CSE 5114: Data Manipulation and Management at Scale

Spring 2026

Course Description

Harnessing the full potential of large-scale data requires advanced techniques and robust tools. This course delves into the methodologies and technologies essential for managing and manipulating substantial data volumes efficiently and responsibly. In taking this course, students will learn key concepts about storing, organizing, transforming, and using large quantities of data and will get hands-on experience using industry-standard tools such as Spark, Airflow, and Kafka. Note: this course will be offered as a hybrid in person/online class this year. Prerequisite skills: comfort coding in python and SQL, understanding of databases, ability to apply basic data analysis techniques.

Course Introduction

Welcome to CSE 5114: Data Manipulation and Management at Scale! The world of data is growing at an astonishing rate, and the ability to work with massive datasets is more important than ever. Whether you're passionate about data engineering, data science, or simply curious about how to wrangle information at scale, I'm excited to embark on this journey with you. In this course, we'll focus on the practical skills and tools needed to collect, clean, organize, and manage large quantities of data—skills that are essential for anyone working with real-world data. No matter your background interests, your unique perspective is valued here, and I'm thrilled to have you as part of our learning community.

Think of CSE 5114 as your hands-on introduction to managing data at scale in the real world. While other courses may offer tidy, ready-to-analyze datasets that can be manipulated and probed locally, this class will prepare you for the messy, complex, and often imperfect data you'll encounter beyond the classroom setting. We'll explore widely used tools, techniques, and technologies for handling large datasets, and you'll gain experience with the challenges and opportunities that come with working at scale.

Throughout the semester, you'll have many opportunities to build and apply your skills. Class sessions will blend lectures with interactive exercises, giving you a chance to practice new techniques right away. Assignments will focus on the technical details of data manipulation and management at scale. You'll also complete a midterm oral exam—designed to simulate a real-world design interview—and a semester-long group project, where you'll tackle a data-driven question from start to finish. The work will be challenging, but I hope you find it engaging, rewarding, and ideally even fun!

As with the data we'll be working with, this course will evolve throughout the semester. Topics may shift to best meet your needs and ensure a high-quality learning experience, so

please treat the syllabus schedule as a flexible guide. **Your feedback is always welcome**—share your thoughts on Ed or in person, and help us make this course even better for everyone.

Course Information

- Instructor: Ilan Goodman (ilang@wustl.edu, Lopata 204C)
  - Office hours: TBA on Zoom or in Lopata 204C during in person weeks (see schedule below)
  - How to contact: Ed (default to public post but switch to private if there is an individual concern), in class, office hours
    - Note: Please do not e-mail me directly about this class—I will respond to Ed posts but may not respond to e-mail
- TAs: Daedalus Chen, Ran Duan, Aadarsha Gopala Reddy, Razi Khan, Minghe Liu, Edgar Palomino, Zichu Pan, Nancy Patel, Caitlin Pedraja, and Mohammad Rouie Miab
  - Office hours: TBA
  - How to contact: Ed, office hours
- Lecture times:
  - Section 1: 10:00-11:30AM Tuesday/Thursday in Mallinckrodt 303 when in person, online when on Zoom (see schedule below)
  - Section 2: 11:30AM-12:50PM Tuesday/Thursday in Mallinckrodt 305 when in person, online when on Zoom (see schedule below)

Learning Objectives

At a high level, the goal of this course is to give you the tools to collect, clean, organize, manage, and use large volumes of data in a messy, real world context. These are core skills for any data engineer but also indispensable for a data scientist, machine learning engineer, or software engineer. By the end of this course, you will be able to:

1. Describe the unique challenges and considerations involved in managing large-scale data, and compare approaches for handling small versus large datasets.
2. Query and optimize storage in data warehouses and NoSQL databases, including working with semi-structured data and de-normalization techniques.
3. Build and manage data pipelines using modern tools (e.g., Airflow, PySpark), and apply distributed processing paradigms such as MapReduce.
4. Explain the principles of distributed systems, including communication infrastructure, distributed storage, fault tolerance, scaling, sharding, and load balancing.
5. Develop systems for real-time data processing, including table design, message queues (e.g., Kafka), logging, and streaming frameworks (e.g., Flink).
6. Apply principles of data privacy and responsible data management, including anonymization, deletion, and designing systems with privacy in mind.

