

INFORMATION TECHNOLOGY SERVICES

VISION PLAN

2002-2003

Executive Summary

Information Technology Services (ITS) provides mission-critical information technology services to University of Texas at Austin students, faculty, and staff. A significant part of the ITS mission is to support the University's academic programs by providing an information-technology-based environment, technological capabilities, and able staff who can assist students, faculty, and staff in their learning, teaching, research, and outreach activities.

Pre-allocated, Ongoing and One-Time Capital Funding for 2002-2003

<u>Pre-allocated to ITS</u>	\$1,754,833
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This pre-allocation represents a 12.58% increase over the allocation for 2001-2002. See "ITS Infrastructure and Services Supported or Supplemented by Funds Other than ITAC" (page 5) for details.

<u>Ongoing Operations</u>	\$1,566,497
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This ongoing operations total of \$1,566,497 represents a 10% increase over the allocation for the year 2001 -2002.

- Student Microcomputer Facility Operations*
- Payment on UT System Loan for SMF (Life Cycle Funding)*
- Help Desk and Training Services*
- Student Computer Use Survey*

<u>Proposed New Ongoing Operations</u>	\$1,285,000
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| <i>Microsoft Student License</i> | <i>\$180,000</i> |
| <i>Student Software Bundle</i> | <i>\$200,000</i> |
| <i>Network Web/File Storage</i> | <i>\$350,000</i> |
| <i>Internet Bandwidth</i> | <i>\$100,000</i> |
| <i>Technical Staff</i> | <i>\$340,000</i> |
| <i>Network Operating Center Electronic Upgrades</i> | <i>\$90,000</i> |
| <i>Courseware Servers and Licenses</i> | <i>\$25,000</i> |

<u>One-Time Capital Expense Projects</u>	\$645,000
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| <i>Server Life Cycle/Capacity</i> | <i>\$170,000</i> |
| <i>Campus Cable System Upgrade</i> | <i>\$70,000</i> |
| <i>Video Conferencing Equipment</i> | <i>\$50,000</i> |
| <i>Authentication and Directory Projects</i> | <i>\$75,000</i> |
| <i>PC Training Room</i> | <i>\$140,000</i> |
| <i>New Technology Assessment and Demonstration</i> | <i>\$140,000</i> |

Report of ITAC Expenditures - 2000-2001, 2001-2002

Awards and Expenditures 2000-2001

Academic Computing and Instructional Technology Services (now Information Technology Services) was awarded a recurring annual allocation of \$1,666,274, with an additional \$360,000 for the UT System loan repayment, an additional \$312,713 as a credit against Blackboard and Web Mail expenditures, and \$567,300 for one-time capital projects. Before the 2000-2001 academic year began, an additional ITAC allocation of \$2,361,500 was received as a replacement for state dollars originally part of the ACITS budget. This substitution of ITAC dollars for state funds was part of a University-wide effort to capture state funds to use for faculty salaries. In addition, \$36,798 of 99-00 ITAC funds were brought forward for use in 2000-2001. The ITAC funds were expended as follows in 2000-2001:

<i>Pre-allocated to ACITS:</i>	\$2,361,500
<i>Ongoing Operations:</i>	\$1,666,274
<i>Student Microcomputer Facility Operations</i>	
<i>Payment on UT System Loan for SMF (Life Cycle Funding)</i>	
<i>Help Desk</i>	
<i>Student Computer Use Survey</i>	
<i>One-time Capital Expenditures (detailed below)</i>	\$758,377
<i>(including \$36,798 carry forward)</i>	
<i>Carry forward to 2001-2002</i>	\$385,585*

One-time Capital Expenditures 2000-2001

<i>Directory and Authentication Services</i>	\$78,169
Windows 2000 Active Directory Services to provide The University community with a uniform authentication service native to Win 2000. Includes e-mail and calendaring services	
<i>Integrated Messaging</i>	\$125,000**
Upgrade campus Exchange services to support up to 10,000 users including needed SANs architecture for storage	
<i>Database Support</i>	\$48,523
Replaced obsolete equipment for providing Oracle, NT SQL Server, FileMaker Pro, and Access database technologies.	
<i>Campus Web Services</i>	\$151,730**
Upgrades of the Web Central infrastructure serving the entire University, including student publishers, faculty, staff, and official publishing.	
<i>USENET News</i>	\$97,357
Upgraded capacity and features of USENET News.	
<i>SMF Software Upgrades</i>	\$9,566
Provided new software licenses for SMF work stations.	
<i>Laboratory Equipment</i>	\$85,714
Hardware and software that augmented and expanded the equipment in the Center for Instructional Technology lab to provide a facility for multimedia teaching and learning projects.	
<i>UTnet</i>	\$162,318
Upgrades for the UT Austin campus network with new equipment to meet the growing demand on the campus network.	

