*STANDARD VII*

# Library and Information Services

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# LIBRARY AND INFORMATION SERVICES

The Library and Information resources agencies at the University of New Hampshire are the University Library, the University of New Hampshire Manchester library, Computing and Information Services, the Parker Language Learning Laboratory, and other smaller units such as the UNH museum. Administratively, these units are autonomous and have separate reporting structures. However, their missions are complementary. Relationships are close and at several levels coordinating committees provide links among the units. For example, the University Librarian and the Director of Computing and Information Services work with the Information Technology Policy and Advisory Committee; the Associate University Librarian sits on the Information Technology Committee; and one of the Library Senators is assigned to the Senate Computing Committee. The Information Technology Policy and Advisory Committee discusses issues concerning the entire University System. For instance, the University Library is in the process of purchasing a new integrated library system and consultations with the Information Technology Policy and Advisory Committee concerning System-wide concerns has been ongoing. On the Information Technology Committee campus computing and information technology issues have been explored with direct input from Faculty, Staff, and Student representatives. Recent discussions have concerned the migration of UNH academic system to a new UNIX-based computing environment.

The response to Standard Seven that follows has been divided into three focused sections: the University Library, the University of New Hampshire at Manchester Library, and Computing and Information Services.

## *UNIVERSITY LIBRARY*

The University Library's mission has not changed since the 1983 Accreditation Self-Study that stated: "The University Library's mission is to provide organized access and guidance to the books, periodicals,

microforms, films, and other diverse published and unpublished materials which enable University instructional, research and service departments to perform their educational functions." It also serves as the public library for the Town of Durham. However, the University has changed dramatically with new undergraduate programs of study, new graduate programs, tremendous growth in externally sponsored research, and new outreach and service-related initiatives. The University's land, sea, and space grant status coupled with its role as the only publicly funded University in the state requires its strong commitment to state and national outreach programs. At the same time, the University continues to emphasize its strong undergraduate program and the strengths of its liberal arts program.

The University Library has responded to these diverse roles, a challenging financial situation, and an increasingly complex information environment by pursuing a dual strategy of ownership and access. Through rigorous analysis of the collection to match acquisitions to curricula needs, use of advanced computerized indexes and document delivery technology, development of strong resource sharing relationships, and the application of computer and telecommunications technology, the Library has been able to maintain effectiveness.

## DESCRIPTION

Recognizing the importance of the Library's academic mission, its structure is that of an academic unit equivalent to a college. The University Librarian sits on the Dean's Council and reports to the Provost. The Librarians are governed by bylaws and organized as a faculty with full faculty status including promotion and tenure review and representation on the Academic Senate and other uiniversity committees. The Senate Library Committee composed of six faculty, one undergraduate, one graduate student, and the University Librarian ex-officio serves as an advisory committee and reviews the effectiveness of the Library's policies and procedures.

The period 1983-1993 has seen tremendous changes in the University of New Hampshire Library. From 837,000 volumes in 1983, the collection has grown to over one million volumes; the card catalog has been automated; many indexes have been purchased on computer disk; and

individual journal articles are available "on demand" from document suppliers. To make better use of the Library's existing space, the following measures have been taken: the University has submitted a capital request for a $15 million addition to the Dimond Library, a storage facility has been constructed a mile west of the center of campus, renovation of staff areas has been accomplished, handicapped access has been improved, renovation of the Engineering, Math, Computer Science Library has been completed, and other needed remodeling has been undertaken. Much effort has been expended in the past ten years to improve library collections and services.

## Collections

The University Library's collection has grown steadily in the past ten years and the University Administration has budgeted an average 9% increase in the materials budget over those same years. Nevertheless, the Library has been under severe financial constraints due to the double digit inflation on library materials, especially journals. This inflation has had a negative impact on all academic libraries, but especially those supporting doctoral programs in the science disciplines. A recent report from the association of research libraries testifies to the severity of the problem: "Since 1981, while ARL libraries' materials budgets increased 244%, collections grew by only 12%. The average cost of a book has risen 49%, the cost of a journal 105%." The increased money allocated to cover increased costs of periodical subscriptions has resulted in a decrease in funds available to buy books.

