

# Department of Language Science

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## Gregory Hickok, Department Chair

2341 Social & Behavioral Sciences Gateway

949-824-1409

<https://www.langsci.uci.edu/>

Language is a system of communication with an extraordinarily intricate structure. The scientific study of the mental representations and biological basis of language involves many questions, including what the nature of this system is, how humans master it so early in their cognitive development, how humans use it to communicate, and how it is implemented in human biology.

The Department offers a B.A. in Language Science, an undergraduate minor, and undergraduate courses.

- Language Science, B.A.
- Language Science, Ph.D.
- Linguistics, Minor

## Faculty

Alyssa Brewer, Ph.D. Stanford University, *Associate Professor of Cognitive Sciences; Language Science* (visual, auditory, somatosensory/pain perception and attention, sensory deficits and neurological disorders, computational neuroimaging)

Penelope R. Collins, Ph.D. University of Toronto, *Professor of Education; Language Science*

Richard Futrell, Ph.D. Massachusetts Institute of Technology, *Assistant Professor of Computer Science; Language Science* (language processing, Bayesian modeling, NLP)

Brandy Gatlin-Nash, Ph.D. Florida State University, *Associate Professor of Education; Language Science*

Gregory S. Hickok, Ph.D. Brandeis University, *Distinguished Professor of Cognitive Sciences; Language Science* (neuroanatomy of language, neural plasticity, neuroimaging, cognitive neuroscience)

Young-Suk Kim, Ed.D. Harvard University, *Professor of Education; Asian American Studies; Language Science*

J. Zoe Klemfuss, Ph.D. Cornell University, *Associate Professor of Psychological Science; Language Science* (narrative development, children's autobiographical memory, sociocontextual influences on children's narrative, memory and well-being, children's eyewitness abilities)

Judith Kroll, Ph.D. Brandeis University, *Distinguished Professor of Education; Language Science; Psychological Science* (psycholinguistics, bilingualism, second language acquisition, language production, lexical processing, reading, visual cognition, gender and science)

Connor Mayer, Ph.D. University of California, Los Angeles, *Assistant Professor of Language Science* (linguistics, phonology, phonetics, computational linguistics, speech motor control)

Lisa Pearl, Ph.D. University of Maryland, College Park, *Professor of Language Science; Logic and Philosophy of Science* (language development, linguistics, computational sociolinguistics, cognitive modeling)

Elizabeth Pena, Ph.D. Temple University, *Professor of Education; Language Science*

Ruben G. Rumbaut, Ph.D. Brandeis University, *Distinguished Professor of Sociology; Chicano/Latino Studies; Criminology, Law and Society; Education; Language Science* (international migration, immigration laws, criminalization, incarceration, social inequality and mobility, race and ethnicity)

Gregory Scontras, Ph.D. Harvard University, *Associate Professor of Language Science; Logic and Philosophy of Science* (semantics, pragmatics, computational modeling, heritage bilingualism)

Sameer Singh, Ph.D. University of Massachusetts Amherst, *Associate Professor of Computer Science; Electrical Engineering and Computer Science; Language Science* (artificial intelligence and machine learning, databases and data mining, scientific and numerical computing)

Julio R. Torres, Ph.D. Georgetown University, *Associate Professor of Spanish and Portuguese; Education; Language Science* (heritage and second language acquisition; multilingualism)

Bernard H. Tranel, Ph.D. University of California, San Diego, *Professor Emeritus of Language Science* (linguistics, linguistic theory, phonology, phonetics, morphology, optimality theory, Romance languages, French linguistics, tone languages, Margi, Mixtec)

Mark J. Warschauer, Ph.D. University of Hawaii at Manoa, *Professor of Education; Informatics; Language Science; Psychological Science* (language, literacy, technology, STEM)

Julie Washington, Ph.D. University of Michigan, *Professor of Education; Language Science* (language development, language disorders, cultural-linguistic variation, poverty, reading growth)

Kai Wehmeier, Ph.D. University of Münster, *Director, Center for the Advancement of Logic, its Philosophy, History, and Applications and Dean's Professor of Logic and Philosophy of Science; Language Science; Philosophy*

Xin Xie, Ph.D. University of Connecticut, *Assistant Professor of Language Science* (psycholinguistics, speech perception and production, cross-language communication, computational modeling, neuroimaging)

## Language Science Courses

### **LSCI 1. Languages of the World. 4 Units.**

The world has over 6,000 languages, with an exuberant variety of sounds, words, grammars. Introduction to a representative (about eight), drawn from every continent. Students not expected to learn these languages, but to explore and study their structure and complexity.

