EDUC259B: Education Data Science Seminar

1-3 units

Instructors

Sanne Smith (she/her)
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Office: CERAS129
You may call me "Sanne", which is pronounced like this
You can sign up for office hours using Calendly (calendly.com/sannesmith)
Please swing by to chat about the EDS program, course work, and your mental health. I'm also available to proofread resumes and cover letters or practice mock interviews with you. Talking with students is a highlight of my job, so don't hesitate to meet with me. If you rather discuss things by e-mail, that's fine too!

Nick Haber
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Office: CERAS109
Office hours: Mondays 3:10-4:10p.
I'm happy to talk about any of the above (though Sanne is really the expert for many of these EDS program questions!). Ask me about project questions, and about research at the intersection of data science, education, and artificial intelligence!

Teaching Assistant

Radhika Kapoor
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Please feel free to talk about EDS courses, projects, or other life and work questions (like campus life or international student life). My research work uses psychometrics, econometrics, and mixed data science methods.
Office hours: CERAS 510. Wednesday, 5-6 PM; Thursday 11 AM-1PM. Schedule on Calendly here. If this doesn't work for you, email me and we can find a time to talk.

Class

Fri 9:30 AM - 11:20 AM at [Lathrop 180](#)

General Description

This three-quarter seminar is a required course for Education Data Science MS students. The seminar will cover a variety of topics and activities. First, the EDS seminar is designed to develop community among EDS students by providing a space where you can learn about each other's perspectives and experiences. Second, the seminar will engage leaders in the field of EDS. During such sessions, you will have an opportunity to meet guest speakers and trailblazers (some of whom may be providers for summer internships and/or prospective future employers), so you learn about contemporary challenges and field developments. Third, the seminar will also bring together students and faculty in the Education Data Science program to create a scholarly community to learn and support each other's work. Fourth, the seminar will provide space to learn about Stanford resources (e.g., EdCareers, the Hume Writing Center, and the libraries). Each quarter has its own focus.

Seminar Goals

- Increasing understanding of what Education Data Science is
    - Working definition
    - Applications and implications of EDS
    - Opportunities
    - Challenges
    - Interested parties
- Developing a community
    - Among EDS MS students
    - Among EDS students and faculty
    - With external EDS innovators
    - Resources across the GSE and Stanford
- Peer learning
    - Course work
    - Skills
    - Experiences

Yearly Overview

Each quarter has a variety of elements that speak to the goals listed in the general description above, but also has a specific focus. These are:

- **Fall:** Centered around an introduction to the EDS field, the cohort, and its collective resources and knowledge, and setting personal goals and plans for the upcoming quarters. Students are introduced to the EDS Seminar Project that is central to the Winter quarter
- **Winter**: Students work on their EDS Seminar Project. This is a short project that you will complete in teams. The teaching team will provide you datasets and research questions and provides structured assignments that guide you through the arc of research. During many of our meetings, you will share updates about your progress and give each other feedback.
- **Spring**: Students work on their Capstone Project Proposal. In addition, each student has dedicated time to teach their cohort something they have found valuable and interesting. We call these "peer learning" opportunities and students have shared a variety of resources before, ranging from a workshop of particular R package to leading a mindfulness activity or a presentation about favorite scholarly work.

EDS Seminar Paper

Within the EDS Seminar, you will be working on a data science project in teams during the Winter Quarter: The EDS Seminar Project. The goal of the EDS Seminar Paper is threefold:

- It provides the opportunity to get to know each other through collaborative work
- It serves as a structured dry-run for the Capstone Project in year 2
- It allows you to showcase a research product for potential internship providers or submit it to a conference.

During the Fall quarter, we will introduce the EDS Seminar Project and provide several promising topics and datasets to work on. We'll discuss how they may speak to relevant problems and what questions we could ask of them, but we won't yet work on them much. During the Winter quarter, there will be time to explore the data regarding those questions and run the analyses. You will collaboratively write a scientific conference proceeding-style article that could be submitted to a conference.

Evaluation

This course can be taken for a Letter Grade only. The final grade is based on participation (20%) and weekly tasks (30%) and the EDS Seminar Project (presentation: 10%, paper: 40%). We expect you to attend all meetings in person and to arrive on time and prepared. You may not

miss more than one meeting and you must notify us in advance if you need to be absent or need to participate remotely.

Class Culture

The underlying assumption of the seminar is that students learn from each other. The benefits to you and to others in the seminar depend on your:
- Punctual attendance
- Absence and virtual attendance is to be avoided but requested beforehand if necessary
- Active involvement in and contributions to class discussions
- Completing the preparation and reflection activities
- Willingness to raise questions
- Willingness to invest yourself in your learning, including seeking help from the teaching team
- Willingness to help in others' learning (i.e., sharing what you know and what you don't know)
- Willingness to provide constructive feedback

From our side, we will also work on developing structures that allow time and room for everyone to participate.

Success in the seminar and as a cohort requires a growth mindset: The belief that with collaboration, dedication, and hard work you will become a better Education Data Scientist. This requires you to find your voice, be it in the form of questions raised in class or by helping explain content to others. To that end, we have structured the course to enable you to learn from PhD / 2nd year EDS students, faculty, industry, your teaching team and from your peers. The learning journey involves all of us. It is well worth it.