The Library has developed a dual strategy of ownership and access through the Collection Development Office and a library liaison program. Since 1983, the Library has established a Collection Development Department with two full-time librarians, a high-level staff member and student assistants. In addition, librarians with subject specialties have been assigned to serve as liaisons to the teaching departments. These liaisons, working with the Departmental library representatives, analyze the departmental needs, establish priorities, evaluate the collection, work on approval plans, compile bibliographies, and monitor the budget. This process provides for a careful review of the collection to determine which materials must be added to the collection. At the same time, those materials that can be made available "on demand" are identified and supplied through document delivery services.

**Monographs.** The Library has established a purchasing plan with a major vendor enabling it to acquire books and other designated material quickly and at a considerable discount. This plan required extensive profiling of the Library according to its needs based on curriculum and research requirements. Tailored to the University's needs, this approach maximizes the limited dollars available to purchase book materials.

**Periodicals.** The dual strategy of ownership and access is especially evident in the Library's approach to the provision of periodical materials. Through the careful analysis of the collection by library liaisons, the Library identifies those materials that are absolutely essential to the academic mission. They form the core of periodicals to which the Library subscribes. Other materials that are still necessary but not so heavily needed are provided by document delivery services. For example, the Library has subscribed to CARL (Colorado Alliance of Research Libraries) Uncover service that supplies periodical articles on demand, increased its traditional Interlibrary loan service by acquiring an ARIEL workstation that facilitates high quality document transmission, and acquired the full-text collection of business journals (approximately 300) on compact disk.

**Government Publications.** The University Library, a partial depository of U.S. government publications, receives over 90% of what the government produces, and is a patent depository and a map depository. Respective materials are received in all formats. Skilled staff are required to make these resources available and useful to patrons. To this end, the University Library has expanded the Documents Department. It now includes two documents librarians, a high-level specialist, and a high-level staff position. The Department has aggressively pursued the application of computer technology to the maintenance and access of the collection. A data center has been established with the aid of a University grant, and projects with other units such as the Institute for Policy and Social Science Research have been initiated.

**Special Collections.** The Special Collections Department which includes rare books, manuscripts, New Hampshire-related materials, and archives has made progress in the past ten years in its attempts to expand the literary and historic collections of the University Library. Some of the Department's initiatives include extensive manuscript collections of

contemporary poets, a folklore collection, a faculty archive, and numerous photographic collections.

**Archives Program.** The University Library has received a major grant from the National Historical Publications Records Commission to organize a formal Archives program for the University. This will be of tremendous value in helping the University to manage and provide access to its internal records and documents. A project archivist and an assistant have been hired on a two-year basis with the expectation of making these permanent faculty and staff positions.

**Branch Libraries.** Much work has been done in the branch libraries to serve the teaching and research needs of the scientific and technical faculty and students more effectively. Resources have been provided in the newer formats. Especially significant has been the conversion of major technical indexes to CD-ROM (Biological Abstracts, Current Contents and Science Citation Index). The branch libraries have been added to the on-line catalog providing instantaneous access and circulation status for those items. Resource materials have been relocated among the branches to better organize and take advantage of all available space. In addition, service has been enhanced with a computer-based customized current contents service for faculty developed in coordination with the University's Office of Sponsored Research.

## *New Technological Applications*

The University Library has moved aggressively to take advantage of new technological applications. The on-line catalog is fully automated and a new and vastly improved second generation system is currently being installed because of obsolete and vendor-canceled software. In addition, the University Libraries have a total of over 70 compact disk indexes. Several of the major indexes have been connected using LAN (Local Area Network) technology to provide more efficient and better access to the indexes. In addition to the world Catalog of OCLC (On-line Computer Library Center) comprising over 27 million records, several specialized subject indexes are available on demand. The Library's on-line catalog is available through the campus network and the Library expects to expand coverage and access to other indexes and services shortly.

## Facilities

Space for the University Libraries has been a major area of concern since 1983. Two major studies have been conducted. The latest by Robert Owen Associates is part of the major campus master plan. This study has resulted in a three phase plan that would meet the Library's needs until 2010. This plan includes the construction of a storage facility which is now in operation, a 60,000 sq. ft. addition to Dimond Library, and the renovation of the existing building. The renovation and the addition will be designed to produce a modern, coherent, unified structure, which when combined with the storage facility, will provide the University with a library system equipped to meet its needs into the twenty-first century.

