

In a Word

Time: T/TH: 11:00-12:20
Location: GFS 118

Instructor: Hajime Hoji
Office: GFS 301T
Office hours: Tuesday/Thursday 12:30-1:30pm and by (Zoom) appointment
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The members of the human species are able to produce and comprehend the language to which they are exposed once they have reached a certain maturational stage, barring any serious impairment. One of the most fundamental working hypotheses adopted in the research program initiated by Noam Chomsky over half a century ago is that part(s) of the mind underlie(s) this ability of ours and it is called the *language faculty*. Chomsky has maintained that we should approach the *language faculty* just as natural scientists approach their subject matters.

The specific goal of this course is two-fold. On the one hand, it aims to introduce systematic aspects of language, with regard to how words are formed, how sounds are put together to form a word, how words are combined to form a larger expression, such as a sentence, and how some aspects of the "meanings" are computed, among other issues. The other aim of the course is to introduce to the students, building on the discussion and activities pertaining to the first goal, how the *language faculty* can be studied *scientifically*.

The latter aim is directly related to how we understand the term "scientifically." We can understand the term as more or less equivalent to "systematically," in the sense of making observations, coming up with a generalization based on the observations, testing the validity of the generalization against

additional observations, and stating the generalization in terms of certain concepts and relations. The activities in the first three parts of the course are related to this notion of *scientifically*.

There is another conception of *scientifically*, which focuses on what hypotheses lead to what predictions, and how the predictions can be tested experimentally. As noted above, it is hypothesized by Chomsky and others that all members of the human species, barring any serious impairment, share the core properties of the *language faculty*. According to this view, every adult speaker of a human language shares crucial properties of the *language faculty*. One can therefore ask: What kind of *hypotheses* can we put forth about properties of the *language faculty* (which is necessarily embodied in an individual)? What kind of *predictions* (about an individual) can we make based on such *hypotheses*? What kind of *experiments* can we conduct (on an individual) to test our *predictions*? How could we obtain results of our experiment (on an individual) in line with our predictions and replicate them (on any other individual)? Given the hypothesis that all members of the human species share the core properties of the *language faculty*, experimental results on an individual should be replicable with any other individual, regardless of the “languages” they speak.

During the course of the semester, you will be asked to participate in on-line experiments, and off-line experiments. The participation in the on-line (and off-line experiments) is meant to provide some preliminaries for understanding our answers to the above-mentioned questions, in relation to your own *language faculty*. To help you understand the nature of our experiment, we discuss a couple of things that do not seem to be related to our experiment: (i) the viewing of a 3-D image out of a (random-dot) stereogram and (ii) the detection of gravitational waves.

You will learn, perhaps to your surprise, that it is possible to study the *language faculty* in a way very close to physics.

The lectures, the Lab activities, assignments, etc. are all meant to help you understand what is intended by the preceding remarks. As a concrete “measuring stick” for your understanding, Chomsky’s essay “[The Galilean Challenge](#)” is included in the readings. At the beginning of the semester, you will most likely have only a very vague understanding of its content. But your understanding should improve as the semester goes by. By the end of the semester, you should have a fairly good understanding of the main point(s) of the essay and more.

The course is designed to help you:

- Gain a *scientific* understanding of human language as a system of complex mental computation.
- Appreciate how much you know, tacitly and unconsciously, as a native speaker of a human language.
- Understand the universal aspects of what underlies our ability to relate linguistic sounds/signs to meaning.

As a most important general point of the course, I would like to emphasize the importance of rational/scientific reasoning, which is of critical importance in order for an individual to live a life that they feel is meaningful, worthwhile, etc., and for an individual to contribute to the survival and the advancement of the human species, especially in light of what we are currently facing globally.

Course materials, assignments, and other content will be posted at Blackboard.

It is your responsibility to check Blackboard regularly.

You must make sure to receive email notification from Blackboard.

All the due dates are provided on the syllabus.

If we make any changes to the due dates and other parts of the syllabus, that will be announced at Blackboard. No changes should be considered *official* unless announced at Blackboard.

Readings

Reading assignments for each week are listed in the schedule given below. The relevant reading materials will be available in advance on Blackboard (Readings).

