SCIS Common Use Labs
in Boardman Hall

USER MANUAL

<u>Note</u>: The instructions in this manual assume students walking into the labs are first-time users of the labs and are complete novices in using the machines.

Table of Contents

Note: On SCIS web site all of the above topics will link to anchors at the same topics below.

I. Access to Boardman Hall SCIS Labs for Computer Science and New Media Students

A. Services Provided

The labs in Room 138, Rooms 127/129, and Room 137 in Boardman Hall are ***not*** scheduled typically for classes. Rather, these are labs where Computer Science and New Media students may come with your laptop computers to work on individual class projects, work on group projects, obtain tutoring help, check out equipment, do informal exam reviews with others, use labs as study halls, and similar activities. Students may use the labs anytime you have access to them including evenings and weekends. See the section below titled ***B. Gaining Access***.

Room 138 – This room has (a) five group-work tables with two iMacs and a large external monitor in each bank of tables and (b) one group of three Windows 10 computers. It also has whiteboards and an overhead projector for group work. It is staffed 20-hrs per week by selected undergraduate senior Computer Science students (i.e. lab monitors / learning assistants) who can help with general training on equipment as well as tutor on computing and math problems when course teaching assistants (TA's) are unavailable. Several computer science TAs have office hours next door in Room 138A.

Rooms 127 and 129 - This room has (a) ten iMac stations for photo, audio, and video editing/production and (b) one or more virtual reality (VR) production work stations. It is staffed 20-hrs per week by selected undergraduate senior New Media students (i.e. lab monitors / learning assistants) who can help with general training on equipment and software and who can check-out and check-in equipment to enrolled students. Two Adjunct Professors are located in Room 131 next door who can also help and check out equipment.

Room 137 – This room is intended as a break room with free coffee, water, hot chocolate, microwave, refrigerator, etc. Please snack only in this one lab. It serves also as a group work room. It has whiteboards as well as a large external monitor for mirroring your laptop as needed.

This room also has lockers containing Arduino kits, mini drones, robots, and similar items that may be checked out from the Room 138 Lab Monitors.

Occasional instructor-led ***help*** or ***review sessions*** should be scheduled in this room over others if possible. Simply post on the door a paper sign at least 24 hours in advance indicating when the room will be used. Even then, expect others to come in informally to obtain coffee, water, etc. For larger groups, Room 138 may be similarly scheduled.

Lab Monitor Responsibilities
Lab monitors (a.k.a. tutors / learning assistants):
1. Post regular office hours on the door when students can expect them to be in the lab (about 20 hours of coverage per week),
2. Maintain lab computers, printers and large format plotter and respond to student questions about their use and accomplish individualized training as needed,
3. Arrange for campus IT support when required,
4. Run most large format plots upon request and maintain supplies,
5. Check out to students the Room 137 kits as requested and lead students to online exercises on how to program them,

6. Install simple hardware as needed and requested,
7. Serve as mentors and tutors capable of assisting students with homework and test preparation (primarily for first and second year CS and NM students) if other TAs are unavailable,
8. Organize, clean up and maintain lab as needed, and
9. Other reasonable tasks in affiliation with the above responsibilities.

Please report any inappropriate behavior or damaged equipment in the labs to the lab monitors or report it to the main office in Room 348 Boardman. If you see something, say something. In this way we can maintain highly productive labs for all of us.

Notice: Wireless recording video cameras are in use in most of the Boardman labs.

B. Gaining Access to Lab Rooms and Computers

Lab Room Access: If you are a Computer Science or New Media student and need access to a particular lab when lab monitors are not scheduled to be in the room, contact Karen Kidder in Room 348 Boardman Hall. She will provide you with punch key codes or a Maine Card ***tap*** capability depending on the circumstances. You should NOT share codes with anyone.

Lab Computer Access: You will need your MaineStreet ID and password to access the desktop computers in the lab. See more explicit instructions below for specific computers and large screens.

Building Access: If you are a Computer Science or New Media student and need access to the building after hours or on weekends, contact Karen Kidder in Room 348 Boardman Hall. She can activate your Maine Card to allow you access to the building by swiping your Maine Card at the parking lot entrance. The use of your card will be auto recorded.