In addition to these major plans, the Dimond Library has been renovated to provide better working conditions for staff and public users. Office space has been redesigned, carpeting installed, Documents and Interlibrary Loan offices expanded and relocated, a new security system installed, the card catalog consolidated and new computerized on-line catalog workstations provided, and some of the reference indexes automated. The Engineering, Mathematics, Computer Science Library in Kingsbury Hall and the Physics Library in DeMeritt have been renovated, and compact shelving that increases shelving capacity has been installed in Physics.

Since 1983, the Library has installed one automated integrated system for its on-line catalog and is in the process of migrating to a new state-of-the-art system. The Library's on-line system including the branch libraries, is available over the campus network, and faculty, students, and general users can dial-in from office, dormitory, and home. The system is also connected to the statewide library system which includes the New Hampshire State Library and other academic and public libraries.

With the implementations of the University's Master Plan the University Library should be able to meet the ever increasing demands of the University faculty, staff, students, and general patrons. The University has made a commitment to a strong library that is centrally located, technologically advanced, well equipped and comfortably arranged. At the same time, there has been attention to the pressing space and staffing needs of the branch libraries. Various options to alleviate these problems

including the utilization of a storage facility and the possibility of incorporating some service points in the main library, are being explored.

### Financial Support

A quick look at the statistics for the past ten years reveals increases in funding averaging approximately 9% per year. This level of funding in the University's fiscally-constrained environment indicates a high level of support for the Library, especially in recent years. Yet, as noted earlier, it has not been sufficient to meet the high level of inflation in library materials. Given this set of circumstances, the University Library has pursued the strategies described above. These strategies are intended to alleviate the adverse effects of double-digit inflation in both book and periodical publishing and to take full advantage of new technological advances in publishing and document delivery.

### Staffing

Currently, the Library is engaged in planning for a reorganization of faculty and staff positions to meet the demands of new information technology. Added information systems require expertise in hardware, software, and networking. The Library's database is critical in this environment and requires close attention to standards and transportability. Bibliographic instruction becomes increasingly important as a multitude of computerized indexes and full-text resources replaces traditional print materials. Access to documents and related materials becomes increasingly complex and journal articles on-demand replace traditional subscription services. This new and quickly changing environment requires librarians with new specialties, different responsibilities, and more skills as educators. Therefore, the Library is reviewing its positions to provide librarians with the expertise to implement the latest in technological developments and to provide better access to resources housed in the University Library and those materials available in the wider information sphere.

The Library faculty and staff are highly qualified. All Library faculty have master's degrees in library science, most have additional master's degrees in a subject specialty, and many have doctoral degrees. Although job specifications for Library assistants require two years of post-secondary education, most staff members have bachelor's degrees and many are

pursuing advanced degrees. Faculty are rigorously reviewed for promotion and tenure using the established criteria of professional librarianship, scholarship, and service. Professional staff bring additional expertise in related areas and operating staff are highly educated and well trained. However, staffing is low as measured by the formula established in the *Standards for College Libraries*. In the reorganization plan discussed above, recommendations have been made to add positions in designated areas and upgrade some current positions to reflect added duties and increased responsibilities.

## Orientation and Training

The University Library has had a long standing tradition of user education and bibliographic instruction. With the advent of the on-line catalog and CD-ROM indexes, the reference and branch librarians have developed new bibliographic instruction techniques that take advantage of computer technology. Included are a "road show" for undergraduate classes, orientation programs for all constituencies, a hypertext guide to the Library, brochures and handouts, traditional lectures and bibliographies. With a room specially designated for bibliographic instruction and the upgrade to the Forum Room, the Library has strongly reaffirmed its commitment to this teaching activity.

## Policies

The University Library is open 101 hours per week during the regular school year and reference librarians provide assistance to students and faculty during 86 hours of that time. All hours are posted and published in several University publications. Services are described in library brochures, student and faculty orientation materials, and a computerized guide to the Library. Policies regarding use of the Library and other access issues are published in the *Student Handbook* and related publications. As discussed previously, the Senate Library Committee, which includes undergraduate and graduate representation, serves in an advisory capacity on these and related issues.

## Exchange of Resources

The University Library is involved in a wide range of resource sharing activities involving local, state, regional and national networks, such as

NELINET (New England Library Information Network) and OCLC (On-line Computer Library Center). Resource sharing agreements range from traditional interlibrary loan and onsite reciprocal borrowing agreements to advanced technological delivery systems involving sophisticated scanning equipment and high speed transmission over the Internet. They enable the University Library to expand its resources and to deliver the needed information in the most cost efficient format and by the most effective mode of transport regardless of geographic location and distance involved.

