

S-061: Statistical and Psychometric Methods for Educational Measurement Syllabus, Harvard Graduate School of Education – Spring 2024

Class meets Mondays and Wednesdays, 10:30-11:45, Room TBD

Course website: <https://canvas.harvard.edu/courses/134381>

Instructor: Andrew Ho

Teaching Fellow: Josh Gilbert

Andrew_Ho@gse.harvard.edu

Weekly drop-ins with Andrew: To be scheduled based on availability.

Weekly drop-ins/sections with Josh: To be scheduled based on availability.

Description

This course covers statistical and psychometric methods for improving the design and use of educational and psychological measurements. Students will learn classical and modern measurement techniques, including reliability, generalizability theory, validation, differential item functioning, item response theory, scaling, linking, standard setting, and adjustments for measurement error. Contexts of assessments include small-scale educational and psychological measures for targeted research studies as well as large-scale district, state, and national assessments for formative, summative, and evaluative purposes. In the first two thirds of the course, students will learn and apply methods in class and complete data analytic assignments. In the remainder of the course, students will read and critique recent research in educational measurement. Students will also develop and present a research proposal that has promise for advancing the field.

Prerequisite: S-052 or at least two semesters of applied statistics that includes estimation and interpretation of logistic regression coefficients. Experience with multilevel models is encouraged but not required. This course complements S-043 and S-090, and students may enroll in these courses in any order. Students who do not meet the prerequisite may enroll instead in S-011E, which provides a nontechnical introduction to educational measurement.

Grading

The requirements of the course include synchronous engagement (5%), active and effortful participation in asynchronous activities (“learning checks” and “learning submissions,” 15%), satisfactory completion of 4 assignments (35%), an in-person “conversational celebration of learning” (CCL, 15%), and satisfactory completion and in-person presentation of a full research outline/project (30%). These weights are approximate—the final course grade may factor in improvement over time and exemplary performance on one or more dimensions. Students may complete the first assignment individually or in pairs and the remaining three assignments in pairs. The CCL will be held via Zoom with me and Josh in mid-April.

This course is letter-grade-only, with exceptions. If students would strongly prefer to take this course on a Satisfactory/No Credit basis, I am happy to discuss this possibility with them on a case-by-case basis. Registered students must submit a course evaluation form at the end of the semester to fulfill the requirements of the course. Auditors may not attend this course synchronously—all synchronous attendees must be registered students.

Additional Meetings with Josh and Andrew

Your TF, Josh, will schedule weekly meeting times by appointment. He may also offer optional discussion sections as necessary. These may be most common before assignment due dates. I will hold, “please drop by my office” hours at a regular time to be determined based on all our availability. The link will be on Calendly at <https://calendly.com/andrewwho>. For those who wish additional scheduled meetings, these are often available after class meetings or by appointment through my assistant, Wendy Angus, at Wendy_Angus@gse.harvard.edu.

The Weekly Rhythm of S-061

S-061 has a weekly rhythm as follows:

- Friday and Saturday: I will post asynchronous modules to Canvas that review the coming week’s topics and material. These are interspersed with “learning checks,” short questions requiring brief answers. Solutions are available immediately thereafter.
- Saturday through Tuesday: Students watch asynchronous modules and skim central readings at their own pace. Students complete learning checks at their own pace, throughout, as collaboratively as they would like.
- Monday: At a “Launch Session” during scheduled class time, I will take a moment to introduce the week’s material, interspersing current events and research. There is also a weekly game or activity related to course content and an accompanying prize. Launch Session attendance is required in Week 1 and is encouraged but optional thereafter.
- Wednesday: At an “Emphasis Session” during scheduled class time, I will emphasize key concepts from the week’s material using parallel examples and, where appropriate, activities. Emphasis sessions are required, and I will take attendance with synchronous “learning checks.”
- Wednesday through Saturday: Students complete the week’s “learning submission” or “assignment,” alternating weeks. Learning submissions are moderate and ungraded, whereas assignments are more extended. Learning submission solutions are available immediately upon submission, whereas assignment feedback is provided later the next week. Learning submissions must be submitted individually, although collaboration with any fellow student is welcome. Assignments must be submitted in pairs, and written collaboration is only permitted within the partnership. Weekly submissions are due at 5pm on Saturdays. However, there is always a flexible extension granted automatically without any need to notify us, until Sunday at 5pm.