Schedule

As noted above, this schedule is tentative and may be subject to change. **Boldface type** refers to assignment and project due dates and exams. *Italics type* refers to dates or events not strictly related to this course. Classes will be online via Zoom except when noted below.

Depending on the topic, classes may be some combination of lecture, group discussion, and coding exercise. You are encouraged to bring your computer for these exercises, but if you are not able to do so, you may partner with another student for the classwork. Occasionally, a class day may be used for dedicated time to work on the group project. We will also repurpose one week of classes for final project presentations.

Since we don't have a textbook to follow for this course, I hope to make the lectures engaging and well worth your time—if we are not hitting that mark, please share feedback about what would make them more useful and enjoyable. I will attempt to record lectures and post them on Canvas, but I cannot guarantee that every lecture will be recorded. These recordings are intended to be a resource for you to review the material and in the rare event that you cannot make it to lecture (e.g., if you are sick, please stay home to recover and prevent infection spread). Many of the classes will involve small group work or interactive exercises, so I expect you will get more out of the course by attending lecture regularly than by relying on recordings.

- Module 1: Data warehouses and NoSQL databases
    - T 1/13 Introduction to the class, working with large scale data, differences with smaller scale data
    - R 1/15 Data warehouse implementation
    - T 1/20 Data warehouse implementation 2
        - In person
    - R 1/22 Introduction to Snowflake
        - In person
    - *R 1/22 Last day to add/drop/change grading basis*
    - T 1/29 Introduction to Snowflake 2
    - R 1/31 De-normalization
    - T 2/3 NoSQL and MapReduce paradigm
- Module 2: Data pipelines
    - R 2/5 Data pipelines and Airflow
    - **F 2/6 Project proposal due**
    - T 2/10 Data pipelines and Airflow 2
    - R 2/12 Debugging Airflow
    - T 2/17 Spark
        - In person
    - *R 2/19 No lecture (asynchronous Airflow and PySpark lab or video lectures)*
    - T 2/24 Spark 2
- Module 3: Streaming data
    - R 2/26 Spark streaming
    - T 3/3 Spark streaming 2
    - R 3/5 Spark streaming 3

    - *M-F 3/9-13 No class (spring break)*
    - T 3/17 Kafka
        - In person
    - R 3/19 Kafka 2
        - In person
    - T 3/24 Flink
    - R 3/26 Exam practice
- Module 4: data privacy and responsibility
    - **M-F 3/30-4/3 Oral exams (outside of lecture, covers modules 1-3)**
    - T 3/31 Responsible use of data
    - R 4/2 De-identification
    - *F 4/3 Last day for course withdrawals with a "W"*
- Module 5: Practical use of data
    - T 4/7 Data structures for streaming data
    - **W 4/8 Project progress report due**
    - R 4/9 Big data and machine learning
    - T 4/14 TBD (based on class interest)
        - In person
    - R 4/16 TBD (based on class interest)
        - In person
- Final project
    - **M-F 4/20-24 Project presentations (no lecture, outside of class)**
    - **T 4/28 Project papers and code due**

Grades

While the focus of the course is on exploration and experimentation, we still need to assign grades to reflect your mastery of the subject material. Your grade will be calculated from three components: one which you are expected to get at least 100% credit on if you are actively engaging with the class, made up of homework completion (including the project proposal and progress report) and class participation; the second made up of a midterm and group project, reflecting your understanding and mastery of the course material; and the third a class-wide incentive to fill out the end of semester course reviews. These three components will be multiplied together to yield your final grade.

To explain the rationale behind this, with the advent of LLMs, we are moving away from using homework as a key component of final grades as a department. The homework is important because it gives you the opportunity to practice the skills we're developing in this course, but we do not want there to be an incentive to use AI tools to the detriment of your own learning. Therefore, homework will be given 100% credit as long as it is completed with sufficient genuine effort. I also care deeply about improving the course and my own teaching, so I will request regular feedback, with 100% credit given for participation. Please share regular, thoughtful feedback! This course is new, so I'm actively making changes in response to student feedback. Finally, we will provide periodic opportunities for extra credit and we welcome you to explore these topics more deeply on your own, which we may also award extra credit for.