## Evaluation Processes

The Library is constantly in the process of evaluating its collection and services to effectively meet the teaching, research, and service missions of the University. Formally, the Library is continuously being reviewed by external agencies and accrediting bodies regarding specific programs and subject areas. Numerous focused departmental and programmatic accreditation reviews have been conducted, and all have been favorable in regard to Library materials and services. The University Library is in the process of revising and codifying its policies and procedures. A recently established Policy Committee, a standing committee of the library faculty, reviews current and projected policies.

In addition, internal reviews ensure that the Library fulfills its mission. The Library's liaison program has been instrumental in improving the development of the collection to meet departmental and curriculum needs. Subject specialists and departmental representatives are working cooperatively to determine buying strategies, develop on-demand options, and eliminate little-used items.

Several surveys have been developed to aid in the collection development process. The Amigos Compact Disk which compares the Library's holdings to those of its peer institutions is especially helpful in identifying strengths and weaknesses in the current collection. In addition, surveys of the faculty are conducted periodically to solicit specific advice and comments regarding collections. The Library's on-line system provides statistical data on use of the collection, and the Library is conducting a periodical use survey to provide additional data on the use of that collection. These statistics will help to determine possible candidates for a document delivery service as opposed to the current subscription service.

Student surveys conducted by Student Affairs traditionally include questions related to library use. The Library also surveys students and faculty on specific issues. Currently, a periodical use survey is being conducted to collect empirical data on the use of specific journals and periodicals. Recently, a seating survey was conducted in connection with the Library space study. An intensive survey of library use to determine support for funded research is in the process of being designed.

## APPRAISAL

In summary, the University Library's strengths and accomplishments are:

### Space
- Construction of storage facility with a capacity of 175,000 volumes
- Approval of capital request for a $15 million addition by NH House and Senate
- Renovation of staff areas
- Renovation of Engineering/Math/Computer Science and Physics Libraries
- Remodeling of Branch Libraries and Main Library
- Improvement of handicapped access

### Collections
- Instituted collection development program
- Set up approval purchasing plan
- Instituted document delivery service
- Installed new high speed document delivery equipment
- Purchased full text business periodicals collection
- Established government documents electronic data center
- Expanded patents and map depositories
- Established an official archives program
- Acquired several major special collections

### Automation
- Implemented an integrated on line library system
- Initiated migration to a new state of the art automated system
- Acquired several computerized reference sources
- Established a local area network (LAN) of reference sources which provides easier access
- Acquired the computerized collection analysis compact disk produced by Amigos
- Set up a campus-wide network
- Provided access to Internet, the national high-speed network
- Established NHNet, the statewide network
- Established the Research Computing Center
- Upgraded classrooms to provide state of the art electronic facilities

The challenges facing the University Library include:

- Providing the needed resources in a time of increasing pressures due to limited funds coupled with double-digit inflation in library materials

- Providing information in all the formats available with the appropriate technical expertise to implement the systems, the needed hardware and software to run the systems, and the professional staff to assist faculty and staff in their use

- Assessing and taking advantage of the latest developments in information technology and networking capability

- Providing sufficient space for an expanding student population, increasing numbers of faculty members, and exploding information resources

- Meeting the vastly increased needs generated by the increased research funding

- Providing patrons with the needed assistance in a complex information environment

- Providing the best possible service to the colleges served by the branch libraries

## PROJECTION

For academic libraries, this is a demanding time of new technological developments, exploding information resources, and shrinking buying power. In this challenging environment, the University of New Hampshire Library has developed the following strategies to take advantage of the latest developments in information technology, to organize staff effectively, to strengthen its assets, and to manage costs effectively to enable it to meet the needs of the University community.

### Strategy One: Stressing Ownership and Access

The dual strategy of ownership and access takes advantage of new networking capabilities and new information delivery formats to purchase lesser used materials "on-demand," while sophisticated computerized analysis of the Library's purchasing history aids the collection development librarians in determining buying strategies. LAN-based workstations provide the latest indexes to a wide variety of scholarly materials as well as full text business and government data.

## Strategy Two: Constructing an Addition and a Storage Facility

With the assistance of two major space studies, the Library administration has developed a twofold strategy of building a storage facility to hold lesser used materials and constructing an addition to the Dimond Library on the center campus. This strategy is designed to meet current space requirements for seating and shelving, to continue to take advantage of the Library's central location on the campus, and to meet the projected needs of the University to the year 2010.

