

EE P 596 C ML Ops

Autumn 2025

Course Description

This course is focused on the development and deployment of Machine Learning (ML) models into a production environment. This includes operational excellence of ML systems, data governance, and ensuring the ROI of deployed models. These are skills that a MLE (Machine Learning Engineer) needs to support all stages of ML development: early data access for analysis and exploration, the ML model development process, preparing models for production, setting up pipelines for automated releases, working within a larger organization to provide models the data they need, ensuring robustness, technical performance (e.g. response time), model performance (e.g. detecting drift and recognizing when something goes wrong), monitoring, observability, and disaster response/recovery.

Logistics

- Adrienne ahandrew@uw.edu
 - Office Hours: Friday 3-5pm on Zoom

Meetings

- Tuesday, BAG 260
 - 6:30-9:50pm

Communication

- Primarily via Slack

Grading

- Programming assignments: 30%
- Final Project: 50%
- Participation/Other: 20%

Programming assignments: Intended to put the weekly concepts into practice

Final Project: Comprehensive project to put concepts into practice

Participation/"Other": Includes presentations, note scribing, and in-class activities.

Course Outcomes

By the end of this course, students should be able to:

- Differentiate between core ML models, what they can be used for, what kind of data they can be used on
- Differentiate between foundational ML models and newer AI/GPT models and their capabilities
- Differentiate between the system architecture needed to support ML vs AI technologies
- Recognize where privacy and compliance concerns must be designed for in the pipeline
- Differentiate among available tools by different providers
- Build an automated ML pipeline that uses a provided ML model to re-train periodically, test, and deploy into a "production" environment that provides metrics and observability

Course Topics

Topics covered in this course:

- Week 1: Intro to MLOps, Basic ML Development
- Week 2: The MLOps Process
- Week 3: A First mini-MLOps Project
- Week 4: Data Governance for MLOps
- Week 5: Development and Deployment of Models and ML Apps, Part I
- Week 6: Development and Deployment of Models and ML Apps, Part II
- Week 7: Building Production Grade MLOps projects
- Week 8: Deep Learning and Large Language Model Projects (versus Foundational Models)
- Week 9: Ethics, Privacy, and Responsibility for MLOps Engineers
- Week 10: The Industry Landscape: Tools and Approaches

Statement on the use of AI

AI tools may be used in this course, but must be referenced with an explanation of how it was used. Using AI tools without citation will be considered academic dishonesty and treated as such.

You, as the student, are responsible for the content of what you create and submit. You must be able to understand and explain anything you submit, whether you used AI to help you with it or not.

- IF you do utilize an AI agent for ANY part of an assignment, as a matter of academic honesty, **you must indicate which tool you used, how you used it, and what it contributed to the assignment.**
 - **Not indicating this can be interpreted as a instance of academic dishonesty and will be treated as such.**

Academic Honesty

I take academic honesty seriously and view academic dishonesty as one of the most serious offenses that a student can commit while in college and impose appropriate punitive sanctions on violators. Here are some examples of academic dishonesty. While this is not an all-inclusive list, I hope this will help you to understand some of the things instructors look for.

- **Cheating:** intentionally using or attempting to use unauthorized materials, information or study aids in an academic exercise
- **Fabrication:** intentional and unauthorized falsification, misrepresentation, or invention of any data, or citation in an academic exercise
- **Plagiarism:** intentionally representing the words, ideas, or data of another as one's own in any academic exercise without providing proper citation
- **Unauthorized collaboration:** instances when students submit individual academic works that are substantially similar to one another; while several students may have the same source material, the analysis, interpretation, and reporting of the data must be each individual's independent work.
- **Participation in academically dishonest activities:** any action taken by a student with the intent of gaining an unfair advantage
- **Facilitating academic dishonesty:** intentionally or knowingly helping or attempting to violate any provision of this policy

I will address instances of academic dishonesty on a case-by-case basis. Penalties could include receiving a 0 on an assignment, failing the class, or referral to the university for handling.

Course Policies

Religious Accommodation

Washington state law requires that UW develop a policy for accommodation of student absences or significant hardship due to reasons of faith or conscience, or for organized religious activities. The UW's policy, including more information about how to request an accommodation, is available at [Religious Accommodations Policy](https://registrar.washington.edu/staffandfaculty/religious-accommodations-policy/) (<https://registrar.washington.edu/staffandfaculty/religious-accommodations-policy/>)[Links to an external site.](#) Accommodations must be requested within the first two weeks of this course using the [Religious Accommodations Request form](https://registrar.washington.edu/students/religious-accommodations-request/) (<https://registrar.washington.edu/students/religious-accommodations-request/>)[Links to an external site.](#)

Accommodations & Access

If you have already established accommodations with Disability Resources for Students (DRS), please communicate your approved accommodations to me at your earliest convenience so we can discuss your needs in this course. If you have not yet established services through DRS, but have a temporary health condition or permanent disability that requires accommodations (conditions include but not limited to; mental health, attention-related, learning, vision, hearing, physical or health impacts), you are welcome to contact DRS at 206-543-8924 or uwdrs@uw.edu or disability.uw.edu.[Links to an external site.](#) DRS offers resources and coordinates reasonable accommodations for students with disabilities and/or temporary health conditions. Reasonable accommodations are established through an interactive process between the student, instructor, and DRS. It is the policy and practice of the University of Washington to create inclusive and accessible learning environments consistent with federal and state law.