II. SCIS Common Use Lab (Room 138 Boardman)

A. Services Provided
- Group and individual workspace
    Computers (iMacs and Windows computers) are available with specialized software (see II. F below) as well as large table monitors to help facilitate group projects (see II. C below).
- Help on printing reports
    The laser printer (8.5" x 11" paper) is available to all computer science and new media students. Lab monitors can help you operate the printer (see II. D below)
- Printing large format high resolution color posters
    Lab monitors can print out large format posters using the plotter inside the lab (see II. E below).
- Mentoring and tutoring
    Several teaching assistants have their offices in Room 138A nd post their office hours on the door. Working on homework in the lab is convenient for accessing teaching assistants. The Room 138 lab monitors are also capable of assisting undergraduate students with homework and test preparation.
- Checking out Arduino kits, robots, and programmable mini drones
    These resources may be checked out to students by the lab monitors.

B. Use of iMacs on Tables
These instructions are for first-time or novice users of the I-Macs in Boardman Room 138.
- Press the power button at the bottom left on the backside of screen if not already on.
- Booting up usually takes 3-5 minutes. In the meantime, switch on the mouse by toggling the switch on its bottom. (If green, the mouse is on. It may take a couple minutes to sync with the screen. If it fails to sync, the batteries may be weak so report to lab monitors.)
- Enter your MaineStreet ID
    - It's usually in the form of firstname.lastname (do not attach @maine.edu)
- Enter your Maine street password.
    - It usually takes 2-3 minutes for first time users to login.
- There are many USB ports on the back of each iMac to connect any flash drives. Desktops of lab computers are cleared automatically each evening so do not expect files to remain on the desktop over time. Take all needed files with you on a USB when you leave or mail the files to yourself.
- After using the iMac, you must logout.
    - Click the Apple logo on the top left corner on your screen and click logout.
    - Switch off the mouse to preserve battery life!
    - You do NOT need to shut down the monitor. It goes to sleep automatically after a few minutes.
- Note: If desired, you may mirror either table iMac screen to the large monitor in the center of the table. See MacOS instructions in next section (II. C).

C. Use of Large Table Monitor for Sharing Your Laptop Screen with the Table Group

If you need to *acquire a laptop* for use while enrolled in the undergraduate programs in either Computer Science or New Media, consult Appendices 1 and 2 for suggested specifications. If your goal is to *share a coding exercise* with others at the table group, Appendix 3 contains convenient web resources for development of computer code.

Connecting Windows 10 Laptops to Large Monitor
- *Physically connect* your laptop to the large center monitor using the HDMI cable that already has many adapters attached to it. The most common display port in windows laptops is either the HDMI or VGA port (many laptops come with both ports). However, the HDMI cable has many additional adapters to connect to any display port.
    - Go to *Settings* on your laptop. You can obtain your settings from the start menu.
    - Select *System* in your settings.
    - If you have physically connected to the monitor using the HDMI cable, you should see two rectangular boxes. One of them is your laptop monitor and the other one is the external large screen monitor.
    - You may *mirror* or *extend* the display.
        - Mirroring will duplicate your laptop monitor. Generally used if you are demonstrating a software package.
        - Extending will increase the usable workspace, you can drag windows from your laptop monitor on to the big one for everyone to see.
- **Changing the large screen orientation and text size**

- If you are using the large monitor to view code, you may want to physically rotate it vertically for all of your table partners to see the code better.
- In the same menu (Settings > System), you may change the *orientation* and the *text size* displayed on the monitor. Feel free to experiment to find what is good for you and your table group.
- The large monitor is a 4K screen, so you may further increase the resolution in the same menu of your laptop. If you don't see an option of 4K in the resolution settings, then your laptop video card probably doesn't support 4K (which is rare).
- If you have any questions, feel free to ask one of the lab assistants for help.

