Henry Edwin Sever Institute
JAMES MCKELVEY SCHOOL OF ENGINEERING AT WASHINGTON UNIVERSITY

# Course Syllabus

**T – 81-558 Applications of Deep Neural Networks, Spring 2026, 3 Units**
**The Henry Edwin Sever Institute | James McKelvey School of Engineering**
**Washington University in St. Louis**

## CLASS MEETING

- **Section 1 (hybrid): room LOUDERMAN, Room 00461, 2:30, In person 1/12/2026, 1/26/2026, 2/16/2026, 3/2/2026. Other meetings via Zoom**

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## COURSE DESCRIPTION

Deep learning is a group of exciting new technologies for neural networks. It is now possible to create neural networks of much greater complexity through a combination of advanced training techniques and neural network architectural components. Deep learning allows a neural network to learn hierarchies of information in a way that is like the function of the human brain. This course will introduce the student to computer vision with Convolution Neural Networks (CNN), time series analysis with Long Short-Term Memory (LSTM), transformers, large language models (LLMs), and classic neural network structures. The focus is primarily on applying deep learning to problems, with some introduction to mathematical foundations. High-Performance Computing (HPC) aspects demonstrate how you can leverage deep learning on graphical processing units (GPUs). Students will use Python to implement deep learning using PyTorch and other libraries. It is unnecessary to know Python before this course; however, familiarity with at least one programming language is assumed. We deliver this course in a hybrid format, including classroom and online instruction.

This hybrid-format course will consist of in-person meetings, prerecorded course videos, Jupyter Notebooks containing code/reading material, as well as a weekly Zoom sync meeting.

Prerequisites – This is a technical course that will require considerable programming in the Python programming language. You should be familiar with the Python language prior to taking this course.

## INSTRUCTOR OVERVIEW

Instructor: Jeff Heaton
Vice President, Reinsurance Group of America (RGA)
Adjunct Instructor, Washington University (WUSTL)

Email: jtheaton@wustl.edu
Phone: (636) 386-7198
Note: email is the preferred means of contact for me, I try to answer all emails in 24 hours.
Office Hours: By appointment

Response Time: I will respond to emails within 24-48 hours.

I started my career in Information Technology (IT), working as a computer programmer in languages such as C/C++, Java, Python, SQL, and PHP. Backend systems that perform complex calculations on high-performance computing (HPC) operations for financial forecasting have always been my specialty. In my early career, I've worked for Anheuser Busch, Monsanto, Boeing, and MasterCard. For the past 20+ years, I've worked for Reinsurance Group of America (RGA), and am currently VP, AI Innovation at RGA.

I've always been passionate about sharing my knowledge and interest in machine learning with others. I run a popular YouTube Channel with over 90K subscribers and have over 10K Twitter followers. Teaching deep learning for Washington University was a natural extension of this, as I enjoy working with students on the latest deep learning technologies. I am often able to recruit interns from my classes to work with these technologies in my group at RGA.

I hold a Masters of Information (MIM) from Washington University, a Ph.D. in Computer Science, and am a senior member of IEEE. I am the author of a couple of books on AI and a few peer-reviewed papers for the Journal of Machine Learning Research and Genetic Programming and Evolvable Machines.

I live in Chesterfield, MO with my wife Tracy and our English Bulldog Hickory. We enjoy traveling and trying new restaurants in St. Louis. We frequently attend college events both at Washington University and St. Louis University (SLU), where my wife is an alum. For entertainment we both enjoy science fiction, particularly Star Trek and Dr. Who.

## COURSE LEARNING OBJECTIVES

By the end of this course, you will be able to:

- Explain the differences between the major technologies of deep learning.
- Design a machine learning based solution to a Kaggle competition
- Measure the performance of a deep learning-based solution.
- Solve well-defined problems with a deep learning solution.
- Check and evaluate your Python code and resolve issues

## COURSE TEXTS / MATERIALS / TECH REQUIREMENTS

Required:

- No textbook
- Reading material at: https://github.com/jeffheaton/app_deep_learning

Optional

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***Note to student**: If you will be based overseas, there may be technology access considerations. Contact your instructor if you have persistent issues accessing the course online resources.*

*Note to student: Persistent technical issues should be worked out through the WashU Tech Den at https://techden.wustl.edu/support-help/.*

