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ABSTRACT

Recognizing the rapid development of telecommunications and networking technologies and their growing importance to higher education and New Jersey's overall economic competitiveness, New Jersey's Plan for Higher Education called for the Commission on Higher Education and the Presidents' Council to appoint a Higher Education Technology Task Force to make recommendations regarding technology and institutional infrastructure. The appointed task force articulated a vision for higher education technology in New Jersey and made recommendations regarding the proposed Higher Education Technology Infrastructure Fund, distance learning, and related infrastructure efforts. The report also recommends that a subgroup of the task force make additional recommendations by January 1998 regarding interconnectivity among institutions and how to fund recurring capital expenditures for technology at New Jersey's colleges and universities. Key recommendations are: (1) the commission should consider various criteria for reviewing institutions' proposed use of bond funds under the technology infrastructure fund act; (2) all institutions offering credit-bearing distance learning courses or programs should be subject to general licensure and degree approval regulations; (3) a subgroup of members investigate how other states fund recurring capital expenditures; and (4) to seek the inclusion of higher education in statewide technology infrastructure planning. Appendices include a summary of survey responses and an overview, as well as a detailed account, of existing institutional information technology among all degree granting institutions in New Jersey. (JJL)

REPORT ON

HIGHER EDUCATION TECHNOLOGY

Adopted by New Jersey Commission on Higher Education
September 1997

REPORT OF THE HIGHER EDUCATION TECHNOLOGY TASK FORCE

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EXECUTIVE SUMMARY

Recognizing the rapid development of telecommunications and networking technologies and their growing importance to higher education and New Jersey's overall economic competitiveness, *New Jersey's Plan for Higher Education* called for the Commission on Higher Education and the Presidents' Council to appoint a Higher Education Technology Task Force to make recommendations regarding technology and institutional infrastructure. Following five months of deliberations, the appointed task force articulated a vision for higher education technology in New Jersey and recommendations regarding the proposed Higher Education Technology Infrastructure Fund, distance learning, and related infrastructure efforts. The report also recommends that a subgroup of the task force make additional recommendations by January 1998 regarding interconnectivity among institutions and how to fund recurring capital expenditures for technology at New Jersey's colleges and universities.

KEY RECOMMENDATIONS

Technology Infrastructure Fund Act

The $50 million Higher Education Technology Infrastructure Fund now pending in both houses of the Legislature requires the Commission on Higher Education to review each institution's proposed use of the bond funds. The task force recommends that the Commission consider various criteria for reviews, such as: how the bond funds will advance an institution's long-range plan for technology; how the proposed connectivity and information technology will advance the institution's instructional, research, and service/economic development missions; how the institution will address technology training needs; and the source of revenue for matching funds.

Distance Learning

The task force indicates that enhancement of educational opportunities through distance learning is dependent on a statewide integrated infrastructure that supports voice, video, and data transfer and facilitates joint degrees, partnerships, and flexibility in method of delivery. Recognizing both the potential of distance learning to broaden access to higher education and the need to establish minimum standards that protect the consumer and ensure the integrity of higher education, the task force recommends that all New Jersey institutions offering credit-bearing distance learning courses or programs should be subject to general licensure and degree approval regulations. Out-of-state institutions that offer courses or programs via distance learning and have an established physical presence in New Jersey also should be subject to those regulations. In cases where distance learning

is offered by an institution without an established physical presence in New Jersey, state responsibility should be limited to providing consumer information pertaining to the accreditation status of the offering institution. In addition, the adoption of regulations establishing specific standards for distance learning programs is recommended. All new programs offered through distance learning by New Jersey institutions, or offered in New Jersey by out-of-state institutions with a physical presence in the state, should be subject to the same review and approval process applied to new programs offered through traditional delivery modes.

Recurring Technology Costs

The task force recommends that a subgroup of members thoroughly investigate how other states fund recurring capital expenditures for technology and make recommendations to the Commission and Presidents' Council by December 1997. In formulating their recommendations, the subgroup should determine the magnitude of funding higher education needs and consider the feasibility of a dedicated revenue stream to provide funds for recurring technology costs for all education institutions, kindergarten through postsecondary.

Related Infrastructure Efforts

The task force urges the Commission and Presidents' Council to continue to seek the inclusion of higher education in statewide technology infrastructure planning. Specifically, efforts should be made to have a portion of the fiber optic cable to be installed along New Jersey's toll roads dedicated to higher education, and efforts should also be made to establish discounts for college and university telecommunications service through an intrastate telecommunications universal services fund.

INTRODUCTION

As a consequence of a fundamental restructuring of global politics and economics; exponential growth in the power, speed, and capacity of computers and information systems; and the versatility made possible by combining computing and telecommunications technologies, the contemporary world has entered the age of the "information economy." A strong economy and democracy now depend upon the fullest use of information technologies to maximize productivity, as well as the continual development and use of new and more powerful technologies.

As a result, New Jersey's economic growth is inextricably tied to the state's ability to keep pace with rapidly changing technologies, and higher education plays a critical role in preparing the state to do so. Colleges and universities are the primary institutions that educate individuals to participate in the mainstream of the information economy and provide leadership for the future. The institutions provide training, retraining, and continuing education for an informed citizenry and a sophisticated workforce prepared for technological advances.

New Jersey, because it has a strong information- and research-intensive industrial base, is particularly well placed to compete in the international high-technology arena. The state is a national leader in the number of resident high-tech companies, and the state's colleges and universities play a significant role in technology research and development. However, as is pointed out in *Looking to the New Millennium: New Jersey's Plan for Higher Education*, colleges and universities face the continual challenge of remaining in step with rapid developments in telecommunication and networking technologies. Their ability to do so is central to the education of a workforce that can propel the economy forward by supporting new business formation and by encouraging existing businesses to move to New Jersey from other locations.

For these reasons, the Commission on Higher Education and the Presidents' Council appointed a Higher Education Technology Task Force to make recommendations regarding technology and institutional infrastructure. This report includes a proposed vision for higher education technology in New Jersey, and recommendations related to distance learning, proposed technology infrastructure bonds, funding for recurring technology costs, and related infrastructure issues.

VISION FOR TECHNOLOGY IN HIGHER EDUCATION

New Jersey aspires to have a system of higher education that is among the best in the world, embracing excellence, access, and affordability and utilizing technology to strengthen the system and improve efficiency and program effectiveness into the 21st century and beyond.

The introduction and broader use of telecommunications and networking technologies in higher education will greatly enhance teaching and learning across the state, while recognizing the changing relationship between instructor, learner, researcher, and location. It will facilitate the growth of each institution, within its unique mission, to develop the higher education enterprise in a manner consistent with the evolving needs of the state. Technology will help New Jersey students and institutions realize their full potential, while fulfilling the role of leadership expected of a state that is highly technology-dependent.

To realize this vision, the Commission on Higher Education and the Presidents' Council should advocate strategic investments in the technological infrastructure of higher education in New Jersey:

- to support improved efficiency and effectiveness in teaching and research;
- to foster closer interinstitutional cooperation, consortial relationships, and resource sharing within the higher education community;
- to offer the benefits of distance education to a potentially unlimited audience;
- to gain access to an external universe of libraries, information resources, and data bases;
- to enhance communication between colleges/universities and the K-12 school system; and
- to build partnerships with private business and government.

HIGHER EDUCATION
TECHNOLOGY INFRASTRUCTURE FUND ACT

Background - Proposed Legislation

In her Fiscal Year 1998 budget recommendation, Governor Christine Whitman proposed a revenue bond of $50 million to provide funding for improved technology at colleges and universities. By requiring institutions to match the state's contribution dollar-for-dollar with campus or corporate funds, the proposal will generate a total of $100 million for institutional technology infrastructure.

The Governor's proposal is a critical first step in addressing higher education technology needs as discussed in *New Jersey's Plan for Higher Education*. As part of its charge, the Higher Education Technology Task Force provided advice and assistance as the legislation to create the technology bond fund was developed. For example, the task force recommended the following definition of "technology infrastructure":

> "...technology infrastructure" means video, voice, and data telecommunications equipment and linkages, including transport services and network interconnections.

The task force also recommended the following language to describe the purpose of the fund:

> The higher education technology bond funds shall be used to develop further video, voice, and data telecommunications networks; transport services; and information technology connectivity within and between New Jersey's institutions of higher education in order to effectively and efficiently provide access to information, educational opportunities, and workforce training. Funds may also be used to enhance higher education institutions' connectivity to libraries and elementary and secondary schools.

The Executive Board of the Presidents' Council also provided input in the development of the legislation by endorsing the task force's recommendation for a $5 million set-aside of bond funds for interinstitutional connectivity, and by agreeing upon the allocation among sectors of the remaining $45 million.

Legislation to create a Higher Education Technology Infrastructure Fund was introduced recently in both houses of the Legislature; Speaker Collins

and Assemblyman Wolfe are the Assembly sponsors of A 3029, and Senate President DiFrancesco is the sponsor in the Senate of S 2158.