Connecting Mac OS Laptops
Note: If you are using an i-Mac already in the lab, the same following steps apply.
- **Physically connect** your laptop to the large center monitor using the HDMI cable that already has many adapters attached to it. One of these will fit your Mac laptop.
  - Note: In newer versions of Mac book air and Pro, the USB-C port can also be connected to external monitors. In this case, find the USB-C port on the back of the large monitor, connect it to your laptop and follow the steps below.
    - Go to **System Preferences** by clicking on the apple logo on the top corner of your screen.
    - Go to **Display**. Two windows will open by default, one is for the monitor and the other one is for the display.
    - You may **mirror** or **extend** the display.
      - Mirroring will duplicate your laptop monitor. Generally used if you are demonstrating a software package.
      - Extending will increase the usable workspace, you can drag windows from your laptop monitor on to the big one for everyone to see.
- **Changing the large screen orientation and text size**
  - If you are using the large monitor to view code, you may want to physically rotate it vertically for all of your table partners to see it better.
  - Rotate the external screen display by changing it in the **orientation** drop down menu. (Display>Orientation)
  - Change the **text size** by changing font size (Format>Font.Size). Additionally, you can also change the laptop monitor resolution (Display>Resolution>Scaled) to 1080p to make your text clearer.
  - The large monitor is a 4K screen, so you may further increase the resolution in the same menu of your laptop. If you don't see an option of 4K in the resolution settings, then your video card probably doesn't support 4K (which is rare). The I-macs offered in the lab do NOT support 4K.
  - If you have any questions, feel free to ask one of the lab assistants for help.

D. Use of Overhead Projector Printer
Feel free to use the overhead projector in Room 138 to project images to the front wall.

Mac OS
- Attach the HDMI cable extending from the wall to your laptop using one of the attached adapters suitable for your laptop.
- Use the remote control (attached to the front bank of tables) to power on the overhead projector.

- If needed, go to Systems Preferences > Displays > Arrangement > and check Mirror Displays.
- To correct a low-resolution image, change the laptop monitor resolution (Display>Resolution>Scaled) to some other size (example,1080p).
- Select an appropriate application or access the web to show what you desire.
- When done, turn off the projector using the remote control.

Windows 10
- Attach the HDMI cable extending from the wall to your laptop using one of the attached adapters suitable for your laptop.
- Use the remote control (attached to the front bank of tables) to power on the overhead projector.
- If needed, … enhance resolution?

E. Use of Laser Printer (8 ½" by 11" Prints)
To use the printer, follow the instructions below for your operating system.

Windows 10
- Go to your settings. You can get to your settings from the start menu.
- Select "devices" in your settings.
- Select "printers and scanners" in the left pane of the devices menu.
- Under "printers and scanners," select "add a printer or scanner."
- If Windows finds a printer named "HP Color LaserJet CP4005," select that printer.

You are now ready to print to Lab 138's printer.

- If Windows did NOT find your printer, select "the printer that I want isn't listed."
- In the popup window, choose "add a printer using a TCP/IP address or hostname."
- In the hostname or IP address field, enter the IP address of the printer: 10.4.102.11
- Click "next."
- If Windows prompts you to install a new driver, do so. If Windows finds a driver, use the driver currently installed.
- In the final window, type in any memorable name you like. Click "next" and exit the setup window.

You are now ready to print to the Lab 138 printer.

macOS
- Go to your system preferences. You can get to your system preferences from the apple icon at the top left of your desktop.
- Select "printers and scanners" in your system preferences.
- Click on the lock to make changes if it is currently locked.
- Click on the "+" icon at the bottom of the list on the left side of the printers and scanners panel.
- Click on the IP tab at the top of the new window.
- Set the protocol to HP Jetdirect.
- For address, enter the IP address of the printer: 10.4.102.11.
- Leave the queue field blank.
- Set the name and location to whatever is memorable for you.
- Click "add."

You are now ready to print to the Lab 138 printer.

F. Use of Large Format Plotter

The plotter in Room 138 is capable of producing high resolution color images up to 42" in one dimension and much longer in the other. Normally the maximum plot made for poster sessions is 42" wide.

In order to minimize waste of paper and ink and to minimize wear and tear on the large format plotter, plots will be printed only by lab monitors and those grad students designated by the School as authorized to use the plotters. Normally just send your plot to the lab monitors by email to have one of them make the print. If there is a need for an explanation or you need to be there to make the plot, please make an appointment with one of the lab monitors. Their email contact information and regularly scheduled hours should be available on the door for Room 138.