* Reflects the \$312,713 of Blackboard/Webmail credit to the ITAC account that was not transferred to its originating account.

**UT accounting records show \$150,000 of these amounts in 2002-2002 fiscal year because some purchases cleared 1 day past deadline.

Awards and Expenditures 2001-2002

Information Technology Services (formerly ACITS) was awarded a recurring allocation of \$2,982,832 and \$360,000 for repayment of the UT System loan for the SMF. An additional \$1,214,942 was allocated to the CIT, a unit previously part of ACITS, but which was transferred with its funding to the Provost's office beginning with the 2001-2002 academic year. The one-time capital equipment allocation was \$594,789. A decision to keep last year's Blackboard repayment amount in ITAC funds rather than transferring it to the account from which it came resulted in an additional carry-forward of \$385,585. Those total funds are being expended as follows:

<i>Pre-allocated to ITS</i>	\$1,558,744
<i>Ongoing Operations:</i>	\$1,424,088
<i>Student Microcomputer Facility Operations</i>	
<i>Payment on UT System Loan for SMF (Life Cycle Funding)</i>	
<i>Help Desk</i>	
<i>Student Computing Survey</i>	
<i>One-time Capital Expenditures (detailed below)</i>	\$956,000
<i>Estimated carry-forward to 2002-2003</i>	\$50,207

One-Time Capital Projects funded with 2001-2002 ITAC Funds (some still in process)

<i>Computer Consolidation for Help Desk</i>	\$50,000
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The impending move of the Help Desk from VRC necessitates the consolidation of computer systems into a server with VmWare GSX or ESX. The justification for the purchase is it will save about 1000 sq ft of floor space at the time of the move, will be less expensive in the long run as we will no longer have to upgrade 14 machines in the 3 year cycle and will allow multiple users to access the same operating system or application simultaneously.

<i>Problem/Incident Tracking</i>	\$150,000
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A software suite of tools that will allow the Help Desk to keep an accurate and up-to-date history of computer problems by user, to gather statistics about problem types, to share information about problem solutions in a more functional manner, to schedule users for appointments and to provide a significantly higher level of customer service. The tools will work with the existing Automatic Call Detection system to provide faster resolution of user problems.

<i>Life Cycle Funding - COM building infrastructure servers</i>	\$180,000
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Unix servers currently on three different vendor platforms will be consolidated to a more efficient single platform providing general Unix services for academic support. Old domain controllers for Windows based services will be replaced. And the Oracle backend for Blackboard will be upgraded to support the course load and usage doubling each year.

<i>Enterprise Management Tools</i>	\$17,000
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Additional software, controls, and hardware that simplify the management and reliability of enterprise servers such as Web Central, course management systems, messaging systems, etc. New monitoring software, updated environmental controls such as temperature sensing, and an additional tape robot will be deployed.

<i>Exchange Collaboration Services</i>	\$15,000
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There will be an investigation of Instant Messaging services using EID authentication that will increase communication among student/faculty and staff desktops for providing support services.

<i>Cold Fusion Services Upgrade</i>	\$24,000
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Add a second server to split development/instructional and production services as well as provide redundancy. Cold Fusion, a Web application development platform, can use the existing EID system and demand on the existing server is expected to double this year.

<i>Core Router/Switch Upgrade</i>	\$150,000
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The core routers and switches in the Network Operations Center will need to be upgraded to remain current with industry hardware/software standards and support the dramatic increases in bandwidth. New technologies to support protocols and services are implemented with new equipment installations. It is proposed that appropriate spares and memory upgrades be acquired for all equipment purchased.

Mail Server Upgrade *\$120,000*

Significant additional use of the University Mailbox Service, the primary student e-mail system, and the increased user message store size in particular requires that the system be upgraded with additional processor and storage capacity to improve reliability and performance.