Timing and Purpose of S-061 Assessments

Assessment Type	Length	Completion Time	Collaboration	Feedback	Purpose
Learning Checks	Brief	Between asynchronous modules	Collaboration with anyone is encouraged. Ultimately, individual submission.	Correct answers provided immediately.	Formative
Learning Submissions	Moderate	Due 5pm ET Saturdays (with a flex day), in Weeks 2, 4, 6...	Collaboration with anyone is encouraged. Ultimately, individual submission.	Correct answers provided immediately.	Formative
Assignments	Extended	Due 5pm ET Saturdays (with a flex day), in Weeks 3, 5, 7...	Collaboration only with partners. Partnered submission required.	Detailed, approximately 1 week later.	Formative and summative.

CALENDAR

(I expect this calendar to change slightly as I accommodate the pace and preferences of the class)

January 2024						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
14	15 – HOLIDAY	16 – Preview 2pm Lrs.G08	17	18	19	20
21 – Week 1 Validation	22 – Launch Session (req.)	23	24 -Emphasis Session (req.)	25	26	27 – Start Week 2 LS
28 – Week 2 Reliability	29 – Launch Session (opt.)	30	31-Emphasis Session (req.)	1	2	3 – Week 2 LS Due 5pm

February 2024						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
4 – Week 3 G Theory 1	5 – Launch Session (opt.)	6	7-Emphasis Session (req.)	8	9	10 – Week 3 AsgnDue5p
11 – Week 4 G Theory 2	12 – Launch Session (opt.)	13	14-Emphasis Session (req.)	15	16	17 – Week 4 LS Due 5pm
18 – Week 5 IRT Models	19 – HOLIDAY	20	21-Emphasis Session (req.)	22	23	24– Week 5 AsgnDue5p
25 – Week 6 IRT, Applied	26 – Launch Session (opt.)	27	28-Emphasis Session (req.)	29	1	2– Week 6 LS Due 5pm

March 2024						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
3 – Week 7 IRT & GRM	4 – Launch Session (opt.)	5	6-Emphasis Session (req.)	7	8	9– Week 7 AsgnDue5p
10 - SPRING BREAK	11	12	13	14	15	16
17 – Week 8 Linking	18 – Launch Session (opt.)	19	20-Emphasis Session (req.)	21	22	23 – Week 8 LS Due 5pm
24 – Week 9 Bias and DIF	25 – Launch Session (opt.)	26	27-Emphasis Session (req.)	28	29	30 – Week 9 AsgnDue5p

April 2024						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
31 - Week 10 Accountablty	1 – Launch Session (opt.)	2	3-Emphasis Session (req.)	4	5	6– Week 10 LS Due 5pm
7--Week 11 Psych&SEM	8 – Launch Session (opt.)	9	10- Emphasis Session (req.)	11	12	13 – Prelim proposal due
14 –Week 12 CCL Review	15 – Review Session (opt.)	16	17 – Review Session (req.)	18 – Convr. Celebration!	19 – Convr. Celebration!	20
21--Week 13 Frontiers	22 – Project Checkin (opt)	23	24 -Emphasis Session (req.)	25	26	27 – Proposal draft due

May 2024						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
28 – Project Week	29 – Project Checkin (opt)	30	1 – Project Checkin (opt)	2	3	4 – Proposal analyses due
5 – Presen- tation Week	6 – Presentations	7	8 – Presentations	9	10 – Final proposal due	11

READINGS

Central readings that are very technical need not be mastered in detail, but please do pay attention to notation and the underlying motivation of derivations. I intend noncentral readings as additional context and citations for future reference. Links will work on campus and, if you are off campus, if you have a VPN connection. Most readings (LR tag) are available via the library reserves tab here (by Week #): https://canvas.harvard.edu/courses/134381/external_tools/33439