## Strategy Three: "Maximizing Access, Minimizing Costs"

Borrowing the title of the Association of Research Libraries' study on access to information resources (Baker, 1992), this phrase captures the essence of the University Library's approach to managing its budget. In spite of fiscal constraints, the University administration has continued to increase the Library's budget. Nevertheless, due to increasing costs, the acquisition of library materials has been limited. To counteract these pressures, the Library will continue its dual strategy of access and acquisition.

## Strategy Four: Reorganizing Staff

In the long-term, the University Library's staffing is low and should be increased to provide more support for public services, subject specialties, and technical support. In the short term, the Library is reorganizing and where appropriate retraining its professional staff to begin to move in this direction. The Library administration is making strong appeals to the University administration to fill all vacant positions and to authorize new positions in recognition of the need for more librarians. In this complex information environment, expertise in information retrieval is critical to the full utilization of the new technology.

## Strategy Five: Developing New Technology

The Library and Computing and Information Services (described in a following section) will devise approaches to enhance the technological development of the campus with comprehensive local and wide area networking. The Library will maintain state of the art library automation systems which supply a multidimensional on-line catalog, computerized periodical indexes, locally produced databases, graphics and imaging

capabilities, full text resources, and fully networked incoming and outgoing access. The Library and CIS are already heavily involved in this effort which will help the University community respond to the needs and directions of the twenty-first century.

With these five strategies, the University Library expects to continue to meet current needs, anticipate future needs, and operate effectively within the challenging financial realities of 1990s New England.

# UNIVERSITY OF NEW HAMPSHIRE AT MANCHESTER LIBRARY

## DESCRIPTION

The University of New Hampshire at Manchester maintains a library in French Hall to support the academic activities of the college. The library houses approximately 25,000 volumes and subscribes to more than 500 periodicals. It also serves as the audio/visual center for the college and provides materials, equipment, and service for faculty and students.

The collection of materials in the UNHM Library has been developed to support the college's curriculum. Collections are strongest in the humanities, history, philosophy, art, language, literature and sign language and deafness. Areas that need strengthening to support new curricula include business, economics, education, and nursing. It is expected that this strengthening will be accomplished over the next several years. The library is fully automated and houses a network for periodical literature. Periodicals are collected in many formats, including full image compact disk technology. The library has developed an extensive bibliographic instruction program that helps students become familiar with library resources and technology.

As a member of the Greater Manchester Integrated Library system, the UNHM Library's on-line catalog system is part of the New Hampshire State Library Union Catalog. Students view not only what is in the Oudens Library but the holdings of many surrounding academic and public libraries. At the public terminals faculty and staff also can view the holdings of the other areas in the state, such as the database in Plymouth State College, Concord, Keene State College, and most importantly, the main Library on the Durham campus. Printers are provided at all terminals. The

Library also has an INTERNET terminal where faculty and students can view the collections in all major institutions in the United States as well as international collections.

Access to materials for faculty and students is the main goal of the library staff. Document delivery services are fast replacing standard interlibrary loan because of the speed of delivery and the inclusion of copyright costs in the fees. The UNHM Library relies heavily on its materials retrieval system with the Dimond Library on the Durham campus. When materials are not available from the UNH Library, UNHM purchases them from document delivery services, such as The British Library Network. The UNHM Library also retrieves materials through a standard interlibrary loan system. UNH-M is an active member of OCLC and NELINET. With all the numerous layers of information retrieval that are in place, the UNHM Library is able to meet most users' needs. However, lack of space is a critical problem for the library. More space is needed for student seating, for shelving the library collection, special collections, for offices, materials processing, and storage of audio/visual equipment.

## APPRAISAL

The mission of the UNHM Library is to provide access to information for its students, faculty and staff. A resourceful and dedicated staff meets this challenge by providing expertise and assistance in locating and retrieving resources from internal and external sources. Close relations with the other University System Libraries, especially the main campus UNH Library, provide access to materials not located at UNHM. The interlibrary loan arrangement is one example of the special relationship between Manchester and Durham. In addition, the Library has cooperative agreements with the Manchester area libraries and the other college libraries in the state. The Library has a need for more space, since, study and shelving space is very limited.