Course requirements and Grades

- Four open-book Tests. You can consult with your notes, books, dictionaries, etc., during the test. The use of electronic devices, however, is not allowed. Each Test counts 10 points for the course grade. (10x4=40)
- Four Assignments. These assignments correspond to the four Tests, and they serve a review purpose for each Test. Each assignment counts 8 points for the course grade. **The assignments are due 11:00 am on the day of the Review Session**, as stated on the syllabus. You must submit your answers at Bb by the deadline (**11:00 am on the day of the Review Session**). You will be allowed to submit your answers twice by the deadline and the highest score will be used for the calculation of the course grade.
- **Having written down the answers elsewhere by the deadline will not earn you points for the assignment.** (8x4=32)
- You must participate twice in on-line Experiments. The FULL participation each time will count 5 points for the course grade. If you do not follow the instructions fully, including the experiment-registration, you will not get the full points. Among the instructions is that you **should not participate in the on-line experiments during the time period of the lecture or the lab session** unless otherwise instructed. When you register for the Experiments, make sure to **use your name as it appears at Blackboard (i.e., your name that appears at the top-right corner of your screen)**. The deadlines for Experiment-Participation #1 and #2 are stated on the syllabus. (5x2=10)
- There will be three other experiment-related assignments.
 - One in which you record judgments in Round 1 and Round 2 of the on-line Experiments by one speaker (whose codename will be provided) and determine their significance for our hypotheses.
 - One in which you do the same as above *for yourself*, i.e., for what you have reported in the on-line experiments (Round 1 and Round 2). **If you fail to participate in on-line experiments (Round 1 and Round 2), you will not be able to complete this assignment and will not be able to get full points for this assignment. You should, therefore, make sure to participate in the on-**

line experiments (both Round 1 and Round 2). I.e., failing to participate in the on-line experiments (Round 1 and Round 2) will affect not just your points for on-line experiments but also your points for this assignment!!

- One in which you check your “current” judgments, record them, and indicate their significance for our hypotheses.
- They each count 6 points for the course grade. (6x3=18).
- We start doing these assignments in class or in Lab; you will complete it on your own and submit it. Deadlines for these assignments will be announced later.

$$40+32+10+18=100$$

- For the four Assignments, make sure that you press the 'Submit' button when you are ready to submit your answers. If you do not see the page with the 'Submit' button, you must contact your TA immediately. For each Assignment (but not for the Experiment-related assignments), you will see your score shortly after their due dates. If you do not see your score and if you think that is an error, you should contact your TA immediately. If you do not receive our reply to your email, assume that your email has not reached us, and you should try to contact us again.
- If the Blackboard does not receive your answers for an Assignment as required, your score will be zero for that assignment.
- Toward the end of the semester, you will begin to see your interim % score for your course grade by clicking “All” (instead of “Graded”) at “My Grades.” The information that you see by clicking “All” at “My Grades” may contain information from previous semesters. If that happens, you should just check the interim score that is accompanied by the correct information about LING110 this semester.

Course grades will be determined based on the following scale.

- A 94 or higher
 - A- 90 or higher and lower than 94
 - B+ 87 or higher and lower than 90
 - B 84 or higher and lower than 87
 - B- 80 or higher and lower than 84
 - C+ 77 or higher and lower than 80
 - C 74 or higher and lower than 77
 - C- 70 or higher and lower than 74
 - D+ 67 or higher and lower than 70
 - D 64 or higher and lower than 67
 - D- 60 or higher and lower than 64
 - F 59 and below
- C- or higher counts as Pass for Pass/Non Pass.

The cut-off points above may be adjusted, depending upon the overall scores of students.

Important Clarification regarding what you see under Grade Center at Blackboard:

The figure given under "**Possible Points**" for each column at the Grade Center at Blackboard is **not necessarily the same** as the percentage point given above for each task. For example, while the percentage points for Assignment 1 are 8 points for the course grade, but you may see a different figure under "**Possible Points**" for the column for Assignment 1 (such as 22). This means that the maximum points you can get for Assignment 1 is 22. If you get 20 out of 22 in the Assignment 1, you will get $8 \times (20/22) = 7.27$ out of 8 points for the course grade. When you begin to see an interim course grade in the middle of the semester, the figure is based on the points for the course grade, not based on the "actual points" you got in various tasks. You sometimes have to convert the "actual points" to the percentage points for the course grade, as explained above.

Discussion/Lab Sections

Discussion/Lab sections meet weekly at the time specified in your class schedule. They are mostly devoted to various Lab activities that will supplement the lectures. But, the main points of the entire course will be emphasized throughout the semester in the Discussion/Lab sections.

The first Lab will meet on January 12.

Homework and Assignments

All of the Assignments must be turned in or completed by the due date/time. All the due dates/time are specified on the syllabus, including on-line experiment participation assignments, but the due dates for the three other experiment-related assignments will be announced later. **Late assignments are not accepted without a very good reason (e.g. demonstrable illness or a life-changing event).**

Important: If you know that you need to turn in or complete your assignment late or if you know you will have to miss a Test, you must talk to the instructor **well ahead of time** and obtain the permission to complete the relevant task (including the taking of a Test) later than the scheduled

date/time. You must have a very good reason for this (e.g., demonstrable illness or a life-changing event).