Virtual Private Networking *\$50,000*

It is important to develop hardware/software to enable utilization of UTNet services for users connected through remote Internet Service Providers. As a myriad of Internet Service Providers provide rapid deployment of high speed access in the Austin metropolitan area, UT's ability to provide services to an increasing number of University of Texas at Austin students, faculty and staff requires a standard service offering. This effort will initiate the essential infrastructure and standards for such a service.

Internet Bandwidth *\$200,000*

The doubling of commodity Internet traffic in the last year requires an immediate infusion of money to purchase additional capacity.

ITS Infrastructure and Services Supported or Supplemented by Funds other than ITAC

Many services and activities for students, faculty and staff in the ITS portfolio are funded in whole or in part from sources other than ITAC. The services below receive some or all of their financial support from non-ITAC funds.

<i>Communications</i>	<i>Custom Contract Support Services</i>
<i>Data Center Operations</i>	<i>Departmental Contract Services</i>
<i>Help Desk</i>	<i>Internal Facilities Management</i>
<i>IT Security Office</i>	<i>Management and Administrative Services</i>
<i>Printing Services</i>	<i>Research and Statistical Consulting</i>
<i>RESNET</i>	<i>Software Distribution Program</i>
<i>Student Micro Facility</i>	<i>Telesys</i>
<i>Training</i>	<i>UMBS</i>
<i>Unix Timesharing Services</i>	<i>UTNet</i>
<i>Video</i>	<i>Web Office</i>
<i>WNT/Exchange Enterprise</i>	
Total Non-ITAC Infrastructure and Service Funding	\$7,412,987

Summary Discussion of Projects Proposed for ITAC Funding for 2002-2003

Ongoing Operations \$1,566,497

Student Microcomputer Facility \$473,697

The prevailing wage in the information technology industry in Austin for student part-time help is as much as \$16.00 per hour. Salaries of our professional full-time classified staff have increased as well by an average of 5% per year. Additional recurring funding to support the SMF is required to accommodate the increase in salaries and the increase in the number of staff.

Life Cycle Funding - Student Microcomputer Facility \$360,000

The Student Microcomputer Facility is on a three-year replacement cycle. New equipment was purchased in the summer of 2000 with a three-year loan from the UT System, paid back at \$360,000 per year.

Help Desk and Training Services \$712,800

The goal of the ITS Help Desk is to answer questions and help solve problems for all computer users in the University community. Competition from Austin IT firms in the form of higher salaries and benefits continues to make it difficult to hire and retain help desk staff (approximately 30 students and 7 full-time employees) with the knowledge and skills necessary to support the UT community. The 10% increase in recurring allocation is required to keep student and full-time salaries competitive and to increase the responsiveness of Help Desk services. To improve the services of the Help Desk, we propose expanding assistance options to include the use of instant messaging as a query and answer tool. Additionally, Training Services is developing a program that will use students to conduct the IT orientation program that takes place as part of UT's freshman orientation every summer. These students will conduct classes on using IT resources at UT for approximately 7,000 students over the 3 summer months. During the fall and spring semester, these students will also teach short IT classes attended by other students.

Student Computer Use Survey \$20,000

In the fall of 2000 and spring of 2002, ACITS (now ITS) conducted a comprehensive survey of about 1,800 students from all colleges and levels. That survey revealed significant information about use and access to technology. Each year a survey will be conducted that will allow the IT organizations to better target their services to the rapidly changing needs of UT students.

Proposed New Ongoing Operations \$1,285,000

Microsoft Student License \$180,000

The UT System Chancellor's office funded the Microsoft software license from 9/1998 through 8/2002. Beginning in Fall 2002 the amount of UT System support decreases each year until UT Austin assumes the entire cost of its portion of the license. This amount of ITAC funding enables ITS to offer to all students a suite of Microsoft software that most find essential: the Office suite (Word, Excel, PowerPoint, Outlook, et al.) plus Windows upgrades. This amount will increase each year for the following two years to cover the decreasing amount of UT System funding.

Student Software Bundle \$200,000

Licensing for student-owned systems of additional software that delivers substantial large-volume economies while increasing information and network security, including anti-virus, firewall, other security tools, Eudora, MacOS upgrades.