There are two required textbooks that are both available online, free of charge:

1. American Educational Research Association, American Psychological Association, & National Council on Measurement in Education. (2014). *Standards for educational and psychological testing*. Washington, DC: American Educational Research Association. The standards are publicly available here: <https://www.testingstandards.net/open-access-files.html>
If you wish to purchase a paper text, you can visit [APA/AERA/NCME](#), where AERA, NCME, or APA members can get a discount (\$49.95). The Coop is also an option.
2. Koretz, D. (2008). *Measuring up: What educational testing really tells us*. Cambridge: Harvard University Press. Available online via [Library Reserves](#). For a paper text, visit [Amazon](#) or the Coop.

Week 1: Validation

Central:

- 1) Koretz (2008), Chapter 2, pp. 16-34. (required text) (LR)
- 2) AERA/APA/NCME Standards, Chapter 1, pp. 11-31. (required text) (LR)

Supplemental:

- 1) Ackerman et al. (2023). *Foundational Competencies in Educational Measurement*. ([link](#)) (LR).
- 2) Koretz (2008), Chapter 9, pp. 215-234. (required text) (LR)
- 3) Kane, M. T. (2013). Validating the interpretations and uses of test scores. *Journal of Educational Measurement*, 50(1), 1-73. (LR)
- 4) Randall, J. (2021). “Color-neutral” is not a thing: Redefining construct definition and representation through a justice-oriented critical antiracist lens. *Educational Measurement: Issues and Practice*. <https://doi.org/10.1111/emip.12429> (LR)
- 5) Lyons, S., Johnson, M., & Hinds, B. F. (2021). *A Call to Action: Confronting Inequity in Assessment*. Lyons Assessment Consulting. ([link](#)) (LR)

Week 2: Reliability and Classical Test Theory

Central:

- 1) AERA/APA/NCME Standards, Chapter 2, pp. 33-47. (required text) (LR)
- 2) 2022 MCAS Technical Report Section 3.7: ([link](#)) (LR)
- 3) Traub, R. E., & Rowley, G. L. (1991). Understanding reliability. *Educational Measurement: Issues and Practice*, 10(1), 37-45. (LR)

Supplemental:

- 4) Koretz (2008), Chapter 7, pp. 143-178. (required text) (LR)
- 5) Crocker, L., & Algina, J. (1986). *Introduction to classical and modern test theory*. Belmont, CA: Wadsworth Group. Chapter 6: Reliability and the classical true score model pp. 105-113, 122-124; Chapter 7: Procedures for estimating reliability pp. 131-150. (LR)
- 6) Haertel, E. (2006). In R. Brennan (Ed.) *Educational measurement*. Westport, CT: Praeger. Chapter 3, 65-87. (LR)

Week 3: Introduction to Generalizability Theory

Central:

- 1) Shavelson, R.J. & Webb, N.W. (1991). *Generalizability theory: A primer*. Newbury Park, CA: Sage Publications. 1-24. (LR)
- 2) Brennan, R. L. (1992). Generalizability theory. *Educational Measurement: Issues and Practice*, 11(4), 27-34. (LR)

Supplemental:

- 3) Brennan, R. L. (2001). Generalizability theory. New York: Springer-Verlag. 1-19. (LR)
- 4) Ho, A.D. & Kane, T.J. (2013). *The reliability of classroom observations by school personnel*. Bill & Melinda Gates Foundation. (LR)

Week 4: Generalizability Theory

Central:

- 1) Hill, H. C., Charalambous, C. Y., & Kraft, M. A. (2012). When rater reliability is not enough: Teacher observation systems and a case for the generalizability study. *Educational Researcher*, 41(2), 56-64. ([DOI](#), LR)

Supplemental:

- 2) Cronbach, L. J., Linn, R. L., Brennan, R. L., & Haertel, E. H. (1997). Generalizability analysis for performance assessments of student achievement or school effectiveness. *Educational and Psychological Measurement*, 57(3), 373-399. (LR)