Your continuing to be registered for the course will be regarded as confirming that you have read this syllabus **carefully** and **have agreed to the policies** stated above. Any deviation from what is stated on the syllabus will be clearly stated and posted at Blackboard. I.e., unless clearly stated and posted at Blackboard, you should assume that we follow what is stated on the syllabus.

Schedule¹

Week	Date	Lecture and Readings
Week 1	1/9	Course introduction: syllabus and the main points of the course Reading: <i>Introducing Chomsky</i> , pp. 3-19; Chomsky, " The Galilean Challenge "
	1/11	An Introduction to language faculty science Readings: <i>Introducing Chomsky</i> , pp. 3-19; <i>The Language Instinct</i> , pp. 15-24; Chomsky, " The Galilean Challenge "
Week 2	1/16	Film "Colorless Green Ideas" Reading: <i>Introducing Chomsky</i> , pp. 3-19; <i>The Language Instinct</i> , pp. 15-24; Chomsky, " The Galilean Challenge "
	1/18	Morphology I: Word-internal structure, derivational morphology: <i>unlockable</i> and <i>unhappiness</i> ; Table 4.11 of the reading; the notion of "head"; roots and stems; bound and free morphemes; affixes, suffixes, prefixes. Reading: "Morphology: The Study of Word Structure," ODA Ch. 4, pp. 111-136, 143-146.
	1/21(Sun)	Deadline for First Experiment-Participation: 8am
Week 3	1/23	Morphology II: Inflectional morphology: allophones, productivity. Reading: "Morphology: The Study of Word Structure," ODA Ch. 4, pp. 111-136, 143-146.

¹ I reserve the right to make necessary changes to this schedule. Changes will be announced in class and/or on Blackboard.

	1/25	Morphology III: Compounds: productivity, compounds vs. phrases. Reading: "Morphology: The Study of Word Structure," ODA Ch. 4, pp. 111-136, 143-146.
Week 4	1/30	Morphology IV: Content words and function words, language acquisition Reading: "Morphology: The Study of Word Structure," ODA Ch. 4, pp. 111-136, 143-146.
	2/1	Review (First Assignment (8%) Due: 11am)
Week 5	2/6	Test 1 (10%)
	2/8	The Sound of Words: Phonetics/Phonology I: the six speech organs, phonemes, contrastive sounds, non-contrastive sounds, allophones, minimal pairs, phonemic inventory, voicing, aspiration, oral cavity, pharyngeal cavity Reading: Relevant Linguistics, pp.13-24 and Ch. 3 pp. 37-42 and 46-47."
		The On-line Experiment site will be open again for the Second Experiment-Participation.
Week 6	2/13	The Sound of Words: Phonetics/Phonology II: phonological features, place of articulation (bi-labial, labio-dental, inter-dental, alveolar, palatal, velar), manner of articulation (stops, fricatives, affricates, nasals), voicing, distinct dimensions of vowel articulation (tongue height, frontness, lip roundedness, tenseness) Reading: Relevant Linguistics, pp.13-24 and Ch. 3 pp. 37-42 and 46-47."
	2/15	The Sound of Words: Phonetics/Phonology III: natural class, phonological rule, voicing assimilation, the schwa-insertion, underlying form, surface form, vowel lengthening, aspiration. Reading: Relevant Linguistics, pp.13-24 and Ch. 3 pp. 37-42 and 46-47."
Week 7	2/20	The Sound of Words: Phonetics/Phonology IV: further discussion on phonological rules, aspiration in Bangla, tone sandhi in Mandarin Chinese, pronunciation of words from a foreign language, etc.
	2/22	Review (Second Assignment (8%) Due: 11am)
	2/25(Sun)	Deadline for Second Experiment-Participation: 8am
Week 8	2/27	Test 2 (10%)

