



## Computing Policy Department of Chemistry Michigan Technological University

This document describes the rules and regulations concerning the acquisition, provision, maintenance, and use of the computing facilities of the Department of Chemistry as pertains to the faculty, staff and students. It is not intended to be a primer on how to use these facilities. All policies and procedures described here concur with those established by:

- Michigan Internet Provider, MERIT: (<http://www.merit.edu/>)
- MTU Computer Advisory Committee, CAC: site index at <http://www.it.mtu>
- MTU Computer Executive Committee, CEx: site index at <http://www.it.mtu>
- MTU Information Technology, IT: (<http://www.it.mtu>)

It is worth noting here that clicking on the site index at <http://www.it.mtu> gives you access to a wealth of information about MTU computing policies, reports, structure, charters, etc. Each user of the computing facilities of the Department of Chemistry at Michigan Technological University is expected to be familiar with these policies.

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- 1. Computing facilities in the Department of Chemistry:** Most of the computing facilities discussed here are those that are network accessible. A number of stand-alone systems are available in the laboratories, e.g., the physical chemistry lab. Since these are generally dedicated to equipment control and data acquisition and are not available for general use, they present an entirely different set of problems and will not be discussed further here. The networked computers are most often office workstations and those in the student-computing laboratory in 717 Chem Sci.

Exceptions to this are the controllers for the Departmental X-Ray and NMR equipment, GCMS, LCMS and other data acquisition systems.

For use of the computing lab,

- Generally, the workstations are available on a first-come-first-served basis.
- Workstations can be reserved in advance through the System Administrator (SA) for class use or special projects.
- Exceptionally long runs, such as HyperChem simulations, are allowed but should be scheduled during times of light use and particularly not near the end of a term. If possible the Windows Terminal Server should be used for long run simulations since it does not take up a lab seat.
- The computing lab is accessible to all validated users on a 24/7 basis.
- Some dedicated computers in the laboratory are set up for specific hardware and software, such as scanners, CD burners, color printers, and special software such as gNMR.

- 2. Computer accounts:** Each member of the Department (faculty, staff, post docs, visiting faculty, graduate and undergraduate students, and work-study students) who is in good standing is entitled to have an account. The use of this account should follow some basic guidelines, such as:
  - The account is only for the private use of the student and should never be given to anyone else, inside or outside the Department, for their use.
  - The user should not use another person's account either with or without permission. Users tend to exhibit more responsible computing practices when using their own account.
  - A group account is restricted solely to those validated to use it.
  - It is the responsibility of the user to safeguard his/her password and select secure passwords which are not easy to break.
  - Upon leaving MTU, the user will be allowed to continue using the account for a grace period of at least one year. Such accounts are terminated the first May after the grace period. Note that access to email is part of your computer account so when the computer account is terminated so is access to email.
  - Students from other departments who are enrolled in a chemistry course will be granted a computer account for the duration of the course to access the software on the chemistry system only if that software is not available on his/her departmental server. However, the use of the Chemistry Student Computing Lab should be limited to access of the particular application of need and not for basic access needs such as email, word processing, and web surfing.
- 3. Good computing practices and rules for usage:** Inappropriate practices can lead to the termination of your computing privileges. There are many rules concerning computer usage. In particular, the user should not

- use or attempt to break into (“hack”) any other account or computing system for which you are not a validated user, deliberately modify or delete files of another user, and/or open windows to the system so that outside users can invade the system.
- use the hardware or software in any manner to damage the system software or hardware or degrade the performance of the system.
- violate any software license agreements by attempting to distribute or obtain software for which you do not have a valid license to do so. The same applies to burning CD’s to store and/or distribute software for which you do not have a valid license.
- generate, access, store or display offensive material on this system.
- install software on the system and the workstations in the computer lab without first consulting the SA for permission and the best way to proceed with the installation
- generate, execute and proliferate computer viruses in any manner.
- use your email for frivolous, threatening or commercial purposes or engage in mass mailings for non-legitimate academic purposes.
- use for general purposes the computers dedicated for special uses (e.g., scanning documents, burning CD’s, etc) unless no others are available.
- engage in massive printing, or print material for users from other departments except under special conditions that must first be cleared with the system administrator (SA).
- be careless with food or drink in the computer lab. Although there is no ban on bringing food or drinks into the computer lab, users should be careful to not contaminate the hardware in any way and should clean up after themselves before leaving.
- play games on the computers while others are waiting for a seat to do legitimate academic work.
- occupy a workstation to reserve it for another user to circumvent the first-come-first-served basis.
- lock any workstation in the computer lab.

