

LING/ANTH 520:001 | Linguistic Phonetics
Course information and policies (Syllabus)

Fall 2025 • UNC Chapel Hill • 3.0 credits

<i>Instructor</i>	Jennifer Smith (jlsmith@email.unc.edu), 309 Smith Bldg, <i>she/her</i> • You are welcome to call me Dr. Smith, Prof. Smith, or Jen.
<i>Course meets</i>	MWF 2:30–3:20, Dey 304 [F-8 on map] • In-person instruction: Lecture, discussion, hands-on labs and activities.
<i>Textbooks</i>	<i>Acoustic & Auditory Phonetics</i> , 3 ed. (K. Johnson, 2012) <i>Vowels and Consonants</i> , 3ed. (P. Ladefoged & S. Disner, 2012) • At campus bookstore. Additional readings may be distributed in class or online.
<i>Web site</i>	https://users.castle.unc.edu/~jlsmith/ling520.html • Resources, assignments, and a detailed course syllabus (updated after every class).
<i>Office hours</i>	Tu 2:00–3:15 (309 Smith Bldg) and by appointment • Come if you have questions, need help, or want more information—or just to say hi!

I. Overview and learning outcomes

Linguistic Phonetics is an introduction to the general principles and concepts of linguistic phonetics, using audiovisual materials and hands-on projects. In this course, you will:

- Learn **basic acoustics** for speech analysis
 - How are **sound waves** produced, and what are their general properties?
 - What are **formants**, and how are their frequencies determined?
- Use **speech analysis software** to investigate speech sounds
 - What are the **acoustic properties** of different kinds of sounds?
 - Which acoustic properties are **linguistically relevant**?
- Learn about the articulation of speech sounds, including the **anatomy of the vocal tract** and the **physiology of speech production**
 - How are speech sounds **articulated**? How does articulation relate to **acoustics**?
 - Which articulatory/acoustic properties are **linguistically relevant**?
- Learn how to **design an experiment** and how to **analyze quantitative data**
 - What makes a good **research question**? How can we generate and test **hypotheses**?
 - How should we plan an experiment, from **stimuli** to **data analysis**?
 - How can we interpret and communicate **numerical results**?
- Use the **International Phonetic Alphabet (IPA)** to transcribe speech sounds

II. Who is this course for?

- This course is for students in linguistics, pre-Speech & Hearing, and Data Science, or anyone who wants to learn about the acoustics and articulation of human speech. (On the LING major, minor, and BA/MA, see <https://linguistics.unc.edu/>.)
- Requirements satisfied: LING BA & MA core course | Data Science elective | Focus Capacities NatSci and Quant (see VII below for Learning Outcomes and Questions).
- This course emphasizes using quantitative (numerical) data to ask and answer questions in phonetics. Quantitative methods are useful in all areas of linguistics. Also, experiment and analysis skills are relevant far beyond the study of language!

- There are **no prerequisites**, although **LING 101** (Intro to Language) is useful background. We will frequently use high-school-level **algebra** skills.

III. Course requirements and grading information

Final grades are calculated as follows:

A. Preparation & participation	20%
B. Lab assignments	30%
C. Midterm exam	15%
Final exam	15%
D. Final project	20%

Grading scale (*letter* → *number*):

A+*	97-100 (98)	C+	77-79 (78)
A	93-96 (95)	C	73-76 (75)
A-	90-92 (91)	C -	70-72 (71)
B+	87-89 (88)	D+	67-69 (68)
B	83-86 (85)	D	60-66 (65)
B-	80-82 (81)	F	0-59

**No A+ final course grades at UNC*

A. Preparation & participation

The best way to *learn* phonetics is to *do* phonetics! Be actively engaged. To get the most out of this course, plan to **attend** class, complete **preparation** on time, and **participate** in activities and discussion. But because any of us may have health, family, or personal issues that interfere with attendance sometimes, **flexibility** is built into the preparation & participation course component.