## COURSE GRADE COMPOSITION

| Major Coursework Components | Component Proportion | Coursework Sub-component | Sub-component Proportion | Points |
|---|---|---|---|---|
| Icebreaker Introduction | 5% | | | 5 |
| Programming Assignments | 70% | Program 1 | 7 pts | 70 |
| | | Program 2 | 7 pts | |
| | | Program 3 | 7 pts | |
| | | Program 4 | 7 pts | |
| | | Program 5 | 7 pts | |
| | | Program 6 | 7 pts | |
| | | Program 7 | 7 pts | |
| | | Program 8 | 7 pts | |
| | | Program 9 | 7 pts | |
| | | Program 10 | 7 pts | |
| Kaggle Competition (team) | 25% | Kaggle Submission | 10 pts | 25 |
| | | Post Solution | 15 pts | |
| | | Individual Contribution | 5 | |

**Total Point: 100**

## SEVER GRADING SCALE & RUBRIC

| Letter Grade | % | Points toward GPA | High-level Description | Description |
|---|---|---|---|---|
| A+ | 98-100 | 4.0 | Rare performance of excellence | |
| A | 93-97 | 4.0 | Excellent performance | Advanced mastery of the material. Superior performance in all aspects of the course. |
| A- | 90-92 | 3.7 | Very good performance | Very good understanding of the material, although may have had some difficulties with one or two of the most advanced concepts or with solving more challenging problems that required creativity. |
| B+ | 87-89 | 3.3 | Average performance | Understands all of the key concepts. Understands most of the more tactical elements , although may have struggled with some. |
| B | 83-86 | 3.0 | Below avg. performance | Had some trouble with tactical parts of the course and missed some of the more complex concepts. |
| B- | 80-82 | 2.7 | Weak performance | Learned the more straightforward concepts, but had difficulty with more complex concepts and/or substantial difficulties with tactical parts of the course. |
| C+ | 77-79 | 2.3 | Poor performance | Learned most, but not all (to varying degrees), of the more straightforward concepts. |
| C | 73-76 | 2.0 | | |
| C- | 70-72 | 1.7 | | |
| D+ | 67-69 | 1.3 | No academic credit given. Student needs to retake the course to get credit. | |
| D | 63-66 | 1.0 | | |
| D- | 60-62 | 0.7 | | |
| F | below 60 | 0.0 | | |

***Note to the student**: Any McKelvey student is considered for probation if any of the following grade issues occurs:*

- *Student receives an F in a class.*
- *Semester GPA drops below 2.0.*
- *Cumulative GPA drops below 2.7.*

***Note to the student:** A cumulative GPA of 2.7 or above is required for graduation from a McKelvey degree program.*

| Letter Grade | % | P/F Option |
|---|---|---|
| A+ | 98-100 | *pass* |
| A | 93-97 | *pass* |
| A- | 90-92 | *pass* |
| B+ | 87-89 | *pass* |
| B | 83-86 | *pass* |
| B- | 80-82 | *pass* |
| C+ | 77-79 | *pass* |
| C | 73-76 | *pass* |
| C- | 70-72 | *pass* |
| D+ | 67-69 | *fail* |
| D | 63-66 | *fail* |
| D- | 60-62 | *fail* |
| F | below 60 | *fail* |

## COURSE GRADING POLICIES & EXPECTATIONS

1. Penalties for late work: You will lose 1/7 of the points for an assignment not submitted on time for the first week. Assignments more than a week late receive a zero.
2. Policies on missed exams & quizzes: All assignments must be completed on-time, by the due dates in Canvas, unless PRIOR arrangements have been made.
3. Regrading policy (if applicable): If you feel any of your work has been improperly graded, please email me and I am happy to discuss a regrade for an assignment.
4. Extra credits opportunities (if any): Extra credit is not provided.
5. Attendance policy: Students are expected to attend all in-person meetings, please email me ahead of time if you are unable to attend.
6. Policy for "incomplete": Students must have completed at least 3/5 of the assignments to be granted an incomplete.
7. Penalties for academic integrity issues: Students are permitted to use GenAI/ChatGPT/etc. Any student caught violating academic integrity will be reported to the university.