**4. Use of the printing facilities:** The computer facility has several printers on the system. Printers are available in the computing lab for student use. Users are expected to use their discretion and avoid massive printing for themselves. The Department of Chemistry reserves the right to institute a cost recovery policy if the printing expenses become too excessive. Students should not use the printing facilities to print material for users outside of the Department.

**5. Mass storage (disk) usage:** Validated users of the Departmental system have limited disk space allocated for the storage of files associated with their work at MTU. An exception to this are those students from other departments who are enrolled in chemistry courses and have been given access to the departmental software for the

duration of the course. They are expected to store their files on their own departmental home directories. Some rules apply to the use of this space.

- Disk usage should not exceed the posted limit. Users exceeding the limit will be notified by the system software and be given a grace period in which to purge or compress enough files to lower the usage below the limit.
- The SA has the right to delete files from the home directory of a user who has exceeded the quota and the grace period for correcting the problem.
- Users should not circumvent this quota by storing files on drives other than that for your home directory and web pages. The exception to this rule is the TEMP directories that are used for scratch files. However storing files on these are purely at the user's own risk since these are periodically purged and are not archived.
- Lost files can be retrieved from daily archives for up to 30 days.
- The system does store certain environmental files on each users home directory; these are necessary for logging onto the system and using specific kinds of software. Users should be careful to not delete these files or modify them incorrectly.

**6. Procurement of Hardware and Software:** The following policies are designed to help provide a Departmental computer network which can be maintained and improved without exorbitant personnel and financial expenses. Maintaining the network can be problematic with the wide variety of hardware and software available on the market. All new software and hardware must be configured to work with the system without conflicts. This adds to the overall workload of the SA. Sometimes the purchaser may opt for the cheaper alternative that later incurs a much higher time and financial expense to maintain. The following policies are **not meant to be absolute** since exceptions can arise where applications are easier to implement or are not available except on specific systems.

- **Standardization of equipment and software:** The purchase of new equipment and software should conform as much as possible to the current standards that the Department, University, and SA have adopted. Exceptions to these standards will certainly be accepted for cases where options are limited, but should be minimized as much as possible. All purchase orders should be made in consultation with the Departmental System Administrator. More explicitly, the CAC policy requires that all information technology acquisitions must be signed by the SA to insure that he/she is aware of the purchase order and/or can advise the purchaser of any potential issues associated with the purchase. This policy also includes those individuals who administer their office and lab computers.
- **Purchase requisitions:** University policy requires that all purchase requisitions for computer equipment that contain a single item with a cost of \$25,000 or more, or that contain a quantity of 25 or more items at a unit price of \$500 or more, must be brought to the acquisitions subcommittee of the System Administration Council by the system administrator signing the requisition. If there are no objections posed by the council the acquisition will be considered approved without reservation. If there are objections, the

subcommittee will draft those in a letter for the system administrator to discuss with the purchaser. These objections will **not** stop the purchase, but are in place to provide some feedback on possible problems with the purchase.

- **Implementation of New Equipment:** All new computer-related equipment should be submitted to the System Administrator for initial backup and configuration of network and operating system parameters.
- **Computer Laboratories:** When specialized computer laboratories are established within the department,
  1. A clear understanding of who is responsible for maintaining the laboratory software and equipment should be developed in consultation with the System Administrator.
  2. A plan should be developed and agreed upon that will minimize problems that might arise if those responsible for maintaining the laboratory can no longer be involved in maintaining it.
  3. A plan should be developed and agreed upon for funding for the projected life time of the lab/equipment for maintenance (systems administrator), network costs (monthly IP charge), card reader fees, application upgrades, operating system upgrades, hardware repair, hardware upgrades, and computer accounts for end users.
- **Computer Upgrade Guidelines:** These guidelines are described here so that users understand the criteria used to decide between upgrading or replacing equipment.
  - **Replacement:** Replacement is recommended when
    - a) the software demands a level of performance that cannot be remedied with adding more RAM, HDD or network connection speed
    - b) the machine is over 4 years old
    - c) the hardware is not compatible with the current department OS
    - d) hardware has intermittent problems that degrades the user's productivity
    - e) even with possible upgrades of RAM and HDD, the SA finds the maintenance of the machine becomes too time expensive such that the TOC warrants replacement
  - **Upgrade:** Upgrade is recommended when
    - a) the demand of the users applications require only an upgrade in the RAM, HDD or network connection speed, or the machine usage can be dedicated to a less demanding function
    - b) the system's speed is considerably slower with respect to other systems of the same platform or usage, essentially forcing the user to be less productive as compared to users with similar jobs
    - c) the SA finds the machine to be time expensive to service making the TOC larger than that of other systems of the same platform and usage
  - **Action for replacement:** A complete computer system includes the computer, monitor, keyboard, mouse and printer, or any subset thereof. These replacements may be new or used.