Your final grade is based on the following calculation, with more detail given in the following sections:

- Calculate **A** (which we expect you will get 100% on) by:
    - 80% homework assignments
        - Full credit for completion of all parts of the assignment within 72 hours of the due date/time
        - Feedback will be given for work submitted on time (highly recommended)
        - Credit will not be given for assignments received more than 72 hours late
    - 10% project proposal and progress report
        - Full credit for turning in a complete proposal/progress report on time
    - 10% class participation, assignment #0, Canvas surveys/quizzes, AI literacy module, and course feedback
        - Full credit may be given even without perfect attendance, but we expect you to typically have your camera on during class and actively engage during lectures and activities to earn full credit
    - Extra credit is applied here as well, so **A** can end up greater than 100%!
- Calculate **B** by:
    - 40% oral midterm
    - 30% project presentation
    - 30% project paper and code
- Calculate **C** by:
    - 95% if fewer than 25% of students submit end of semester course reviews, otherwise
    - 97% if fewer than 50% of students submit end of semester course reviews, otherwise
    - 100% if fewer than 75% of students submit end of semester course reviews, otherwise
    - 103% if fewer than 90% of students submit end of semester course reviews, otherwise
    - 105%
- Your final grade is the product of **A**, **B**, and **C** percentages

As with many courses, at or above 90% corresponds to an A, 80-89% corresponds to a B, 70-79% corresponds to a C, 65-69% corresponds to a D, and less than 65% corresponds to an F. Note that these percentages will not be rounded. Percentages in these ranges ending with 7-9 get a “+” and percentages in these ranges ending with 0-2 get a “-” (with the exception of an F). A grade of C- or better is considered a passing “pass/fail” grade. I do not expect to curve grades for this class, but I reserve the right to curve final grades upward if the distribution makes it clear that I have not done a sufficient job teaching you collectively the material.

Assignments

Assignments are opportunities for you to individually practice the skills we develop throughout the semester. Most assignments will be available for 1-2 weeks and will be due at 5PM on the due date. We will assign credit for completion, not correctness, but we expect you to

put substantial effort into the assignments for your own learning, development, and practice. If it appears you submitted a portion of the assignment but did not complete all questions in good faith, you may receive partial credit. We will not provide official course support for homework assignments after their due dates and assignments submitted more than 72 hours after the due date will not be accepted, so we recommend starting early to ensure you finish on time and keep up with the material. We will aim for each assignment to take a handful of hours—they should be challenging enough for you to productively engage with the problems, but not so large that they take several complete days apiece to complete. You should expect to spend around 30-50 hours on the assignments over the course of the semester, though it may take you more or less time depending on your background with the material. If we make any assignment too simple or too challenging, please give us that feedback so we can continue to improve the course.

You may discuss the concepts and techniques in the assignments with other students, but all the code and writeups should be yours and yours alone. **Along with each assignment, we require that you list any sources (aside from the TAs/instructor) you used and anyone you discussed the assignment with.** Aside from using an LLM (or something similar) to do the homework for you, you are welcome to look anything up on the internet or utilize tools like LLama/ChatGPT/Claude/Gemini, just like you would be able to in a job or working on your own project. That said, please give specific citations and share key queries (we want to learn how to best use these tools too!).

Midterm

The midterm will be a 20-25 minute oral exam with the instructor or a TA designed to test your conceptual understanding of the material. It is meant to mimic a data systems design interview you might find at a tech company if you were applying for a data engineering (or similar) position, so we hope you find this useful practice beyond this course. The midterms will be recorded for consistency and calibration, but the recordings will not be shared beyond the teaching team.

If you do not feel like your midterm performance matches your level of mastery of the material, you are allowed to request a second oral exam with the instructor during the week following midterms. The grade you receive on this second midterm **will overwrite your first grade whether you score higher or lower** and the second midterm questions will cover more material and may be tougher than the first midterm, so be judicious about choosing this option. There is no option to appeal this second midterm grade.