Please be aware that it is not appropriate to be using your class time to make or receive phone calls, text, browse the Internet, do your email, tweet, be on social media, or any other non-class-related activity. The content of this seminar requires focus. As recent research by a group of Stanford researchers demonstrates, [multi-tasking significantly reduces specialized focus](). We expect you to fully engage with the seminar and the seminar materials.

Students with documented disabilities

Students who may need an academic accommodation based on the impact of a disability must initiate the request with the Office of Accessible Education (OAE). Professional staff will evaluate the request with required documentation, recommend reasonable accommodations, and prepare an Accommodation Letter for faculty dated in the current quarter in which the request is made. Students should contact the OAE as soon as possible since timely notice is

needed to coordinate accommodations. The OAE is located at 563 Salvatierra Walk (phone: 723-1066)

Winter Overview

Week	Topic
1 01/12	**Welcome brunch** Let's start the quarter right and enjoy brunch together. During our brunch, we'll do a cohort bonding activity around your new year's resolution (so think about one if you didn't already!). Sign up to bring your favorite dish! We will also provide an overview of the Winter Quarter. This includes setting up milestones, thinking about how to divide work, thinking about how we will structure presenting and discussion, how to give feedback, and what we expect for your seminar projects. We will also spend time reflecting on Fall Quarter course evaluations. *Do:* ● *Schedule a meeting with Nick, Radhika, or Sanne to discuss your research question.* ● *Think of a new year's resolution to share* ● *Optional: Sign up to bring a dish for our brunch*
2 01/19	**Industry Speaker: David Lang (Research Manager @ Cradle-to-Career California)** David Lang is a GSE alumn and is currently a research manager @ Cradle-to-Career. The California Cradle-to-Career Data System is a statewide longitudinal data system that provides tools to help students reach their goals and delivers information on education and workforce outcomes. **Seminar project: Data Documentation** An excellent way to start with your project is to get to know your data by reading about it. Most datasets have documentation in files such as codebooks, data dictionaries, technical reports, or read-me's. Dig into your data's documentation or talk to your project's representatives to gather key information about the dataset and its variables. We'll discuss your findings in class. *Do* ● *Submit a question beforehand or write a reflection about David's talk* ● *Read Lewis, C. (forthcoming). Data Management in Large-Scale Education Research. Chapter 8, Documentation.* ● *Explore your data's documentation and complete a survey about it*

3 01/26	**Pitch Workshop with EdCareers** Whether talking with someone in an informational interview, searching for your next job, being interviewed, or talking with potential project collaborators, it's good to be prepared to say what you're all about in a minute or so. EdCareers provides the Pitch Workshop to help you finetune and practice your Pitch. **Seminar project: Descriptive analysis** Get to know your data by doing a descriptive analysis related to your project's research question. Examine sample size, measures of central tendency (mean, median), measures of variation (standard deviations, interquartile ranges), and missin values for key variables. We'll discuss your findings in class. *Do:* - Read Hayes-Larson E, Kezios KL, Mooney SJ, Lovasi G. Who is in this study, anyway? Guidelines for a useful Table 1. J Clin Epidemiol. 2019 Oct;114:125-132. - Submit your descriptive analysis based on the reading
4 02/02	**Faculty speaker: TBA** **Seminar project: Key data visualization** A descriptive data visualization about the key question is a very important step in the research project as it can give you a rough sense of what more complex analyses might return or might inform what kind of analysis you will pursue. Prepare one or a couple of data visualizations that speak to your research question and present it in class to gather feedback. *Do* - *Submit a question beforehand or write a reflection about Dan's talk* - *Submit one or a few data visualizations related to your research question*
5 02/09	**Community Engaged Research Workshop** Clayton Hurd will join the seminar to provide a workshop about community engaged research. **Seminar Project: Methods proposal** Start writing the data and methods section by outlining it as methods proposal presentation (slides). What kind of analysis are you planning to do and why? *Do: Be ready to present your methods proposal in class*
6 02/16	**Hume Center Workshop** The Hume Center is a wonderful resource you should know about as it helps Stanford students "develop rich and varied abilities in every aspect of written and oral communication". The center joins us today to provide a writing workshop. **Seminar Project: Peer-to-peer discussion**

	Continue working on your project and start doing the more complex analyses. Discuss what you have accomplished and what you are struggling with. Together we'll try to help you with your question. *Do: Bring something you'd like to discuss about your project to class.*
7 02/23	**Faculty Speaker: Phil Fisher** Phil Fisher will join the seminar to talk about his research **Seminar Project: Peer-to-peer discussion** Continue working on your project and start doing the more complex analyses. Discuss what you have accomplished and what you are struggling with. Together we'll try to help you with your question. *Do: Bring something you'd like to discuss about your project to class.*
8 03/01	**Industry speaker: TBA** **Seminar Project: Writing Review** Submit a piece of writing for your Seminar Project and read someone else's writing to exchange feedback during class.
9 03/08	**EDS Seminar Project Presentations** Present your complete EDS Seminar projects!
10 03/15	**Celebration** Time to reflect on the Winter quarter. We will focus on evaluating your course experiences, student life, and the seminar itself.