- **Participation points:** Expect frequent **preparation questions** (submitted in Canvas before class) and **in-class activities** (completed during class, often as part of a discussion). These are graded pass/fail; a pass earns **one** participation point.
 - *Preparation questions* are graded as a pass if they (a) are complete and (b) show some application of course concepts, even if they are only partly correct. They are often based on a reading or resource assigned for the upcoming class.
 - *In-class activities* earn a point if there is evidence that you participated (this will depend on the type of activity). Some may use PollEverywhere.

Your participation & preparation grade is determined by the percentage of participation points earned out of the total possible, after the lowest 10% of your participation opportunities are dropped. (So if you earn 26/30 points, this would be $26/27 = 96.3\%$.) This allows you to miss several activities with no consequence. For this reason, there are no make-ups for missed preparation questions or in-class activities except in cases of University Approved Absence (see below).

- There is **no grade for attendance** specifically. But note that you may miss participation activities when you miss class, and remember that it is your responsibility to check the "[Daily syllabus](#)" web page for lecture slides, handouts, and any upcoming preparation or assignments. (For LING MA students, consistent attendance in all your LING courses is expected as part of your professional development. Be in contact with *all* your LING instructors if you have more than a few absences.)

Most days, **readings** and/or **online materials** will be assigned as **preparation** for class. In class, we will not simply repeat this information—we will use it and build on it. In order to keep up, you need to be prepared. The **preparation questions** on Canvas (see above) are designed to help you with this, but remember that it is your responsibility to actively think about the assigned readings and other class preparation activities.

B. Lab assignments

There are approximately 8 **lab assignments** over the course of the semester, about one each week except at midterm-exam time and final-project time. Lab assignments give you hands-on practice with speech-sound analysis using the Praat software, experiment design, and/or data analysis and interpretation. Some labs are done in **partner groups**.

- Lab assignments are usually made available on Wednesday and due the following Monday, to be submitted on Canvas (unless otherwise announced).
- Lab assignments start out simpler and become more complex as the semester progresses. The point values of the different lab assignments vary accordingly.
- For most lab assignments, there is one class day that is designated as lab work time. Use the time in class to work on your lab assignment, collaborate with your partner group, or ask me questions. **Please note that some of the lab assignments will take longer than one class period to fully complete.**

Lab assignments are graded on a numerical scale. The overall lab assignment grade is calculated as total points earned divided by total points possible.

C. Midterm and final exams

Exams will be given in our classroom. Exam dates are firm: the **midterm** will only be postponed in extreme circumstances, such as a class cancellation on that date or the class before. The **final exam** date is set by the Office of the Registrar and cannot be changed, unless you qualify for an Exam Excuse Form through the office of the Dean of Students.

If you must miss the midterm exam, contact me *in advance* to determine whether you are eligible for a make-up exam. Without prior permission, a missed exam may not be made up unless you have documentation from Health Services, your dean, or another appropriate authority to show that your absence was unexpected and unavoidable.

If you qualify for exam-related accommodations, be sure to register with the University Compliance Office ([UCO](#)) and send me an instructor notification through their portal.

- **MIDTERM EXAM: Friday, October 3, in class**
 - IPA symbols and traditional articulatory descriptions for designated vowels
 - Simple and complex waves
 - Fundamental frequency (pitch) in language
 - Standing waves, boundary conditions, and resonance frequencies
 - The source-filter model of schwa
 - Modeling and interpreting vowel formants: tube models, perturbation theory

- **FINAL EXAM: Friday, December 5, 8-11am**

The final exam will be **cumulative**, including topics from the midterm and also:

- IPA symbols and articulatory descriptions for designated consonants
- Modeling the acoustics of consonants
- Voice Onset Time, phonation, and phonation types
- Airstream mechanisms
- Experiment design and methodology in phonetics
- Data analysis and interpretation

D. Final project

The **final project** is your chance to use the phonetic analysis skills you have developed throughout the semester and apply them to an original research topic. You and your partner group will: propose your own **research question** to investigate, develop a **methodology** and **analysis** plan, carry out the necessary **experiments** and **measurements**, and **present** your work to the class. More information about the final project will be provided later in the semester.