## PROJECTION

The UNHM Library will continue to build its collection to meet the needs of its curriculum. At the same time, it will aggressively pursue the latest in technological developments to support access to external data bases over high speed networks and document delivery from other libraries or commercial vendors. In addition, the Library will continue to acquire materials in all formats—print, microform, compact disk and tape. Closer coordination with the other University System libraries, especially the University's main library, will be pursued.

# COMPUTING AND INFORMATION SERVICES

The organizational structure of Computing and Information Services has gone through a series of changes since 1983. In 1983, academic and administrative computing were completely separate systems. This structure was continued throughout the 1980s. In fact, administrative computing was transferred to the University System and reported to the Chancellor's Office. Academic computing remained on the University campus, but it has reported to different vice presidents over the years. In 1992, administrative computing was combined with academic computing and brought back to the University campus under the directorship of Computing and Information Services. At the same time, the reporting structure was shifted from the Provost to the Vice President for Finance and Administration. Various other scholarly support services including Media Services, Printing, Mail Services and Telecommunications were also brought into this unit. In 1993, Research Computing was moved from this unit to the Research Office and now reports to the Vice President for Research. Changes in the organizational structure of computing and related services at the University, like those on many campuses across the country, are the result of the fast changing technological environment and need to balance the academic, administrative, and research needs of the University.

# DESCRIPTION

The mission of Computing and Information Services is to provide support for instruction and research, to deliver services which meet the University's information needs, and to provide leadership and assistance in planning for the effective use of technology. It maintains centralized and decentralized computing resources for both instruction and research. Centrally, there are two large Digital systems and several smaller, application-specific systems. In addition, increasing numbers of departments have workstations and computing systems supported by the department.

Computing and Information Services operates a VAX 8820 running VMS and a DECsystem 5500 RISC Ultrix machine for instructional and research computing. Each semester, the academic mainframe systems support over 4,500 users; more than half are designated as course study accounts. For students and faculty who do not have access to systems directly connected to the campus fiber-optic backbone, these mainframe systems provide access to the Internet and remote resources such as the NSF Supercomputing Centers. UNH is an affiliate of the National Center for Supercomputing Applications, the Pittsburgh Supercomputer Center, and the Cornell Theory Center. Administrative data processing is centralized on additional VAX computers, administrated for the University System of New Hampshire through Computing and Information Services.

There are more than 3,000 microcomputers in use. Many are in departmental clusters consisting of 5 to 30 machines. Five microcomputer centers and three VAX terminal and workstation centers are available to all UNH students. These centers are equipped with more than 150 IBM and Apple Macintosh personal computers and compatible printers, and over 70 text and graphics terminals and workstations. In FY92, Local Area Network services were installed in the student computing centers to provide improved access to discipline-specific software and general purpose applications for course assignments for students.

Within Computing and Information Services, three groups provide information resources and access to academic campus users. Other groups provide administrative computing functions, mostly on centralized mainframe systems, and additional services such as telecommunications

(the second largest telephone company in New Hampshire) and printing and mailing services.

*On-Line,* the department's quarterly publication, continues to serve as a forum for tutorial and general computing information. Time sensitive computing information is distributed to faculty and administrators through *Keyed In,* the department's monthly newsletter, and other existing University information services such as the *Campus Journal* and WILDCAT, the campus-wide information system.

**Instructional Services.** Instructional Services assists faculty, staff and students with consultation and software support, computer configuration and installation, training, and the provision of instructional media and documentation. During the last year, the User Support Center's hotline consulting service handled more than 8,400 logged calls. In addition, the center provides walk-in consulting for specialized services such as computer virus scanning. Resource Centers, equipped with both purchased and donated equipment and software, provide the University community with centrally located computing equipment and software, much of which is too expensive for individuals or departments to purchase. Consultants are available in the centers at all times to help with the wide range of services. Over the past year, 66 classrooms and other instructional facilities have been upgraded. Newly renovated facilities include 8 multimedia-ready audiovisual facilities, 7 large lecture facilities, and 51 general audiovisual facilities.

The Training Center offers courses ranging from hands-on workshops in WordPerfect to on-site customized sessions on connecting to the campus network and maintains a library of video tape training and computer based training materials. Instructional Services also provides a wide range of services such as video production, photography, archival, and sound support.

