

LING 6080: Topics in Computational Linguistics

Models of (morpho)phonological learning

Yang Wang

Course

Semester: Fall 2025

Time: TuTh/12:25PM-01:45PM

Textbook: None

Website: Canvas

Location: BU C 108

Prerequisites: None

Instructor

Email: yangx.wang@utah.edu

Office Hours: TuTh/3:30pm-4:30pm/by APPT¹

Pronoun: she/her/hers

Location: LNCO 2321

1 Course Description

This seminar will explore models of (morpho)phonological learning from two distinct traditions: (a). theory-driven acquisition and learnability models rooted in the linguistic literature, and (b). morphophonology-related tasks in machine learning and natural language processing.

Our goals in this course are to bring these approaches in conversation with each other, examining how they align, how they diverge, and how they relate to empirical developmental findings and human behavioral data. We will also ask how they might jointly inform our theories of phonological and morphophonological grammar development. The course will focus on models addressing core questions in morphophonological learning: phonotactic learning, segmentation/morphological analysis, alternation learning, word classes, and inflection/reinflection.

Although phonology and morphophonology will be the case study, this seminar is intended to be broadly accessible to anyone interested in bringing computational models to bear on language acquisition theories and linguistic theories. No prior background in computation is needed; we'll discuss the relevant computational approaches as we go.

2 Course Outcomes and objectives

There are three main objectives:

1. To introduce students to the field of morphophonological learning through a computational lens, including hands-on experience with relevant theory, methods and tools.
2. To develop students' overall research ability, such as critically evaluating, presenting, and discussing research articles, as well as replicating previous studies and presenting their own work.

¹I know this occasionally conflicts with the colloquia events. During these three weeks, I will be in my office from 3-3:30pm and will stay in my office for 30 more minutes.

3. To develop students' ability to conduct independent research in the area of morphophonological learning.

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

1. Identify key issues and findings in the domain of (computational) morphophonological learning
2. Replicate important previous studies and apply their methods to new data.
3. Critically evaluate articles reporting computational research on phonological learning and morphophonological learning
4. Present primary research articles and lead group discussion
5. Conduct independent research, write a research paper, and present their findings.

3 Course materials

You are not required to purchase any textbooks or materials for this class. All necessary materials, including assignments, lecture notes, slides, and readings, will be distributed through the course website on Canvas.

3.1 Software

As a programming language, we will use Python 3, run through Jupyter Notebooks, an open-source web application that allows you to create and share documents that contain live code, equations, visualizations and narrative text. You can install a Jupyter environment locally on your machines, or run them remotely via CoLab, an online environment that allows you to write and execute Python in your browser, with no configuration required and free access to GPUs. We will go over the details in the first week of classes.

4 Course requirements and grading

Grade break-down

Homework	40%			
Course participation	10%			
Final paper: presentation	10%			
Final paper: paper itself	40%			
In total	100%			
		+		-
		A	94–100%	90–93.99%
		B	87–89.99%	84–86.99%
		C	77–79.99%	74–76.99%
		D	67–69.99%	64–66.99%
		E		≤ 59.99%

Note: As a beginning graduate student, your focus should shift from concern over the grades you're earning to engaging with the course material in a way appropriate for a (novice) researcher. Even if phonology is not your concentration, it is your responsibility to approach the course not as a hurdle to clear, but as an opportunity to learn concepts and tools that are essential to you as a linguist (e.g., how to read, write and argue; how to present your ideas). Nonetheless, grades are the department's

and university's formal way of monitoring your progress, so here is how to interpret your final grades.

Grades you may receive	How to interpret it	Translation to a letter grade
4	Exceeds expectations	A+
3	Satisfactory	A
2	Near satisfactory	B
1	Unsatisfactory	C
0	No submission	E

To be clear, if you're receiving anything less than 3, you should be concerned!

4.1 Homework (40%)

There will be four homework assignments, which may include small coding exercises, problem sets, and paper reflections. All assignments will be posted on Canvas. Homework is due **the Sunday of the corresponding week. Late homework will not be accepted unless you've made specific arrangements with me.**

You are encouraged to work together on the homework, but be sure to do the write-up on your own. Homework should be typed and submitted on Canvas. While you are expected to submit all homework, for the assignments, I will disregard the one with the lowest grade when calculating final averages.

If you need help figuring out how to insert IPA symbols into your documents, see the resources on Canvas, or ask me about doing IPA in \LaTeX —it's actually pretty easy. It is generally not necessary to include a bibliography in your homework write-ups unless you consult sources beyond the course materials (readings, lectures, slides, etc.).