(VIII)

### **LSCI 2. Discovering Language. 4 Units.**

Explores language's pervasiveness and diversity; demonstrates ways linguistics illuminates language's crucial--albeit hidden--societal role. Issues: self- and group-identification, language death, language in legal and educational settings. Illustrations: spoken and signed languages, varieties of English, Native American languages.

(VII)

### **LSCI 3. Introduction to Linguistics. 4 Units.**

Emphasis on the notion that language is a remarkable achievement of the human mind. Current insights into the nature of language. Survey of various subfields of linguistics. Introduction to linguistic analysis.

(III and V.B ).

### **LSCI 10. Introduction to Phonology. 4 Units.**

Basic concepts in phonetic description and phonological analysis.

Prerequisite: LSCI 3

(III and V.B ).

### **LSCI 20. Introduction to Syntax. 4 Units.**

Basic concepts in syntactic description and grammatical analysis.

Prerequisite: LSCI 3

(III and V.B ).

### **LSCI 43. Introduction to Symbolic Logic. 4 Units.**

An introduction to the symbolism and methods of the logic of statements, including evaluation of arguments by truth tables, the techniques of natural deduction, and semantic tableaux.

Same as LPS 30, PHIL 30.

(Vb)

### **LSCI 51. Acquisition of Language. 4 Units.**

What children say, what they mean, and what they understand. Theories about the learning of language by one-, two-, and three-year-olds. Comparison of kinds of data on which these theories are based.

Same as PSYC 56L.

(III)

### **LSCI 51B. Foundations of Bilingual Education and Bilingualism. 4 Units.**

Provides a comprehensive overview of current issues in bilingual education and bilingualism. Topics include dimensions of bilingualism, the effects of bilingualism on children's linguistic and cognitive development, bilingual education programs, literacy, special needs, and assessment.

Same as EDUC 52, HUM 52.

**LSCI 68. Introduction to Language and Culture. 4 Units.**

Explores what the study of language can reveal about ourselves as bearers of culture. After introducing some basic concepts, examines how cultural knowledge is linguistically organized and how language might shape our perception of the world.

Same as ANTH 2D.

(III)

**LSCI 99. Special Topics in Language Science. 4 Units.**

Special Topics at lower-division level.

Repeatability: Unlimited as topics vary.

**LSCI 102. Formal Languages and Automata. 4 Units.**

Formal aspects of describing and recognizing languages by grammars and automata. Parsing regular and context-free languages. Ambiguity, nondeterminism. Elements of computability; Turing machines, random access machines, undecidable problems, NP-completeness.

Prerequisite: (ICS 46 or CSE 46) and MATH 2B and ICS 6B and ICS 6D. ICS 46 with a grade of C or better. CSE 46 with a grade of C or better

Same as CS 162.

Restriction: School of Info & Computer Sci students have first consideration for enrollment. Cognitive Sciences Majors have first consideration for enrollment. Language Science Majors have first consideration for enrollment. Computer Science Engineering Majors have first consideration for enrollment.

**LSCI 106. Topics in Logic . 4 Units.**

Selected topics in mathematical or philosophical logic.

Prerequisite: (LPS 105A or PHIL 105A or LSCI 145A) and (LPS 105B or PHIL 105B or LSCI 145B) and (LPS 105C or PHIL 105C or LSCI 145C)

Repeatability: Unlimited as topics vary.

Same as LPS 106, PHIL 106.

**LSCI 106M. Computational Models of Language Learning. 4 Units.**

Focuses on using computational models to investigate questions related to language learning. Topics include computational models of language acquisition, principles underlying models of language learning and language change, computational learning theory, and modeling information extraction from language by humans.

Prerequisite: LSCI 151. LSCI 151 with a grade of A- or better

Concurrent with LSCI 206C.

**LSCI 107M. Computational Methods for Language Research. 4 Units.**

Focuses on computational methods useful for language research. Students become familiar with software and programming languages used for extracting information from electronic datasets and for creating basic simulations of linguistic cognition. No prior programming experience assumed.