A note on partner groups

Some of the lab assignments and the final project will be done in **partner groups**.

Reasons for incorporating groups in this course include:

- Completing an interesting and satisfying final project requires more work than one person can reasonably do, so doing the project as a partner group means you can do something more significant. Collaboration on some of the lab assignments lets you get the partner group working smoothly before you start the final project.
- You never fully understand something until you've had to explain it to someone else. As you work with your partner group, you will need to explain things to each other, and everyone will understand the course material better as a result.
- Finally, this is how real research is often done! Researchers work with other people, share the ideas, share the labor, spot opportunities or mistakes that a collaborator overlooked, present the results together, and share the credit.

I will assign the partner groups, on the basis of questionnaires, to ensure that there is a fair distribution of *skills and backgrounds* among the groups. It is your job to ensure that there is a fair distribution of *work* within each partner group, so be sure to negotiate this each time your group works together on an assignment. Grades for partnered assignments take individual contributions into account. **Partner groups typically work well in this course, but I am always available to help if problems arise.**

IV. Course policies

A. Collaboration/citation for assignments:

- You are encouraged to discuss assignments with other students, but every student or partner group must write up her/his/their assignment **independently**.
- If any **reference materials** other than course readings, lecture outlines, handouts, course web pages, or your own class notes are consulted, you are required to list such outside references in your assignment. (Outside materials will not be necessary except when specified.)

B. Artificial intelligence (AI) use: Use of generative AI tools of any kind is not permitted in this course without explicit instructions in an assignment or written permission from me. Any unauthorized use of generative AI tools will be considered an instance of academic dishonesty and will be referred to Student Conduct.

In cases where AI tools are allowed, the following policies apply:

1. AI should help you think, not think for you.
2. Engage responsibly with AI. Evaluate AI-generated outputs for potential biases,

- limitations, inaccuracies, false output, and ethical implications. Do not put personal or confidential data into these tools. Understand that you are ultimately 100% responsible for your final product.
3. The use of AI must be open and documented. Declare, explain, and cite any use of AI in the creation of your work.
 4. If you are unsure about acceptable AI use, check with me. Guidance offered in this syllabus or a specific assignment will be referenced should an issue be referred to Student Conduct for alleged academic misconduct.
- C. Devices in class: Please use laptops or other devices only for class-related activities. Studies show that students who use devices for non-class activities impair their own learning—and their neighbors’ learning too (Fried 2006; Sana, Weston, & Cepeda 2013).
- D. Accessing sound files: Some assignments require listening to sound files. You are strongly encouraged to use headphones or earphones; the audio quality will be much better. If listening to sound files will be difficult for any reason, please contact me early so that we can discuss your situation and consider alternative assignments.
- E. Recording of class sessions: In general, no audio or video recording of class sessions is permitted in this course. If you have questions or concerns, please talk with me.
- F. Late assignments: Assignments have due dates because material in this course builds on earlier concepts. However, sometimes emergencies happen or life is complicated.
- (i) If you know an assignment will be late, please email me to request an extension **at least 24 hours** before it is due. I don’t need proof that you “need” extra time, and in most cases, I will give you an extension. Note that in some cases (such as when the material will be discussed in class before your extended deadline), there will be a 10% to 20% late penalty on your grade.
 - (ii) If an emergency makes you unable to complete an assignment by its deadline, please email me to let me know as early as possible. Such assignments will generally be accepted, possibly with a late penalty.
 - (iii) Prep questions are **not** accepted late for credit, except in the case of University Excused Absences, because they are linked to class preparation and the lowest 10% of scores are dropped (see III.A above).
- G. Weather cancellations: Unless University classes are officially canceled, you should assume that our class will be held, but if there is bad weather, use your own judgment about whether it is safe for you to travel to campus. If classes are canceled, check the course web site for announcements and schedule changes.
- H. Changes to the syllabus: I, as your instructor, reserve the right to make changes to the syllabus, including exam dates (excluding the officially scheduled final examination), if unforeseen circumstances occur. Any changes will be announced as early as possible so that you can adjust your schedules.
- I. Respect and diversity: I value the perspectives of individuals from all backgrounds reflecting the diversity of our students. I define diversity broadly to include age, ethnicity, gender, gender expression, gender identity, genetic information, language variety, national origin, physical and learning ability, political background, race, religion, sex, sexual orientation, social class, veteran status, and other ways in which