In anticipation of passage of the legislation, the task force conducted a survey to provide a snapshot of existing technology programs, hardware, and connectivity at colleges and universities. The results of that survey are summarized in Appendix A. The task force also determined that a needs assessment should be conducted regarding interinstitutional connectivity in order to plan for use of the $5 million set-aside. A request for proposal was issued this month seeking a consultant to complete the needs assessment, and the consultant report is expected by November.

Rules and Regulations

Also in anticipation of approval of the Higher Education Technology Infrastructure Fund Act, the task force developed proposed language for inclusion in Commission on Higher Education rules and regulations to implement the act. According to the legislation, each institution will be required to receive approval from the Commission on Higher Education to use its allocation from the technology fund. The purpose of the approval is to assure that the use of allocated funds is consistent with the intent of the law.

The following criteria are recommended for use by the Commission in reviewing each institution's proposed use of funds:

- The institution must summarize its long-range plan for technology and how the proposed use of funds advances that plan.

- The institution must use the funds to enhance interinstitutional or intrainstitutional connectivity and information technology as it relates to advancing the instructional, research, or service/economic development missions of the institution.

- The institution must describe how the proposed use of funds advances the institution toward the next level in establishing integrated voice, video, and data networks.

- The institution must make a commitment, by resolution of its governing board, to maintenance of the technology infrastructure proposed for purchase.

- The institution must describe how it will address training, staffing, and other indirect costs related to the proposed use of funds.

- The institution must identify the source(s) of revenue for the matching amount equal to the amount of the grant provided.

- Interinstitutional networking enhancements must be compatible with the recommended technology infrastructure for New Jersey higher education.

The task force also recommends the inclusion of the following definitions in the regulations:

"interinstitutional" means between two or more institutions.

"intrainstitutional" means within an institution's campus or between campuses of a multicampus institution.

In regard to the timing of the dollar-for-dollar match required to receive technology bond funds, the task force recommends that regulations include language indicating the following:

Expenditures made prior to July 1, 1997 cannot be used as a match for technology bond funds.

Expenditures made after July 1, 1997 may be used as a match for bond funds provided they are tied to the specific project(s) that the bond funds are used for, and provided the project(s) meets all of the criteria established in regulations to implement the Higher Education Technology Infrastructure Fund Act.

DISTANCE LEARNING

Background

Communication technology presents new opportunities for New Jersey institutions and broader educational opportunities for students; the possibilities afforded by distance education are extraordinary. However, enhancement of educational opportunities through distance learning is dependent on a statewide integrated infrastructure that supports voice, video, and data transfer, and facilitates joint degrees, partnerships, and flexibility in method of delivery. Such a network is essential for New Jersey to compete in the burgeoning field of distance education and provide citizens with the opportunity to satisfy distance learning needs without going to out-of-state providers.

The development of a statewide network of high-level, high-quality distance learning courses and programs that meet the needs of students should be a priority for the New Jersey higher education system. An effective network infrastructure will require a significant level of interinstitutional communication and collaboration; all institutions can be involved, but levels of involvement will vary based on institutional mission and campus decisions.

Several efforts are currently underway to position the New Jersey system of higher education to take full advantage of technology in teaching, research, and service. Realization of a state commitment to address distance learning needs through the development of a comprehensive technology infrastructure is possible with the enactment of the proposed Higher Education Technology Infrastructure Fund. This report includes recommendations for licensure regulations to assure that minimum standards are in place for distance learning. Also, an important related effort grows out of *New Jersey's Plan for Higher Education,* which recommends that the Presidents' Council develop a plan for regional centers to prepare faculty and staff in the use of rapidly changing technology. One focus of those centers should be the development of expertise necessary for faculty and staff to prepare and deliver distance learning courses and programs that meet state standards and provide enhanced home or off-site learning opportunities.

Recommendations For Distance Learning

As the agency responsible for licensing institutions that provide credit-bearing courses in New Jersey, the Commission on Higher Education promulgates standards for licensure in the form of administrative

regulations. Those regulations should be expanded to incorporate standards and requirements related specifically to distance learning. That is not to say that there should be less stringent standards for distance learning. On the contrary, institutions should adhere to comprehensive licensure standards for distance learning programs and should be as committed to the quality of those programs as they are to that of their traditional offerings. That commitment is essential to the integrity of higher education and the protection of the student. Therefore, recommendations regarding distance learning are provided below for New Jersey institutions and for out-of-state institutions.

New Jersey Institutions

New Jersey institutions that offer credit-bearing distance learning courses or programs within or outside of the state should be subject to all of the standards and rules in the New Jersey Licensure and Degree Approval Regulations for higher education, including those standards that are stipulated specifically for distance learning programs due to their unique method of delivery. Any standards that are specific to distance learning should be consistent with *Guidelines for Distance Learning Programs* developed by the Middle State Association of Colleges and Schools.

Out-of-State Institutions

New Jersey law requires out-of-state institutions to be licensed by the Commission on Higher Education if they wish to provide credit-bearing instruction in the state. The purpose of licensing out-of-state institutions is not to restrict trade, but to assure that standards are in place and to protect the consumer. Therefore, out-of-state institutions that provide credit-bearing courses at locations in New Jersey are currently subject to the same regulations as in-state programs. With distance learning, however, it is possible for out-of-state institutions to provide credit-bearing instruction via electronic or other means without ever establishing a physical location in the state. The task force recommends that in cases where distance learning is offered without an established physical location in New Jersey, state responsibility should be limited to providing consumer information pertaining to the accreditation status of the offering institution.

Some out-of-state institutions, however, provide credit-bearing courses or programs via distance learning but do have an established physical presence in New Jersey where instruction is delivered. When a portion of instruction is delivered in New Jersey at a location established or arranged for by the out-of-state institution, New Jersey licensure regulations should apply, consistent with the law requiring all institutions that provide credit-bearing courses in New Jersey to be licensed by the Commission. The Attorney General's office indicates that general legal principles and the authority

vested in the Commission by the Higher Education Restructuring Act of 1994 support the recommended approach of regulating out-of-state programs only if they are offered with a physical presence in New Jersey as defined below.

Specific Recommendations for Distance Learning Regulations

Definitions

"Distance learning" shall be defined as a formal educational process in which all or the majority of the instruction occurs when the learner and the instructor are not physically located in the same place at the same time.

"Physical presence" shall be defined as a situation in which an out-of-state institution offers credit-bearing courses and conducts some portion of the learning experience at a location established in New Jersey by the out-of-state institution, whether established directly or under the auspices of another organization or institution.

Standards

- An institution's distance learning programs shall be clearly defined and related to the institution's mission and shall be consistent with the goals and objectives of the institution.

- The institution's policies and objectives associated with distance learning offerings shall be consistent with those established for other learning environments.

- The institution's catalogue and promotional materials shall indicate the maximum time permitted for the completion of each course and program offered through distance learning. Any difference between on-campus and distance learning tuition and fee charges shall be clearly indicated.

- The institution shall provide students with complete and timely information regarding course and degree requirements, nature of faculty/student interaction, assumptions about technological competence and skills, technical equipment requirements, availability of academic support services, financial aid resources, and costs and payment policies.

- Faculty and academic professionals involved in distance learning shall have an understanding of distance education, its special characteristics, and the needs of distance learners.

- Each institution shall address issues related to ownership and intellectual property derived from the creation and production of software, telecourses, or other electronically offered programs.

- Individuals outside the traditional campus community who act in capacities such as tutors or proctors for students enrolled in distance learning shall be approved by the institution offering the course/program.

Program Review and Approval

As is currently the practice with traditionally offered programs, if a New Jersey institution wishes to offer a new degree program through distance learning, the program shall be subject to review by the Presidents' Council.

Distance learning degree programs offered at newly established off-campus sites shall be subject to any review or approval that is required for all programs at such off-campus sites. *(Regulations pertaining to off-campus sites are currently under development as part of the revised licensure standards.)*

Commission approval for distance learning programs offered by New Jersey institutions shall be required only if programs are referred by the Presidents' Council for consideration due to an institution's changing or exceeding its mission or due to excessive program cost or unnecessary duplication.

Out-of-state institutions that wish to offer credit-bearing distance learning with a physical presence in New Jersey must first be licensed by the Commission on Higher Education, with advice from the Presidents' Council, to offer specific courses or degree programs. If an out-of-state institution is licensed to offer a degree program(s) in New Jersey, the Presidents' Council must review any additional programs that it wishes to offer with a physical presence in this state.

Granting Degrees for Distance Learning Programs Provided Collaboratively

In the case of collaborative distance learning degree programs, it is the responsibility of the institutions offering the programs to determine which institution(s) will grant the degree.

Counting Students Enrolled in Multiple Institutions

Due to the ease of taking courses at multiple institutions through distance learning, the task force was asked also to address the issue of "how to count students who are simultaneously enrolled at more than one institution." The task force recommends the following for inclusion in regulations:

> Students who are taking coursework at more than one institution shall be counted by each institution based on a full-time equivalent standard unless a consortial agreement exists between institutions regarding who will count the students for enrollment purposes.