	2/29	The Meaning of Words I: Semantics Semantic competence and semantic relations Reading: Fromkin et al. (Ch. 7 pp.371-379)
Week 9	3/5	The Meaning of Words II: Propositional Logic Reading: Propositional Logic_1-4.pdf (from L.T.F. Gamut. 1991. Ch. 2, pp. 28-35.).
	3/9	The Meaning of Words III: Entailments, Quantifiers and Set Theory Reading: Fromkin et al. (Ch. 7 pp.371-379)
Spring Recess March 10-17		
Week 10	3/19	The Meaning of Words IV: Entailments, Quantifiers and Set Theory (continued) Reading: Fromkin et al. (Ch. 7 pp.371-379)
	3/21	Review (Third Assignment (8%) Due: 11am)
Week 11	3/26	Test 3 (10%)
	3/28	Re-introduction to language faculty science. The language faculty and the basic scientific method, definite predictions and definite experimental results. What is checked in the on-line experiments, an initial discussion. Readings: Feynman “Seeking New Laws” in <i>The character of physical law</i> (pp. 150-153), Hoji and Plesniak 2022 “Language Faculty Science and Physics” Sections 1 and 2 (pp. 387-403), Lasnik 1990, Syntax, pp. 5-17. You must also make sure to download and go over “ List of Experiments and Sentences ” before the lecture. You should have it handy for the rest of semester because we make frequent reference to its content.
Week 12	4/2	What is behind the experiments: Hypotheses about the language faculty of an individual, Merge, purely hierarchical mental representations, and the structural relation of c-command. An initial discussion of experimental results. Readings: The same as what is mentioned for 3/28.
	4/4	How to read Excel result charts. Going over the assignment for recording someone’s reported judgments in the on-line experiments. Readings: The same as what is mentioned for 3/28.
Week 13	4/9	Correlations of judgments, Sub-preliminary experiments, c-command detection, and Venn diagrams.

		Readings: The same as what is mentioned for 3/28.
	4/11	Replication in language faculty science, experiments in other languages; native vs. non-native speakers; factual knowledge and comprehension, experiment and demonstration. Going over the assignment for recording your current judgments in off-line experiments, as well as recording your judgments in the on-line experiments. Readings: The same as what is mentioned for 3/28. Einstein “Foreword”. Optional readings: Hoji “Galileo’s Other Challenge,” Plesniak 2022 “ Building the Linguistic Telescope ” (pptx).
Week 14	4/16	Detection of gravitational waves and detection of c-command effects; language faculty science and the brain. Readings: Penrose 2004: Section 1.4., Einstein “Physics and Reality”
	4/18	Review (Fourth Assignment (8%) Due: 11am)
Week 15	4/23	Test 4 (10%)
	4/25	Last Session: Reviewing general ideas of the course, questions from students, and discussion.

References

The relevant parts of each of the following will be posted at Blackboard or available on-line as specified.

- Anderson, S. 2010. “How Many Languages Are There In The World, Linguistic Society of America.” (Assignment #1 will refer to this.)
- Chomsky, N. 2017. “[The Galilean Challenge](#),” *Inference: International Review of Science*, Vol. 3. Issue 1.
- Einstein, A., 1936. *Physics and Reality*. The Journal of the Franklin Institute; Reprinted in: *Ideas and Opinions*. 1955. Crown Publishers, New York. (The assigned reading is pp. 293-295.)
- Einstein, A., 1953/1967. “Foreword to the English translation of Galileo's Dialogue Concerning the Two Chief World Systems, University of California Press. (The assigned reading is pp. xvii-xix)