Prerequisite: PSYC 150 or LSCI 155 or PSYC 156A or LSCI 151

Same as PSYC 157M.

**LSCI 109. Special Topics in Computational Linguistics. 4 Units.**

Topics in computational linguistics.

Prerequisite: Prerequisites vary.

Repeatability: Unlimited as topics vary.

**LSCI 111. Intermediate Phonology. 4 Units.**

Fundamentals of phonological theory. Intensive practice in phonological analysis.

Prerequisite: Recommended: LSCI 10

Concurrent with LING 211.

**LSCI 115. Introduction to Phonetics. 4 Units.**

Introduces students to fundamental concepts of phonetics. The sound systems of selected languages around the world, including that of English, are described in detail. Students are trained to work with speech sound recognition, phonetic transcription, and language sound production.

Prerequisite: LSCI 3

**LSCI 116. Introduction to Speech Science. 4 Units.**

Introduces students to the central topics in speech science and cultivates critical thinking in evaluating scientific literature through lectures, readings, and discussions.

**LSCI 117. Introduction to Acoustic Phonetics. 4 Units.**

Introduction to the study of the acoustic properties of speech and their relationship to speech articulation and speech perception. Topics covered include making and interpreting quantitative acoustic measurements of speech, basic experimental design, and basic data visualization and statistical analysis.

Prerequisite or corequisite: LSCI 3 and LSCI 10

Concurrent with LSCI 217.

**LSCI 119. Special Topics in Phonetics/Phonology. 4 Units.**

Topics in phonetics/phonology.

Prerequisite: Prerequisites vary.

Repeatability: Unlimited as topics vary.

**LSCI 121. Intermediate Syntax. 4 Units.**

Examines various phenomena within a generative theory of syntax, focusing on the nature of syntactic rules, representations, and constraints. Introduces methods of experimental syntax, providing students hands-on opportunity to recognize the connection(s) between theory and experiential results.

Prerequisite: LSCI 20

**LSCI 124. Current Topics in Syntactic Theory. 4 Units.**

Research seminar in syntax. Intensive study of a small number of well-defined topics which have had significant impact on the development of syntactic theory.

Repeatability: May be repeated for credit unlimited times.

**LSCI 129. Special Topics in Syntax. 4 Units.**

Topics in Syntax.

Prerequisite: Prerequisites vary.

Repeatability: Unlimited as topics vary.

**LSCI 139. Special Topics in Morphology. 4 Units.**

Topics in Morphology.

Prerequisite: Prerequisites vary.

Repeatability: Unlimited as topics vary.

**LSCI 141. Topics in Philosophy of Language. 4 Units.**

Selected topics in the philosophy of language, e.g., the nature of meaning, mechanisms of reference, speech acts.

Repeatability: Unlimited as topics vary.

Same as LPS 145, PHIL 145.

**LSCI 142. Introduction to Logic. 4 Units.**

Introduction to sentence logic, including truth tables and natural deduction; and to predicate logic, including semantics and natural deduction.

Same as LPS 104, PHIL 104.

**LSCI 143. Introduction to Formal Semantics. 4 Units.**

Introduces students to the analytical tools used in the investigation of natural language semantics. Topics include the truth-conditional approach to meaning, compositionality, scope and anaphora, generalized quantifier theory, and intensionality.

Prerequisite: LPS 30 or LSCI 43 or PHIL 30 or LPS 104 or PHIL 104 or LSCI 142. LPS 30 with a grade of C- or better. LSCI 43 with a grade of C- or better. PHIL 30 with a grade of C- or better. LPS 104 with a grade of C- or better. PHIL 104 with a grade of C- or better. LSCI 142 with a grade of C- or better

**LSCI 145A. Introduction to Set Theory and Mathematical Reasoning. 4 Units.**

An introduction to the basic working vocabulary of mathematical reasoning and proof. Topics include sets, Boolean operations, ordered n-tuples, relations, functions, induction, and their applications to mathematical philosophy.

Same as LPS 105A, PHIL 105A.

**LSCI 145B. Metalogic. 4 Units.**

Introduction to formal syntax (proof theory) and semantics (model theory) for first-order logic, including the deduction, completeness, compactness, and Löwenheim-Skolem theorems.

Prerequisite: LSCI 145A or LPS 105A or PHIL 105A

Same as LPS 105B, PHIL 105B.

Overlaps with MATH 150.