Project

The largest component of your grade comes from the semester-long project. This project is meant to give you experience working with a large volume of real-time data, including coming up with a question you want to answer or a problem you want to solve using data, finding a non-trivial data source, cleaning and curating the data, and interpreting it in a meaningful way. We hope that you can choose a topic that interests you and that you enjoy getting to focus a large chunk of time exploring it and playing around with the data. This project is meant to be

completed in groups of 2-4 students. We expect each student to spend roughly 50-70 hours on the project over the course of the semester. We require you to submit a project proposal and a progress report throughout the semester to ensure that you are on the right track. Unless requested otherwise, all members of your group will receive the same grade on the proposal, progress report, and final paper/code. The presentation will be given as a group but may be graded individually if the content is not distributed evenly.

Class Participation

We hope to make the lecture a place you want to attend, and we will allocate a small percentage of your final grade toward class participation, including active attendance, completion of in-class activities, and exit tickets. This will not be graded for correctness—as long as you make a reasonable effort, you can receive full credit. If you are sick and contagious, however, please stay home and let us know on Ed. We will post lecture slides and materials to Canvas and are happy to help you catch up if needed.

Feedback

Finally, we will also give a small amount of credit for filling out the semester-end course evaluation and providing us with feedback throughout the semester. We want to make this class as wonderful as possible, both this semester and in the future. Please help us continue to improve!

Generative AI (and Other Resources)

As this is a course that aims to give practical skills, we want the environment to be as close as possible to what you might experience outside of the classroom. To that end, you are welcome to use the internet, generative AI, or any resources you deem helpful for the sake of studying, practice questions or (fake) datasets, looking up documentation, and general efficiency to aid your learning. This is a graduate-level class, so we expect you to use these tools as is appropriate for your own development. However, you may not use these sources to write any code you do not understand or could not explain, as that would defeat the purpose of the practice. You may use generative AI however you like for the final project, but we expect the vast majority of the work to be your own (and not the product of a large language model). We also request that you include specific key genAI queries as part of your citations for your assignments and project so that we can make recommendations and improve the course for future iterations.

Ed

This term we will be using Ed for class discussion. The system is highly catered to getting you help fast and efficiently from classmates, the TA, and myself. Rather than emailing

questions to the teaching staff, I encourage you to post your questions on Ed—as a rule, we will not be responding to email for class-related queries.

Find our class signup link at: https://edstem.org/us/join/A2vryx.

Gradescope

This term we will be using Gradescope for homework submission, along with Canvas. You can find our class link at: https://www.gradescope.com/courses/1224084.

University-Wide Guidelines and Policies

Reporting Sexual Assault and Harrassment

If a student discusses or discloses an instance of sexual assault, sex discrimination, sexual harassment, dating violence, domestic violence or stalking, or if a faculty member otherwise observes or becomes aware of such an allegation, the faculty member will keep the information as private as possible they are required to immediately report it to the Department Chair or Dean or directly to the Gender Equity and Title IX Compliance Office at (314) 935-3393 or titleix@wustl.edu. They will also offer available resources, including confidential support resources through the Relationship and Sexual Violence Prevention (RSVP) at 314-935-3445. Additionally, you can report incidents or complaints to the Office of Student Conduct and Community Standards or by contacting WUPD at (314) 935-5555 or your local law enforcement agency. See: Gender Equity and Title IX Compliance Office

Disability Resources

WashU supports the right of all enrolled students to an equitable educational opportunity and strives to create an inclusive learning environment. In the event the physical or online environment results in barriers to the inclusion of a student due to a disability, they should notify the instructor as soon as possible.

Disabled students requiring adjustments to equitably complete expectations in this course should contact WashU's Disability Resources (DR) and engage in a process for determining and communicating reasonable accommodations. Because accommodations are not applied retroactively, DR recommends initiating requests prior to, or at the beginning of, the academic term to avoid delays in accessing accommodations once classes begin. Once established, responsibility for disability-related accommodations and access is shared by Disability Resources, faculty, and the student. Disability Resources: www.disability.wustl.edu; 314-935-5970

Statement on Military Service Leave

WashU recognizes that students serving in the U.S. Armed Forces and their family members may encounter situations where military service forces them to withdraw from a course of study, sometimes with little notice. Students may contact the Office of Military and Veteran Services at (314) 935-2609 or veterans@wustl.edu and their academic dean for guidance and assistance. See: https://veterans.wustl.edu/policies/policy-for-military-students/.