Network Web/File Storage \$350,000

ITS proposes to stop charging for personal web/file storage space for students. Growth in demand for online disk storage is driven by need to support personal web pages, collaborative projects, roaming email access, and backup for personal devices (especially mobile and wireless devices). This requires a server and storage investment which would be amortized over three years. The costs are as follows: 25 MB per student for \$272,000; 50 MB for \$320,000; 75MB for \$350,000; 150MB for \$522,000.

Internet Bandwidth \$100,000

Growth in demand for Internet bandwidth attributable to student use, in wired dorms, in labs, and via dial-up (including replacement of declining "Telesys" modem pool net revenues. The doubling of commodity Internet traffic in the last year has increased our annual bandwidth charges by roughly \$150,000. Unfortunately, we will require another \$150,000 increment sometime in calendar 2002, perhaps as early as spring semester. Telesys revenues, projected to decline from \$3M in 1999-2000 to \$1M in 2002-2003 resulting in a shortfall of \$2,000,000 will require an additional \$180,000 to cover bandwidth expenses

formerly paid out of this revenue source. The student contribution of the total growth in Internet cost is 50% of the costs not accounted for through Resnet.

Technical Staff \$340,000

Four additional technical staff are needed to provide more robust support for email, Blackboard, and the web. The total is based on an average salary of \$65,000 plus fringe benefits and equipment.

Network Operations Center Electronics Upgrades \$90,000

Continuing growth in UTnet and Internet traffic requires an annual upgrade of the core electronics in the NOC. The student portion is 50% of the total cost.

Courseware Licensing and Support \$25,000

Blackboard, the course management system, continues to grow. In November 2001 up to 100 simultaneous pages were being served for 500+ classes. By January 2002 the number is well over 200 and growing. Servers are still being expensed, but this total is the difference between the original cost of the annual license and technical support costs that occur every year and what is already being paid from other funds.

Proposed One-Time Capital Expense Projects for 2002-2003 **\$645,000**

ITS identified the following list of critical one-time capital projects requiring ITAC funding. Based on past ITAC funding patterns, we expect about one-half of the capital projects to be funded. The remainder of the unfunded projects or portions of projects will be shifted into later years unless alternative sources of funding can be identified. The projects are listed in priority order.

Server Life Cycle/Capacity \$170,000

Utilization of Blackboard is dramatically increasing (doubling each semester) so additional server capacity is needed. In addition, sessions will be encrypted to prevent exposure of sensitive material. Webmail continues to grow (now 50% of the accesses to the primary student email system on campus) so additional processor is needed. Some utility servers (print, naming, monitoring) within Windows services are 8 and 11 years old and need replacement. ITS has developed through collaboration with faculty and administrative offices the beginnings of an Application Service Provider model for delivering specialized software solutions. The current NT server provides advanced statistical applications to students, faculty, and staff in the UT community using the Windows Terminal Server plus Citrix Metaframe software. This project proposes extending to ASP model to provide faculty, staff and students easier access to advanced mathematical applications including Matlab, Mathematica, and Maple.

Campus Cable System Upgrade \$70,000

To meet the growing demand for instructional and teleconferencing video programming across the campus, the cable system must be upgraded from its existing equal-split configuration operating at 450 MHz of usable bandwidth to a sub-split configuration operating at 550 MHz. This upgrade would effectively triple the capacity of the system from 30 channels to 90 channels and enable transmission of higher quality digital television.

Video Conferencing Equipment \$50,000

An important infrastructure concern of ITS is the provision of high-quality video conferencing for students and faculty. At present, a central video conferencing facility, meeting minimum UT System standards and which is generally accessible to all members of the campus community, has yet to be established at UT Austin. The equipment being proposed could be employed in newly renovated space on campus to provide the necessary functions that could be used for job interviews or other activities.

Authentication and Directory Projects \$75,000

Projects to produce core university IT infrastructure. Directory services at UT will include Active Directory, iPlanet LDAP, and open LDAP, with tools and projects needed to make these services interoperate and synchronize. Directory services are a key service to provide institution wide authentication, authorization and certain institutional role information. The student portion is 50% of \$150,000 total cost.