individuals differ. I strive to make this classroom an inclusive space for all students, where we exchange ideas with respect. I welcome suggestions toward these goals. See also the University's [Policy Statement on Non-Discrimination](#),

Other policies and resources (UNC standard items):

- **Attendance Policy (University Policy):** As stated in the University's [Class Attendance Policy](#), no right or privilege exists that permits a student to be absent from any class meetings, except for these University Approved Absences:
 1. Authorized University activities: [University Approved Absence Office \(UAAO\)](#) website provides information and [FAQs for students](#) and [FAQs for faculty](#) related to University Approved Absences
 2. Disability/religious observance/pregnancy/short-term military service, as required by law and approved by the [University Compliance Office](#), or in the case of short-term military service, the Dean of Students
 3. Significant health condition and/or personal/family emergency as approved by the [Dean of Students Office](#), [Gender Violence Service Coordinators](#), and/or the [University Compliance Office](#)
- **Code of Conduct:** I expect all students to adhere to University policy and follow the guidelines of the UNC Student Code of Conduct. Additional information can be found at <https://studentconduct.unc.edu/>.

In any course, including mine, what constitutes cheating can change from one activity to another. Please see my guidelines for each activity, and if you are unsure, please ask me to clarify. Don't get caught up with Code of Conduct issues just because getting unauthorized help appears to be simple and untraceable. It is not!

- **Accommodations/University Compliance Office:** The [University Compliance Office \(UCO\) Accommodations Team](#) receives requests for accommodations for disability, pregnancy and related conditions, and sincerely held religious beliefs and practices through the University's Policy on Accommodations. The UCO Accommodations team determines eligibility and reasonable accommodations consistent with state and federal laws.
- **Counseling and Psychological Services (CAPS):** UNC-Chapel Hill is strongly committed to addressing the mental health needs of a diverse student body. The [Heels Care Network](#) website is a place to access the many mental health resources at Carolina. CAPS is the primary mental health provider for students, offering timely access to consultation and connection to clinically appropriate services. Go to the [CAPS website](#) or visit their facilities on the third floor of the Campus Health building for an initial evaluation to learn more. Students can also call CAPS 24/7 at 919-966-3658 for immediate assistance.
- **Title IX and Related Resources:** Any student who is impacted by discrimination, harassment, interpersonal (relationship) violence, sexual violence, sexual exploitation, or stalking is encouraged to seek resources on campus or in the community. Reports can be made [online to the UCO](#) or by contacting the [University's Title IX Coordinator](#), Elizabeth Hall, or the [Report and Response Managers](#) in the University Compliance Office (UCO). Please note that I am designated as a Responsible Employee, which means I must report to the UCO any information I receive about the forms of misconduct listed in this paragraph. If you'd like to speak with a confidential resource, those include [Counseling and Psychological Services](#),

the University's Ombuds Office, and the [Gender Violence Services Coordinators](#). Additional resources are available at [safe.unc.edu](#).

- Resources for support and learning:

[Undergraduate Testing Center](#) — Provides a proctored testing environment for students who are unable to take an exam at the normally scheduled time (with pre-arrangement by your instructor).

[Learning Center](#) — Free, popular programs to help you optimize your academic performance. Try academic coaching, peer tutoring, STEM support, ADHD/LD services, or workshops and study camps. Find tips and tools on their [website](#).