4.2 Attendance and course participation (10%)

This a discussion-based seminar, which means you'll be asked to participate actively in class. This requires thoroughly reading and digesting the assigned readings ahead of time, and being prepared to discuss your thoughts and questions about those readings. **10% of the final grade will be based on your presentation of some previous studies, for which you will sign up by the end of Week 2.** All discussion is expected to be respectful towards the different backgrounds, and perspectives of your fellow students and me.

This class would be a part of your journey as a graduate student and a professional linguist. While other forms of attendance and participation won't be graded directly, they will make a significant difference in your learning experience (and mine too). I can promise you'll get much more out of the course if you show up, ask questions, and share your thoughts. I always enjoy your questions, even when I am embarrassed not to have an answer.

If you tend to be shy, think of this class as a safe space to practice and grow. Engaging in discussion is part of your professional training, and there's no better place to start than right here.

4.3 Final project (presentation + paper)

In lieu of a final exam, you'll be expected to write a term paper (about 8-12 pages, double-spaced), **due by 11:59 p.m. on Friday, December 12, 2025.** To help you get going, there will be assignments

— such as a topic proposal — throughout the semester. You will give a short presentation (10-20 minutes) at the end of the semester.

5 Course schedule (tentative)

<i>Week</i>	<i>Date</i>	<i>Topic</i>	<i>Deadlines</i>
1	8/19	Introduction, syllabus, Python basics I	
	8/21	Python basics II	
2	8/26	Python basics III	
	8/28	Python basics IV	
3	9/02	Overview: morpho(phono)logy in NLP	
	9/04	Overview: (morpho)phonology in linguistic theory	
4	9/09	Phonotactics	
	9/11	Phonotactics	
5	9/16	Phonotactics	
	9/18	Phonotactics	
6	9/23	Phonotactics	
	9/25	Segmentation	
7	9/30	Segmentation	
	10/02	Segmentation	
8	10/07	<i>Fall break</i>	
	10/09	<i>Fall break</i>	
9	10/14	Segmentation	
	10/16	Segmentation	
10	10/21	Alternation & (Re)inflection	
	10/23	Alternation & (Re)inflection	
11	10/28	Alternation & (Re)inflection	
	10/30	Alternation & (Re)inflection	
12	11/04	Alternation & (Re)inflection	
	11/06	Alternation & (Re)inflection	
13	11/11	Alternation & (Re)inflection	
	11/13	Alternation: Exceptions, productivity, lexical specificity	
14	11/18	Alternation: Exceptions, productivity, lexical specificity	
	11/20	Alternation: Typology, under-resourced languages	
15	11/25	Alternation: Neural networks, Bayesian program synthesis	
	11/27	<i>Thanksgiving</i>	
16	12/02	Course wrap up	
	12/04	Course wrap up	
	12/12	Final paper due	

Note: This syllabus is meant to serve as an outline and guide for our course. Please note that I may modify it with reasonable notice to you. I may also modify the Course Schedule to accommodate the needs of our class. Any changes will be announced in class and posted on Canvas under Announcements.

6 Course policies

1. **Email policy:** please email me instead of leaving me a message on Canvas. I will do my best to respond within 24 hours on weekdays. If you haven't heard back from me within that time, feel free to follow up with another email.
2. **Office hours:** Office hours are a space for us to discuss any issues or concerns you might have with the class, and you are always welcome to drop by, whether or not you have a specific question. Beyond the designated office hours, I have an open-door policy: if you see my door open, feel free to knock, and I'll be happy to help with any questions you have.
3. Please know that my goal as an instructor is to support your success in this class and in your education as much as possible. I aim to challenge you, but not to set you up for failure. Please make use of office hours and class time to ask any questions you may have.

7 Getting help

- (a) **Accommodations.** Accommodations will be considered on an individual basis and may require documentation. Please contact Yang as soon as possible (preferably shortly before the semester begins) to request accommodations of any kind.
 - (b) **Extreme personal circumstances.** Please contact your instructor as soon as possible if an extreme personal circumstance (hospitalization, death of a close relative, natural disaster, etc.) is interfering with your ability to complete your work.
 - (c) **Religious practices.** To request an accommodation for religious practices, contact your instructor at the beginning of the semester.
 - (d) **Active duty military.** If you are a student on active duty with the military and experience issues that prevent you from participating in the course because of deployment or service responsibilities, contact Yang as soon as possible to discuss appropriate accommodations.
 - (e) **Disability access.** All written information in this course can be made available in an alternative format with prior notification to the Center for Disability Services (CDS). CDS will work with you and the instructor to make arrangements for accommodations. Prior notice is appreciated. To read the full accommodations policy for the University of Utah, please see Section Q of the Instruction & Evaluation regulations (<http://regulations.utah.edu/academics/6100.php>). If you will need accommodations in this class, contact the Center for Disability Services 801-581-5020 (<https://disability.utah.edu/>).
1. Your success at the University of Utah is important to all of us here! If you feel like you need extra support in academics, overcoming personal difficulties, or finding community, the U is here for you. Please refer to the [Student Support Services](#) page for the U for updated information. Please feel welcome to reach out to Yang to handle issues regarding your coursework.