PC Training Room \$140,000

A new computer training facility that would be located in the Undergraduate Library where it is easily accessible to students and where other critical academic and computing support services can already be found. The only technology classroom in the UGL continues to be over utilized, inadequate for collaborative work, and frequently too small to accommodate the large numbers of students who sign up for the classes and seminars. This purchases computers and furniture.

New Technology Assessment and Demonstration

\$140,000

Acquire and demonstrate various new technologies of interest to the UT Austin community. For example, this may include new PC Tablets, iPods, new operating systems or applications. A primary customer service goal is to offer a central Web location for solutions to IT problems that can be used at any time so students, as well as faculty and staff, can easily find the resources they need by subject topic and other browsing and search options. One example of this type of service can be seen at the University of Indiana <http://kb.iupui.edu/>. A Knowledge Base proof of concept will capture various types of information resources, including information published by ITS, colleges and departments, and corporations. The project will also investigate future improvements to email systems such as improved server based antivirus protection, individual mailbox restores, spam bouncing, tighter integration between Webmail and UMBS. Finally, [IT@UT](#) is a Web-based publication providing up-to-the-minute IT news and information as a central point for students, faculty and staff to learn about developments in IT on campus and around the globe. To take advantage of the Web's capability for multimedia content, the [IT@UT](#) staff proposes acquiring a digital video camera, digital video deck and computer software for editing. Video content would then be incorporated in the articles about IT use, about new technologies and IT events on campus.

Appendix A

Network Status

Established in 1987, the Networking Services group of UT Austin's Academic Computing and Instructional Technology Services (ACITS) organization maintains UTNet. UTNet is a campus-wide high-speed digital data network available to all computer users on the UT Austin Campus. UTNet also comprises a core set of network-based services, which are made available to all of its users. Some additional services are supplied by the UT System Office of Telecommunication Services.

UTNet has grown over the last 14 years to become what it is today: an information resource that is essential to the academic, research, and business operations of the university. Recently, the UTNet backbone network has been re-engineered, which has resulted in a large increase in network performance. The new Ethernet switching core is the current backbone system to which all new and renovated building networks are attached. The complete UTNet system is actually several systems linked together. While some technologies have been replaced, much of the equipment that has been installed over the years is still in use. As such, the UTNet system includes several generations of equipment reflecting the rapid evolution of networking technology.

UT Austin is the largest university in the United States, and consequently the campus network serves a community of approximately 70,000 people (48,000 students and another 20,000 or so faculty and staff) in over 100 buildings on the main campus and at several other locations in Austin. Ten years ago, UTNet served a mere 400 computer located at about 20 sites. By 1992 the number of connected computers had increased to 4,000. From 1994 on, the combination of the World Wide Web and the widespread adoption of low cost, high performance desktop computers led to an explosion in network access and utilization. Currently there are approximately 35,000 computers on UTNet, a number that is roughly twice as large as the number of telephones on campus. The current population includes some 3,000 computers on the ResNet system, a 6,500 port dormitory network for students who live on campus. More than 17,000 dial-in user accounts are supported by the 2,500 lines of the Telesys dial-in system, and over 80,000 users have e-mail accounts on the mail.utexas.edu system.

There are nearly 500 Web servers on campus, with approximately 300,000 pages of information being indexed on a regular basis. Currently, 75 percent of UTNet traffic is Web-related, with hundreds of Web traffic flows per second (each flow is the result of a "Web-click") being delivered by the backbone routers during the busy part of the day. There has been an 8,663 percent increase in the number of assigned IP addresses ("hosts") from November 1988 to May 1998. Traffic moved across the UTNet backbone by routers was measured at 68Mbps during the busiest time of the day in 1993 to 128Mbps during the busiest time of the day in 2002. The increase in traffic has not abated during the last 10 years .

While everyone depends upon the UTNet system to get their work done, few people ever think about the network and fewer still know how the network functions. Instead, everyone simply assumes that the network will be there when they need it. This level of confidence is an appropriate response, since no one using e-mail or the Web should have to know how the underlying network system operates. This level of confidence is also a powerful indicator of how successful the UTNet system has been in delivering reliable, production-quality services 24 hours a day, seven days a week. From the outside, the network appears to most users as something so reliable that they can take it from granted. The UTNet capabilities to handle the new evolving network based video conferencing technologies and the increased reliance upon data backup and storage across the network are significant as areas where the transparency of the network has been demonstrated. However, a look "under the hood" at UTNet reveals a complex and dynamic system in a constant state of change.