**LSCI 145C. Undecidability and Incompleteness. 4 Units.**

Introduction to the formal theory of effective processes, including recursive functions, Turing machines, Church's thesis, and proofs of Gödel's incompleteness theorem for arithmetic, and Church's undecidability theorem for first-order logic.

Prerequisite: LSCI 145B or LPS 105B or PHIL 105B

Same as LPS 105C, PHIL 105C.

Concurrent with LPS 205C.

**LSCI 149. Special Topics in Semantics. 4 Units.**

Topics in Semantics.

Prerequisite: Prerequisites vary.

Repeatability: Unlimited as topics vary.

**LSCI 151. Acquisition of Language II. 4 Units.**

Focuses on native language learning, exploring the way in which infants and very young children unconsciously uncover the rich systematic knowledge of their native language. Examines both experimental and computational studies that quantitatively investigate the "how" of language acquisition.

**LSCI 151B. Bilingual Acquisition. 4 Units.**

Focuses on different forms of bilingualism, including bilingual first language acquisition, early second language acquisition, and late second language acquisition. Research techniques discussed include theoretical, experimental, and computational methods.

Prerequisite: LSCI 151 or PSYC 156A. Placement via consent of the instructor is also accepted.

**LSCI 151C. Computational Cognitive Models of Language Acquisition. 4 Units.**

Focuses on synthesizing research literature related to computational cognitive models of language acquisition. Students develop their abilities to discuss key concepts and background assumptions, clearly present major points and findings, and concisely summarize literature from a particular perspective.

Prerequisite: LSCI 51

**LSCI 151S. Second Language Acquisition . 4 Units.**

Examines a number of theoretical perspectives that attempt to explain second language learning with a focus on adult learners. How universal constraints, individual differences, and social factors influence the task of learning a second language as an adult.

Prerequisite: LSCI 3 or SPAN 113B

**LSCI 152. Acquisition of Language III . 4 Units.**

Focuses on native language learning, exploring the way in which infants and very young children unconsciously uncover the rich systematic knowledge of their native language. Examines both experimental and computational studies that quantitatively investigate the "how" of language acquisition.

**LSCI 155. Psychology of Language. 4 Units.**

Examines language using the tools of experimental psychology. From sounds to words to spoken and written sentences, explores how language is used in real time, and how its use reveals how it is represented in the mind.

Prerequisite: PSYC 7A or PSCI 9 or PSYC 9B or PSCI 11B or LSCI 3

Same as PSYC 150.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Language Science Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**LSCI 158. Language and the Brain . 4 Units.**

Research analysis on biological bases of human linguistic capacity. Development, focusing on hemispheric specialization, plasticity; localization of specific linguistic functions in adults, with emphasis on study of aphasias; relation of linguistic capacity to general cognitive capacity, considering research on retardation.

Prerequisite: (PSYC 7A or PSB 9 or PSYC 9A or PSB 11A) and (PSYC 9B or PSB 11B or BIOL 35 or BIOL N110 or BIOL N115A)

Same as BIOL N160, PSYC 161.

Restriction: Cognitive Sciences Majors have first consideration for enrollment. Biological Sciences Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment.

**LSCI 159. Special Topics in Psycholinguistics. 4 Units.**

Topics in Psycholinguistics.

Prerequisite: Prerequisites vary.

Repeatability: Unlimited as topics vary.

**LSCI 164A. Topics in Romance Languages. 4 Units.**

Topics in Romance Languages.

Prerequisite: Prerequisites vary.

Repeatability: Unlimited as topics vary.

**LSCI 164B. French Phonetics. 4 Units.**

Study of the sound structure of French. Introduction to elements of general phonetics, contrastive (French/English) phonetics, and French phonetics and phonology. Designed to help students improve their pronunciation. Also serves as a preparatory course for language teaching.

Prerequisite: FREN 1C

**LSCI 165B. Structure of Japanese. 4 Units.**

An overview of the linguistic features of modern Japanese. Provides students with a systematic introduction to the nature and characteristics of the language.

Same as EAS 123.

**LSCI 165L. Language Change, Acquisition, and Complexity. 4 Units.**

Focuses on models of language change, acquisition, and complexity, looking at the connections between them to explain empirical data relating to the form of existing languages and how languages change over time. Emphasis is placed on computational and mathematical models.