**Technical Support Services.** The Technical Support Services group of Computing and Information Services provides technical assistance, support, and training in the use of microcomputer and mainframe technology for the University's academic and administrative communities. Technical Support Services is responsible for the management of the University's student computing centers and academic mainframe systems. An electronic "QUESTIONS" Mailbox is maintained on all centralized

academic systems though which users can get help. Responses to messages are guaranteed within one working day. In FY92, the Questions mailbox handled over 1,900 messages.

**Networking.** Access to the Internet and NSFnet for the University has been upgraded to T1 speed, 1.544 Megabits/second. UNH Internet connectivity through NEARnet has been extended to the campuses of Plymouth State College and Keene State College through the USNH network. Technical Support Services supports the UNH Network Information Center (NIC) which offers anonymous ftp services, which allow members of the UNH campus to make files accessible via the Internet. This service has been used to share information that is unique to UNH with universities and research institutions across the nation.

Computing and Information Services was invited last year to participate in the Governor's Task Force for a Statewide Telecommunication Network for New Hampshire, called New Hampshire Net. As part of this project, the University was selected to implement a pilot study project of a point-to-point telecommunications network.

As part of the University's public service mission, NHNet, a statewide network, has been implemented to extend Internet and remote electronic communication to K-12 teachers throughout New Hampshire. The project is co-sponsored by the Department of Education's Center for Educational Field Services and uses a VAX 3800 called NHNet as its host computer to handle electronic mail services, Internet capabilities, and electronic bulletin board services to provide teachers with a peer-to-peer network.

**Research Computing Center.** The Research Computing Center provides UNH researchers with high speed computational power, a program development environment that can handle large amounts of data, multidimensional interactive graphics to present complex relationships, a high speed network to support a distributed computing environment, and high quality text processing for publications, professional meetings, and proposals. This group also assists in transferring technology to local New Hampshire businesses and other businesses throughout the world. Using these services, researchers from businesses and University departments, such as physics, the Institute for the Study of Earth, Oceans, and Space, and

civil and mechanical engineering, concentrate on solving scientific problems, not computing problems.

Computational support is provided to such funded researchers as the Gamma Ray Observatory Group, the Solar Terrestrial Theory Group, and many more. In addition, Research Computing supports the CADLAB in Morse Hall and teaches courses in CAD for the College of Engineering and Physical Sciences. Commercial customers of Research Computing are primarily served in the areas of CAD/CAM, financial analysis, marketing research, labels processing, database analysis, network consulting/teaching, and accountability testing for NH public schools. The InterOperability Laboratory in the past year hosted two large ring open testing programs and a hot stage testing for INTEROPT91.

**Telecommunications and Network Services.** Telecommunication provides telephone and data service for the University community. This includes administration of an AT&T Dimension G2 with 10,000 potential extensions, of which 8,000 are currently active, a fiber optic backbone carrying data and video services, including satellite downlinks, to academic and administrative buildings, and maintenance and repair of computer equipment.

## APPRAISAL

Computing and Information Services is successful in its mission principally because of the wide variety of expertise and experience of its staff and the enthusiastic reception and support that use of computer technology has at UNH. Through careful planning and consolidation, Computing and Information Services has been able to expand offerings to the University community and offer greater depth and variety in many existing services. The effectiveness of the department as a service organization is evidenced by the numbers of people served. In 1992, over 16,500 client contacts were logged and over 6,000 accounts were used on central academic systems.

As the number of computer users on campus continues to increase, the profile of the UNH computer user is changing. Many are increasingly comfortable with technology and have a growing awareness of the possibilities afforded by computers. Balancing the demand for new technology and the costs involved in catering to this demand is a difficult

and neverending challenge. Support staff in all areas continually need to not only be well versed in current technology, but they also are asked to be leaders for the campus, planning directions for new uses to facilitate the missions of the University.

In these efforts, CIS is constrained by budget dollars for the purchase of hardware and software and for professional development of its staff, and by the lack of an adequate central location. Computing and Information Services currently has staff in more than ten buildings. Keeping communication open between multiple locations and many distinct, yet related projects, is an enormous challenge.

## PROJECTION

Computing and Information Services will continue to work closely with faculty, staff and students to evaluate its programs and prepare strategic directions for the use of technology on campus. Continued efforts will be made to provide appropriate high-quality, cost effective information technology services for the University community, develop and enhance the current information technology environment, promote the ongoing professional development of CIS staff and create a well integrated organizational structure, and foster a thoughtful, professional approach to delivering effective service.

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