ONGOING TASK FORCE WORK

Funding for Recurring Technology Costs

Recognizing that technology plays an increasingly significant role in providing higher education services to students and the state, funding for technology infrastructure and basic systems or upgrades is essential. The proposed $50 million Higher Education Technology Infrastructure Fund Act recognizes this, and the task force urges active support of the legislation to establish the fund. The $50 million plus the required institutional match will provide for significant infrastructure developments, both on and among campuses.

The task force realizes that there are also recurring costs associated with educational technology and telecommunications which require an ongoing funding source. States have various means of providing funds for recurring technology costs. Some provide annual or biannual budget allocations from the general fund for technology, some rely on bonds, and others rely on designated taxes or lotteries. But whatever the means, there is a growing recognition across the nation of the need to provide funds for recurring technology costs in order to ensure that higher education systems are equipped to meet the needs of students and contribute to societal and economic development in the age of the information economy.

The Higher Education Technology Task Force recommends that a subgroup of task force members be formed to thoroughly investigate how other states address recurring expenditures for technology. The subgroup should make a recommendation to the Presidents' Council and the Commission by January 1998 on how to fund recurring expenditures for technology and telecommunications costs at New Jersey colleges and universities. In formulating their recommendation, the subgroup should determine the magnitude of funding needed to support the vision set forth in this report and consider the feasibility of a dedicated revenue stream to provide funds for the recurring technology costs for all education institutions, kindergarten through postsecondary.

Interinstitutional Needs Assessment

The interinstitutional needs assessment to be completed by a consultant will inform distribution of the $5 million allocated for interconnectivity among higher education institutions. The continuing subgroup of the Higher Education Technology Task Force should also discuss the consultant's

interconnectivity needs assessment and develop recommendations to the Presidents' Council and Commission by January 1998 regarding the technology infrastructure for higher education.

RELATED INFRASTRUCTURE EFFORTS

The Higher Education Technology Task Force also was involved in two ongoing efforts regarding the development and maintenance of a technology infrastructure for higher education.

Statewide Fiber Optic Cable Infrastructure

Representatives from the Commission on Higher Education, the Presidents' Council, and the task force jointly requested the Governor's Office to include higher education in statewide technology infrastructure planning. A specific request was made to have a portion of the fiber optic cable to be installed along New Jersey's toll roads dedicated to higher education in order to reduce costs and provide better access among institutions and to public schools, libraries, and business and industry. As a result, future fiber optic cable discussions will be broadened to include higher education, and higher education representatives should continue to urge the inclusion of colleges and universities in statewide technology infrastructure planning and development.

Universal Services

Prior to 1996, "universal service" ensured that residents in areas where phone service was expensive could receive affordable service subsidized through contributions made by telephone companies to a universal service fund. The federal Telecommunications Act of 1996 redefined universal service as an "evolving level of telecommunications services" that goes beyond mere telephone service, and it called for all telecommunications providers to contribute to the universal service fund. The law also extended discounted rates to schools and libraries on all telecommunications services, including transmission rates, inside wiring and wireless connections of school classrooms, and Internet services for schools and libraries. The telecommunications providers that serve schools will be reimbursed for the school discounts through the universal service fund.

While ensuring schools and libraries have access to advanced telecommunications services recognizes the importance of technology in education, the Telecommunications Act does not include telecommunications discounts across the educational spectrum to colleges and universities. Each state, however, is encouraged to adopt an intrastate provider fund to allow for additional discounts. As a result, with the support of the task force and on behalf of the higher education community, the Commission on Higher Education sought and received intervenor status in New Jersey's Board of Public Utilities evidentiary hearing at which statewide universal service

issues will be resolved. The task force is working with the Commission to develop testimony and a convincing argument to establish an intrastate telecommunications universal service fund which will, among other things, provide discounts for college and university telecommunications service. The task force recommends ongoing support for these efforts in preparation for the hearings that will occur in early fall.

Summary of Survey Responses

Overview of Existing Institutional Information Technology

Connectivity, Programs, Hardware

June 1997

All degree granting institutions in New Jersey were surveyed to provide an overview of existing institutional information technology. The survey sought information about connectivity, programs, and hardware. Of the 56 institutions surveyed, 51 responded. Of the 45 institutions that receive state aid (which excludes proprietary and religious institutions), all responded.

Responses to the survey questions are summarized below, and a copy of the survey instrument is attached.

Fifty of the 51 institutions that responded indicated they are connected to the Internet. The type of connection is varied, and in some cases institutions are connected by more than one means:

22% are connected by modem
- 12% - POTS
- 8% - ISDN
- 14% - SLIP/PPP
- 2% - other

The "other" modem connection is notebook accounts.

94% have a direct connection
- 8% - 56KB
- 73% - T1
- 16% - other

The "other" direct connections are:
- 2 Fractional T1
- 1 256KB Fractional T1
- 1 128KB frame relay (Fractional T1)
- 1 frame relay (256K CIR w/T2 burst)
- 1 direct fiber connection to ISP
- 1 16 Mb SMDS, 16 Mb ATM
- 1 T3 (multiple ISP connections)

Institutional Internet service providers are also varied; each is listed below with the number of institutions that reported it as their service provider:

GES - 20 institutions
UUNet Technologies - 6 institutions
PSI - 2 institutions
Bell Atlantic - 2 institutions

Net Access - 2 institutions
Sprint - 2 institutions
Town Square Access - 1 institution
National Internet Source - 1 institution
New York Network - 1 institution
NETCOM - 1 institution
BBN Planet - 1 institution
MCI - 1 institution
Digex - 1 institution
NYnet - 1 institution
VICONET - 1 institution
Adelphia Communications - 1 institution
Eclipse - 1 institution

Five institutions reported multiple providers as follows:
NJIN; Garden State Cable, Earth Station
Digex; GES, Eclipse
Alternet, BBN Planet, ESNET
Bell Atlantic; ICON
GES; TCG

Forty-two (82%) of the institutions that responded indicated they have interactive video classroom(s), and 40 (78%) indicated they have video conferencing.

Of those institutions that have either interactive video classroom(s) and/or video conferencing, the type of connection varies, and in some cases institutions are connected by more than one means:

43% indicated they have Bell Atlantic IDLS service to connect interactive video classrooms and/or provide video conferencing; 59% of those have county-wide service and 68% have lata-wide service.

73% indicated they have ISDN connections; of those, 16% have 128KB, 11%, 256KB, 89%, 384KB, and 5% greater than 384KB.

26% indicated they have other connections.

"Other" connections for interactive video classrooms and video conferencing include:
cable TV; satellite uplink
ITFS satellite
satellite
Internet
ComCast Cable; Countywide Fiber Network
contract with OTIS
internal 16 Mb SMDS/ATM

telephone conferencing, satellite downlinking
Suburan Cable Co.
T1
satellite downlink
2 not yet connected

Thirty-five institutions (69%) reported that they own (or are lease purchasing) their own telephone switches. Fifteen institutions (29%) contract with a provider for services. One institution (2%) reported "other"; they own a switch for on-campus service and contract out for off-campus service.

Thirty-three institutions (65%) reported that they offer distance learning, and of the 18 institutions that do not offer distance learning, 13 institutions (72%) indicated that they intend to do so in the near future. A listing of distance learning offerings and the type of information technology used is provided in Attachment A.

Institutions also indicated the types of information technology they use for instruction, administration, and/or general communication. The chart on the following page indicates the number of institutions that use a particular type of information technology and the purpose for which they use it.

INFORMATION TECHNOLOGY	INSTRUCTION		ADMINISTRATION		GEN. COMMUNICATION	
	on campus	off campus	on campus	off campus	on campus	off campus
1. Computers	50	31	51	30	45	40
	98.0%	60.8%	100.0%	58.8%	88.2%	78.4%
2. Multimedia Computing	45	11	25	5	14	6
	88.2%	21.6%	49.0%	9.8%	27.5%	11.8%
3. Fax Machines	26	19	46	34	35	31
	51.0%	37.3%	90.2%	66.7%	68.6%	60.8%
4. Cable TV	19	12	10	3	18	8
	37.3%	23.5%	19.6%	5.9%	35.3%	15.7%
5. Closed Circuit TV	13	3	9	1	12	1
	25.5%	5.9%	17.6%	2.0%	23.5%	2.0%
6. Broadcast TV	12	7	5	1	1	1
	23.5%	13.7%	9.8%	2.0%	2.0%	2.0%
7. Video Tape	45	26	23	9	15	12
	88.2%	51.0%	45.1%	17.6%	29.4%	23.5%
8. Satellite Connection	25	5	20	3	12	4
	49.0%	9.8%	39.2%	5.9%	23.5%	7.8%
9. Desktop Video conferencing	14	7	10	6	7	7
	27.5%	13.7%	19.6%	11.8%	13.7%	13.7%
10. Interactive Video Classrooms	27	22	16	14	9	15
	52.9%	43.1%	31.4%	27.5%	17.6%	29.4%
11. Other	5	5	4	3	4	4
	9.8%	9.8%	7.8%	5.9%	7.8%	7.8%

des for information technology modes:

1 = computers 2 = multimedia computing 3 = fax machines 4 = cable TV 5 = closed circuit TV 6 = broadcast TV 7 = videotape 8 = one-way video w/ two-way audio or PC link (satellite connection) 9 = two-way video & audio (desktop videoconferencing) 10 = two-way video & audio (interactive video classrooms) 11 = other (see answers to Item 8 for specifics) 12 = audio tape (Thomas Edison)

Institution:	Name of Program or Course:	Information Technology Mode(s) Used; May Include More Than One per Course/Program:						Entire Program:	Part of Program:
Assumption College	NONE								
Atlantic Community College	Cultural Anthropology	7						1	
Atlantic Community College	Art Appreciation	7	9					1	
Atlantic Community College	Film History Appreciation	7						1	
Atlantic Community College	Introduction to Business	7						1	
Atlantic Community College	Principles of Marketing	7						1	
Atlantic Community College	Small Business Management	7						1	
Atlantic Community College	Principles of Management	7						1	
Atlantic Community College	Heritage of the Western World	7						1	
Atlantic Community College	U.S. History I	7						1	
Atlantic Community College	General Psychology	7	9					1	
Atlantic Community College	Child Psychology	7						1	
Atlantic Community College	Principles of Sociology	7	9					1	
Atlantic Community College	Financial Accounting	10						1	
Atlantic Community College	Introduction to Literature	10						1	
Atlantic Community College	Nursing Management	10						1	
Atlantic Community College	Self-Management	10						1	
Atlantic Community College	Communications I	1						1	
Atlantic Community College	Communications II	1						1	
Atlantic Community College	Significant Themes in Literature	1						1	
Atlantic Community College	19th Century American Literature	1						1	
Atlantic Community College	Statistical Methods	7						1	
Atlantic Community College	Interpersonal Communication	9						1	
Atlantic Community College	Fundamentals of Nutrition	10						1	
Atlantic Community College	Introduction to Computers	7						1	
Atlantic Community College	Elementary French I	7						1	
Atlantic Community College	Elementary French II	7						1	
Atlantic Community College	Elementary Spanish I	7						1	
Atlantic Community College	Elementary Spanish II	7						1	
Atlantic Community College	Concepts of Physical Education	7						1	
Atlantic Community College	Marriage and the Family	7						1	
Atlantic Community College	Aging and Society	7						1	

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Institution:	Name of Program or Course:	Information Technology Mode(s) Used: May Include More Than One per Course/Program:						Entire Program:	Part of Program:
Atlantic Community College	Information Systems and Programming	1						1	
Atlantic Community College	Introduction to Arts and Humanities	1						1	
Bergen Community College	Sociology of the Family	10						1	
Bergen Community College	Japanese I	10						1	
Bergen Community College	Contemporary Issues in Policing	10						1	
Bergen Community College	Spanish for Public Service Personnel	10						1	
Bergen Community College	Introduction to Bs.	10						1	
Bergen Community College	Elementary Statistics	10						1	
Bergen Community College	U.S. History to Reconstruction	4							1
Bergen Community College	U.S. History Since Reconstruction	4							1
Bergen Community College	Sociology of the Family	7							1
Bergen Community College	Child Psychology	4							1
Bergen Community College	Business Mathematics	4	7						1
Bergen Community College	Vietnam	7							1
Bergen Community College	Sociology	4							1
Bergen Community College	General Psychology	4							1
Bergen Community College	Introduction to Business Administration	4							1
Bergen Community College	Personal Finance and Money Management	4							1
Berkeley College	NONE								
Bloomfield College	Essex County site for F.D.U. grad. course (Telecommunications and Distance Learning)	10						1	
Bloomfield College	French 110 from Caldwell College	9						1	
Bloomfield College	Courses (including French) with Caldwell College planned for spring 1998	10						1	
Brookdale Community College	A.A. degree in Liberal Arts ("Going the Distance")	11	4	7				1	
Brookdale Community College	A.A. degree in Business ("Going the Distance")	11	4	7				1	
Brookdale Community College	Cultural Anthropology	4						1	
Brookdale Community College	Introduction to Business	4						1	
Brookdale Community College	Personal Finance	4						1	
Brookdale Community College	Principles of Management	4						1	
Brookdale Community College	Exploring Biology: Cycles of Life	4						1	
Brookdale Community College	Macro Economics	3	4	10				1	
Brookdale Community College	Micro Economics	4						1	

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Institution:	Name of Program or Course:	Information Technology Mode(s) Used; May Include More Than One per Course/Program:						Entire Program:	Part of Program:
Brookdale Community College	English Composition	4						1	
Brookdale Community College	20th Century American Literature	11						1	
Brookdale Community College	Children's Literature	4	7					1	
Brookdale Community College	Here's to Your Health	4						1	
Brookdale Community College	World Civilization I	4						1	
Brookdale Community College	World Civilization II	4						1	
Brookdale Community College	American Civilization I	4						1	
Brookdale Community College	America in Perspective	4						1	
Brookdale Community College	Living with Health	4						1	
Brookdale Community College	Introduction to Marketing	4						1	
Brookdale Community College	Elementary French Communication I	7	4					1	
Brookdale Community College	Elementary French Communication II	7						1	
Brookdale Community College	Elementary Italian Communication I	7						1	
Brookdale Community College	Elementary Italian Communication II	7						1	
Brookdale Community College	Elementary Spanish Communication I	7	4					1	
Brookdale Community College	Elementary Spanish Communication II	7						1	
Brookdale Community College	Music Appreciation	7	4					1	
Brookdale Community College	Ethics in America	4						1	
Brookdale Community College	Introduction to Psychology I	4						1	
Brookdale Community College	Introduction to Psychology II	4						1	
Brookdale Community College	Human Growth and Development	4						1	
Brookdale Community College	Principles of Sociology	4						1	
Brookdale Community College	Human Geography	4						1	
Brookdale Community College	Musical Theatre	11						1	
Brookdale Community College	Medical Terminology	10	3					1	
Brookdale Community College	Effective Public Speaking	10	3						1
Brookdale Community College	Short Story	10	3						1
Brookdale Community College	Mini Micro Computer I	1	2						1
Burlington County College	Introduction to Children's Literature	7	3	6					1
Burlington County College	Introduction to Statistics	7	6						1
Burlington County College	Introduction to Music	7	3	11					1
Burlington County College	Black and White Photography I	7							1

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Institution:	Name of Program or Course:	Information Technology Mode(s) Used: May Include More Than One per Course/Program:						Entire Program:	Part of Program:
Burlington County College	American Government and Politics	7	6						1
Burlington County College	Project Universe	7	6						1
Burlington County College	Oceanus	7	6						1
Burlington County College	Introduction to Psychology	7	3						1
Burlington County College	General Psychology II	7	3						1
Burlington County College	Child Psychology	7	3	6					1
Burlington County College	Developmental Psychology	7	3						1
Burlington County College	Principles of Sociology	7	6						1
Burlington County College	Marriage and the Family	7	6						1
Burlington County College	Elementary Spanish I	7	6						1
Caldwell College	Accounting	3							1
Caldwell College	Business Administration	7	1	3					1
Caldwell College	Communication Arts	3							1
Caldwell College	English	1	3	7					1
Caldwell College	Foreign Language	3	7						1
Caldwell College	History	3	7						1
Caldwell College	Math/Computer Science	1	3						1
Caldwell College	Computer Information Systems	1	3						1
Caldwell College	Psychology	3	7						1
Caldwell College	Religious Studies	3							1
Caldwell College	Sociology	3							1
Caldwell College	Social Studies	3							1
Caldwell College	Criminal Justice	3							1
Caldwell College	Gerontology	3							1
Caldwell College	Ecology courses	1	3	7					1
Camden County College	Introduction to Literature	4	6	7				1	
Camden County College	Elementary Spanish I	4	6	7				1	
Camden County College	Elementary Spanish II	4	6	7				1	
Camden County College	History of Western Civilization I	4	6	7				1	
Camden County College	History of Western Civilization II	4	6	7				1	
Camden County College	Morality and Personal Values	4	6	7				1	
Camden County College	American Federal Government	4	6	7				1	

