Welcome to UCSD!

UCSD Bioinformatics & Systems Biology

Boot Camp

September 16, 2013

Overview

I. **Boot camp**

II. Graduate program

Boot Camp

Boot Camp

By the book (website):

"The week-long boot camp for incoming first year students of the Bioinformatics and Systems Biology Graduate Program aims to:

- Introduce new students to the Program, its faculty and students, the courses, and research opportunities.
- Foster student community and collaboration among students of the first year class, and to students in upper classes.
- Convey the bar for the core curriculum and key classes, as well as the research excitement and work ethic characteristic of the program's best students.
- Provide incoming students with an opportunity to remedy deficiencies prior to taking the core classes.

Boot Camp Schedule

[Click Here For Detailed Schedule](#)

- **Today**
  - Intro to Boot Camp / Program
  - Coffee
  - Unix review / shared resources
  - Lunch
  - Faculty talks
  - Python
  - Coffee
  - Python / SciPy
  - Dinner

- **Every day this week except for Wednesday**
  - 8:30 AM – 5:30 PM
  - Faculty Rotation Talks
  - Classes and Workshops
- **Wednesday**
  - No boot camp: All-campus Graduate Student Orientation (OGS)
- **Friday**
  - Optional dinner - EVERYONE invited
- **Next Monday**
  - Group project presentations

Configuring your system

UCSD-PROTECTED Wireless
- http://blink.ucsd.edu/technology/network/connections/wireless/index.html

UCSD VPN Client

- http://blink.ucsd.edu/technology/network/connections/off-campus/VPN/index.html

SSH client

- Putty for Windows

- Linux and OS X already have

What we will do

• Faculty '10 minute madness' talks about research rotations 4 per day.

•Lectures on bioinformatics topics followed by hands-on workshops

•Journal club (Thursday)

•Homework (due Tuesday)

•Group project (Friday - Weekend)

•Final presentation (Monday)

Overview

I. Boot camp

II. **Graduate program**

What the program has in store for you

A) Courses

B) Rotations

C) Exams

D) Grad student life

E) After graduate school

Courses: Bioinformatics / Systems Biology (BISB) track

Code	Name	Professor	Quarters
MATH283	Statistical methods in Bioinformatics	Glenn Tesler	Fall
BENG202 / CSE282	Introduction to Bioinformatics Algorithms	Pavel Pevzner	Winter
BNFO285 / BENG207*	Statistical Learning in Bioinformatics	Sheng Zhong	Winter
BENG203 / CSE283	Genomic Analysis	Vineet Bafna / Trey Ideker	Spring
BNFO281	Bioinformatics and Systems Biology Seminar	--	All
BNFO283	Bioinformatics Student Research Talks	--	All
BNFO298	Research Rotation	--	All
SOMI226 / BIOM219	Scientific Ethics	Various	Fall or Spring

* temporary "special topics" course code. Make sure to pick the right one!

** Also need to register at ethics.uscd.edu

Courses: Biomedical Informatics (BMI) track

Code	Name	Professor	Quarters
MATH283	Statistical methods in Bioinformatics	Glenn Tesler	Fall
MED264	Principles of Biomedical Informatics	Lucila Ohno-Machado	Fall
BENG202 / CSE282	Introduction to Bioinformatics Algorithms	Pavel Pevzner	Winter
BNFO285 / BENG207*	Statistical Learning in Bioinformatics	Sheng Zhong	Winter
MED262	Current Trends in Biomedical Informatics	--	All
BNFO283	Bioinformatics Student Research Talks	--	All
BNFO298	Research Rotation	--	All
SOMI226 / BIOM219**	Scientific Ethics	Various	Fall or Spring

* temporary "special topics" course code. Make sure to pick the right one!
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Courses: Electives

- Requirements
  - 16 units (4 classes)
  - Each from different unit
  - One must be CS, one must be BIO
- Student-favorite electives:
  - Algorithms: CSE 102/202
    - will help for core algorithms course
  - Systems Biology: PHYS 276 ("Quantitative Molecular Biology")
  - Metabolic Modeling: BENG 212
    - Foundation of Palsson lab approach to Systems Biology
  - Molecular Biology: BGGN 220
    - how to read (and critique) biology papers
  - Bioinformatics Applications to Human Disease: MED 263
-

Courses: Second Year

Preview of coming attractions . . .

- BNFO500 (TA-ship) for 2 quarters

- BNFO299 under your PI (research)

- More colloquium (BNFO281 / MED262)

- More student research talks (BNFO283)

- Finish up required courses and electives

Rotations

Some advice:

- Talk to faculty *well in advance of the quarter*.
- Only start a rotation where you have a clear project laid out with the PI
- Try to focus on one new topic / skill at a time (e.g. one new biological skill or one new computational skill but not both at the same time)
- Don't be shy! Professors **need you** to do their research!

What's required (supposedly)

3 rotations, each comprising:

- Proposal (~1 page)
- Report (~5 pages)
- Short presentation (starting in Winter for 1st years)

Exams *They're really not that bad!*

- 2nd Year: **Qualifying Exam (minor proposition)**
  - ○ Assigned committee of three faculty
  - ○ Taken by the end of Spring quarter
    - ▪ 10-page written proposal
    - ▪ oral presentation
    - ▪ *Focus is on your ability to create and defend a research proposal – not on your preliminary results.*
- 3rd Year: **Senate Exam (major proposition)**
  - ○ You choose committee of 5 Faculty
  - ○ Taken by the end of Summer of 3rd year
    - ▪ Written Proposal + Presentation:
    - ▪ *Preliminary results are more important - should show reasonable path to finishing (~2 more years is expected).*

Exams *They're really not that bad!*

Requirements: proposal, presentation. (break up slide into 2 exams)

Make sure you start thinking about it at least a month in advance.

Do practice talks with your labmates/classmates.

Talk to your advisor, especially about the **3rd** year proposal. Send advisor drafts, do practice talks with them present.

But what am I supposed to write?

For both exams, it should be clear to the committee that you understand:

1) A biological problem

2) What's been tried before: what has/hasn't worked, what are the benefits/challenges.

3) **What you hope to accomplish**

4) How you will go about doing it

5) **What will a result of X tell you about (1) ???**

Fellowships

Fellowships

NSF: start volunteering or start thinking about 'Broader impact'

You can apply now AND 2nd year (if you don't get it)

Keep your eyes out for the informational session about NSF

Others: Hertz, Socrates, IGERT, DOE

Apply, apply, apply! It's good practice!

Grad student life

Oxymoron?

No way!
Lots to do in San Diego:

surf, hike, climb, socialize, shop, eat out

Taking time off is healthy and normal.

So is drinking espresso.

After Grad School

Don't worry, no one expects you to be thinking about it yet!

BUT, be aware that there are lots of opportunities outside of the traditional academic path. Take advantage of any free seminars, career fairs.

Professors	Postdocs	Industry	Financial
University of Illinois	UCSD	Pacific Biotechnologies	ID Analytics
University of Virginia	BROAD	Illumina	
University of Iceland	Craig Venter Institute	Amgen	
University of Birmingham	Stanford	Synthetic Genetics	
Craig Venter Institute	NIH	GT Life Sciences	
Stanford			

Let's get started!