# WEEK-BY-WEEK COURSE SCHEDULE

***Note to the student:*** *While Canvas should be the ultimate authority on the course's week-by-week schedule, the below table depicts the week-by-week flow of the course, including major topics, readings and assignments.*

| Module | Content |
|---|---|
| Module 1<br>**Meet on 01/12/2026** | **Module 1: Python Preliminaries**<br>• 1.1 Course Overview<br>• 1.2 Introduction to Python<br>• 1.3 Python Lists, Dictionaries, Sets & JSON<br>• 1.4 File Handling<br>• 1.5 Functions, Lambdas, and Map/Reduce<br>• **We will meet on campus this week (in-class meeting #1)** |
| Module 2<br>Week of 01/19/2026 | **Module 2: Python for Machine Learning**<br>• 2.1 Introduction to Pandas for Deep Learning<br>• 2.2 Encoding Categorical Values<br>• 2.3 Grouping, Sorting, and Shuffling<br>• 2.4 Apply and Map<br>• 2.5 Feature Engineering<br>• Module 1 Program due: 01/21/2026<br>• Icebreaker due: 01/21/2026 |
| Module 3<br>**Meet on 01/26/2026** | **Module 3: PyTorch for Neural Networks**<br>• 3.1 Deep Learning Overview<br>• 3.2 Introduction to PyTorch<br>• 3.3 Feature Vector Encoding<br>• 3.4 Early Stopping and Persistence<br>• 3.5 Sequences vs Classes |

| Module | Content |
|---|---|
| | • Module 2 Program due: 01/27/2026<br>• **We will meet on campus this week (in-class meeting #2)** |
| Module 4<br>Week of 02/02/2026 | **Module 4: Training for Tabular Data**<br>• 4.1 K-Fold Cross-Validation<br>• 4.2 Training Schedules<br>• 4.3 Dropout<br>• 4.4 Batch Normalization<br>• 4.5 RAPIDS for Tabular Data<br>• Module 3 Program due: 02/03/2026 |
| Module 5<br>Week of 02/09/2026 | **Module 5: CNN and Computer Vision**<br>• 5.1 Image Processing<br>• 5.2 Convolutional Neural Networks<br>• 5.3 Pretrained Networks<br>• 5.4 Image Augmentation<br>• 5.5 YOLO<br>• Module 4 Program due: 02/10/2026 |
| Module 6<br>**Meet on 02/16/2026** | **Module 6: ChatGPT and Large Language Models**<br>• 6.1 Transformers<br>• 6.2 ChatGPT API<br>• 6.3 LLM Memory<br>• 6.4 Embeddings<br>• 6.5 Prompt Engineering<br>• Module 5 Program due: 02/17/2026 |

| Module | Content |
|---|---|
| | • **We will meet on campus this week (in-class meeting #3)** |
| Module 7<br>Week of<br>02/23/2026 | **Module 7: Image Generative Models**<br>• 7.1 Generative AI<br>• 7.2 StyleGAN3<br>• 7.3 DeOldify<br>• 7.4 Stable Diffusion<br>• 7.5 DreamBooth<br>• Module 6 Program due: 02/24/2026 |
| Module 8<br>**Meet on 03/02/2026** | **Module 8: Kaggle**<br>• 8.1 Introduction to Kaggle<br>• 8.2 Ensembles<br>• 8.3 Hyperparameters<br>• 8.4 Bayesian Optimization<br>• 8.5 Semester Kaggle<br>• Module 7 Program due: 03/03/2026<br>• **We will meet on campus this week (in-class meeting #4)** |
| Module 9<br>Week of<br>03/16/2026 | **Module 9: Facial Recognition**<br>• 9.1 Face Detection<br>• 9.2 Facial Features<br>• 9.3 Image Augmentation<br>• 9.4 Emotion Detection<br>• 9.5 Blink Efficiency<br>• Module 8 Program due: 03/17/2026 |

| Module | Content |
|---|---|
| Module 10<br>Week of<br>03/23/2026 | **Module 10: Time Series in PyTorch**<br>• Time Series Encoding<br>• Seasonality and Trend<br>• LSTM Time Series<br>• CNN Time Series<br>• Meta Prophet<br>• Module 9 Program due: 03/24/2026 |
| Module 11<br>Week of<br>03/30/2026 | **Module 11: Natural Language Processing**<br>• 11.1 NLP Overview<br>• 11.2 Hugging Face<br>• 11.3 Tokenizers<br>• 11.4 Datasets<br>• 11.5 Model Training<br>• Module 10 Program due: 03/31/2026 |
| Module 12<br>Week of<br>04/06/2026 | **Module 12: Reinforcement Learning**<br>• Gymnasium<br>• Q-Learning<br>• Stable Baselines<br>• Atari Games<br>• Future of RL |
| Module 13<br>Week of<br>04/13/2026 | **Module 13: Deployment and Monitoring**<br>• 13.1 Denoising Autoencoders<br>• 13.2 Anomaly Detection<br>• 13.3 Model Drift<br>• 13.4 TPUs |

| Module | Content |
|---|---|
| | • 13.5 Future Directions<br>• Kaggle Competition Closes: **04/19/2026 (midnight)**<br>• Kaggle Assignment due in Canvas: **04/21/2026** |
| Week 14<br>Week of<br>04/20/2026 | **Wrapup** Discuss final Kaggle results and future directions of this technology. |

