



DS.796.W02. Data Science Project

Spring 2026

Thur. 6:30 pm – 9:00 pm, Online Synchronous via Zoom

Three Credits

Instructor: Bu Hyoung Lee, Ph.D.
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Class Schedule: Two lectures (including short individual meetings) + Four full advising sessions + One practice presentation + One final presentation on the given **Thursdays**:

Lecture + Short Advising Session: Jan. 22
Full Advising Session: Feb. 5 or Feb. 12
Full Advising Session: Feb. 19 or Feb. 26
Lecture + Short Advising Session: Mar. 12
Full Advising Session: Mar. 19 or Mar. 26
Full Advising Session: Apr. 9 or Apr. 16
Practice Presentation: Apr. 23 (6:00 PM – 9:00 PM)
Final Presentation: Apr. 30 (6:00 PM – 9:00 PM)

Each research talk, to DS faculty and invited reviewers:

Oral presentation (10 min) + Q&A (5 min)

Selected Presentation: Tuesday, May 5 (6:00 PM – 8:00 PM)

An award competition open exclusively to invited students

All Zoom links are placed on *Moodle*.

Note 1: The two lectures will be recorded, and their videos will be posted on *Moodle*.

Note 2: During each advising session, your progress will be reviewed and discussed in an individual breakout room (about 25 minutes per full meeting or 10 minutes per short meeting). Due to time constraints, each advising session will be split across two days. Your group and meeting days will be posted on *Moodle*.

Please consult the course schedule table and *Moodle* for more information.

Office Hours: By appointment ONLY

Prerequisite: DS.795. Data Science Project Design

Course Description: Students complete the independent or small group research project proposed in DS.795, then present their work as a thesis-like paper and at an end-of-semester symposium. Within the project, students use the complete process of addressing a real data science project, which includes collecting and processing data, applying an appropriate method to the research questions, and reporting on the problems and solutions. The final report also includes a discussion of the ethics involved in the project. Each project team is supervised by the instructor (Prof. Lee; in some cases, other relevant DS faculty) and advised by a

project partner/client assigned by academic, governmental, or industry sponsors. To be taken the semester following DS.795.

Goals & Learning Objectives:

After successful completion of the two-course sequence (DS.795 & DS.796), students should also be able to ...

1. Articulate the analytics process model to perform a data science research project.
2. Comment on the different ethical issues that can potentially be associated with performing his/her project.
3. Identify the tools and techniques that will need to be employed to carry out the project.
4. Learn to independently manage a data science project to completion.
5. Present the research process, tools used, and the research findings effectively.

Textbooks:

There is no official textbook for this course. We will draw our discussion materials from different sources, including the following books:

1. Michael J. Quinn (2020), *Ethics for the information age* (8th ed.), Pearson, ISBN: 9780136731894.
2. Kord Davis (2012), *Ethics of big data*, O'Reilly, ISBN: 9781449311797.
3. Cathy O'Neil (2016), *Weapons of math destruction: How big data increases inequality and threatens democracy*, Crown, ISBN: 9780553418811.
4. Gareth James, Daniela Witten, Trevor Hastie, and Robert Tibshirani (2021), *An introduction to statistical learning with applications in R* (2nd ed.), Springer, ISBN: 9781071614174. (Free e-book is available at <https://www.statlearning.com>)
5. Trevor Hastie, Robert Tibshirani, and Jerome Friedman (2016), *The elements of statistical learning: Data mining, inference, and prediction* (2nd ed.), Springer, ISBN: 9780387848570. (Free e-book is available at <https://hastie.su.domains/ElemStatLearn>)

Workload & Grading: Like DS.795, this course will mostly involve independent work, with discussion with the instructor and the partner/client. There will be five homework assignments, primarily related to research progress. Students must submit their homework assignments (three progress reports + two partial drafts) and final work (one full manuscript + one PowerPoint presentation) on time. Here is a breakdown of the course grade:

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|--|-----|
| 1. Homework Assignments (three progress reports + two partial drafts), | 30% |
| 2. Final Project Presentation (based on DS faculty & IAB's evaluations), | 30% |
| 3. Final Project Report (full manuscript), | 40% |

Final Grade Determination:

<i>A</i>	<i>A⁻</i>	<i>B⁺</i>	<i>B</i>	<i>B⁻</i>	<i>C⁺</i>	<i>C</i>	<i>F</i>
[92,100]	[90,92)	[87,90)	[83,87)	[80,83)	[77,80)	[70,77)	[0,70)

Catalog Description of Grades:

- A: **Excellent.** Denotes high achievement and indicates intellectual initiative beyond the objectives of the course.
- B: **Good.** Denotes work that meets course objectives and the intellectual command expected of a graduate student.
- C: **Unsatisfactory.** Denotes work of inferior quality compared to the objectives of the course. It is the lowest passing grade.
- F: **Failure.**

Homework & Project Manuscripts:

- All due dates are presented in the course schedule table.
- Every progress report must meet the format guidelines below:
 1. Use the 8½ × 11 (letter size) layout with a one-inch margin & one-and-a-half (1.5) space.
 2. Follow APA style. Use clear, complete, and organized expressions. Attach all relevant SAS/R/Python scripts and outputs, including figures and tables, if necessary. Do **NOT** copy and paste any unorganized and messy outputs.
 3. Type texts using
11-point “Times New Roman” or similar fonts for statements &
10-point “Courier New” or similar fonts for SAS/R/Python scripts and outputs.
 4. Write your full name & the homework number on the top left of the first page.
- The partial/full manuscripts must meet Loyola’s thesis/dissertation standards generally accepted in academia. Their details, including a template, are available on **Moodle**. Failure to follow the guidelines may result in loss of credit, regardless of the quantity and quality of your work.
- Upload your document (saved as a single **pdf** file) electronically on **Moodle** (under the submission link) **by 11:59 PM** on the due date.
- **Late homework will NOT be accepted** unless extenuating circumstances are present. In these cases, you must discuss the situation with the instructor (Prof. Lee) as soon as possible.