Telecommunications Infrastructure

ITS maintains extensive communications networks for user access to the University's computers from desktop computers and workstations and for data communications between computers and with the Internet. The campus computer network, UTNet, is not a single entity, but a system of networks, equipment, and software that enable information to be sent between campus computers and computer sites all over the world. The network employs optical fiber media for inter-building computer communication.

UT Austin is a member of the Greater Austin Area Telecommunication Network (GAATN), which has completed installation of 250 miles of optical fiber to connect educational and government facilities. The Pickle Research Campus and the main campus are connected by optical fiber. UT Austin utilizes a connection to the Internet through a common carrier by a 155Mbps circuit.

Within individual buildings, local-area networks (LANs) connect to UTNet by means of switches and routers. These switches and routers perform address filtering to reduce message traffic on the backbone and the individual LANs. The result of this network configuration is that a workstation connected to an Ethernet, Token Ring, or LocalTalk LAN in a particular building has access to the campus-wide network and thence to regional, national, and worldwide networks. Telesys Dialup System (<http://www.ots.utexas.edu/telesys/>)

ITS provides telephone dial-in services on a monthly fee basis (\$12 per month) to faculty, staff and students who have a desktop computer and a modem. Telesys supports multiple communications protocols and includes features for data compression and error detection. Over 2,500 modems are currently in use serving 17,000 subscribers. Most services require a user id and password for authentication.

Access to National Academic Networks

UT Austin participates in several national networks (Internet 2, e.g.) through which its users can exchange mail and files with colleagues at other sites, get access to databases and servers, and remotely log in to other machines. Most of UT Austin's systems are connected to the Internet. Access to the Internet is provided through the Texas Higher Education Network (THEnet). THEnet connects the UT System component institutions, as well as approximately 300 other educational, governmental, and industrial research organizations and to all major Internet backbones operated by commercial Internet providers such as Sprint, ANS, UUNet Technologies, and Performance Systems International.

The University of Texas System Network (UTSN)

The UTSN is a part of the Texas Backbone Network which is a cooperative endeavor with State of Texas Department of Information Resources, Texas A&M University and The University of Texas. The UTSN is an inter-institutional network for carriage, coordination, and integration of voice, video, and computer communications managed and administered from the network operation center (NOC) located in the Service Building at UT Austin. The UTSN is managed by OTS, on behalf of UT System Office of Telecommunications and Information Technology. Management and operational policies for UTSN are established by the OTIT. Policy development is done in collaboration with the UT Clients via the UT System Strategic Leadership Council (SLC) and the UT System Information Technology Management Council (ITMC). Consultation concerning operational procedures, service levels, and technical issues is provided to OTS by the UT System Telecommunications Advisory Council (TAC).

Appendix B

Computer Lab Status

The Student Microcomputer Facility has been providing on-campus computer access to students since January 1994. In the 2000/2001 academic year, the SMF was refit with new computers, a network with greater capacity, and other essential software and hardware. Averaging half a million check-ins every year, the 193 computer workstations and on-site assistance in the SMF are available more than 140 hours during a normal long semester week, staying open without closing from Sunday through Friday with additional hours available on Saturdays.

Appendix C
Classroom Technology Status

ITS has one technology classroom. This classroom is located in the Computation Center building, room 8.

Appendix D

Curricular Innovations

ITS provides servers, technical, and customer support for BlackBoard and Web CT course management systems. Also provided is access to USENET news and to locally created listservs and newsgroups.

Appendix E

Help Desk

The goal of the ITS Help Desk is to answer questions and help solve problems for all computer users in the University community. The operation involves a sophisticated call delivery system and an e-mail support system. The staff of the Help desk is available to answer questions for student, faculty and staff in two different locations on campus for a total of 66 hours per week, including hours on Sunday and on many University holidays. The staff handles an average of 450 individual contacts per day with the beginning of semester totals often running 700 or more.

Presently, 85% of the phone calls are answered within 20 seconds or less and e-mail questions are answered in less than 24 hours by a help desk staff of approximately 30 students and 7 full-time employees with the knowledge and skills necessary to support the UT community.