

# Graduate Student Orientation

Fall 2021

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# Welcome!

Indiana University's Department of Statistics was created in July 2006. It is currently located in Myles Brand Hall (prev. "Informatics East") complex on the northeast corner of East Tenth Street and Woodlawn Avenue.

The department currently offers three graduate degree programs:

- ▶ M.S. in Applied Statistics (for students in other IU Ph.D. programs)
- ▶ M.S. in Statistical Science
- ▶ Ph.D. in Statistical Science

# People

## Key Personnel

- ▶ The Chair of the department is [Elizabeth Housworth](#).
- ▶ [Kelly Hanna](#) provides staff support for the department's various degree programs. See her first for most of your needs!
- ▶ [Dana Fielding](#) is the department's manager and fiscal officer. See Kelly or Dana for help with course registration. See Dana about financial and administrative matters.
- ▶ The Director of Graduate Studies (DGS) is [Daniel Manrique-Vallier](#) (me). See me for academic issues.

**If you have not already done so, please ask Kelly to schedule a time for you to meet with a faculty member to discuss your program of study and plan your fall semester.**

## More people

**Additional faculty:** Michael Trosset, Chunfeng Huang (on sabbatical), Andrew Womack, Amanda Mejia, Julia Fukuyama (on leave), Fangzheng Xie, Brad Luen, Arturo Valdivia, Jianyu Wang, Jaime Ramos, Geoffrey Thompson, Jiae Kim.

**Indiana Statistical Consulting Center:** [Hannah Bolte](#) (interim director), Elizabeth Housworth (executive director), Spencer Hays (liaison to statistical consulting courses), JangDong “JD” Seo (statistical consultant).

# COVID-19

- ▶ We're returning to in-person classes after 1.5 years!
- ▶ But things are not back to normal yet:
  - ▶ Vaccination requirements. (contact [vaxreq@iu.edu](mailto:vaxreq@iu.edu) or call 812-855-4848 if you haven't been vaccinated yet)
  - ▶ Mandatory indoor mask use.
  - ▶ Physical distancing.
  - ▶ Mitigation testing for not-yet-vaccinated people.
  - ▶ Voluntary asymptomatic testing.
  - ▶ Symptomatic testing.
  - ▶ Contact tracing.

Please pay attention to IU's communications. Check the latest information at <https://www.iu.edu/covid/index.html>.

# M.S. in Statistical Science

## **Eight core courses:**

- ▶ Applied Linear Models (STAT-S 631–632). First year.
- ▶ Applied Statistical Computing (STAT-S 610–611). First year.
- ▶ Fundamentals of Statistical Methods and Theory (STAT-S 621-622). First year.
- ▶ Statistical Consulting (STAT-S 690). Fall of second year.
- ▶ Consulting Internship (STAT-S 692) or Research Paper (STAT-S 799). Spring of second year.

At least two elective courses, typically in the second year. If you do not need to take STAT-S621, then you may want to take an elective in your first semester. Discuss with your academic advisor.

# Typical MSSS Sequence Map

Fall of Year 1	Spring of Year 1
Applied Linear Models I Intro Statistical Computing Stats Methods and Theory I	Applied Linear Models II Applied Statistical Computing Stats Methods and Theory II
Fall of Year 2	Spring of Year 2
Statistical Consulting Elective (Elective)	Consulting Internship Elective (Elective)

# The role of ISCC

An important component of the MSSS program is experience working in the Indiana Statistical Consulting Center (ISCC). Effective consulting requires (a) knowledge of statistical methodology, (b) practice analyzing data, and (c) good computing skills and work habits. The 631–632 and 610–611 sequences are designed to prepare students for supervised contact with ISCC clients in their 3rd semester, followed by a one-semester internship in their 4th semester. Highly motivated students may apply to volunteer at ISCC during their 1st and/or 2nd semesters.



# Fall 2021 Courses

## Required for MSSS Students

- ▶ Applied Linear Models I (631, Arturo Valdivia).  
All first-year MSSS students must take this course!
- ▶ Introduction to Statistical Computing (610, Andrew Womack).  
All first-year MSSS students must take this course!
- ▶ Fundamentals of Statistics I (621, Jianyu Wang).  
All first-year MSSS students must take this course!
- ▶ Statistical Consulting (690, Spencer Hays).  
All second-year MSSS students must take this course!

## **Electives highly recommended for MSSS students.**

- ▶ Nonparametric Theory & Data Analysis (625, Brad Luen)
- ▶ Bayesian Theory & Data Analysis (626, Daniel Manrique-Vallier)
- ▶ Exploratory Data Analysis (670, Brad Luen)
- ▶ High-Dimensional Data (675, Michael Trosset)
- ▶ Survival Analysis (SPH-Q 612, Zhongxue Chen)
- ▶ Machine Learning (CSCI-B 555, Roni Khardon)
- ▶ Data Mining (CSCI-B 565, Yuzhen Ye )

# PhD in Statistics

- ▶ Courses: 90 credit hours of coursework, including courses required to obtain a minor in another department;
- ▶ Two qualifying examinations
- ▶ Dissertation proposal and Defense.