More about Course Mechanics:

As part of DS.796, you will work on a capstone project throughout the semester and take it to completion. The instructor will play the role of the facilitator, ensuring that you have a plan of execution for the project and are making good progress according to that plan. If any obstacle arises in doing the project, the instructor will help you find solutions. The common lectures will be used to discuss ethics, especially as it relates to data science, analyzing some case studies, discussing presentation skills, and preparing and practicing for the final presentation. Also, the advising sessions and homework assignments will be utilized to get reports on the progress.

Students with Disabilities:

To request academic accommodations due to a disability, please contact Disability and Accessibility Services (DAS), Maryland Hall 141, at das@loyola.edu or call (410) 617-7380. If you already registered with DAS and requested an accommodations letter (and DAS has sent the letter to Prof. Lee via email), please schedule a brief meeting with Prof. Lee to discuss the accommodations you might need in this class.

Honor Code:

The Honor Code states that all students of the Loyola Community have been equally entrusted by their peers to conduct themselves honestly on all academic assignments and tests. Loyola students have a collective and individual responsibility for the ethical welfare of their academic community. All outside resources or information used should be clearly acknowledged. If there is any doubt or question regarding the use and documentation of outside sources for academic assignments, your instructor should be consulted. Please refer to the Honor Code for more information and further clarification of the standards, types of violations, adjudication process, and sanctions that may be imposed for violations.

Note. The academic **penalties** for an honor code violation must be:

- 1) Final course grade *F* imposed by the instructor &
- 2) Additional sanctions decided by the University.

Title IX:

Loyola University Maryland is committed to a learning and working environment free from sexual and gender-based misconduct including sexual harassment, sexual assault, fondling, incest, statutory rape, domestic violence, dating violence, stalking, and sexual exploitation. Reports of such offenses are taken seriously, and Loyola encourages students experiencing sexual misconduct to report the incident in accordance with the University's policy on [Reporting Sexual Misconduct](#). Because of the University's obligation to respond to reports of sexual misconduct, mandated reporters including faculty members, are required to report incidents of sexual misconduct to the Title IX coordinator even if the reporting party requests confidentiality. Information about confidential resources that are not required to report sexual misconduct to the Title IX coordinator may be found on the [Title IX reporting resources page](#). For more information about policies and resources or reporting options, please review the [Title IX web page](#). Loyola is also committed to an environment free of other forms of harassment and discrimination. For information about policies and reporting resources, please review the Bias Related Behaviors Process and Policy in the [Community Standards](#) for policies related to students and the [harassment and discrimination policy](#) for policies related to employees.

Counseling Center:

The Loyola Counseling Center supports the emotional well-being of the student body and is committed to a respectful understanding and honoring of the social, emotional, and cultural contexts represented by each individual student. The counseling center provides brief individual and group counseling, emergency and crisis intervention, and comprehensive referral services for those in need of longer-term therapy. Relevant updates and more information can be found on www.loyola.edu/counselingcenter or by calling (410) 617-2273. To make an appointment, call (410) 617- 2273. For after-hours emergencies, call our after-hours counselor at (410) 617-5530 or Campus Police at (410) 617-5911.

Writing Center:

The Loyola Writing Center is open seven days a week for both face-to-face and Zoom appointments. The complete schedule of hours is posted on <https://www.loyola.edu/department/writing-center/about/location-hours>. For questions, or help making an appointment, students can email lwc@loyola.edu.

Tutoring:

The Study (Jenkins Hall, third floor) is Loyola's academic support center. They help Loyola students become successful and independent learners, through a variety of free academic support services such as peer and professional tutoring, academic success workshops, academic coaching, and time management and organization coaching. They also provide a quiet study space and computer lab. These services are available in person and online, and students can register for them through The Study's website at www.loyola.edu/thestudy.



DS.796.W02: Tentative Course Schedule (Updated on Monday, 1/5/26)

Topics	Dates		Assignments Due by Wednesday midnight (11:59 PM) of your meeting week
	Group #1	Group #2	
Lecture + Advising Session	January 22 (Group #1 & Group #2 together) Orientation & Planning + Research Ethics & Institutional Review Board (IRB)		Capstone Proposal (including updates and modifications)
	<i>January 29 Meeting Cancelled</i>		
Full Advising Session	February 5	February 12	Progress Report #1
Full Advising Session	February 19	February 26	Progress Report #2
	<i>March 5 Spring Break (No Meeting)</i>		
Lecture + Advising Session	March 12 Academic Writing & APA Style + Presentation Skills		Partial Draft #1
Full Advising Session	March 19	March 26	Partial Draft #2
	<i>April 2 Easter Break (No Meeting)</i>		
Full Advising Session	April 9	April 16	Progress Report #3
Practice Presentation	6:00 PM – 9:00 PM, Thursday, April 23 (Group #1 & Group #2 together)		Full Manuscript & PowerPoint Presentation by Monday, April 20
Final Presentation	6:00 PM – 9:00 PM, Thursday, April 30 (Group #1 & Group #2 together)		Revisions (if necessary) by Monday, April 27
Selected Presentation	6:00 PM – 8:00 PM, Tuesday, May 5 (An award competition open exclusively to invited students, based on the evaluation of capstone projects.)		