Week 5: Introduction to Item Response Theory

Central:

- 1) Harris, D. (1989). Comparison of 1-, 2-, and 3-parameter IRT models. *Educational Measurement: Issues and Practice*, 8(1), 35-41. (LR)
- 2) 2022 MCAS Technical Report Section 3.6.1 & 3.6.2: [link](#) (LR)
- 3) Stata Manual (version 18), pp. 1-13. <http://www.stata.com/manuals/irt.pdf> (LR)

Supplemental:

- 4) Stevens, S. S. (1946). On the theory of scales of measurement. *Science (New York, N.Y.)*, 103(2684), 677-680. (LR)
- 5) AERA/APA/NCME Standards, Chapter 5, pp. 95-109, focus on scores, scales, and norms. (required text) (LR)

Week 6: Item Response Theory

Central:

- 1) Yen, W. M., & Fitzpatrick, A. R. (2006). In R. Brennan (Ed.), *Educational measurement*. Westport, CT: Praeger. pp. 111-118. Sections 1-2.4 (LR))

Supplemental:

- 2) Klugman, E. M., & Ho, A. D. (2020). How can released state items support interim assessment purposes in an educational crisis. *Educational Measurement: Issues and Practice*, 39(3), 65-69. ([DASH](#), LR)

Week 7: Polytomous IRT and the Graded Response Model

Central:

- 1) Stata Manual (version 18), pp. 13-18. <http://www.stata.com/manuals/irt.pdf> (LR)
- 2) Jessen, A., Ho, A. D., Corrales, C. E., Yueh, B., & Shin, J. J. (2018). Improving measurement efficiency of the Inner EAR scale with Item Response Theory. *Otolaryngology-Head and Neck Surgery*, 158, 1093-1100. ([DOI](#), LR)

Supplemental:

- 3) Samejima, F. (1969). *Estimation of Latent Ability Using a Response Pattern of Graded Scores* (Psychometric Monograph No. 17). Richmond, VA: Psychometric Society. ([DOI](#), LR)

Week 8: Linking and Equating

Central:

- 1) AERA/APA/NCME Standards, Chapter 5, pp. 95-109, focus on linking. (required text) (LR)

Supplemental:

- 2) Reardon, S. F., Kalogrides, D., & Ho, A. D. (2021). Validation methods for aggregate-level test scale linking: A case study mapping school district test score distributions to a common scale. *Journal of Educational and Behavioral Statistics*. (LR)
- 3) Holland, P. W., & Dorans, N. J. (2006). In R. Brennan (Ed.), *Educational measurement* (4th ed.). Westport, CT: American Council on Education, Praeger Publishers. pp. 197-201. (LR)

Week 9: Bias/DIF and Accommodations

Central:

- 1) AERA/APA/NCME Standards, Chapter 3, pp. 49-72. (required text) (LR)
- 2) Stata Manual (version 18), pp. 235-248. <http://www.stata.com/manuals/irt.pdf> (LR)

Supplemental:

- 3) Koretz (2008), Chapter 11, pp. 260-280. (required text) (LR)
- 4) Abedi, J., Hofstetter, C. H., & Lord, C. (2004). Assessment accommodations for English Language Learners: Implications for policy-based empirical research. *Review of Educational Research*, 74, 1-28. (LR)

Week 10: Accountability Models, Standards, Proficiency, and Growth

Central:

- 1) AERA/APA/NCME Standards, Chapter 5 review (beyond the Week 8 reading). (required text) (LR)
- 2) Ho, A. D. (2008). The problem with "proficiency": Limitations of statistics and policy under no child left behind. *Educational Researcher*, 37(6), 351-360. (LR)
- 3) Kolen, M. J. (2006). In R. Brennan (Ed.), *Educational measurement* (4th ed.). Westport, CT: Praeger Publishers. pp. 171-180. (LR)

Supplemental:

- 4) Glass, G. V. (1978). Standards and criteria. *Journal of Educational Measurement*, 15(4), 237-261. (LR)
- 5) McClarty, K. L., Way, W. D., Porter, A. C., Beimers, J. N., & Miles, J. A. (2013). Evidence-based standard setting. *Educational Researcher*, 42(2), 78-88. (LR)
- 6) Koretz (2008), Chapter 8. (required text) (LR)
- 7) Briggs, D. C. (2013). Measuring growth with vertical scales. *Journal of Educational Measurement*, 50(2), 204-226. (LR)

- 8) Castellano, K. E., & Ho, A. D. (2013). *A practitioner's guide to growth models*. Council of Chief State School Officers. (LR)
- 9) Pearl, J. (2014). Lord's paradox revisited - (Oh Lord! Kumbaya!). University of California. Technical Report R-36 (October). (LR)
- 10) Kraft, M. A. (2020). Interpreting effect sizes of education interventions. *Educational Researcher*, 49, 241-253. (LR)

Week 11: Connections to factor analysis and structural equation modeling

Central:

- 1) Stata Manual (version 18), pp. 315-340. <http://www.stata.com/manuals/sem.pdf> (LR)

Week 12: Review for the Conversational Celebration of Learning

No readings

Week 13: Readings useful for projects

Supplemental:

- 1) Bradburn, N. M., Sudman, S., & Wansink, B. (2004). *Asking Questions*. San Francisco, CA: John Wiley & Sons. Chapter 12: Asking Questions FAQ, 323-333. (LR)
- 2) AERA/APA/NCME Standards, Chapter 12 and 13, pp. 183-213. (required text) (LR)
- 3) Koretz (2008), Chapter 10, pp. 235-259. (required text) (LR)
- 4) Wainer, H. (2010). 14 conversations about three things. *Journal of Educational and Behavioral Statistics*, 35(1), 5-25. (LR)

The Conversational Celebration of Learning (CCL)

I will hold a 20-minute conversational “celebration of learning” with each of you on or around April 18 and 19, at time windows to be scheduled. The goal is to encourage you to become fluent enough in the language of measurement and psychometrics so that you can speak it actively and accurately in conversation. Questions will be based on the learning submissions and assignments you will have already completed in class. You can hear a bit about the reasoning behind this conversation here: <https://vimeo.com/497738911>

Course Project

To complete the course, you must develop an original research project, present it to other class members, and submit a final written product. In conducting this research project, you may collaborate with a partner in the class. While my vision of what constitutes a viable project is somewhat contextual and subject to negotiation, there are two broad possibilities:

1. A complete and extended outline of a research paper, including results from data analysis that uses the methods introduced in this course. This will require you to write down the underlying structure of the paper from start to finish. This includes (in order): 1) Introduction /

motivation; 2) Background / literature review; 3) Data and sample; 4) Methods; 5) Results; and 6) Discussion and implications for policy and/or practice. To be clear, while this is less effort than a completed final paper, it also means that you must produce the main tables and figures that you intend to include in a final version of your paper.

2. If producing results is not possible, I will require you to write a “pre-analysis plan”. This is very similar to #1 above, except that the “Results” section will instead require a full list of models that you wish to estimate, a detailed discussion of what you expect to find, and what you might learn from your study (regardless of how the analysis turns out). This option is available primarily for students who are working on a project that has scholarly promise, but also logistical headaches that are beyond your control (for example, if you are collecting data or waiting on the acquisition of a restricted-use data set).

Your grade on the course project will depend on the contribution of the project is and how well you implement it. In addition to the scheduled deadlines on the syllabus, I encourage you to keep me informed on the progress of your project throughout the semester.

The maximum length of the extended outline or pre-analysis plan (not counting references, tables, and figures) is 20 pages of double-spaced 12-point type with one-inch margins. During the course, we will provide explicit guidance and support tailored to each research project. I expect that your course project will eventually (after the course is complete) result in a published research paper that can appear on your Curriculum Vitae.