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Institution:	Name of Program or Course:	Information Technology Mode(s) Used; May Include More Than One per Course/Program:						Entire Program:	Part of Program:
Camden County College	Basic Psychology	4	6	7				1	
Camden County College	Abnormal Psychology	4	6	7				1	
Camden County College	Child Psychology	4	6	7				1	
Camden County College	Introduction to Sociology	4	6	7				1	
Camden County College	The Family	4	6	7				1	
Camden County College	General Anthropology	4	6	7				1	
Camden County College	Introduction to Journalism	4	6	7				1	
Camden County College	The American Cinema	4	6	7				1	
Camden County College	Health and Personal Living	4	6	7				1	
Camden County College	Business Law I	4	6	7				1	
Camden County College	Business Law II	4	6	7				1	
Camden County College	Introduction to Business	4	6	7				1	
Camden County College	Introduction to Management	4	6	7				1	
Camden County College	Small Business Management	4	6	7				1	
Camden County College	Economics I	4	6	7				1	
Camden County College	Economics II	4	6	7				1	
Camden County College	Business Math	4	6	7				1	
Camden County College	Principles of Marketing	4	6	7				1	
Camden County College	Fundamentals of Selling	4	6	7				1	
Centenary College	In-Service Teacher Training	1	2	7	9	10			1
College of Saint Elizabeth	NONE								
College of New Jersey	NONE								
County College of Morris	Aviation Flight Technology								1
County College of Morris	Humanities/Social Science option in A.A. degree in Liberal Arts and Sciences	4	7					1	
Cumberland County College	A.A. degree in Liberal Arts	4						1	
Cumberland County College	Horticulture	10							1
Cumberland County College	Aquaculture	10							1
Cumberland County College	Elementary Spanish	10						1	
Cumberland County College	Holistic Health	10						1	
Cumberland County College	General Psychology	10						1	
DeVry Institute	NONE								
Drew University	NONE								

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Institution:	Name of Program or Course:	Information Technology Mode(s) Used; May Include More Than One per Course/Program:						Entire Program:	Part of Program:
Essex County College	NONE								
Fairleigh Dickinson University	Management Information Systems (certificate program)	1	2					1	
Fairleigh Dickinson University	ESL 2nd Certification Program	10						1	
Fairleigh Dickinson University	Logic	10						1	
Fairleigh Dickinson University	Corporate Communications	10						1	
Fairleigh Dickinson University	Communications and Culture	10						1	
Fairleigh Dickinson University	Distance Learning and Children	10						1	
Fairleigh Dickinson University	Telecommunications and Distance Learning	10						1	
Fairleigh Dickinson University	Prescriptive Practice	10						1	
Fairleigh Dickinson University	Principles of Marketing	10						1	
Fairleigh Dickinson University	Distributed Data Base Systems	10						1	
Fairleigh Dickinson University	Language Theory and Communication	10						1	
Fairleigh Dickinson University	Pharm/Chem Industry	10						1	
Fairleigh Dickinson University	Entrepreneurship for Arts, Science, and Technology	10						1	
Fairleigh Dickinson University	Medieval England and France	10						1	
Fairleigh Dickinson University	Estate and Gift Planning	10						1	
Fairleigh Dickinson University	Estate and Gift Taxation	10						1	
Fairleigh Dickinson University	Human Nutrition	10	7						1
Fairleigh Dickinson University	History of Sport	10						1	
Fairleigh Dickinson University	Introduction to Multisensory Structured Language Teaching	10						1	
Fairleigh Dickinson University	Drama Workshop	10						1	
Felician College	NONE								
Georgian Court College	NONE								
Gloucester County College	Introduction to Business	7						1	
Gloucester County College	Principles of Managment	7						1	
Gloucester County College	Topics in Chemistry	7						1	
Gloucester County College	Princples of Geography	7						1	
Gloucester County College	Topics in History	7						1	
Gloucester County College	Topics in Physics	7						1	
Gloucester County College	Topics in Sociology	7						1	
Gloucester County College	Topics in Art	7						1	
Gloucester County College	Ethics	7						1	

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Institution:	Name of Program or Course:	Key to Information Technology Mode(s) Used: More Than One per Course/Program:					May Include in:	Entire Program:	Part of Program:
Hudson County Community College	Introduction to Anthropology	10						1	
Hudson County Community College	Practical Nutrition	10						1	
Hudson County Community College	Business Mathematics	10						1	
Hudson County Community College	Introduction to Statistics and Probability	10						1	
Hudson County Community College	College Survival Skills	10						1	
Hudson County Community College	Principles of Macroeconomics	10						1	
Hudson County Community College	Business Communications	10						1	
Hudson County Community College	U.S. History	10						1	
Hudson County Community College	History of Western Civilization I	10						1	
Hudson County Community College	Principles of Management	10						1	
Hudson County Community College	Marketing	10						1	
Hudson County Community College	Foundations of College Algebra	10						1	
Hudson County Community College	Precalculus	10						1	
Hudson County Community College	Advanced Spanish I	10						1	
Hudson County Community College	Introduction to Political Science	10						1	
Hudson County Community College	Principles of Sociology	10						1	
Hudson County Community College	Advanced Spanish II	10						1	
Jersey City State College	Internet for Educators	1	2	11				1	
Jersey City State College	Tools for the Interactive Classroom	1							1
Jersey City State College	Special Education, Vocational Guidance	1	10					1	
Katharine Gibbs School	NONE								
Kean College of New Jersey	Inquiry and Research	1							1
Kean College of New Jersey	Internet and World Wide Web	1							1
Mercer County Community College	A.A. degree in Humanities and Social Science	various						1	
Mercer County Community College	A.A.S. degree in Business	various						1	
Mercer County Community College	Business Law I	4						1	
Mercer County Community College	Business Law II	4						1	
Mercer County Community College	Personal Finance	4						1	
Mercer County Community College	Small Business Management	4						1	
Mercer County Community College	Civil War	4						1	
Mercer County Community College	Vietnam	4						1	
Mercer County Community College	The Nuclear Age	4						1	

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Institution:	Name of Program or Course:	Information Technology Mode(s) Used; May Include More Than One per Course/Program:						# Entire Program:	# Part of Program:
Mercer County Community College	Recent History of the American South	4						1	
Middlesex County College	NONE								
Monmouth University	Software Implementation and Reuse	9						1	
Monmouth University	Software Systems Security	9						1	
Monmouth University	Principles of Software Engineering	9						1	
Monmouth University	Mathematical Foundations of Software Engineering	9						1	
Monmouth University	Software System Design	9						1	
Montclair State University	NONE								
N.J.I.T.	M.S. in Information Systems	1	3	7				1	
N.J.I.T.	M.S. in Engineering Management	1	3	7				1	
N.J.I.T.	M.S. in Management	1	3	10				1	
N.J.I.T.	B.S. in Computer Science	1	3	7				1	
N.J.I.T.	B.A. in Information Systems	1	3	7				1	
N.J.I.T. (graduate)	12-credit certif. in Object-Oriented Design	1	3	7				1	
N.J.I.T. (graduate)	12-credit certif. in Programming Environment Tools	1	3	7				1	
N.J.I.T. (graduate)	12-credit certif. in Project Management	1	3	7				1	
N.J.I.T. (graduate)	12-credit certif. in Pollution Prevention and Control	1	3	7				1	
N.J.I.T. (graduate)	12-credit certif. in Health Care Information Systems	1	3	7				1	
N.J.I.T. (graduate)	12-credit certif. in Telecommunications Networking	1	3	7				1	1
N.J.I.T. (graduate)	12-credit certif. in Continuous Process Improvement	1	3	7				1	1
N.J.I.T. (graduate)	12-credit certif. in Environmental Infrastructure and Management	1	3	7				1	1
N.J.I.T. (graduate)	12-credit certif. in Practice of Technical Communications	1	3	7				1	1
N.J.I.T.	College Chemistry I	4	5	7				1	
N.J.I.T.	College Chemistry II	4	5	7				1	
N.J.I.T.	Computer Programming and Problem Solving (1)	1	3	4	5	7		1	
N.J.I.T.	Computer Programming and Problem Solving (2)	1	3	4	5	7		1	
N.J.I.T.	Programming in "C"	1	2	3	4	7		1	
N.J.I.T.	Programming in C++	1	2	3	4	7		1	
N.J.I.T.	Introduction to Computer Science 1	2	3	7	8	4		1	
N.J.I.T.	Introduction to Computer Science 2	2	3	7	8	4		1	
N.J.I.T.	Machine and Assembly Language Programming	2	3	4	7			1	