The lab monitors track the number of plots made for each student each semester. Until further notice, students may make one poster plot per semester for school related matters at no cost. Additional free plots may be made with permission from the Director.

G. Software Available on Computers in Room 138

The current list of software on the **iMacs** in Room 138 includes:

- XCode
- Microsoft Excel
- Microsoft Word
- Microsoft PowerPoint
- MATLAB
- Mathematica
- SPSSStatistics
- R
- Audacity
- Blender
- Processing
- Miro Video Converter
- VLC
- DaVinci Resolve
- Geogebra 5

The current list of software on the **Windows 10 computers** includes:

- Browsers
  - Google Chrome
  - Microsoft Edge
  - Microsoft Internet Explorer
  - Mozilla Firefox
- Office
  - Excel 2016
  - OneNote 2016
  - Word 2016
  - Outlook 2016
  - Powerpoint 2016
  - Publisher 2016
  - Access 2016
  - Office 2016 Tools
  - Skype for Business 2016
  - Sway
- Autodesk
  - A360 Desktop
  - AutoCAD 2018
  - Civil3D (various)
  - Revit 2018
- Other
  - ArcGIS
  - 7 Zip
  - Duolingo
  - Fathom 2
  - FileZilla
  - GenoPro Beta
  - Google Earth
  - IBM SPSS Statistics
  - ImgBurn
  - KeyShot 6 64
  - MapInfo Pro 16.0 (64-bit)

- Programming
  - Code Writer
  - Eclipse Oxygen
  - Python 2.7 & 3.4 (under IBM SPSS Statistics)
  - IronPython 2.7
  - Java & JDK
  - Notepad++
  - R
  - RStudio
  - Wolfram Mathematica 11.1.1
- Adobe
  - Acrobat Distiller X
  - Acrobat X Pro
  - Bridge CS6 (32 & 64 bit)
  - Dreamweaver CS6
  - ExtendScript Toolkit CS6
  - Extension Manager CS6
  - Fireworks CS6
  - Flash Professional CS6
  - Illustrator CS6 (32 & 64 bit)
  - InDesign CS6
  - LiveCycle Designer ES2
  - Media Encoder CS6
  - Photoshop CS6 (32 & 64 bit)
  - Photoshop Express
- Maps   MATLAB R2017a
- Microsoft Power BI
- ***Microsoft Solitaire Collection***
- MikTeX 2.9
- Mixed Reality Portal
- Paint 3D
- Pgina
- PuTTY (64-bit)
- SketchUp 2017
- Solid Edge ST10
- SYSTAT 12
- TeXstudio

H. Equipment Available for Checkout from Room 138 Lab Monitors

The current list of equipment available for check out from Room 138 includes:

Item Name	Number Available	Approx. Replacement Value
• Xx • Yy	Xx yy	$000

III. Combined Focus Ring and Stillwater Labs (Rooms 127 and 129 Boardman)

This lab has a dual goal of serving as a common use lab for New Media and Computer Science students and as a research facility for New Media faculty and students.

A. Services Provided
- Group and individual workspace
  Computers (iMacs and the AI/VR computer) are available with specialized software (see III. F below -red indicates to be revised)

- Mentoring and tutoring
  - The Room 127 and 129 student lab monitors (learning assistants) are available to tutor students in the use of the equipment available in the lab rooms.
- Checking out xxx-name_the_categories_of_equipment-xx
  - These resources may be checked out to students by the lab monitors.

B. Use of iMacs on Tables

These instructions are for first-time or novice users of the I-Macs in Boardman Rooms 127 and 129.
Just copy the descriptions from the other lab?
- Topic
  - Description
- Topic
  - Description
- Topic
  - Description
- Topic
  - Description

C. Use of Cybertron PC for AI and VR

Similar to the description from the other lab?
- Topic
  - Description
- Topic
  - Description
- Topic
  - Description
- Topic
  - Description

D. Use of … anything else? Audio equipment?

- Topic
  - Description
- Topic
  - Description
- Topic
  - Description
- Topic
  - Description

E. Software Available on Computers in Rooms 127 and 129

The current list of software on the **iMacs** in Rooms 127 and 129 includes:

● xxx	● xxx

The current list of software on the **Windows 10 computers** includes:

● Browsers
  ○ Google Chrome
  ○
	● xxx
	  ○ zzz
	  ○

F. Equipment Checkout Procedure
- Topic
  Description
- Topic
  Description
- Topic
  Description
- Topic
  Description

G. Equipment Available for Checkout from Rooms 127 and 129 Lab Monitors
The current list of equipment available for check out from Room 138 includes:

Item Name	Number Available	Approx. Replacement Value
• Xx • Yy	Xx yy	$000

IV. SCIS Student Lounge and Project Work Room (Room 137 Boardman)

A. Services Provided
This room is supplied as a ***break room*** with free coffee, water, hot chocolate, microwave, refrigerator, etc. Please snack only in this one lab.

It serves also as a ***group work*** room. It has whiteboards as well as a large external monitor for mirroring your laptop as needed.

This room also has ***small equipment lockers*** containing Arduino kits, mini drones, robots, and similar items that may be checked out from the Room 138 Lab Monitors.

Occasional instructor-led or peer-led ***help*** or ***review sessions*** are typically scheduled in this room over others if possible. Simply post on the door a paper sign at least 24 hours in advance indicating when the room will be used and for what purpose. Even then, expect others to come in informally to obtain coffee, water, etc. For larger groups, Room 138 may be similarly scheduled.

B. Use of the Large Wall Screen by Students
If you want to mirror your laptop screen to the large LG screen on the wall in Room 137, simply use the instructions supplied for either macOS or Windows operating systems provided under Section II. C. above.

APPENDICES

Appendix A.
Laptop Computer Recommendations for Computer Science Students
(2018-2019)

Computer Science Faculty Recommendation

Room 138 is essentially a laptop station lab where students may work alone or with others to achieve learning and assignment goals. To use the lab fully and to support your education generally you will need to acquire a suitable laptop computer.

By the beginning of their second semester (and preferably earlier), all computer science students are required to have a laptop computer for use in and out of class, based on the specific requirements of each course. This document provides guidance on selecting a suitable computer for this purpose.

Hardware Any general-purpose laptop computer based on chipsets from the past three years will be adequate for coursework. Specialized and restricted hardware such as Chromebooks, tablets, and others on which it is difficult to install a variety of software are not suitable. A separate large-capacity external disk (2 TB or more) is highly recommended for backups and auxiliary storage.

Operating Systems Different courses in the curriculum emphasize, recommend, or require different operating systems (and related software). Students have successfully completed the program using several major operating systems, such as GNU/Linux (various distributions, such as Debian and Ubuntu), MacOS, and Windows. It is very likely that each student will need to use multiple operating systems, which can be done either by installing multiple operating systems natively on the computer or by running one natively and the others in virtual machines.

Other Software As students make progress through the program, they will be required to install, study, and use a variety of software, such as programming environments for multiple languages, various editors and integrated development environments, emulators, database systems, game engines, system tools, mathematical and modeling software, and more. In most cases, it is not necessary to purchase any software separately because it is either free or available without charge to students through the university.

One Computer Science Graduating Senior's Recommendation: For What It Is Worth

From my experience you are likely to use all three of the major operating systems, Windows, Linux, and MacOS, during your degree program. One option is to buy a Mac laptop supporting all three operating systems (using BootCamp, Parallels, or VirtualBox). Alternatively, you might acquire a PC that supports Windows and Linux (e.g., via VirtualBox) and use iMacs in the labs if there is a need to use the MacOS for one or more courses.

Minimum System Requirements I would recommend for 2018-2019
- **Operating System:** Windows 7 or MacOS High Sierra
- **CPU Speed:** 2.0 GHz dual-core processor or better
- **Memory:** 4 GB

- **Disk Space:** 512 GB
- **Graphics Card:** DirectX 10 Support

Recommended System Specifications
- **Operating System:** Windows 10 or MacOS High Sierra
- **CPU Speed:** 2.5 GHz dual-core processor or better
- **Memory:** 8 GB
- **Disk Space:** 1 TB
- **Graphics Card:** DirectX 11 Support

Required Software (most are free downloads)
- Java Development Kit
- Eclipse Oxygen for Java Developers
- VirtualBox with Ubuntu
- Visual Studios
- An office suite (Microsoft Office is free to University students, so wait until on-campus to download; other choices: LibreOffice, Apple Pages/Keynote/Numbers)

Recommended Software (free downloads)
- Android Studio
- XCode (on MacOS)
- Unity game engine

Appendix B.
Laptop Computer Recommendations for New Media Students

All New Media students are required to have a MacBook Pro prior to beginning their second semester in the program.