2. Success at The University of Utah includes learning about and using available resources. The Basic Needs Collective (BNC) is a coordinated resource referral hub. They educate about and connect students to campus and community resources to help them meet their basic needs. As a central location for resource referrals related to food, housing, health insurance, managing finances, legal services, mental health, etc., any student experiencing difficulty with basic needs is encouraged to contact them. Drop into their office located in the Union basement or schedule with them online for an in-person or virtual visit through their webpage: <https://basicneeds.utah.edu/>.

8 University Policies

1. **The Americans with Disabilities Act.** The University of Utah seeks to provide equal access to its programs, services, and activities for people with disabilities. If you will need accommodations in this class, reasonable prior notice needs to be given to the Center for Disability & Access, 162 Olpin Union Building, (801) 581-5020. CDS will work with you and the instructor to make arrangements for accommodations. All written information in this course can be made available in an alternative format with prior notification to [the Center for Disability & Access](#).

Given the nature of this course, attendance is required and adjustments will only be permitted as required by Policy 6-100(III)(O). If you need to seek an ADA accommodation to request an exception to this attendance policy due to a disability, please contact the Center for Disability and Access (CDA). CDA will work with us to determine what, if any, ADA accommodations are reasonable and appropriate.

In compliance with ADA requirements, some students may need to record course content. Any recordings of course content are for personal use only, should not be shared, and should not be made publicly available. In addition, recordings should be destroyed at the conclusion of the course.

2. **University Safety Statement.** The University of Utah values the safety of all campus community members. To report suspicious activity or to request a courtesy escort, call campus police at 801-585-COPS (801-585-2677). You will receive important emergency alerts and safety messages regarding campus safety via text message. For more information regarding safety and to view available training resources, including helpful videos, visit <https://safeu.utah.edu>
3. **Addressing Sexual Misconduct.** Title IX makes it clear that violence and harassment based on sex and gender (which Includes sexual orientation and gender identity/expression) is a civil rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, color, religion, age, status as a person with a disability, veteran's status or genetic information.

If you or someone you know has been harassed or assaulted, you are encouraged to report it to the Title IX Coordinator in the Office of Equal Opportunity and Affirmative Action, 383 South University Street, 801-581-8365, or the Office of the Dean of Students, 270 Union Building, 801-581-7066. For support and confidential consultation, contact the Center for Student

Wellness, 426 SSB, 801-581-7776. To report to the police, contact the Department of Public Safety, 801-585-2677(COPS).

Lauren's Promise: Lauren's Promise is a vow that anyone – faculty, staff, students, parents, and community members – can take to indicate to others that they represent a safe haven for sharing incidents of sexual assault, domestic violence, or stalking. Anyone who makes Lauren's Promise vows to: 1.) listen to and believe those individuals who are being threatened or experiencing sexual assault, dating violence or stalking; 2.) represent a safe haven for sharing incidents of sexual assault, domestic violence, or stalking; and 3.) change campus culture that responds poorly to dating violence and stalking. By making Lauren's Promise, individuals are helping to change campus cultures that respond poorly to dating violence and stalking throughout the nation.

4. **Academic Misconduct Statement.** It is expected that students adhere to University of Utah policies regarding academic honesty, including but not limited to refraining from cheating, plagiarizing, misrepresenting one's work, and/or inappropriately collaborating. This includes the use of generative artificial intelligence (AI) tools without citation, documentation, or authorization. Students are expected to adhere to the prescribed professional and ethical standards of the profession/discipline for which they are preparing. Any student who engages in academic dishonesty or who violates the professional and ethical standards for their profession/discipline may be subject to academic sanctions as per the University of Utah's Student Code: <https://regulations.utah.edu/academics/6-410.php>
5. **Drop/Withdrawal Policies.** Students may drop a course within the first two weeks of a given semester without any penalties. Students may officially withdraw (W) from a class or all classes after the drop deadline through the midpoint of a course. A "W" grade is recorded on the transcript and appropriate tuition/fees are assessed. The grade "W" is not used in calculating the student's GPA. For deadlines to withdraw from full-term, first, and second session classes, see the U's Academic Calendar.