To help you prepare the presentation of your course project, we will devote class time to discussing the components of a good scholarly talk. We may also be available to help you practice a “dry run” of your presentation. You (and perhaps your research partner) should make an appointment with me to discuss the feedback I provide on your draft. You should also see Josh or me for ongoing support for your project. Prior to any meetings with either of us, please prepare a brief memo describing your agenda for the meeting and email it the day before our meeting. This will help us to help you.

Preliminary proposal:

Proposed title

Key references (1-5)

Research Questions

Data & sketch of analytic plan (include “8 displays” from Week 3.1 if data are available)

Questions/roadblocks

As we evaluate your project, we will ask the following five questions:

- 1) Have you asked at least one compelling research question motivated and framed by existing literature?
- 2) Have you answered at least one interesting research question in a cogent and thoughtful manner?
- 3) Have you articulated your methods clearly enough that readers can replicate them?

- 4) Have you demonstrated mastery of a measurement concept or technique, including accurate interpretation of analytic results?
- 5) Have you demonstrated sufficient momentum toward a publishable paper?

Additional optional texts

All students should consider #1, below, for their reference library. Application-oriented students should consider #3 and #6 for Generalizability Theory and IRT, respectively. More technically oriented students should consider #4 and #5. Students interested in practical methods for large-scale testing should consider #2.

1) Educational Measurement, 4th Edition. ISBN: 978-0275981259

<http://www.amazon.com/Educational-Measurement-American-Council-Education/dp/0275981258>

2) Test Equating, Scaling, and Linking, 2nd Edition. ISBN: 978-1441923042

<http://www.amazon.com/Test-Equating-Scaling-Linking-Statistics/dp/1441923047>

3) Generalizability Theory: A Primer. ISBN: 978-0803937451

<http://www.amazon.com/Generalizability-Theory-Measurement-Methods-Science/dp/0803937458/>

4) Generalizability Theory. ISBN: 978-1441929389

<http://www.amazon.com/Generalizability-Theory-Statistics-Behavioral-Sciences/dp/144192938X/>

5) Fundamentals of Item Response Theory. ISBN: 978-0803936478

<http://www.amazon.com/Fundamentals-Response-Measurement-Methods-Science/dp/0803936478/>

6) Applications of Item Response Theory to Practical Testing Problems. ISBN: 978-0898590067

<http://www.amazon.com/Applications-Response-Practical-Testing-Problems/dp/089859006X/>

Statistical and psychometric computing

Statistical computing is an integral part of S-061. I will be using Stata this year, and Josh is proficient in R. I assume that everyone is comfortable using a computer to perform basic statistical analysis, although I do not necessarily assume that you have used Stata. All Harvard students have free access to Stata.

I do not teach programming during class time, although code is threaded through the lecture slides. We provide resources to help you learn how to program on your own at your own pace. Josh may also cover coding issues in his sections.

I also allow students to complete problem sets and projects in R. For students with equal proficiency and interest in both programming languages, Stata will be the more convenient choice. However, students complete the course in R every year, and we will do our best to support this additional language.

Slack, collaboration, and study groups

We will be using Slack for collaboration and communication in this course. Please access the S-061 Slack channel on the Canvas site here:

https://canvas.harvard.edu/courses/134381/external_tools/77742 . Standard Slack norms are here:

- Be good citizens of Slack: answer questions, assume best intent, try not to sidetrack conversations.
- Understand [public and private channels](#), and try to communicate with the proper audience.
- Use [threads](#) (reply) to organize smaller group discussions around specific topics.
- [Format messages](#) so that they're easier to read (e.g., [shift-return](#) creates a line break).
- **Use emoji reactions** liberally to acknowledge messages while keeping channels from becoming inundated with reaction messages.
- Use the [search function](#) to try to find an answer, reducing duplicate questions.
- [Manage notifications](#) to reduce information overload and maintain focus.
- Remember that there are situations when it's best to move the conversation off of Slack messaging. Students can meet face-to-face using Zoom or **Slack calls**.

