

# Computing Resources for Biostatistics Students

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Cluster System Administrator

# MPrint Printing

MPrint

[mprint.umich.edu](http://mprint.umich.edu)

\$48.00 allowance / term- \$0.06 per B/W image (double-sided counts as two)

More printing allowance requested at:

<https://goo.gl/forms/8PyTbalwvolupAOC3>

B/W Printers and scanner/copier in M4048A SPH II

B/W Color printers in Campus Computing Sites Lab in MG442C SPH II

# Computing Labs

Biostatistics Student Computing Lab

Location: M4048A SPH II

6 Windows 10 workstations

4 iMacs

Software SAS, R, RStudio

MPrint printing resources ([mprint.umich.edu](http://mprint.umich.edu))

# Computing Labs

Campus Computing Sites

Location: MG442C SPH II

MPrint Printers

64 Windows and 4 Mac Workstations

Maintained by ITS [4help@umich.edu](mailto:4help@umich.edu)

# Wifi

## MWireless

- Primary SSID

- Requires unique login

## MGuest

- Unsecured

- No login required

## MSetup

- Used for setting up devices

# VPN

Virtual Private Network

<https://its.umich.edu/enterprise/wifi-networks/vpn/getting-started>

Encrypted off-campus connection to on campus network

Required for virtual sites

Library Journal access

# Software (student discount)

ITS Computer Showcase

[computershowcase.umich.edu](http://computershowcase.umich.edu)

Located in the Union on Central Campus and Pierpont Commons on North Campus

SAS

\$50.00

Available on Biostatistics Computing Cluster for free

# Canvas

Canvas is the Learning Management System used across the University Canvas is where you will find all course-related information and materials:

- Announcements

- Readings

- Assignments

- Grades

- Discussion board

- Class recordings (if instructor records lectures)



# Canvas

Access your course sites by pointing your browser to:

umich.instructure.com

For Canvas help, please:

Consult the Canvas Student Guide ( <http://guides.instructure.com/m/4212>)

Contact ITS Service Center/4-HELP by calling 734-764-HELP(4357) or emailing [4HELP@umich.edu](mailto:4HELP@umich.edu)

# Google

Core services: email/calendar/documents, provided by Google.

[email.umich.edu](mailto:email.umich.edu)

[calendar.umich.edu](https://calendar.umich.edu)

[drive.umich.edu](https://drive.umich.edu)

# Storage

U-M Google Drive ( unlimited)

U-M Box (unlimited)

MiStorage, Turbo, Amazon S3 (requires\$\$)

# Campus Research Computing Resources

Advanced Research Computing - Technology Services

Great Lakes HPC Cluster

New cluster. Free until November 25th

Armis HIPAA HPC Cluster

HIPAA compliant, currently free.

Storage

Rented by the TB at different speed/replication tiers

# Biostatistics Computing Cluster

55 Compute Nodes

2 Login Nodes

948 Processors

~5.5TB RAM

Statistical Software R, SAS, RStudio, Graphical Web Portal

# Biostatistics Computing Cluster

## Free Accounts

Everyone in the department gets 5000 CPU hours/ semester free

## Paid Accounts

\$1000/user/year

Unlimited access to cluster resources

Login [biostat-login.sph.umich.edu](https://biostat-login.sph.umich.edu)

Accessible from campus networks or VPN

# Anatomy of a Batch Job

```
#!/bin/bash
```

```
#SBATCH --job-name=hello_world
```

```
#SBATCH --time=10:00
```

```
#SBATCH --mail-type=BEGIN,END,FAIL
```

```
#SBATCH --mail-user=danbarke@umich.edu
```

```
#SBATCH --mem=4000mb
```

```
#SBATCH --cpus-per-task=1
```

```
R CMD BATCH script.R
```

# Demonstration on the Biostatistics Cluster

Logging in from Mac

Submitting a batch job

```
sbatch myscript.slurm
```

Viewing queued work

```
squeue
```

Getting email from jobs



# Thanks!

Dan Barker

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<https://sph.umich.edu/biostat/computing>