- Feynman, R. 1965/1994. "Seeking New Law" in *The character of physical law*. New York: The Modern Library. (The Feynman lectures based on which this book was prepared can be viewed on-line. If you Google "Feynman Messenger Lectures," you will find the seven lectures. The assigned reading is pp. 150-153, which is part of his seventh lecture ("Seeking New Laws") available at: <https://www.youtube.com/watch?v=phfaDMEMFaU> (last accessed on 1/2/2023). The content of pp. 150-151 starts around 16:40 of that video.)
- Feynman, R. 1999. *The Pleasure of Finding Things Out*, Basic Books, New York. (The assigned readings are pp. 22-23 and pp. 108-109. What is in pp. 22-23 can be viewed at: <http://www.youtube.com/watch?v=IaO69CF5mbY> (last accessed on 1/7/2016).)
- Fromkin, V. (Editor) 2000. *Linguistics: An Introduction to Linguistic Theory*. Blackwell Publishers Inc. Malden, MA. (The assigned reading is pp. 371-379.)
- Gamut, L.T.F. 1991. *Logic, Language and Meaning*. Volume 1: Introduction to Logic. The University of Chicago Press. (The assigned reading is pp. 28-35.)
- Hoji, H. 2015. *Language Faculty Science*. Cambridge University Press. (The assigned reading (optional) is pp. 313-318.)
- Hoji, H.. 2017. "[Galileo's Other Challenge](#)." *Inference: International Review of Science*, Vol. 3. Issue 2.
- Hoji, H. and D. Plesniak. 2022. "Language Faculty Science and Physics", in *The Theory and Practice of Language Faculty Science*, H. Hoji, D. Plesniak, Y. Takubo (eds.) De Gruyter Mouton. (The assigned reading is its Sections 1 and 2 (pp. 387-403).)
- Justice, P. *Relevant Linguistics*. Chicago: Chicago University Press. Relevant parts on Blackboard. (The assigned readings are pp. 13-24, pp. 34-42, and pp. 46-47.)
- Lasnik, H. 1990. Syntax, in *Language: An Invitation to Cognitive Science Volume 1* (D. N. Osherson and H. Lasnik (eds.)), A Bradford Book, The MIT Press. (The assigned reading is pp. 5-17.)
- Maher, J. and J. Groves. 1998. *Introducing Chomsky*. Totem Books. (The assigned reading is pp. 3-19.)
- O'Grady, W., M. Dobrovolsky, and M. Aronoff, *Contemporary Linguistics: An Introduction*, 2nd edition. New York: St. Martin's Press (ODA). (The assigned readings are pp. 111-136 and pp. 143-146.)
- Penrose, R. 2004. *The Road to Reality: A Complete Guide to the Laws of the Universe*, Jonathan Cape. (The assigned reading is Chapter 1: Section 1.4, but you will find it useful to read the rest of the chapter.)
- Pinker, S. *The Language Instinct*. New York: William Morrow and Company. (The assigned reading is pp. 15-24.)
- Plesniak, D. 2022. "[Building the Linguistic Telescope](#)". February 2022. Talk given at the Second Annual Workshop on Language Faculty Science. Online.

Academic Integrity

The University of Southern California is foremost a learning community committed to fostering successful scholars and researchers dedicated to the pursuit of knowledge and the transmission of ideas. Academic misconduct is in contrast to the university's mission to educate students through a broad array of first-rank academic, professional, and extracurricular programs and includes any act of dishonesty in the submission of academic work (either in draft or final form).

This course will follow the expectations for academic integrity as stated in the [USC Student Handbook](#). All students are expected to submit assignments that are original work and prepared specifically for the course/section in this academic term. You may not submit work written by others or “recycle” work prepared for other courses without obtaining written permission from the instructor(s). Students suspected of engaging in academic misconduct will be reported to the Office of Academic Integrity.

Other violations of academic misconduct include, but are not limited to, cheating, plagiarism, fabrication (e.g., falsifying data), knowingly assisting others in acts of academic dishonesty, and any act that gains or is intended to gain an unfair academic advantage.

The impact of academic dishonesty is far-reaching and is considered a serious offense against the university and could result in outcomes such as failure on the assignment, failure in the course, suspension, or even expulsion from the university.

For more information about academic integrity see the [student handbook](#) or the [Office of Academic Integrity's website](#), and university policies on [Research and Scholarship Misconduct](#).

Statement on Academic Conduct and Support Systems

Academic Integrity:

The University of Southern California is a learning community committed to developing successful scholars and researchers dedicated to the pursuit of knowledge and the dissemination of ideas. Academic misconduct, which includes any act of dishonesty in the production or submission of academic work, comprises the integrity of the person who commits the act and can impugn the perceived integrity of the entire university community. It stands in opposition to the university's mission to research, educate, and contribute productively to our community and the world.

All students are expected to submit assignments that represent their own original work, and that have been prepared specifically for the course or section for which they have been submitted. You may not submit work written by others or “recycle” work prepared for other courses without obtaining written permission from the instructor(s).

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For more information about academic integrity see [the student handbook](#) or the [Office of](#)

[Academic Integrity's website](#), and university policies on [Research and Scholarship Misconduct](#).

Please ask your instructor if you are unsure what constitutes unauthorized assistance on an exam or assignment, or what information requires citation and/or attribution.

Students and Disability Accommodations:

USC welcomes students with disabilities into all of the University's educational programs. The Office of Student Accessibility Services (OSAS) is responsible for the determination of appropriate accommodations for students who encounter disability-related barriers. Once a student has completed the OSAS process (registration, initial appointment, and submitted documentation) and accommodations are determined to be reasonable and appropriate, a Letter of Accommodation (LOA) will be available to generate for each course. The LOA must be given to each course instructor by the student and followed up with a discussion. This should be done as early in the semester as possible as accommodations are not retroactive. More information can be found at osas.usc.edu. You may contact OSAS at (213) 740-0776 or via email at osasfrontdesk@usc.edu.

Support Systems:

The Student Resources page is found at:
<https://sites.google.com/view/uscphongroup/usc-support>