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Institution:	Name of Program or Course:	Information Technology Mode(s) Used; May Include More Than One per Course/Program:						Entire Program:	Part of Program:
N.J.I.T.	Computer Organization	2	3	4	7			1	
N.J.I.T.	Programming Language Concepts	2	3	4	7			1	
N.J.I.T.	Principles of Operating Systems	2	3	4	7			1	
N.J.I.T.	Introduction to Logic and Automation	2	3	4	7			1	
N.J.I.T.	Computers and Society	2	3	4	7			1	
N.J.I.T.	Computer Application to Commercial Problems	2	3	7				1	
N.J.I.T.	Requirements Analysis and Systems Design	2	3	7				1	
N.J.I.T.	Introduction to Database Systems	2	3	7				1	
N.J.I.T.	Advanced Data Structures and Algorithm Design	2	3	7				1	
N.J.I.T.	Human Computer Interface	2	3	7				1	
N.J.I.T.	Computer systems Management	2	3	7				1	
N.J.I.T.	Open Systems Networking	2	3	7				1	
N.J.I.T.	Systems Simulation	2	3	7				1	
N.J.I.T.	Computer Technology for MIS	2	3	7				1	
N.J.I.T.	Design in Software Engineering	2	3	7				1	
N.J.I.T.	Circuits and Systems I	1	3	10				1	
N.J.I.T.	Digital Design	1	3	10				1	
N.J.I.T.	Introduction to Microprocessors	1	3	10				1	
N.J.I.T.	Numerical Computing in Engineering Technology	2	3	10				1	
N.J.I.T.	Technical Writing	2	3	4	6	7	10	1	
N.J.I.T.	Organizational Behavior	2	3	4	7	10		1	
N.J.I.T.	Society, Technology, and the Environment	2	3	4	7			1	
N.J.I.T.	World Literature I	1	3	4	7			1	
N.J.I.T.	World Literature II	1	3	4	7			1	
N.J.I.T.	Calculus I	1	3	4	7	8		1	
N.J.I.T.	Calculus II	1	3	4	7	8		1	
N.J.I.T.	Calculus III	1	3	4	7			1	
N.J.I.T.	Differential Equations	1	3	4	7			1	
N.J.I.T.	Discrete Analysis	1	3	4	5	7	10	1	
N.J.I.T.	Probability and Statistics	1	3	4	7			1	
N.J.I.T.	Principles of Management	1	3	4	7			1	
N.J.I.T.	Principles of Marketing	1	3	4	7			1	

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N.J.I.T.	Adjustment Computations I	1	3	4	7	10		1	
N.J.I.T.	Adjustment Computations II	1	3	4	7	10		1	
N.J.I.T.	Computers and Society	1	3	4	7			1	
N.J.I.T. (graduate course)	Thermodynamics	1	3	7	8			1	
N.J.I.T. (graduate course)	Kinetics of Reactions and Reactor Design	1	3	7	8			1	
N.J.I.T. (graduate course)	Mathematical Methods in Chemical Engineering	1	3	7	8			1	
N.J.I.T. (graduate course)	Industrial Waste Control I	1	3	7	8			1	
N.J.I.T. (graduate course)	Industrial Gas Cleaning	1	3	7	8			1	
N.J.I.T. (graduate course)	Object-Oriented Programming in C++	1	3	7	8			1	
N.J.I.T. (graduate course)	Advanced Programming Environments and Tools	1	3	7	8			1	
N.J.I.T. (graduate course)	Client Server Computing	1	3	8				1	
N.J.I.T. (graduate course)	Advanced Database System Design	1	3	7	8			1	
N.J.I.T. (graduate course)	Computer Networks-Architectures and Protocols	1	3	7	8			1	
N.J.I.T. (graduate course)	Internetworking and Higher Layer Protocols	1	3	7	8			1	
N.J.I.T. (graduate course)	Multimedia Systems	1	3	7	8			1	
N.J.I.T. (graduate course)	Software Design and Production Methodology	1	3	7				1	
N.J.I.T. (graduate course)	Information System Evaluation	1	3	7				1	
N.J.I.T. (graduate course)	Information System Principles	1	3	7	8			1	
N.J.I.T. (graduate course)	Management of Computer and Information Systems	1	3	4	7			1	
N.J.I.T. (graduate course)	Object-Oriented Software Development	1	3	7	8			1	
N.J.I.T. (graduate course)	Business Process Innovation	1	3	7	8			1	
N.J.I.T. (graduate course)	Design of Interactive Systems	1	3	7	8			1	
N.J.I.T. (graduate course)	Client Server Architecture	1	3	7	8			1	
N.J.I.T. (graduate course)	Advanced Programming Environment Tools	1	3	7				1	
N.J.I.T. (graduate course)	Managerial Economics	1	3	7	8			1	
N.J.I.T. (graduate course)	Random Signal Analysis	1	3	7				1	
N.J.I.T. (graduate course)	Industrial Management	1	3	7				1	
N.J.I.T. (graduate course)	Engineering Cost Analysis	1	3	7				1	
N.J.I.T. (graduate course)	Management Science	1	3	7				1	
N.J.I.T. (graduate course)	Legal Aspects in Environmental Engineering	1	3	7				1	
N.J.I.T. (graduate course)	Legal Aspects in Construction	1	3	7				1	
N.J.I.T. (graduate course)	Legal, Ethical Issues	1	3	7				1	

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Institution:	Name of Program or Course:	Information Technology Mode(s) Used; May Include More Than One per Course/Program:						Entire Program:	Part of Program:
N.J.I.T. (graduate course)	Project Management	1	3	7				1	
N.J.I.T. (graduate course)	Project Control	1	3	7				1	
N.J.I.T. (graduate course)	Benchmarking and Quality Function Deployment	1	3	7	8			1	
N.J.I.T. (graduate course)	Cost Estimating for Capital Projects	1	3	7				1	
N.J.I.T. (graduate course)	Advanced Professional and Technical Communication	1	3	4	7			1	
N.J.I.T. (graduate course)	Document Design and Desktop Publishing	1	3	10				1	
N.J.I.T. (graduate course)	Pollution Prevention	1	3	7				1	
N.J.I.T. (graduate course)	Seminar (Environmental Science)	1	3	8				1	
N.J.I.T. (graduate course)	Principles of Financial Management	1	3	10				1	
N.J.I.T. (graduate course)	Mergers, Acquisitions, and Restructuring	1	3	10				1	
N.J.I.T. (graduate course)	Human Resources Management	1	3	8				1	
N.J.I.T. (graduate course)	Employee Training and Development	1	3	10				1	
N.J.I.T. (graduate course)	Behavioral Science in Engineering Organizations	1	3	4	8	10		1	
N.J.I.T. (graduate course)	Advanced Engineering Statistics	1	8	10				1	
N.J.I.T. (graduate course)	Facilities Maintenance	1	3	7	8			1	
N.J.I.T. (graduate course)	Concurrent Engineering	2	3					1	
N.J.I.T. (graduate course)	Flexible and Computer Integrated Manufacturing	1	3	8				1	
N.J.I.T. (graduate course)	Industrial Quality Control	1	3	7	8			1	
N.J.I.T. (graduate course)	Total Quality Management	1	3	7				1	
N.J.I.T. (graduate course)	New Venue Financing	1	3	8				1	
N.J.I.T. (graduate course)	Management Information Systems	1	3	7	8			1	
N.J.I.T. (graduate course)	Computing Concepts for Managers	1	3	8	10			1	
N.J.I.T. (graduate course)	Operating Management, Planning, and Control	1	3	7	10			1	
N.J.I.T. (graduate course)	Decision Support Systems	1	3	7				1	
N.J.I.T. (graduate course)	Executive Information Systems	1	3	7				1	
N.J.I.T. (graduate course)	Principles of Marketing	1	3	7				1	
N.J.I.T. (graduate course)	Models of Consumer Behavior	1	3	10				1	
N.J.I.T. (graduate course)	Statistical Mechanics	1	3	7				1	
N.J.I.T. (graduate course)	Quantum Mechanics	1	3	7				1	
N.J.I.T. (graduate course)	Physics of Materials	1	3	7	8			1	
N.J.I.T.	Race to Save the Planet	1	3	4	7			1	
N.J.I.T.	Faces of Culture	1	3	4	7			1	

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Institution:	Name of Program or Course:	Information Technology Mode(s) Used: May Include More Than One per Course/Program:						Entire Program:	Part of Program:
N.J.I.T.	Americas	1	3	4	7			1	
N.J.I.T.	Principles of Marketing	1	3	4	7			1	
N.J.I.T.	Principles of Management	1	3	4	7			1	
N.J.I.T.	Mechanical Universe	1	3	4	7			1	
N.J.I.T.	Economics	1	3	4	7			1	
N.J.I.T.	General Psychology	1	3	4	7			1	
Ocean County College	General Nursing course (Stockton)	10						1	
Ocean County College	Introduction to Business Administration	10						1	
Ocean County College	Principles of Marketing	10						1	
Ocean County College	Principles of Accounting I	10						1	
Ocean County College	Small Business Management	10						1	
Ocean County College	Business Law I	10						1	
Ocean County College	Business Law II	10						1	
Ocean County College	Principles of Management	10						1	
Ocean County College	Myth and Meanings I	10						1	
Ocean County College	Myth and Meanings II	10						1	
Ocean County College	General Psychology	10						1	
Ocean County College	Child Psychology	10						1	
Ocean County College	Cultural Anthropology	10						1	
Ocean County College	Biology I	10						1	
Ocean County College	Introduction to Statistics	10						1	
Ocean County College	Introduction to Algebra I	10						1	
Ocean County College	Introduction to Algebra II	10						1	
Ocean County College	Fundamental Mathematics	10							1
Passaic County Community College	NONE								
Phila. College of Bible-N.J. Campus	NONE								
Princeton Theological Seminary	NONE								
Princeton University	NONE								
Ramapo College of New Jersey	Differential Equations	10						1	
Ramapo College of New Jersey	Discrete Structures	10						1	
Ramapo College of New Jersey	Fundamentals of International Business	10						1	
Ramapo College of New Jersey	Intermediate Accounting	10						1	