# PhD in Statistics: course requirements

90 credit hours, including at least 60 credit hours of coursework:

- ▶ **Core Courses** (9 credit hours): Math-M 413: Introduction to Analysis I, STAT-S 610: Introduction to Statistical Computing, STAT-S 611: Applied Statistical Computing
- ▶ **Data Analysis Courses** (12 credit hours): STAT-S 631: Applied Linear Models I, STAT-S 632: Applied Linear Models II, STAT-S 771: Advanced Data Analysis I, STAT-S 772: Advanced Data Analysis II
- ▶ **Advanced Statistical Theory Courses** (12 credit hours): STAT-S 721: Advanced Statistical Theory I, STAT-S 722: Advanced Statistical Theory II plus at least two semesters of STAT-S 785: Seminar on Statistical Theory
- ▶ **Elective and Minor Courses** (27 credit hours): *All students must complete a Ph.D. minor in another graduate program. Minor requirements are specified by the awarding department.*

# PhD program: Qualifying examinations

Students advance to candidacy by completing the coursework and passing two qualifying examinations:

- ▶ **Statistical Theory:** Based on the material covered in STAT-S 721/722. Typically administered in August following the completion of the S721/S722 sequence (typically start of second year).
- ▶ **Data Analysis:** This is a year-long project that students undertake while enrolled in S711/S722 (Advanced Data Analysis). The examination consists of an oral presentation and a paper. The presentation usually is expected to take place at the end of the 722 semester.

# Transitions and Resources

- ▶ **From undergraduate to graduate study.** Less breadth, greater depth. Take 2–3 courses per semester, but learn everything you can.
- ▶ **From foreign universities to U.S. universities.** You are not alone! Many of our faculty completed their undergraduate studies in other countries.
- ▶ **Communicate your concerns to our faculty,** especially our DGS (Daniel Manrique-Vallier), your advisor, and your instructors. If you are struggling, don't keep it to yourself—let us help!
- ▶ Note the **Resources for graduate students** tab on the department website, including: a welcome letter from Kelly, advice from a former student, information about summer internships and jobs, etc.

# Academic Integrity at Indiana University

Our primary concern (and the primary concern of prospective employers) is that students who receive the MSSS degree achieve certain levels of knowledge about and proficiency in statistical science. *One learns by doing one's own work.* Therefore. . .

*As a student at IU, you are expected to adhere to the standards and policies detailed in the Code of Student Rights, Responsibilities, and Conduct (Code). When you submit a test or exam paper with your name on it, you are signifying that the work contained therein is entirely your own, unless otherwise cited or referenced. Any ideas or materials taken from another source for either written or oral use must be fully acknowledged. If you are unsure about the expectations for completing an assignment or taking a test or exam, then seek clarification with your instructor beforehand. All suspected violations of the Code will be handled according to University policies. Sanctions for academic misconduct may include a failing grade on the assignment, reduction in your final grade, a failing grade in the course, among other possibilities, and must include a report to the Dean of Students.*

## Some Practical Guidelines

- ▶ Each instructor will establish specific policies and expectations for his/her course. Typically these policies will be stated in the course syllabus. If you are confused about the rules for completing an assignment, then ask the instructor for clarification. Ignorance (e.g., “I didn’t know that I wasn’t allowed to copy X’s final exam.”) is not a valid excuse.
- ▶ Virtually all instructors prohibit collaboration with other students on tests and exams. Some instructors permit collaboration on homework assignments, others do not.
- ▶ Individual projects should be completed without collaboration; team projects require each member to contribute.



## Some Practical Guidelines (2)

### Acknowledge Your Sources!

Any resources you use must be cited. For example, writing  
*“Essentially, all models are wrong, but some are useful.”* (Box & Draper, Empirical Model-Building and Response Surfaces, 1987, p. 424.)

is fine, but writing

*Essentially, all models are wrong, but some are useful.*

is plagiarism.

# Opportunities for Financial Support

IU rarely guarantees financial support to MS students; however, the Department of Statistics often has enough TA (Teaching Assistant) positions that it can hire several MSSS students per semester. MSSS students are encouraged to apply for TA positions. Please be aware, however, that TA positions are of vital importance to the department's mission and involve substantial obligations, e.g., to be responsive to instructor requests, to perform assigned tasks competently and efficiently, to be available for the entire semester, etc. More information will be provided in special orientation meetings for TAs.

## Other Events This Week

- ▶ Contact Kelly to schedule a **meeting with a faculty member**. Please do so ASAP, in order to ensure that you register for appropriate courses.
- ▶ The University Graduate School will host a Graduate Student Welcome & Networking Reception in person on Wednesday, August 18th from 5-7pm ET in the Wells Library lobby and Scholars' Commons.
- ▶ R workshop: Friday August 20th from 10:30am to 12:30pm in Myles Brand Hall, room E150. You will be using R in many of your classes, so we strongly encourage you to attend.
- ▶ A career services open house will be held on Sunday, August 22nd from 2-5pm ET at the Walter Center for Career Achievement.