Prerequisite: PSYC 156A. PSYC 156A with a grade of A- or better

**LSCI 168J. Improvisation, Language, and Culture. 4 Units.**

Addresses improvisation, both in performance and in everyday life. Examines improvisation as the "flexible regulation" of everyday behavior by exploring different scholarly treatments of language and interaction, and working on developing actual theatrical improvisation skills.

Same as ANTH 151A.

Restriction: Upper-division students only.

**LSCI 168S. Language and Social Cognition. 4 Units.**

Explores the relationship between language and cognition in social and cultural contexts. The overall goal is to think through how language structure and use impact how individuals perceive, think about, and understand the world around them.

Same as ANTH 150A.

Restriction: Anthropology Majors have first consideration for enrollment.

**LSCI 169. Special Topics in Language Studies. 4 Units.**

Topics in Language Studies.

Prerequisite: Prerequisites vary.

Repeatability: Unlimited as topics vary.

**LSCI 172. History of English. 4 Units.**

Traces the history of English from its roots through its earliest written records and into the present, including fundamental changes in morphology, phonology, syntax, semantics, and vocabulary, as well as social, cultural, and historical forces affecting language.

Prerequisite: LSCI 3

**LSCI 175. Language Origins: Evolution, Genetics, and the Brain. 4 Units.**

Examines how human language(s) may have originated. Studies pertinent techniques (reconstruction) and addresses related questions, including is our language faculty inborn (i.e., genetically encoded)? Can brain imaging and population genetics research help to unlock this mystery of human evolution?.

Same as ANTH 152A, GLBC 105, HIST 135G.

**LSCI 176. Introduction to Pidgins and Creoles. 4 Units.**

Explores the linguistic structures of pidgin and creole languages and examines major theories for the surprisingly high degree of similarity found across pidgin and creole languages. Includes sociolinguistic and field methods.

Prerequisite: LSCI 3 or SPAN 113A

**LSCI 179. Special Topics in Historical Linguistics. 4 Units.**

Topics in Historical Linguistics.

Prerequisite: Prerequisites vary.

Repeatability: Unlimited as topics vary.

**LSCI 182V. Language and Literacy. 4 Units.**

Addresses the linguistic principles and processes that underlie oral and written language proficiency. Emphasis is on how to use phonology, morphology, orthography, semantics, syntax, and pragmatics to support literacy and oral language development for K-12 students.

Same as EDUC 151, PSCI 192V.

Restriction: Language Science Majors have first consideration for enrollment. Psychological Science Majors have first consideration for enrollment. Education Majors have first consideration for enrollment. Psychology and Social Behavior Majors have first consideration for enrollment. Psychology Majors have first consideration for enrollment. Social Ecology Majors have first consideration for enrollment.

**LSCI 189. Special Topics in Applied Language Science: Writing Skills for Language Science. 4 Units.**

Topics in Applied Language Science.

Prerequisite: Prerequisites vary.

Repeatability: Unlimited as topics vary.

**LSCI 195A. Language Science Research I. 4 Units.**

Provides students with in-depth experience in different facets of research in language science. It includes theoretical, behavioral, computational, and/or applied language science topics and methodologies.

Prerequisite: Permission of faculty advisor. If this is not the same faculty member as the course instructor, the faculty advisor will coordinate with the course instructor when it comes to assessing the student's research process at the end of each quarter.

Repeatability: May be repeated for credit unlimited times.

**LSCI 195B. Language Science Research II. 4 Units.**

Provides students with in-depth experience in different facets of research in language science. It includes theoretical, behavioral, computational, and/or applied language science topics and methodologies.

Prerequisite: Permission of faculty advisor. If this is not the same faculty member as the course instructor, the faculty advisor will coordinate with the course instructor when it comes to assessing the student's research process at the end of each quarter.

Repeatability: May be repeated for credit unlimited times.

**LSCI 195C. Language Science Research III. 4 Units.**

Provides students with in-depth experience in different facets of research in language science. It includes theoretical, behavioral, computational, and/or applied language science topics and methodologies.

Prerequisite: Permission of faculty advisor. If this is not the same faculty member as the course instructor, the faculty advisor will coordinate with the course instructor when it comes to assessing the student's research process at the end of each quarter.

Repeatability: May be repeated for credit unlimited times.