## UNIVERSITY COURSE EVALUATIONS

***Note to the student:*** *Each student is asked to thoughtfully complete and submit the university course evaluation. It is fully anonymous and is one of the best tools we have to continue to improve the student experience for all students. Course evaluations become available 5 days before the end of the course and remain open for 8 days. Students receive email notification when evaluations are available to them.*

## PROFESSIONAL POLICIES

Use of Laptop Computers and Electronic Devices in the Classroom

Laptop & tablet computers, smart phones and other electronic devices can be helpful in taking notes, providing tools for course exercises and referencing course related materials. However, they can also be distracting when used for non-course related activities such as emailing & texting, posting on social media, reading news sites, shopping online, or looking at YouTube videos. Some students have even been observed working on class assignments for the same or other courses. As common sense suggests, and a March 2013 study by Faria Sana, Tina Weston and Nicholas J. Cepeda confirmed, students who are multitasking during class have less understanding and recall of what's being discussed. The study also found that "participants who were in direct view of a multitasking peer scored lower on a test compared with those who were not." *

As mentioned earlier this course is part of a professional, graduate program. Consequently, it is expected that students conduct themselves in a professional manner. This includes being engaged in the class proceedings, by attentive listening, critical thinking, asking appropriate questions and participating in active discussion, and treating others with respect. Your attendance and participation in class is important for the class and is expected to be more than just physical attendance. Engaging in non-class related activities during class time is not acceptable and disrespectful of the lecturer and other students.

** Reference the Wall Street Journal article: I'm Banning Laptops from My Classroom, July 10, 2016 by Stuart Green*
** Reference the WashU Teaching Center Article*
*https://teachingcenter.wustl.edu/resources/course-design/developing-course-policies-on-laptops-mobile-devices/ >*

Privacy and Security
Your instructors promise to respect your privacy and security. Your individual grades are yours, and will not be shared with other students. We ask that you respect the privacy of your fellow students and instructors. Recording of class sessions either audio or video is prohibited without permission from the instructor and the other class members.

Collaboration:
With the exception of your team projects, all assignments are to be completed on your own. You are encouraged to discuss ideas and techniques broadly with other class members, but all written or presentation work, whether in preliminary or final form, is to be generated by you working alone. If in doubt - *ask*.

Language Sensitivity
We are sensitive to the reality that speaking English alone is very challenging for those where English is not the primary or first language. It is also true that a common language is the only way to work and learn together. With this in mind, when in the classroom, all students should speak English at all times. While meeting with classmates on a class assignment, please be careful to speak a language that every student present (in your group) understands.

Professionalism:
You are part of a professional, graduate program. Consequently, it is expected that you and your fellow students conduct yourselves in a *professional* manner. This includes being present and on time for classes and meetings, being prepared, and participating in class discussions, group activities, projects, and working constructively in teams. The level of professionalism you exhibit throughout the course will impact your final grade. It directly affects the participation portion of the grade but is also taken into consideration in all other aspects of the course as it reflects the overall quality of professional performance.

If applicable: Ground Rules for Online Discussion & Zoom/Canvas Netiquette: What rules will you establish for appropriate participation in Zoom discussion? What elements of netiquette should students follow in live or face to face settings?

## SEVER/UNIVERSITY POLICIES & RESOURCES

### COVID-19 Health and Safety: updated Fall 2023

Students experiencing symptoms consistent with COVID-19 or concerned about a possible exposure should contact the 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.

** During periods of high transmission, it may not be feasible for all students to receive documentation from SHC. In these instances, please extend grace to students who indicate a need to isolate and allow their absence so that we may reduce the likelihood of illnesses being transmitted in our classrooms.

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.

Resources
Students and staff should refer to the following websites for guidance on next steps and contact information:

- **WashU Together: COVID-19 Response:**
  - https://covid19.wustl.edu/
- **Testing for COVID-19:**
  - https://students.wustl.edu/covid-19-tests/
- **COVID-19 Isolation Protocols for the 2023-2024 year:**
  - https://students.wustl.edu/covid-19-isolation-protocols/
- **What to do if you have been exposed to COVID-19:**
  - https://students.wustl.edu/if-exposed-covid-19/

## Academic Integrity

All students in the School of Engineering & Applied Science are expected to conform to high standards of conduct. This statement on student academic integrity is intended to provide guidelines on academic behaviors which are not acceptable.

