**Field of Statistics**

**Cornell University**

**2017 PhD Orientation**

**Field Structure:** students admitted to *Field of Statistics* not departments. The main statistics faculty are associated with:

* Department of Statistical Science (DSS)
* Biological Statistics and Computational Biology (BSCB)
* Industrial and Labor Relations (ILR – also ILRST)
* Operations Research and Information Engineering (ORIE)
* Mathematics (MATH)

*But statistical folks are also in*: Computer Science (CS), Information Science (IS), Laboratory of Ornithology (Lab of O), Cornell Statistical Consulting Unit (CSCU), Survey Research Institute (SRI), Center for Applied Math (CAM), Economics, Natural Resources, Astronomy, and Weill Medical College

**Program Outline** (can be tailored)

* Expected 5 years to completion
* Years 1 and 2: Coursework + decide on adviser/thesis topic
* Year 3: Proposal/A exam
* Years 4 and 5: Write and defend thesis.

**Summer Funding**

* Available from faculty research grants and department funds
* Department funds generally close to graduate school recommendations (last year $5,000 over the Summer)
* Requirements: you must be (mostly) at Cornell and conducting research
* Additional (more lucrative) funding available from
  + Summer Instructor and TA-ships (at Cornell)
  + Internships (industry and research institutions)
* Students encouraged to take external internships at least once during degree
* First summer usually used to “try out” a research project/advisor.

**Coursework Requirements** (subject to reasonable tailoring)

* 2 semesters probability (MATH 6710/6720 or MATH/ORIE 6500)
* 2 semesters theory (Math 6730/6740, starts in Spring)
* 2 semesters modeling (STSCI/BTRY 7170/7180 – 7180 usually alternates)
* Statistical Computing (BTRY 6520 – alternates with 7180)
* Statistical Consulting (BTRY 6950 – not considered a “full” course)
* Advanced statistical modeling (various)
* 4 electives

Electives: expected to have significant statistical content, provide mathematical/computational tools relevant to statistics *or* provide background on application area of particular relevance. In the past students have selected from introductory mathematical statistics in ORIE, real/complex/functional analysis, machine learning, theoretical computer science (networks and graph theory), optimization, applied stochastic processes, numerical analysis (including matrix computations), and econometrics. Often special topics courses offered on an *ad hoc* basis

Typical 3-per-semester sequence:

1st Year Fall:

* Math 6710
* STSCI 7170
* Elective

1st Year Spring

* Math 6720
* Math 6730
* STSCI 6520/7180

2nd Year Fall:

* Math 6740
* 2 electives
* Statistical Consulting

2nd Year Spring:

* Electives
* Statistical Consulting

**Qualifying Exams**

* Usually one exam; format can change depending on performance
* Waived if maintained an A- average an no worse than a B+ in the first courses taken that satisfy the following:
  + 1 probability courses (Math 6710/6720)
  + 2 theory courses (Math 6730/6740)
  + 1 of Linear Models and Generalized Linear Models (STSCI 7170/7180)
  + 1 statistical elective or statistical modeling course or computational statistics course
* Usually can be determined by end of Fall semester of the second year.

**Advisors and Special Committee**

* Initial temporary advisor: DGS (Martin Wells); Initial Committee: DSS Chair (Marten Wegkamp) and MPS Director (David Ruppert)
* Thesis advisor generally chosen during second year
* Special committee:
  + faculty who’s expertise will be relevant to your thesis research
  + must contain one minor field representative (may entail additional coursework).
  + Common minors: operations research, mathematics, computer science, economics, natural resources
  + Will determine results of A and B exams (can be changed with approval from DGS).

**A-Exam**

* Should be taken before the start of your 4th year.
* “Thesis proposal” – here’s what I want to do and evidence that it’s doable and I can do it.
* Usually seminar-style talk, followed by questions from the committee.

**B-Exam**

* Thesis defense: “let me out of here”. Same format as A Exam.
* Should be by end of fifth year (often in Summer)
* “Three papers” is a nominal benchmark, but this is by no means formal.

**Committee Meetings**

Every year between A and B exams – helps to keep you motivated and make sure everyone understands expectations. For most students, this means one meeting in fourth year.

**6th Year Funding**

* You must apply for funding beyond your sixth year of studies.
* Application
  + A letter from the student requesting a sixth year of funding and outlining
    - Their current research progress.
    - The reasons that their degree requires more time than normal expectations.
    - A timetable for when specific material will be completed during their sixth year.
  + A letter from the chair of the students special committee supporting their request and outlining progress, signed by all members of the special committee following a meeting with the student and review of their progress.
* Applications reviewed by admissions committee and are due by January 1 of the fifth year of studies.

**Computing and Other Resources**

* Windows/Mac laptops provided to PhD students
* DSS cluster; arrangements for high performance computing currently under review.
* Conference funding available to support one conference per year: you must be presenting and apply for funding from graduate school first.
* Computer Science Special Masters degree is available for statistics students.

**Other Expectations**

* Come to DSS seminars (Wednesdays at 4:15), as well as student seminars (TBA).
* Note other seminars around campus (Operations Research, Economics, Artificial Intelligence, Computational Biology)
* Talk to faculty about their work and possible projects – most of us are happy to meet you and all of us love to talk.
* Get involved in research early; the program is intended to be flexible to allow you to put effort into this if needed.
* We expect a serious commitment to TA duties, when you have them; but let the DGS know if it becomes onerous.
* Feel free to ask for things or make suggestions; we reward initiative.

**People to Know**

* Marty Wells, DGS, special committee chair until you find an alternative
* Marten Wegkamp, Chair of DSS
* David Ruppert, MPS Director
* Giles Hooker, former DGS and all around good guy

**REALLY Important People to Know**

* Diana Drake, Graduate Field Assistant and Happy Greeter in Malott Hall, DSS
* Bea Johnson, Department Assistant and Happy Greeter in Comstock Hall, BSCB
* Sue Bishop, Graduate Field Assistant in CB, BSCB
* Alice Cho and Eileen Grabosky, DSS Administration
* Cynthia Todd, Career Advisor, DSS

Computing Support through COESIS: <http://www.it.cornell.edu/support/coecis/>