Recommended software includes:
- An office suite (Microsoft Office is free to University students, so wait until on-campus to download; other choices: LibreOffice, Apple Pages/Keynote/Numbers)
- Adobe Pro Suite (subscribe annually through the university to acquire the very substantial student discount)
- Other software as the needs of individual courses dictate (often free)

Appendix C.
Convenient Web Resources for Development of Computer Code

A. Windows Operating System Laptops

When using Windows laptops to develop computer code, the following resources may help.

Integrated Development Environments (IDEs)
- Visual Studio: https://docs.microsoft.com/en-us/visualstudio/
- Eclipse for Java:
  - https://www.eclipse.org/downloads/packages/eclipse-ide-java-developers/oxygen3a
  - http://www.javaforstudents.co.uk/Setting_up_Eclipse_IDE
- Android Studio:
  - https://developer.android.com/studio/
  - https://developer.android.com/studio/install

Programming Languages
- Microsoft .NET
  https://docs.microsoft.com/en-us/dotnet/#pivot=docs&panel=getstarted
  - Visual C++: https://docs.microsoft.com/en-us/cpp/
  - Visual Basic: https://docs.microsoft.com/en-us/dotnet/visual-basic/
  - C#: https://docs.microsoft.com/en-us/dotnet/csharp/
- C++
  - Install Visual Studio with C++ support:
    https://docs.microsoft.com/en-us/cpp/build/vscpp-step-0-installation
  - Get Started with C++ in Visual Studio:
    https://docs.microsoft.com/en-us/visualstudio/ide/getting-started-with-cpp-in-visual-studio
  - Hello World in C++ using Visual Studio 2017:
    https://www.visualstudio.com/vs/support/hello-world-c-using-visual-studio-2017/
- Java

- o https://docs.oracle.com/javase/tutorial/getStarted/cupojava/win32.html?PHPSESSID=ccfeb578b236e4463cf68ecda1c93089
        - o http://help.eclipse.org/oxygen/index.jsp?nav=%2F1
    - Python
        - o https://www.howtogeek.com/197947/how-to-install-python-on-windows/
        - o https://wiki.python.org/moin/BeginnersGuide
        - o https://devguide.python.org/
    - Android
        - o https://developer.android.com/studio/intro/
        - o https://developer.android.com/training/basics/firstapp/

B. Mac Operating System Laptops

When using Mac laptops to develop computer code, the following resources may help.

Integrated Development Environments (IDEs)
- XCode:
    - o https://developer.apple.com/xcode/
    - o https://developer.apple.com/develop/
- Eclipse for Java:
    - o https://www.eclipse.org/downloads/packages/eclipse-ide-java-developers/oxygen3a
    - o http://www.javaforstudents.co.uk/Setting_up_Eclipse_IDE
- Android Studio:
    - o https://developer.android.com/studio/
    - o https://developer.android.com/studio/install

Programming Languages
- Swift (iOS)
    - o https://developer.apple.com/swift/
- C++
    - o https://www.cprogramming.com/xcode.html
    - o https://www.cprogramming.com/tutorial/lesson1.html
- Java (usually pre-installed with Mac OS X)
    - o https://docs.oracle.com/javase/tutorial/getStarted/cupojava/win32.html?PHPSESSID=ccfeb578b236e4463cf68ecda1c93089
    - o http://help.eclipse.org/oxygen/index.jsp?nav=%2F1
- Python (usually pre-installed with Mac OS X)
    - o https://www.python.org/downloads/mac-osx/
    - o http://thonny.org/
    - o https://wiki.python.org/moin/BeginnersGuide
    - o https://devguide.python.org/
- Android
    - o https://developer.android.com/studio/intro/
    - o https://developer.android.com/training/basics/firstapp/