Preferred Name and Personal Pronouns

WashU recognizes that many students prefer to use names other than their legal ones to identify themselves. In addition, in order to affirm each person's gender identity and lived experiences, it is important that we ask and check in with others about pronouns. This simple effort can make a profound difference in a person's experience of safety, respect, and support. See: Pronouns Information and Preferred Name.

Emergency Preparedness

Before an emergency, familiarize yourself with the building(s) that you frequent. Know the layout, including exit locations, stairwells and the Emergency Assembly Point (EAP). Review the "Quick Guide for Emergencies" that is found near the door in many classrooms and main lobby areas of buildings for specific emergency information and instructions. For additional Information and EAP maps, visit https://emergency.wustl.edu/. To ensure that you receive emergency notifications, make sure your information and cell phone number is updated in SIS, and/or download the WashU Safe app and enable notifications.

To report an emergency:
Danforth Campus: (314) 935-5555
School of Medicine Campus: (314) 362-4357
North/West/South and Off Campus: 911 then (314) 935-5555

Academic Integrity

Effective learning, teaching and research all depend upon the ability of members of the academic community to trust one another and to trust the integrity of work that is submitted for academic credit or conducted in the wider arena of scholarly research. Such an atmosphere of mutual trust fosters the free exchange of ideas and enables all members of the community to achieve their highest potential.

In all academic work, the ideas and contributions of others (including generative artificial intelligence) must be appropriately acknowledged and work that is presented as original must be, in fact, original. Faculty, students and administrative staff all share the responsibility of ensuring the honesty and fairness of the intellectual environment at WashU.

For additional details on the university-wide Undergraduate Academic Integrity policy, please see:

https://wustl.edu/about/compliance-policies/academic-policies/undergraduate-student-academic-integrity-policy/

Academic integrity is a serious offense that may lead to warning, suspension, or expulsion from the University. All instances of academic integrity allegations will be reported to Academic Integrity in the Office of the Provost, who will hold an initial meeting and then determine next steps with the student. For more information on the academic integrity policy, procedures, frequently asked questions, and who to contact, visit Academic Integrity in the Office of the Provost. The academic integrity policy, process, and information listed there applies to undergraduate students enrolled in all Schools and programs and master's level students in the McKelvey School of Engineering, the Sam Fox School of Design and Visual Arts, and the School of Continuing and Professional Studies. For all other programs, please see the Contacts page.

In all cases of academic integrity violations, the instructor shall make an academic judgment about the student's grade on that work and in that course, which shall not be considered a sanction for prohibited conduct under this policy.

Religious Holidays

As home to students, faculty, and staff of all the world's major religions and as a non-sectarian institution, WashU values the rich diversity of spiritual expression and practice found on campus. It is therefore the policy of the university that students who miss class, assignments, or exams to observe a religious holiday should be accommodated. To ensure that accommodations may be made, students who plan to miss class for a religious holiday must inform their instructors in writing before the end of the third week of class, or as soon as possible if the holiday occurs during the first three weeks of the semester. Instructors should inform students on their syllabus and/or at the start of the class how they would like students to notify them of any accommodation needs related to religious observance. The University's Religious Holiday Class Absence Policy can be found here.

The Office of Religious, Spiritual and Ethical Life maintains a calendar of many religious holidays observed by the WashU community.

Unauthorized Recording and Distribution of Classroom Activities and Course Materials

Except as otherwise expressly authorized by the instructor or the university, students may not record, stream, reproduce, display, publish or further distribute any classroom activities or course materials. This includes lectures, class discussions, advising meetings, office hours, assessments, problems, answers, presentations, slides, screenshots or other materials presented as part of the course. If a student with a disability wishes to request the use of assistive technology as a reasonable accommodation, the student must first contact the Office of Disability Resources to seek approval. If recording is permitted, unauthorized use or distribution of recordings is also prohibited.

COVID-19 Health and Safety Protocols

Students experiencing symptoms consistent with COVID-19 or concerned about a possible exposure should contact Habif Health and Wellness vs. Student Health Center (314-935-6666) to arrange for testing as indicated. If a student tests positive for COVID-19, they will receive a letter with instructions about any necessary isolation that they can share with their instructors. Any accommodation needs for COVID-related absence not covered in an instructor's standard course policies should be discussed between the student and instructor.