Academic Integrity

Engineering is a profession demanding a high level of personal honesty, integrity and responsibility. Therefore, it is essential that engineering students, in fulfillment of their academic requirements and in preparation to enter the engineering profession, adhere to the College of Engineering [Statement of Principles](#)[Links to an external site.](#) Any student in this course suspected of academic misconduct (e.g., cheating, plagiarism, or falsification) will be reported to the College of Engineering Dean's Office and the University's Office of Community Standards and Student Conduct to initiate the [student conduct process](#)[Links to an external site.](#) Any student found responsible for academic misconduct may receive a zero for their grade on the impacted academic work (e.g., assignments, project, or exams), and academic consequences, with the possibility of expulsion.

Title IX

The UW, through [numerous policiesLinks to an external site.](#), prohibits sex- and gender-based violence, harassment, and discrimination and expects students, faculty, and staff to act professionally and respectfully in all work, learning, and research environments.

For support, resources, and reporting options related to sex- and gender-based violence, harassment, or discrimination, refer to the [UW Title IX's websiteLinks to an external site.](#), specifically the [Know Your Rights & ResourcesLinks to an external site.](#) guide. Should you wish to make the Office of the Office of the Title IX Coordinator aware of a Title IX concern, visit the [Make a Title IX ReportLinks to an external site.](#) webpage.

Please know that if you choose to disclose information to me about sex- or gender-based violence, harassment, or discrimination, I will connect you (or the person who experienced the conduct) with resources and individuals who can best provide support and options. You can also access additional resources directly:

- You can request anonymous support, from [SafeCampusLinks to an external site.](#)
- You can request confidential support, from a [confidential advocateLinks to an external site.](#)
- If you know you want to submit a formal complaint, contact the [Civil Rights Investigation OfficeLinks to an external site.](#)

Please note that some senior leaders and other specified employees have been identified as [Officials Required to Report.Links to an external site.](#) If an Official Required to Report learns of possible sex- or gender-based violence, harassment, or discrimination they are required to contact the Office of the Title IX Coordinator and report all the details they have in order to ensure that the person who experienced harm is offered support and reporting options.

Relevant Websites

- Title IX: [uw.edu/titleix/Links to an external site.](#)
- Survivor resources: [uw.edu/titleix/survivor-resources/Links to an external site.](#)
- Confidential advocates: [uw.edu/sexualassault/support/advocacy/Links to an external site.](#)
- SafeCampus: [uw.edu/safecampus/Links to an external site.](#)
- Officials Required to Report: [uw.edu/titleix/employee-reporting-expectations/Links to an external site.](#)
- Policies: [uw.edu/titleix/policies/Links to an external site.](#)

Mental Health and Wellbeing Resources

The following wellbeing & mental health resources are available to you on campus:

- [Let's Talk](#) connects you with support from a counselor without an appointment via drop-in hours.
- [The Counseling CenterLinks to an external site.](#) provides you with personal counseling, assessment, referral, and crisis intervention services (206-543-1240).
- [UW LiveWell](#) provides you with support and case consultation if you are experiencing personal hardship, including academic hardship as the result of extenuating life circumstances (206-543-6085).
- [Husky Health & Well-Being](#) provides you with a central online resource for access to health and wellness services across the campus.
- Academic Advising can help if you are experiencing challenges navigating academic commitments.
- [SafeCampusLinks to an external site.](#) is here for you to privately discuss mental, emotional, or physical safety and well-being concerns for yourself or others (206-685-SAFE [7233]). SafeCampus's team of caring professionals will provide individualized support, while discussing short- and long-term solutions and connecting you with additional resources when requested.
- [Forefront Suicide PreventionLinks to an external site.](#) provides information and services to reduce suicide by empowering individuals and communities to take sustainable action, championing systemic change, and restoring hope.
- Crisis Clinic: If you or someone you know experiences a crisis outside of business hours, please call the Crisis Clinic at 206-461-3222 or toll-free at 1-866-427-4747.
- Food and Housing: If you are experiencing food or housing insecurity, you can start with UW Emergency Aid (<https://www.washington.edu/emergencyaid/Links to an external site.>) or the UW Food Pantry (<https://www.washington.edu/anyhungryhusky/Links to an external site.>).
- Study Centers: <https://www.engr.washington.edu/current/academics/studycentersLinks to an external site.>

Privacy

It is possible that some aspects of the course will take place over zoom (e.g. office hours). While students are encouraged to turn on their cameras if they are able, there is no requirement or

penalty for keeping your camera off. For any session that is recorded on Zoom, the recording will capture the presenter's audio, video and computer screen. The recordings will only be accessible to students enrolled in the course to review materials. These recordings will not be shared with or accessible to the public. The University and Zoom have FERPA-compliant agreements in place to protect the security and privacy of UW Zoom accounts. Students who do not wish to be recorded should:

- Choose a Zoom username that does not include any personal identifying information like their name or UW Net ID; and
- Not share their computer audio or video during their Zoom sessions.

Land Acknowledgement

The University of Washington acknowledges the Coast Salish peoples of this land, the land which touches the shared waters of all tribes and bands within the Suquamish, Tulalip, and Muckleshoot nations.