- ❑ **Action for upgrade:** This includes the replacement or enhancement of one or more of these items: monitor, keyboard, mouse, RAM, HDD, removable media drives, network interface card, and sound card.
- 7. Disposal and home use of old equipment:** The disposal of old computer equipment must follow MTU guidelines. To dispose any such equipment, email [chhelp@help.chemistry.mtu.edu](mailto:chhelp@help.chemistry.mtu.edu) and describe the nature and location of the equipment. The SA will retrieve the equipment at a convenient time. If a faculty or staff member wishes to take old computer equipment home for valid academic use, he/she should complete a form that will be supplied by the SA.
- 8. System privileges of users:** A local system administrator, (LA), is a user who has been granted system privileges on his/her own workstation located in his/her office and/or lab. With these privileges, the LA can implement application and system software on his/her workstation. LA privileges are granted in situations where he/she are implementing new software on a regular basis or needs specialized software that requires LA control. Each LA should realize that this privilege exposes the system to some risk since:
- Most new software now open windows to the network and web, exposing the system to hackers.
  - Without testing, newly implemented software often do not integrate well with the system and can involve troublesome registry modifications.
  - LA's are more likely to download programs that are infected with viruses that can have an impact on the local and outside network.

In the event the SA is called to address problems on a machine that is LA maintained the job of diagnosing and then fixing the problem can be quite daunting. Since the SA is not familiar with the myriad of installs/uninstalls, tweaks, application upgrades, OS upgrades, patches, and hardware modifications, a relatively simple restoration of an earlier HDD image may be applied. The end result of this is a system that again functions properly but no longer has all the changes/installs available that the LA has conducted since the last snapshot was taken. Also, some locally stored files may be lost.

The LA should be aware that certain restrictions and responsibilities apply.

- The SA has the privilege to turn his machine off in the event it is causing system or network troubles.
- The root administrator has the privilege to completely rebuild the machine (with subsequent loss of data, etc. ) since the time in tracing down problems generated by programs loaded by others takes much longer.
- Local files are not backed up by the system archives, so the LA should archive his own local files.
- The LA should keep a diary of local system changes next to his computer such that in his/her absence, the SA can more easily diagnose and fix a problem.
- Certain types of software should not be loaded on a local workstation without the approval of the SA. For example, MS Outlook should not be used since it is one of the most highly exploited applications available. Microsoft has

issued a statement to the effect that if security is at all a concern then Outlook should NOT be used.

**9. System maintenance:** The maintenance of the system entails a variety of actions, a few of which are:

- Making fixes to the OS
- Updating the OS to new releases
- Archiving files on the system servers
- Implementing new application software
- Maintaining the local workstations and those in the computer lab
- Monitoring the use of the system against hackers, excess disk use, etc.
- Maintaining the email system

Due to these important responsibilities, it is necessary for the SA to take certain actions that may on occasion cause problems or inconveniences for the users, but in a manner to minimize the effect. These include:

- Take the system down or off the network
- Place certain system dependent files on the user's home directory.
- Delete files on the user's home directory using a well-defined algorithm in the event the user has exceeded his quota and did not remedy the problem by the end of the grace period.

**10. Disciplinary action:** Users must abide by the rules established by the Department as well as the IT, CAC and CEx. In addition users must not violate Michigan Laws, in particular Act 53 of the Public Acts of 1979, as amended by Act 326 in 1996. This law defines punishable computer misconduct as "an act to prohibit access to computers, computer systems, computer networks for certain fraudulent purposes; to prohibit intentional and unauthorized access, alteration, damage, and destruction of computers, computer systems, computer networks, computer software programs, and data". Those who abuse the system or fail to follow the accepted procedures will face disciplinary action including the termination of his/her computing privileges in the Department of Chemistry.

**11. Acronyms:**

- SA system administrator
- IT Department of Information Technology
- CAC computer advisory committee
- CEx computer executive committee
- OS operating system
- LA local system administrator
- RAM random access memory
- HDD hard drive
- TOC total operating cost