27

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

			Curriculum Content and Evalaluation	Curriculum Planning and Evalaluation	Instructional Resources	Faculty Instructional Responsibilities	Intellectual Contributions	Student Selection	Student Support	Overall Survey
Spearman's rho	Highest Degree Earned	Correlation Coefficient	-0.169	-0.134	0.306	0.051	0.306	-0.066	0.041	0.022
		Sig. (2-tailed)	0.401	0.504	0.121	0.799	0.121	0.743	0.839	0.914
		N	27	27	27	27	27	27	27	27
	Department	Correlation Coefficient	-0.358	-0.292	-0.073	-0.250	-0.073	-0.226	-0.072	-0.294
		Sig. (2-tailed)	0.066	0.139	0.719	0.208	0.719	0.257	0.721	0.137
		N	27	27	27	27	27	27	27	27
	Discipline	Correlation Coefficient	0.099	0.153	0.077	0.136	0.077	0.114	0.106	-0.006
		Sig. (2-tailed)	0.622	0.446	0.704	0.499	0.704	0.570	0.599	0.978
		N	27	27	27	27	27	27	27	27
	Faculty Rank or Job Title	Correlation Coefficient	0.260	0.107	-0.270	-0.027	-0.270	0.088	0.073	0.073
		Sig. (2-tailed)	0.190	0.594	0.173	0.892	0.173	0.662	0.717	0.717
		N	27	27	27	27	27	27	27	27
	Accrediting Body	Correlation Coefficient	0.145	0.257	0.172	0.279	0.172	0.347	0.205	0.250
		Sig. (2-tailed)	0.471	0.196	0.390	0.159	0.390	0.076	0.304	0.208
		N	27	27	27	27	27	27	27	27

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

APPENDIX AD

Spearman Correlations: Open-Ended Statements

Spearman's rho Correlations: Open-Ended Statements

			Question 43	Question 44	Question 45	Question 46	Question 47	Question 55	Question 56
Spearman's rho	Highest Degree Earned	Correlation Coefficient	-0.122	-0.132	0.011	0.301	-0.055	0.290	-0.259
		Sig. (2-tailed)	0.545	0.511	0.956	0.127	0.785	0.151	0.233
		N	27	27	27	27	27	26	23
	Department	Correlation Coefficient	0.058	0.008	0.062	0.093	-0.264	-0.110	-0.102
		Sig. (2-tailed)	0.773	0.970	0.757	0.644	0.183	0.594	0.642
		N	27	27	27	27	27	26	23
	Discipline	Correlation Coefficient	-0.101	-0.149	-0.087	-0.327	-0.375	-0.394	-0.035
		Sig. (2-tailed)	0.615	0.457	0.666	0.096	0.054	0.046	0.875
		N	27	27	27	27	27	26	23
	Faculty Rank or Job Title	Correlation Coefficient	0.073	-0.024	-0.099	-0.166	0.199	-0.091	-0.044
		Sig. (2-tailed)	0.717	0.904	0.624	0.409	0.320	0.659	0.841
		N	27	27	27	27	27	26	23
	Accrediting Body	Correlation Coefficient	-0.047	0.063	-0.234	-0.139	-0.104	-0.217	0.172
		Sig. (2-tailed)	0.817	0.755	0.240	0.489	0.606	0.286	0.432
		N	27	27	27	27	27	26	23

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

			Question 93	Question 94	Question 95	Question 96	Question 97	Question 98
Spearman's rho	Highest Degree Earned	Correlation Coefficient	0.020	-0.188	.467*	0.000	0.393	0.346
		Sig. (2-tailed)	0.931	0.402	0.025	1.000	0.070	0.097
		N	22	22	22	22	22	24
	Department	Correlation Coefficient	-0.015	-0.160	0.301	-0.042	0.229	0.042
		Sig. (2-tailed)	0.948	0.476	0.173	0.853	0.305	0.846
		N	22	22	22	22	22	24
	Discipline	Correlation Coefficient	-0.091	0.139	0.511	0.178	0.044	0.181
		Sig. (2-tailed)	0.688	0.537	0.015	0.429	0.846	0.396
		N	22	22	22	22	22	24
	Faculty Rank or Job Title	Correlation Coefficient	0.098	-0.113	0.137	0.074	-0.007	0.131
		Sig. (2-tailed)	0.663	0.618	0.543	0.744	0.976	0.541
		N	22	22	22	22	22	24
	Accrediting Body	Correlation Coefficient	-0.336	0.124	-0.243	-0.295	-0.132	0.047
		Sig. (2-tailed)	0.126	0.584	0.277	0.182	0.560	0.826
		N	22	22	22	22	22	24

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

APPENDIX AE

Institutional Review Board Approval

Institutional Review Board Approval

Duquesne University
Institutional Review Board
MEMORANDUM

To: **Elayne Shields**

From: Paul Richer, Ph.D.
Chair, IRB - Human Subjects
403 Administration Building

Re: **Protocol #02-48: The development of 1st baccalaureate program standards.**

Date: August 19, 2002

Thank you for submitting your proposal to the IRB and for contributing to Duquesne's research endeavors.

Based upon the Department of Health and Human Services (HHS) regulations for the Protection of Human Subjects (45 CFR 46) as amended; 56 FR 28003, June 18, 1991), I have reviewed this research proposal in accordance with these procedures and those established and published in the Federal Register (46 FR 8392), January 26, 1981 for expedited review.

Based upon internal review, the recommendation of IRB member, Dr. Joseph Kush, and my own review as Chairperson of the Institutional Review Board, I have determined that your research proposal is consistent with the requirements of the appropriate sections of the *Code of Federal Regulations* cited above re expedited review. Furthermore, the intended research involves minimal risk to human subjects. Your proposed research is hereby **approved** on an **expedited** basis.

I want to remind you of two contingencies that are necessary for this approval. The first is that you ensure that you are the only person who will have access to the electronic data, whether it is sent to you directly or sent to the research-related server. The second is that you do not begin any electronic surveying until you have in hand participants' signed consent forms. Please remember that the first page of consent forms should be on Duquesne letterhead and that you should produce two copies with original signatures, one for you and one for the participant.

You will be required to submit an annual report updating the IRB regarding the status of your research. In addition, any changes in the procedures involving human subjects prior the annual review must be brought to our attention by you. Please be advised that the DU IRB reserves the right to suspend or terminate the study if it is not conducted in accordance with the approved protocol or if any unexpected, adverse reactions arise. In the latter instance, either Dr. Kush or I should be notified promptly. Once your study is complete, please provide the Board with a copy of the study results at the IRB address shown above.

Best wishes for your research.

C: Dr. Barone
Dr. Kush
IRB Records

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