Engineering courses typically have many problem sets assigned as homework. You are not allowed to collaborate when solving homework problems, performing lab experiments, writing

or documenting computer programs, or writing reports unless the instructor specifically states otherwise.

**It is dishonest and a violation of academic integrity if:**

1. You turn in work which is represented as yours when in fact you have significant outside help. When you turn in work with your name on it, you are in effect stating that the work is yours, and only yours.
2. You use the results of another person's work (exam, homework, computer code, lab report) and represent it as your own, regardless of the circumstances.
3. You request special consideration from an instructor when the request is based upon false information or deception.
4. You submit the same academic work to two or more courses without the permission of each of the course instructors. This includes submitting the same work if the same course is retaken.
5. You willfully damage the efforts of other students.
6. You use prepared materials in writing an in-class exam except as approved by the instructor.
7. You write on or make erasures on any test material or class assignment being submitted for re-grading.
8. You collaborate with other students planning or engaged in any form of academic dishonesty.
9. You turn in work, which is represented as a cooperative effort, when in fact you did not contribute your fair share of the effort.
10. You do not use proper methods of documentation. For example, you should enclose borrowed information in quotation marks; acknowledge material that you have abstracted, paraphrased or summarized; cite the source of such material by listing the author, title of work, publication, and page reference.
11. 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, probation, 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.

> *(*Note Instructors are encouraged to include in their syllabus a link to information on Academic Integrity policies and procedures. You are also encouraged to cover this information with your students and provide examples of what is permissible and what are the more common violations in your subject area.)*

**Turnitin** *(*Note that this should be included if you might use TurnItIn in your course at any point)*
In taking this course, students may be expected to submit papers and assignments through Turnitin for detection of potential plagiarism and other academic integrity concerns. If students do not have an account with Turnitin and/or do not utilize Turnitin when submitting their papers and assignments, the instructor may upload your paper or assignment to Turnitin for processing and review.

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.

[Note to faculty: You are welcome to list the contact information for your subject librarian directly on your syllabus, and/or reach out to your subject librarian to create a research guide curated to the needs of your class.]

Ask a Librarian
Lauren Todd, the subject librarian for engineering, is available to help with all your library and research needs. She offers virtual research help via email or one-on-one Zoom consultations.

She can help you find appropriate databases and evaluate your sources. She also provides assistance with off-campus access to the library and has tips to make your research process easier. You reach her via email at lauren.todd@wustl.edu or make a Zoom appointment here. For general guidance on Engineering Research, see Research Guides. For information on Library current operations and response to the COVID-19 outbreak, visit https://library.wustl.edu/about/covid-19/ .

English writing support:
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.

The **Engineering Communication Center** (http://engineering.wustl.edu/current-students/student-services/Pages/default.aspx) offers undergrad students, grad students, faculty & alumni of the McKelvey School of Engineering one-on-one assistance with written, oral and graphic communications, as well as job-search documents such as resumes and cover letters. To schedule an appointment, visit https://wustl.mywconline.com. For more information, you may contact the center at: ecc@wustl.edu.

English competence:
Students are encouraged to check their grammar and spelling before submitting their written works. Although, students are free to choose whatever tools best fit their need, some of the common tools for grammar, spelling, and citing references can be found in the list below.

https://www.merriam-webster.com – Merriam-Webster Dictionary [Free]
https://www.grammarly.com – Grammarly [Free & Paid Service]
http://www.gingersoftware.com – Ginger [Free & Paid Service]
http://www.citationmachine.net – Citation Machine [Free & Paid Service]

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.

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.

Sexual Harassment:
Sexual harassment is a form of discrimination that violates university policy and will not be tolerated. It is also illegal under state and federal law. Title IX of the Education Amendments of 1972 prohibits discrimination based on sex (including sexual harassment and sexual violence) in the university's educational programs and activities. Title IX also prohibits retaliation for asserting claims of sex discrimination. The university has designated the Title IX Coordinator identified below to coordinate its compliance with and response to inquiries concerning Title IX.

Reporting Sexual Harassment:
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

Confidential Resources for Instances 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.

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://carestream.washu.edu.

Disability Resources (DR):
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

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 http://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.

Preferred Name and Gender Inclusive Pronouns:
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: https://students.wustl.edu/gender-pronouns-information/, https://registrar.wustl.edu/student-records/ssn-name-changes/preferred-name/.

Military Service Leave:
Washington University 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/.

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 in-person or virtual 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.

## Faculty Resources

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

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.