Many people learn in deeper ways when working in a group, and I encourage collaborative learning. To mimic statistical and psychometric work in the real world and to provide a chance for you to use this language actively, I require completion of assignments in pairs starting from the Week 3.

We mandate collaboration for at least three reasons. First, learning statistical and psychometric methods is like learning a language. To learn it, one must “speak” it actively and in a genuine context with other individuals. Second, collaborative quantitative analysis is the norm and individual work is the exception in the world of practice. Third, my experience has been that, on average, students who work in pairs and groups both perform better and enjoy themselves more than students who work individually. Statistical and psychometric collaboration is a case where the whole is greater than the sum of its parts.

Accommodations

We encourage students needing accommodations in instruction or evaluation to notify us early in the semester. If you have a disability or health concern that may have some impact on your work in this class and for which you may require adjustments or accommodations, please contact Maritza Hernandez at maritza_hernandez@gse.harvard.edu, or the Access and Disability Services (ADS) administrator in Gutman 124. No accommodations can be given without authorization from ADS, or without notice. If you already have a Faculty Contact Form for this course from ADS, please provide us with that information privately in our offices so that we can

make those adjustments in a timely manner. All inquiries and discussions about accommodations will remain confidential.

Avoiding plagiarism and ensuring appropriate use of Artificial Intelligence (e.g., ChatGPT)

Please read the School's policy on plagiarism in the [HGSE Student Handbook](#), which includes the statement, "Students who submit work either not their own or without clear attribution to the original source, for whatever reason, face sanctions up to and including dismissal and expulsion." Attention to this policy is particularly important in a course like S-061, in which collaboration with other students is encouraged. If you work closely with other students during the planning of your analyses—a process that I encourage and fully support—recognize the other students' contributions explicitly in your written account (a footnote is fine for this purpose). This helps avoid the natural questions that arise when similarities are detected at grading.

Please also read the School's policy on the appropriate use of generative artificial intelligence (AI), including tools like ChatGPT. Acknowledge and document any use of these tools in your DAM. You are welcome to use these tools to refine or translate your code and to refine or translate your ideas. However, you should “lead” and not “follow” any AI tool. The “seed” of every answer in any submitted assignment must be your own, and you must acknowledge and cite any way that AI has helped that seed to grow. You can access the GSE Sandbox here: <https://gse.sandbox.ai.huit.harvard.edu/>

If you have any questions about what constitutes appropriate collaboration or use of AI, or how to define what constitutes your own work, please see me or a Teaching Fellow.

Other Writing Resources

- HGSE Academic Writing Services: Gutman Library
- APA Online Tutorial: http://isites.harvard.edu/icb/icb.do?keyword=apa_exposed
- Writing Resources (including *Writing Like an Educator* Course and Reference Materials): <http://isites.harvard.edu/icb/icb.do?keyword=awrs&pageid=icb.page48297>
- Sign-up for Individual Sessions at the Writing Center: <http://www.appointmentquest.com/provider/2030159020>

(Boilerplate) Required Information for Students Included in a Zoom Classroom Recording

Note that my travel may require me to conduct a class session by Zoom. If I do, I typically record the class so that students can review the lecture later. The following boilerplate applies to those recordings:

- Instructors may use Zoom to record class sessions.
- If an instructor uses Zoom to record a class session, Zoom provides audio and visual indicators to inform you when the recording starts, stops, is in progress, and is paused or unpaused.
- You, as a student, may not yourself record a class session. (More generally, you should not record a class session using any other technology.)

- You have the option to appear in an audio-only mode, such that your webcam is disabled (turned off) during the class.
- You have the option to access Zoom class sessions using a pseudonym.
- In order to facilitate class participation, you are expected to communicate any pseudonym to your instructor in advance of the class.
- Links to class session recordings, if available, will be posted in the Zoom meetings section of the Canvas course webpage. More generally, any class recording must only be posted inside of the Canvas site for the course.
- Links to Zoom class session recordings will be removed and videos deleted at the end of the academic term.
- You may not disclose the link to a class session recording or copies of recordings to anyone, for any reason. It is available to your class only.