**LSCI 195W. Writing Skills for Language Science. 4 Units.**

Focuses on written technical communication skills in language science. Topics include the scientific publication process (focusing on research abstracts), how to write for pieces of different lengths, and writing for different audiences.

(Ib)

**LSCI 198. Directed Group Study. 4 Units.**

Directed study with Linguistics faculty.

Repeatability: Unlimited as topics vary.

**LSCI 199. Independent Study. 4 Units.**

Independent research with Linguistics faculty. Students may enroll for only one 199 each quarter.

Repeatability: May be repeated for credit unlimited times.

**LSCI 201A. Language Science Research. 1.3 Unit.**

Involves colloquia and scientific reports by faculty, students, and visitors. Students are exposed to current language science research and gain experience in active listening and scientific discourse.

Repeatability: Unlimited as topics vary.

Restriction: Graduate students only. Language Science Majors only.

**LSCI 201B. Language Science Research . 1.3 Unit.**

Involves colloquia and scientific reports by faculty, students, and visitors. Students are exposed to current language science research and gain experience in active listening and scientific discourse.

Grading Option: In Progress (Letter Grade with S/U).

Repeatability: Unlimited as topics vary.

Restriction: Graduate students only. Language Science Majors only.

**LSCI 201C. Language Science Research. 1.3 Unit.**

Involves colloquia and scientific reports by faculty, students, and visitors. Students are exposed to current language science research and gain experience in active listening and scientific discourse.

Repeatability: Unlimited as topics vary.

Restriction: Graduate students only. Language Science Majors only.

**LSCI 202A. Skills for Language Science I. 4 Units.**

Focuses on computational skills for language science research. Topics include computational literacy, programming languages, and database interfaces that are useful for language science research, allowing for general scripting and file manipulation, and enabling statistical analysis and data visualization.

Restriction: Graduate students only.



**LSCI 202B. Skills for Language Science II. 4 Units.**

Introduction to the scientific publication process and practice of scientific writing skills.

Prerequisite: LSCI 202A. LSCI 202A with a grade of B- or better

Restriction: Graduate students only.

**LSCI 202C. Skills for Language Science III. 4 Units.**

Introduction to scientific presentation for audiences of different backgrounds and practice of scientific presentations skills.

Prerequisite: LSCI 202B. LSCI 202B with a grade of B- or better

Repeatability: May be taken for credit for 4 units as topics vary.

Restriction: Graduate students only.

**LSCI 202D. Advanced Skills for Language Science . 1.3 Unit.**

The practice of advanced professional writing skills, including the writing of grants. Students bring their own academic material to the workshop.

Prerequisite: LSCI 202C. LSCI 202C with a grade of B or better

Restriction: Graduate students only.

**LSCI 202E. Advanced Skills for Language Science II. 1.3 Unit.**

The practice of advanced professional writing skills, including the writing of research statements and related documents. Students bring their own academic material to the workshop.

Prerequisite: LSCI 202D. LSCI 202D with a grade of B or better

Restriction: Graduate students only.

**LSCI 202F. Advanced Skills for Language Science III. 1.3 Unit.**

The practice of advanced professional writing skills, including the writing of journal articles. Students bring their own academic material to the workshop.

Prerequisite: LSCI 202E. LSCI 202E with a grade of B or better

Restriction: Graduate students only.

**LSCI 206C. Computational Models of Language Learning. 4 Units.**

Focuses on computational models of native language learning, exploring how probabilistic learning and inference fare on difficult case studies within language acquisition. In all cases, grounds the learning models in available empirical data and considers their psychological plausibility.

Prerequisite: LSCI 251. LSCI 251 with a grade of B- or better

Same as PSYC 245M.

Restriction: Graduate students only.

Concurrent with LSCI 106M.

**LSCI 209. Special Topics in Computational Linguistics. 1-4 Units.**

Focuses on ongoing research in linguistics. Variable units based on course content, as determined by Department. May be repeated for credit as topic varies.

Repeatability: May be repeated for credit unlimited times.

Restriction: Graduate students only.

Concurrent with LSCI 109.

**LSCI 217. Introduction to Acoustic Phonetics. 4 Units.**

Introduction to the study of the acoustic properties of speech and their relationship to speech articulation and speech perception. Topics covered include making and interpreting quantitative acoustic measurements of speech, basic experimental design, and basic data visualization and statistical analysis.

Restriction: Graduate students only.

Concurrent with LSCI 117.