[Writing Center](#) — For free feedback on course writing projects. Coaches can assist with any writing project, including multimedia projects and application essays, at any stage of the writing process. You don't even need a draft to come visit. To schedule a 45-minute appointment, review tips, or request written feedback online, visit their [website](#).

V. Schedule of course topics

The schedule of course topics is available on the course web site, at:

<https://users.castle.unc.edu/~jlsmith/ling520/schedule.html>

VI. More about phonetics: Additional readings (Course Reserves)

Along with our course textbook, the following books are on reserve for this course (see [Course Reserves](#) on our Canvas site). These books provide more information on topics covered in class, or on additional phonetics topics.

Thomas, Erik (2011). *Sociophonetics: An introduction*. Basingstoke: Palgrave Macmillan.

- Practical information for working with spectrograms and analyzing sociolinguistic variation.

Ladefoged, Peter (2003). *Phonetic data analysis*. Malden, MA: Blackwell.

- Good tips on both acoustic analysis and practical fieldwork in phonetic research.

Ladefoged & Johnson (2011). *A Course in Phonetics*, 6th ed. Boston: Wadsworth.

- Discusses articulation, acoustics of non-English sounds in more detail than *Vowels & Consonants*.

International Phonetic Assoc. (1999). *Handbook of the International Phonetic Association*. Cambridge, UK: Cambridge University Press.

- More information about the use of the IPA and the sounds represented by the symbols. Phonetic analyses of a number of languages are also given.

Stevens, Kenneth N. (1998). *Acoustic Phonetics*. Cambridge, MA: MIT Press.

- A very comprehensive, technical book on acoustic phonetics.

VII. IDEAs in Action Focus Capacities

A. Natural Scientific Investigation (FC-NatSci)

These are the **learning outcomes** that are expected of students after completing a course.

- Demonstrate the ability to use scientific knowledge, logic, and imagination to construct and justify scientific claims about naturally occurring phenomena, including validation through rigorous empirical testing.
- Analyze and apply processes of scientific inquiry as dictated by the phenomena and questions at hand. These include generating and testing hypotheses or theories pertaining to the natural world; using logic and creativity to design investigations to test these hypotheses; collecting and

interpreting data about the natural world; making inferences that respect measurement error; building and justifying arguments and explanations; communicating and defending conclusions; revising arguments and conclusions based on new evidence and/or feedback from peers; and synthesizing new knowledge into broader scientific understanding.

- Evaluate science-related claims and information from popular and/or peer-reviewed sources by examining the relationship between the evidence, arguments, and conclusions presented and by assessing consistency with existing knowledge from valid and reliable scientific sources.
- Identify, assess, and make informed decisions about ethical issues at the intersections of the natural sciences and society.

These are the types of **questions** you should be able to answer after completing a course.

- What rules govern the natural world, and how are they discovered, tested, and validated?
- What is distinctive about the approach to understanding employed in the natural sciences?
- What challenges are encountered in making measurements of the natural world?
- What are the limits of investigation in the natural sciences?

B. Quantitative Reasoning (FC-QUANT)

These are the **learning outcomes** that are expected of students after completing a course.

- Summarize, interpret, and present quantitative data in mathematical forms, such as graphs, diagrams, tables, or mathematical text.
- Develop or compute representations of data using mathematical forms or equations as models, and use statistical methods to assess their validity.
- Make and evaluate important assumptions in the estimation, modeling, and analysis of data, and recognize the limitations of the results.
- Apply mathematical concepts, data, procedures, and solutions to make judgments and draw conclusions.
- Synthesize and present quantitative data to others to explain findings or to provide quantitative evidence in support of a position.

These are the types of **questions** you should be able to answer after completing a course.

- What is the role of mathematics in organizing and interpreting measurements of the world?
- How can mathematical models and quantitative analysis be used to summarize or synthesize data into knowledge and predictions?
- What methodology can we apply to validate or reject mathematical models or to express our degree of confidence in them?