While on campus, it is imperative that students follow all public health guidelines established to reduce the risk of COVID-19 transmission within our community.

Masking

Masking remains a valuable tool in the mitigation of COVID-19, and all respiratory illnesses. Students and instructors are encouraged to treat requests to mask with care and consideration, keeping in mind that some individuals may be at a higher risk, caring for others at a higher risk, or feeling less comfortable in a mask-optional environment. Based on monitoring of regional and campus conditions, a mask requirement may be implemented as needed.

Students with disabilities for whom masked instructors or classmates create a communication barrier are encouraged to contact Disability Resources (www.disability.wustl.edu) or talk to their instructor for assistance in determining reasonable adjustments. Adjustments may involve amplification devices, captioning, or clear masks but will not allow for the disregard of mask policies should a requirement be in place.

Additional Resources for Students

Confidential Resources for Incidents of Sexual Assault, Sex Discrimination, Sexual Harassment, Dating Violence, Domestic Violence, or Stalking

WashU is committed to offering reasonable academic supportive measures (e.g., a no-contact order, course changes) to students who are victims of relationship or sexual violence, regardless of whether they seek a formal investigation or criminal charges. If a student needs to explore options for medical care, other services, or reporting, or would like to receive individual counseling services, there are free, confidential support resources and professional counseling services available through the Relationship and Sexual Violence Prevention (RSVP) Center. If you need to request such support, please contact RSVP to schedule an appointment with a confidential and licensed counselor. Although information shared with counselors is confidential, requests for supportive measures will be coordinated with the appropriate University administrators and faculty. The RSVP Center is located in Seigle Hall, Suite 435, and can be reached at rsvpcenter@wustl.edu or (314) 935-3445. For after-hours emergency response services, call the Sexual Assault and Rape Anonymous Helpline (SARAH) at (314) 935-8080 during the academic year, or (314) 935-5555 and ask to speak with an RSVP Center Counselor on call. See: RSVP Center.

Bias Reporting and Support System (BRSS)

WashU has a non-punitive process through which students, faculty, staff, and community members who have experienced or witnessed incidents of bias, prejudice, or discrimination

against a student can report their experiences to the University's Bias Report and Support System (BRSS) team.

Center for Career Engagement (CCE)

The Center for Career Engagement provides one-on-one coaching, resources, programs and events to support the lifelong career success of all students and alumni. In addition to having your resume reviewed or fine-tuning your interviewing skills, the CCE invites you to work with us as partners at every stage of your career development as you reflect, learn and experiment. Our Certified Career Management Coaches will listen, ask questions, and provide resources to help you understand yourself, envision possibilities, prepare, search and apply, and engage in your career development.

You can select a career coach based on availability and alignment with one of our industry-aligned career communities, or you can choose a coach in the Career Exploration community.

To make an appointment:

1. Log in to Handshake
2. Click Career Center (left side tool bar)
3. Click Appointments.

The CCE is conveniently located in the Danforth University Center, Suite 110 with several additional office spaces across campus in Knight Hall 210, Bauer Hall 250, Steinberg Hall and Brown Hall.

Counseling and Psychological Services

The Center for Counseling and Psychological Services' professional staff members work with students to resolve personal and interpersonal difficulties, many of which can affect a student's academic experience. These include conflicts with or worry about friends or family, concerns about eating or drinking patterns, and feelings of anxiety, depression, and thoughts of suicide. Individual, Conjoint, and Group therapy are all provided in addition to referrals for off-campus support. Information can be found on the CCPS webpage.

The Division of Student Affairs also offers a telehealth program to students called TimelyCare. While students are encouraged to visit CCPS during business hours, this additional service also provides after-hours access to medical care and 24/7 access to mental telehealth care across the United States, with no cost at the time of the visit. 12 counseling visits are provided at no charge as well as a limited number of psychiatry appointments. Students who pay the Health and Wellness fee are eligible for this service.

Additionally, see the mental health services offered through the RSVP Center.