**LSCI 219. Special Topics in Phonetics and Phonology . 4 Units.**

Topics in phonetics and phonology.

Prerequisite: Prerequisites vary.

Repeatability: Unlimited as topics vary.

Restriction: Graduate students only.

**LSCI 229. Special Topics in Syntax. 4 Units.**

Varied topics in syntax.

Prerequisite: Prerequisites vary.

Repeatability: Unlimited as topics vary.

Restriction: Graduate students only.

**LSCI 239. Special Topics in Morphology. 4 Units.**

Topics in morphology.

Prerequisite: Prerequisites vary.

Repeatability: Unlimited as topics vary.

Restriction: Graduate students only.

**LSCI 248M. Modal Logic. 4 Units.**

Introduction to modal logic methods and their application.

Restriction: Graduate students only.

**LSCI 249. Special Topics in Semantics. 4 Units.**

Varied topics in semantics.

Repeatability: Unlimited as topics vary.

Restriction: Graduate students only.

**LSCI 250. Psycholinguistics. 4 Units.**

Examines how language is used in real time, and how its use reveals how it is represented in the mind and the brain.

Restriction: Graduate students only.

**LSCI 250B. Bilingualism. 4 Units.**

Examines how bilingualism interfaces with language representation, language use, and language development.

Restriction: Graduate students only.

**LSCI 250H. Heritage Language Acquisition. 4 Units.**

Examines how heritage languages are represented in speakers' minds, processed in real time, and acquired.

Restriction: Graduate students only.

**LSCI 251. Language Acquisition. 4 Units.**

Focuses on native language learning, exploring the way in which infants and very young children unconsciously uncover the rich systematic knowledge of their native language. Examines both experimental and computational studies that quantitatively investigate the "how" of language acquisition.

Restriction: Graduate students only.

**LSCI 251A. Atypical Acquisition. 4 Units.**

Focuses on different types of atypical acquisition, including acquisition in special populations and acquisition under atypical circumstances. Research techniques discussed include theoretical, experimental, and computational methods.

Restriction: Graduate students only.

Concurrent with LSCI 151A.

**LSCI 251C. Computational Cognitive Models of Language Acquisition. 4 Units.**

Focuses on synthesizing research literature related to computational cognitive models of language acquisition. Students develop their abilities to discuss key concepts and background assumptions, clearly present major points and findings, and concisely summarize literature from a particular perspective.

Restriction: Graduate students only.

**LSCI 253M. Experimental Methods for Language Research. 4 Units.**

Focuses on experimental methods useful for language research. Students become familiar with software and programming languages used for implementing and analyzing behavioral experiments.

Restriction: Graduate students only.

**LSCI 259. Special Topics in Psycholinguistics. 4 Units.**

Topics in Psycholinguistics. May be repeated for credit as topic varies.

Repeatability: Unlimited as topics vary.

Restriction: Graduate students only.

**LSCI 265L. Language Change, Acquisition, and Complexity. 4 Units.**

Focuses on models of language change, acquisition, and complexity, looking at the connections between them to explain empirical data relating to the form of existing languages and how languages change over time. Emphasis is placed on computational and mathematical models.

Restriction: Graduate students only.

Concurrent with LSCI 165L.

**LSCI 269. Special Topics in Language Studies. 4 Units.**

Varied topics in language studies.

Repeatability: Unlimited as topics vary.

Restriction: Graduate students only.

**LSCI 279. Special Topics in Language Change. 4 Units.**

Varied topics in language change.

Prerequisite: Prerequisites vary.

Repeatability: Unlimited as topics vary.

Restriction: Graduate students only.

**LSCI 281L. Language Learning with Digital Media. 4 Units.**

Provides students with a graduate-level introduction to key issues of digital media in second-language teaching and learning.

Restriction: Graduate students only.

**LSCI 281S. Second Language Acquisition and Teaching. 4 Units.**

Explores the prevailing paradigms that seek to account for how adults learn second languages (L2s) in instructed settings.

Restriction: Graduate students only.

**LSCI 290. Dissertation Research. 4-12 Units.**

Dissertation Research.

Repeatability: Unlimited as topics vary.

Restriction: Graduate students only.

**LSCI 299. Independent Study. 1-12 Units.**

Independent study. Research with language science faculty.

Repeatability: Unlimited as topics vary.

Restriction: Graduate students only.