

BIOCHEMISTRY BOOT CAMP
Carpenter Engineering, Room 112
June 6-8, 2022

PRELIMINARY PROGRAM OF EVENTS

All events are scheduled to take place in **Carpenter Engineering Building, Room 112** unless otherwise noted. For updates and more information, please visit the Biochemistry Boot Camp website at <https://fitzkee.chemistry.msstate.edu/bootcamp/>.

Monday, June 6

Morning Session

- 8:00 am "No-Frills" Breakfast
Bagels, doughnuts, coffee, and juice
- 9:00 am Introductory Remarks Nick Fitzkee
- 9:05 am **Session 1:** Protein Structure Matt Thompson
Primary, secondary, tertiary structure; origins of function
- 10:20 am Break
- 10:30 am **Session 2:** Protein Properties and Online-Databases Nick Fitzkee
Computer tools for understanding proteins; ExPASy, Entrez
- 11:50 am Group Photo
- 12:00 pm Break for Lunch (on your own)

Afternoon Session

- 1:00 pm **Session 3:** DNA Structure and Properties Chris Johnson
Basic properties, PCR, predicting melting temperatures
- 1:50 pm Break
- 2:00 pm **Session 4:** DNA Properties and Online Databases Chris Johnson
Predicting melting temperature, PCR, and cloning
- 2:50 pm Break
- 3:00 pm **Session 5:** Introduction to UNIX Nick Fitzkee
Filesystem, running programs, X-windows, working with files
- 4:50 pm Discussion and Day 1 Wrap-Up Participants
- 5:00 pm Break for Dinner (on your own)

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Tuesday, June 7

Morning Session

Session 6: Working in the Lab: Laboratory Safety and Waste Handling at MSU

- 9:00 am Laboratory Safety TBD
- 10:30 am Break
- 10:40 am Chemical Waste Disposal at MSU Ben Sharpe, EHS
- 11:00 am **Session 7:** Publication-Quality Graphics
Excel Tricks, Learning the GIMP and InkScape Nick Fitzkee
- 11:50 am Break for Lunch (on your own)

Afternoon Session

- 1:30 pm **Session 8:** Model Fitting and GnuPlot
Model basics, uncertainties and errors, chi-squared Nick Fitzkee
- 2:50 pm Break
- 3:00 pm **Session 9:** The PDB and Molecular Visualization
Using PyMOL for analysis and figures Nick Fitzkee
- 4:15 pm Break
- 4:30 pm **Session 10:** Keeping a Lab Notebook Dhanush Amarasekara
- 5:20 pm Discussion and Day 2 Wrap-Up Participants
- Take Home Lab:** GNUPlot for Chemists
- Take Home Lab:** Practice Using PyMOL
- 5:30 pm Break for Dinner (on your own)

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Wednesday, June 8

Morning Session

- 9:00 am **Session 11:** Basic Bioinformatics Nick Fitzkee
Homology, sequence alignment, and BLAST
- 10:20 am Break
- 10:30 am **Session 12:** Getting Started with Python Nick Fitzkee
A very basic introduction to programming and workflow
- 11:50 am Break for Lunch (on your own)

Afternoon Session

- 1:30 pm **Session 13:** Literature Databases and EndNote TBD
Constructing a library, Getting a perfect bibliography
- 2:20 pm Survey and Day 3 Wrap-Up Participants