
LIN 828: Phonetics II

Fall 2023

Instructor

Karthik Durvasula
Office: B463 Wells Hall
E-mail: durvasul@msu.edu

Meetings

by Regular Off. hours:
Mondays, 3:00 - 5:00pm
(or) by appointment

Class schedule / location

Thursday 12:40 - 3:30pm A104 Wells Hall

Note 1: It's best to email me a day or two BEFORE you meet with me so that I can let you know if I am free at the time you plan to come.

Course goals

This course is intended to introduce students to issues related to computational modelling in phonology and phonetics. In the course, you will learn about analytic results from statistics, proofs of simple theorems that are relevant to work in phonology and phonetics, and computer implementations of simulations of models/theories.

Required readings

- All the required readings are listed in the syllabus. Almost all of the papers are accessible online and via the MSU library. I will upload any inaccessible papers to D2L.
- Some very useful video repositories
 - (a) [Abralin Youtube lectures](#)
 - (b) [SIGTYP Youtube lectures](#)

Course requirements

Attendance

Students are expected to attend and participate in all classes. It is important to attend all classes since materials that are not covered in the readings may be presented. Some materials maybe be sent via email, but you should also check with me or a classmate regarding material you may have missed.

Readings

Students are expected to do all the assigned readings. You must do the reading before the day it is discussed in class. This will make the lectures easier to follow, and you will be in a better position to ask questions about things that might not be clear to you. It will also help with your homework.

Homework

There will be a fair bit of homework in this class. It is best to finish it by the deadline. In case you encounter difficulties, please contact me in advance to figure out a new deadline for the relevant homework.

In-class discussion

Please come to class having read the assigned readings and having thought about the relevant issues carefully.

Research during the course

General critique/squib: This short paper (5-6 pages, single spaced) should be related to a proof, simulations or a model for some relevant aspect of linguistics. You will further identify relevant papers and any issues with the previous literature and propose a modification. Ideally, you will consider potential predictions of the modification, and then discuss how the predictions might address the issue you raised.

Final paper: In the paper, you will present original proofs/simulations/modelling that is an extension of the research that you identified in the *General critique/squib*. The format should closely follow the guidelines discussed in [Some notes on writing papers](#).

Grading

Grading weight		Grading scale	
Homework	40%	4.0	93% or higher
Research squib presentation/discussion	5%	3.5	85% - 92.9%
Research squib	15%	3.0	77% - 84.9%
Final paper presentation	10%	2.5	69% - 76.9%
Final paper	30%	2.0	61% - 68.9%
Total	100%	1.5	53% - 60.9%
		1.0	45% - 52.9%
		0.0	44.9% or lower

Spartan code of honor academic pledge

As a Spartan, I will strive to uphold values of the highest ethical standard. I will practice honesty in my work, foster honesty in my peers, and take pride in knowing that honor is worth more than grades. I will carry these values beyond my time as a student at Michigan State University, continuing the endeavor to build personal integrity in all that I do.

Important dates

There is always a possibility that dates/deadlines are changed. If so, I will make sure that you have enough time to plan accordingly.

Item	Date
Research squib topic presentation	October 19 (Thursday)
Research squib due	October 23 (Monday)
Final presentations	Dec 13 (Wed), 12:45pm–2:45pm or another time acceptable to all during finals week
Final paper due	During finals week (TBD)

Papers/chapters to read [list subject to variation]

1. Probability - Chapters 1-4 of (Matloff 2019), Chapter 1 of Wasserman (2004)
 - 1 Matloff, Norman (2019). *Probability and statistics for data science: Math+ R+ data*. CRC Press.
 - 2 Wasserman, Larry (2004). *All of statistics: a concise course in statistical inference*. Vol. 26. Springer.
 2. Modelling phonology using probability - rule application
 - 1 Guy, Gregory R (1991). “Explanation in variable phonology: An exponential model of morphological constraints.” *Language variation and change* 3.1, pp. 1–22.
 3. Modelling phonology using probability - phonotactics
 - 1 Coleman, John and Janet B. Pierrehumbert (1997). “Stochastic phonological grammars and acceptability.” In: *Proceedings of the 3rd Meeting of the ACL Special Interest Group in Computational Phonology*. Association for Computational Linguistics, pp. 49–56.
 4. Looking for individual variation or multiple grammars
 - 1 Sneller, Betsy (2018). *Mechanisms of phonological change*. University of Pennsylvania.
 5. Modelling in production - complex consonants vs. consonant sequences
 - 1 Shaw, Jason A., Karthik Durvasula, and Alexei Kochetov (2019). “The Temporal Basis of Complex Segments.” In: *Proceedings of the 19th International Congress of Phonetic, Sciences (ICPhS 2019)*. Ed. by Sasha Calhoun, Paola Escudero, Marija Tabain, and Paul Warren. Canberra, Australia: Australasian Speech Science and Technology Association Inc., pp. 676–680. URL: https://assta.org/proceedings/ICPhS2019/papers/ICPhS_725.pdf.
- Extra reading:
- 1 Shaw, Jason A., Sejin Oh, Karthik Durvasula, and Alexei Kochetov (2021). “Articulatory coordination distinguishes complex segments from segment sequences.” *Phonology* 38.3, pp. 437–477. DOI: [10.1017/S0952675721000269](https://doi.org/10.1017/S0952675721000269).
6. Modelling in production - absolute vs. proportional lag
 - 1 Durvasula, Karthik and Yichen Wang (2023). “Revisiting CV timing with a new technique.” In: *Proceedings of the 20th International Congress of Phonetic, Sciences (ICPhS 2023)*. Ed. by Radek Skarnitzl and Jan Volín. Prague, The Czech Republic: Guarant International, pp. 2284–2288. URL: https://drive.google.com/file/d/15U212y4_-9lyZAgmiccQYXYj9zBi_CAu/view.
 7. Modelling in production - C-centre vs. right-edge
 - 1 Shaw, Jason A. and A. I. Gafos (2015). “Stochastic Time Models of Syllable Structure.” *PLoS One* 10.5, e0124714.
- Extra reading:
- 1 Shaw, Jason A., A. I. Gafos, P. Hoole, and C. Zeroual (2009). “Syllabification in Moroccan Arabic: evidence from patterns of temporal stability in articulation.” *Phonology* 26.1, pp. 187–215. DOI: [10.1017/S0952675709001754](https://doi.org/10.1017/S0952675709001754).
 - 2 Shaw, Jason A., A. I. Gafos, P. Hoole, and C. Zeroual (2011). “Dynamic invariance in the phonetic expression of syllable structure: a case study of Moroccan Arabic consonant clusters.” *Phonology* 28.3, pp. 455–490.
8. Modelling in perception - change over time within a segment
 - 1 Norris, Dennis and James M. McQueen (2008). “Shortlist B: a Bayesian model of continuous speech recognition.” *Psychological Review* 115.2, pp. 357–395.
 9. Other potential topics: DCT and naive bayes classifier,