WashU Cares

WashU Cares specializes providing referrals and resources, both on, and off campus for mental health, medical health, financial and academic resources by using supportive case management. WashU Cares also receives reports on students who may need help connecting to resources or whom a campus partner is concerned about. If you are concerned about a student or yourself, you can file a report here: https://caresteam.washu.edu/

The Writing Center

The Writing Center offers free writing support to all WashU undergraduate and graduate students. Staff members will work with students on any kind of writing project, including essays,

writing assignments, personal statements, theses, and dissertations. They can help at any stage of the process, including brainstorming, developing and clarifying an argument, organizing evidence, or improving style. Instead of simply editing or proofreading papers, the tutors will ask questions and have a conversation with the writer about their ideas and reasoning, allowing for a higher order revision of the work. They will also spend some time looking at sentence level patterns to teach students to edit their own work.

The Center is located in Mallinckrodt, and appointments are available days and evenings Sunday through Friday. Office staff hours are Monday through Friday 10:00am to 4:00pm. Students are seen primarily by appointment, with walk-ins accepted as the schedule allows. They also have dedicated walk-in hours for undergraduates on Tuesday and Wednesday afternoons.Both in-person and online appointments are available. To make an appointment, go to writingcenter.wustl.edu. Email: writing@wustl.edu.

The Learning Center

The Learning Center provides peer-led support programs, including course-specific mentoring and academic skills coaching (study and test-taking strategies, time management, etc.), that enhance undergraduate students' academic progress. Contact them at learningcenter@wustl.edu or visit ctl.wustl.edu/learningcenter to find out what support they may offer for your classes.

Center for Diversity and Inclusion (CDI)

The Center for Diversity and Inclusion (CDI) supports and advocates for all undergraduate, graduate, and professional school students. We foster belonging for all! Visit our website for more information and resources. The CDI consists of the following offices and is physically located in the Danforth University Center (DUC) Suite 150 and the Women's Building Room 102.

- Cross-Cultural Connections (CCxN) – DUC 150
- Office for International Student Engagement (OISE) – Women's Building 102
- Office for Religious, Spiritual and Ethical Life (ORSEL) – DUC 150
- Spectrum Office (LGBTQIA+ Support) – DUC 150

The Dialogue Across Difference (DxD) program at WashU prepares students to engage in dialogue across perspectives. Students use dialogue to understand each other and see differences as learning opportunities. DxD offers 1 credit 8-week dialogue courses for undergraduate students and workshops and programs open to all graduate, undergraduate, and professional students. Visit us in DUC 340 or our website to learn more about DxD.

Gephardt Institute

Students play an essential role in a vibrant and functioning democracy. State and local elections take place throughout the year and have a direct impact on our communities. Visit vote411.org to find dates and details of upcoming elections in every state. You can register to vote, request an absentee ballot, confirm your polling location, and get Election Day reminders at https://wustl.turbovote.org for any of the 50 states and Washington D.C. WashU students are considered Missouri residents, and eligible student voters can register to vote in the state of Missouri or their home state. You need to update your voter registration every time you move, even within the same city.

Whether or not you're eligible to vote, you can participate by encouraging your friends to register and vote, engaging your peers in local issues, and taking part in other civic and community engagement activities. For more resources on voting and other civic and community engagement opportunities, including Civic Action Week, please visit http://washuvotes.washu.edu and http://gephardtinstitute.washu.edu.

University Libraries

WashU Libraries include seven unique locations across the Danforth Campus, but they are much more than just beautiful, quiet spaces for studying and group work. The Libraries include librarians for every discipline on campus, with the expertise to work with you to develop research ideas and find the best resources to meet your needs; you are also encouraged to explore our research guides, tailored for each subject and available online. The Libraries hold over five million items in the collections—print books, journals, electronic resources, databases, and millions more accessible through interlibrary loan—and you can find it all at the search on our home page. Additional resources for students include special collections, data services, citation help, digital publishing, and more. Visit the Libraries website for more details about these and other ways that the Libraries are here to support your academic success.

Engineering Communications Center

The Engineering Communications Center offers students in the McKelvey School of Engineering one-on-one help with oral presentations, writing assignments, and other communications projects. They are located in Urbauer Hall, Rm. 104. To schedule an appointment, please email the ECC faculty at ecc@seas.wustl.edu.