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Institution:	Name of Program or Course:	Information Technology Mode(s) Used: May Include More Than One per Course/Program:						Entire Program:	Part of Program:
Raritan Valley Community College	Aviation Flight Technology	10							1
Richard Stockton College of N.J.	Introduction to the Photographic Medium	1	2						1
Richard Stockton College of N.J.	Race to Save the Planet	1	4	7					1
Richard Stockton College of N.J.	Introduction to Management	1	4	7					1
Richard Stockton College of N.J.	Small Business \Management	1	4	7					1
Richard Stockton College of N.J.	Introduction to Psychology	1	4	7					1
Richard Stockton College of N.J.	Introduction to Sociology	1	4	7					1
Richard Stockton College of N.J.	Western Civilization	1	4	7					1
Richard Stockton College of N.J.	Health and Wellness	1	4	7					1
Richard Stockton College of N.J.	Rhetoric and Composition	1	4	7					1
Richard Stockton College of N.J.	Understanding Child Development I	10						1	
Richard Stockton College of N.J.	Understanding Child Development II	10						1	
Richard Stockton College of N.J.	Survey of Culture Through Literature	1	4	7					1
Richard Stockton College of N.J.	Chemistry and Society	1	4	7					1
Richard Stockton College of N.J.	Introduction to Literature	1	2	4					1
Richard Stockton College of N.J.	Introduction to Chinese Culture and Language	1	4	7					1
Richard Stockton College of N.J.	Introduction to Gerontology	1	4	7					1
Richard Stockton College of N.J.	Beginning French I	10						1	
Richard Stockton College of N.J.	Civil Rights Movement	1	4	7					1
Richard Stockton College of N.J.	Introduction to Japanese Language and Culture	1	4	7					1
Richard Stockton College of N.J.	Ethics in America	1	4	7					1
Richard Stockton College of N.J.	Marketing Principles								1
Richard Stockton College of N.J.	Theory in Nursing	10						1	
Richard Stockton College of N.J.	Government by Consent	1	4	7					1
Richard Stockton College of N.J.	Introduction to Anthropology	1	2	4	7				1
Richard Stockton College of N.J.	American Cinema	1	4	7					1
Richard Stockton College of N.J.	Against All Odds	1	4	7					1
Richard Stockton College of N.J.	Survey of Western Art	1	2	4	7				1
Rider University	NONE								
Rowan University	NONE (to be developed)								
Rutgers University	Drug Therapy	10							1
Rutgers University	Family Nursing I	10							1

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Institution:	Name of Program or Course:	Information Technology Mode(s) Used; May Include More Than One per Course/Program:						Entire Program:	Part of Program:
Rutgers University	Community Health Nursing I	10							1
Rutgers University	Role of the Contemporary Nurse	10							1
Rutgers University	Pharmacodynamics	10							1
Rutgers University	Advanced Health Assessment	10							1
Rutgers University	Contemporary Role of Advanced Practice in Nursing	10							1
Rutgers University	Law and Computers	10							1
Rutgers University	Honors Calculus	10							1
Rutgers University	Business Law I	10							1
Rutgers University	Seminar on Brain Science	10							1
Rutgers University	Food Science Fundamentals	10							1
Rutgers University	Public Relations Management	1							1
Saint Peter's College	Methods in Curriculum	8	7						1
Saint Peter's College	Problems and Solutions in Urban Education	8	7						1
Saint Peter's College	Curriculum Enrichment	8	7						1
Saint Peter's College	Issues in Urban Education	8	7						1
Saint Peter's College	Humanities Across the Curriculum	7							1
Saint Peter's College	Geography Across the Curriculum	7							1
Saint Peter's College	Current Issues in Math and Science	7							1
Saint Peter's College	Skills in Nonviolence	7							1
Saint Peter's College	Environmental Issues in Math and Science	10	7					1	
Saint Peter's College	School Law	10						1	
Saint Peter's College	Western Civilization I	10						1	
Saint Peter's College	Microeconomics	10						1	
Saint Peter's College	Prose Fiction	10						1	
Saint Peter's College	Parental Involvement	7							1
Saint Peter's College	Succeeding with Difficult Students	7							1
Saint Peter's College	The High-Performance Teacher	7							1
Saint Peter's College	Assertive Discipline and Beyond	7							1
Saint Peter's College	Strategies for Preventing Conflict and Violence	7							1
Saint Peter's College	Teaching Children to Get Along	7							1
Saint Peter's College	Motivating Today's Learning	7							1
Saint Peter's College	Including Children with Special Needs	7							1

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Institution:	Name of Program or Course:	Information Technology Mode(s) Used; May Include More Than One per Course/Program:						Entire Program:	Part of Program:
Saint Peter's College	Building Your Teaching Repertoire	7							1
Salem Community College	Science Culture in Western Tradition	4						1	
Salem Community College	Principles of Marketing	4						1	
Salem Community College	Psychology 101 (Introduction, General)	4						1	
Seton Hall University	Executive Ed.D. Program	1						1	
Seton Hall University	Taxation Program	1						1	
Stevens Institute of Technology	Concurrent Engineering (program)	10							1
Stevens Institute of Technology	ISDN Training (course)	2						1	
Stevens Institute of Technology	Telecommunications Management (program)	10						1	
Sussex County Community College	Introduction to Psychology	4	10					1	
Sussex County Community College	Introduction to Sociology	4						1	
Sussex County Community College	Introduction to Astronomy	4						1	
Sussex County Community College	Abnormal Psychology	10						1	
Sussex County Community College	Introduction to Business	4						1	
Sussex County Community College	Introduction to Legal Systems	10						1	
Thomas Edison State College	Abnormal Psychology	7						1	
Thomas Edison State College	The Adult Years	7						1	
Thomas Edison State College	Advanced Economic Theory							1	
Thomas Edison State College	Africa History and Culture	7						1	
Thomas Edison State College	The Age of the Enlightenment	7						1	
Thomas Edison State College	American Cinema	7	11					1	
Thomas Edison State College	American Civil Rights Movement	7						1	
Thomas Edison State College	American Civil War	7						1	
Thomas Edison State College	American Government	7						1	
Thomas Edison State College	American History I	12						1	
Thomas Edison State College	American History II	12						1	
Thomas Edison State College	Analysis and Interpretation of Literature	7						1	
Thomas Edison State College	Asian Studies I	7						1	
Thomas Edison State College	Assembly Language							1	
Thomas Edison State College	Business Finance							1	
Thomas Edison State College	Business Law	7						1	
Thomas Edison State College	Business Mathematics	7						1	

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Institution:	Name of Program or Course:	Information Technology Mode(s) Used; May include More Than One per Course/Program:						Entire Program:	Part of Program:
Thomas Edison State College	Business Policy							1	
Thomas Edison State College	College Algebra	7						1	
Thomas Edison State College	College Composition I	7						1	
Thomas Edison State College	College Composition II	7						1	
Thomas Edison State College	Complexity, Management and Change							1	
Thomas Edison State College	Computer Aided Manufacturing							1	
Thomas Edison State College	Computer Architecture							1	
Thomas Edison State College	Computer Literacy	7						1	
Thomas Edison State College	Computers and Society	1						1	
Thomas Edison State College	Computers and Society	1	11					1	
Thomas Edison State College	Constitutional Issues	7						1	
Thomas Edison State College	Contemporary Ethics	7	11	12				1	
Thomas Edison State College	C Programming	7						1	
Thomas Edison State College	C + +Programming	7						1	
Thomas Edison State College	Data Structures							1	
Thomas Edison State College	Dealing with Diversity	7						1	
Thomas Edison State College	Developmental Psychology	7	12					1	
Thomas Edison State College	Dilemmas of War and Peace	12						1	
Thomas Edison State College	Discrete Mathematics							1	
Thomas Edison State College	Drugs and Society	7						1	
Thomas Edison State College	Electronic Instrumentation and Control							1	
Thomas Edison State College	Elementary Spanish I	7	12					1	
Thomas Edison State College	Elementary Spanish II	7	12					1	
Thomas Edison State College	Elementary Spanish III	7	12					1	
Thomas Edison State College	Elements of Intercultural Communication							1	
Thomas Edison State College	Environmental Science	7						1	
Thomas Edison State College	Ethics and the Business Professional	7						1	
Thomas Edison State College	Fluid Mechanics							1	
Thomas Edison State College	General Earth Science	7						1	
Thomas Edison State College	Geological Science	7						1	
Thomas Edison State College	Global Environmental Change	7	11					1	
Thomas Edison State College	International Economics	7	11					1	

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Institution:	Name of Program or Course:	Information Technology Mode(s) Used; May Include More Than One per Course/Program:						Entire Program:	Part of Program:
Thomas Edison State College	Introduction to Anthropology	7						1	
Thomas Edison State College	Introduction to Business	7						1	
Thomas Edison State College	Introduction to Children's Literature	7						1	
Thomas Edison State College	Introduction to Chinese History and Culture	7						1	
Thomas Edison State College	Introduction to Counseling	7						1	
Thomas Edison State College	Introduction to Financial Accounting	7						1	
Thomas Edison State College	Introduction to the History of Women and the Family in America	12						1	
Thomas Edison State College	Introduction to Human Geography	7						1	
Thomas Edison State College	Introduction to Managerial Accounting	7						1	
Thomas Edison State College	Introduction to Marketing	7	11					1	
Thomas Edison State College	Introduction to Modern English/American Literature I	12						1	
Thomas Edison State College	Introduction to Modern English/American Literature II	12						1	
Thomas Edison State College	Introduction to Operations Management							1	
Thomas Edison State College	Introduction to Photography	7						1	
Thomas Edison State College	Introduction to Psychology	7						1	
Thomas Edison State College	Introduction to Sociology	12						1	
Thomas Edison State College	Introduction to Western Archaeology	7						1	
Thomas Edison State College	Introduction to World Regional Geography	7						1	
Thomas Edison State College	Introductory Astronomy	7						1	
Thomas Edison State College	Introductory Biology	7						1	
Thomas Edison State College	Language in Social Contexts							1	
Thomas Edison State College	Machine Design I							1	
Thomas Edison State College	Machine Design II							1	
Thomas Edison State College	Macroeconomics	7	12					1	
Thomas Edison State College	Major Philosophers: From Socrates to Sartre	7	11					1	
Thomas Edison State College	Managerial Communications							1	
Thomas Edison State College	Managing in Organizations	7	11					1	
Thomas Edison State College	Marriage and the Family	12						1	
Thomas Edison State College	Marriage and the Family	11	12					1	
Thomas Edison State College	Microeconomics	7	12					1	
Thomas Edison State College	The Middle East	7						1	
Thomas Edison State College	Modern American Poetry	7						1	

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Institution:	Name of Program or Course:	Information Technology Mode(s)* Used; May Include More Than One per Course/Program:						Entire Program:	Part of Program:
Thomas Edison State College	Modern Latin America and the Caribbean							1	
Thomas Edison State College	Myth and Culture	7						1	
Thomas Edison State College	News Writing	7						1	
Thomas Edison State College	Nutrition	7						1	
Thomas Edison State College	Operating Systems							1	
Thomas Edison State College	Organic Chemistry							1	
Thomas Edison State College	People and Organizations	7						1	
Thomas Edison State College	Physics I	7						1	
Thomas Edison State College	Physics II	7						1	
Thomas Edison State College	Principles of Management	7	11					1	
Thomas Edison State College	Principles of Sales	7						1	
Thomas Edison State College	Principles of Statistics	7						1	
Thomas Edison State College	Radiation Biophysics							1	
Thomas Edison State College	The Religious Quest	7	11					1	
Thomas Edison State College	The Renaissance: Origins of the Modern West	7						1	
Thomas Edison State College	Research in Experimental Psychology							1	
Thomas Edison State College	Shakespeare I	7	12					1	
Thomas Edison State College	Small Business Management	7						1	
Thomas Edison State College	Social Gerontology	7						1	
Thomas Edison State College	Social Psychology	7	11					1	
Thomas Edison State College	Survey of Chemistry	7						1	
Thomas Edison State College	Twentieth Century African-American Novel	7						1	
Thomas Edison State College	War and American Society	7						1	
Thomas Edison State College	Western Art History I	7						1	
Thomas Edison State College	Western Art History II	7						1	
Thomas Edison State College	Western Civilization I	7						1	
Thomas Edison State College	Western Civilization II	7						1	
Thomas Edison State College	Women and Social Action	7						1	
Thomas Edison State College	Worlds of Childhood	7						1	
Union County College	Introduction to Contemporary Business	4	6	7				1	
Union County College	Organization and Management	4	6	7				1	
Union County College	Small Business Management	4	6	7				1	

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Institution:	Name of Program or Course:	Information Technology Mode(s) Used; May Include More Than One per Course/Program:						Entire Program:	Part of Program:
Union County College	Business Law I	4	6	7				1	
Union County College	Business Law II	4	6	7				1	
Union County College	Principles of Marketing	4	6	7				1	
Union County College	Salesmanship	4	6	7				1	
Union County College	Mind (psychology course)	4	6	7				1	
Union County College	Part of a Family (sociology course)	4	6	7				1	
Union County College	Periodontology I	10						1	
Union County College	Pharmacology/Oral Medicine	10						1	
Union County College	Oral Pathology	10						1	
Union County College	Dental Health Education/Community Dental Health	10						1	
Union County College	Clinical Dental Hygiene II	10						1	
Union County College	Clinical Services II	10						1	
Union County College	Dental Materials	10						1	
Union County College	Arrest, Search and Seizure (in-service training)	10							1
U.M.D.N.J.	Grand rounds for medical students	10							1
U.M.D.N.J.	M.S. in Clinical Nutrition	10						1	
U.M.D.N.J.	M.S.. in Psychiatric Rehabilitation	10							1
U.M.D.N.J.	M.S.. in Health Professions Education	10							1
U.M.D.N.J.	Dental Assisting	10							1
U.M.D.N.J.	Dental Hygiene	10							1
U.M.D.N.J.	Medical Laboratory Technician	10							1
U.M.D.N.J.	Medical Technology	10							1
U.M.D.N.J.	M.S. in Health Sciences	10							1
U.M.D.N.J.	B.S. in Health Sciences	10							1
William Paterson College of N.J.	Nursing Pharmacology	10						1	

Survey: Overview of Existing Institutional Information Technology

Connectivity, Programs, Hardware

Please return response to: Commission on Higher Education; fax to 609-292-7225
or mail response to CN 542, Trenton, NJ 08625
by May 28, 1997

Institution: _____ **Survey Respondent:** _____
Phone: _____ **Title:** _____

1. Please check the type(s) of connection your institution has to INTERNET.

CONNECTED TO INTERNET BY MODEM				CONNECTED TO INTERNET BY DIRECT CONNECTION			
POTS	ISDN	SLIP/PPP	OTHER	ISDN	56KB	T1	OTHER

If "other" please indicate _____

2. Who is your INTERNET service provider?

3. Does your institution have:
   an interactive video classroom(s)? ❑Yes ❑ No
   video conferencing? ❑Yes ❑ No

4. If you answered "yes", to either of the above, please indicate below how these resources are connected.

❑ Bell Atlantic IDLS service
   ❑ County-wide
   ❑ Lata-wide

❑ ISDN
   ❑ 128KB
   ❑ 256KB
   ❑ 384KB
   ❑ Other: _____

❑ Other: _____
_____

5. What arrangements does your institution have for voice (telephone) communications?
   ❑ Own or lease-purchasing a telephone switch(s)
   ❑ Contract with a provider for services
   ❑ Other: _____
   _____

6. Does your institution currently offer any distance learning?

❑Yes ❑ No

7. If you do not currently offer any distance learning, do you intend to do so in the near future?

❑Yes ❑ No

8. Please check the appropriate column(s) below to indicate if the listed information technology is used at your institution for instruction, administration, and/or general communication. (In each case, please check the appropriate column to indicate if used for on campus communication and/or off campus communication.)

INFORMATION TECHNOLOGY	INSTRUCTION		ADMINISTRATION		GENERAL COMMUNICATION	
	on campus	off campus	on campus	off campus	on campus	off campus
1. Computers						
2. Multimedia Computing						
3. Fax Machines						
4. Cable TV						
5. Closed Circuit TV						
6. Broadcast TV						
7. Video Tape						
8. One-way Video w/Two-way audio or PC Link (Satellite Connection)						
9. Two-way Video & Audio (Desktop Videoconferencing)						
10. Two-way Video & Audio (Interactive Video Classrooms						
11. Other: _____ _____ _____						

9. Please list on the next page, degree or certificate programs, plus any individual courses apart from degree and certificate programs, that your institution offers through distance learning. In the second column (I.T. MODE #), please indicate the information technology mode used to communicate by using the numbers in the chart for item 8. When a program/course is listed, please check the appropriate column to indicate if the entire program/course or part of the program/course is offered through distance learning.

(For the purposes of this question, distance learning is defined as a formal educational process in which the majority of the instruction occurs when the learner and the instructor are not physically located in the same place at the same time.)

NAME OF PROGRAM OR COURSE	I. T. MODE #	ENTIRE PROGRAM	PART OF THE PROGRAM

(Add pages as needed.)

Thank you for completing this survey. Please return your response by **May 28, 1997** to the Commission on Higher Education; fax to 609-292-7225 or mail response to CN 542, Trenton, NJ 08625. (Please address questions to Dr. Jeanne Oswald, 609-292-8916.)

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Office of Educational Research and Improvement (OERI)
National Library of Education (NLE)
Educational Resources Information Center (ERIC)

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