**LINGUISTICS**

**Director of undergraduate studies:** Raffaella Zanuttini, 209 DOW, 432-2452, raffaella.zanuttini@yale.edu; ling.yale.edu

Linguistics is the scientific study of language. The major in Linguistics offers a program of study leading toward an understanding of phonological, grammatical, and semantic structure and of various approaches to descriptive, experimental, and historical linguistics. Majors may concentrate on theoretical, experimental, or computational linguistics, on various aspects of comparative grammar, or on a particular family of languages. Interested students should consult the director of undergraduate studies.

**COURSES FOR NONMAJORS AND MAJORS**

Students with no previous background in linguistics are encouraged to approach the field by taking a 100-level course.

**REQUIREMENTS OF THE MAJOR**

The major requires twelve term courses in linguistics and related areas, distributed as follows:

1. **Breadth requirement** (four courses). All majors must take a course in each of the core areas of phonology (LING 232) and syntax (LING 253). In addition, at least one course must be taken in any two of the six remaining core areas of linguistics: phonetics, morphology, semantics/pragmatics, computational linguistics, language and mind/brain, and historical linguistics.

2. **Depth requirement** (two courses). In one of the eight core areas of linguistics, students must take two additional courses beyond the introductory level.

3. **Electives** (four courses). Four additional courses relating to linguistics are required, at least one of which must be at the 200 level or above. Electives may be chosen from courses offered by the Linguistics department or, with approval of the director of undergraduate studies, from related courses in programs such as Anthropology, Classics, Cognitive Science, Computer Science, English, Philosophy, Psychology, or foreign languages.

4. **Research requirement** (one course). LING 490, Research Methods in Linguistics, is required and is usually taken in the fall term of the senior year.

**SENIOR REQUIREMENT**

Senior requirement (one course). Students attend a research colloquium and write a senior essay in LING 491 during the spring term of the senior year.

**ADVISING**

**Combined B.A./M.A. degree program** Exceptionally able and well-prepared students may complete a course of study leading to the simultaneous award of the B.A. and M.A. degrees after eight terms of enrollment. See Simultaneous Award of the Bachelor's and Master's Degrees under Special Arrangements in the Academic Regulations. Interested students should consult the director of undergraduate studies prior to the sixth term of enrollment for specific requirements in Linguistics.

**REQUIREMENTS OF THE MAJOR**

- **Prerequisites**: None
- **Number of courses**: 12 term courses (incl senior req)
- **Specific courses required**: LING 232, 253, 490
- **Distribution of courses**: 1 course each in 2 addtl core areas, as specified; 2 addtl courses beyond intro level in 1 core area; 4 electives, at least 1 at the 200 level or above
- **Senior requirement**: LING 491

**FACULTY OF THE DEPARTMENT OF LINGUISTICS**

**Professors** Stephen Anderson, Robert Frank (Chair), †Roberta Frank, Laurence Horn (Emeritus), †Frank Keil, †Joshua Knobe, †Jason Stanley, †Zoltán Szabó, Petronella Van Deusen-Scholl (Adjunct), Raffaella Zanuttini

**Associate Professors** Claire Bowern, Maria Piñango, Kenneth Pugh (Adjunct)

**Assistant Professor** Ryan Bennett, Jason Shaw, Jim Wood

**Lecturer** Matthew Barros, Hadas Kotek, Kevin Tang

†A joint appointment with primary affiliation in another department.

**Introductory Courses**

Courses in this group do not require previous study of linguistics.
[ LING 105, The Mental Lexicon ]

* LING 106b, Illusions of Language  Matthew Barros
Introduction to linguistics, with special emphasis on sociolinguistics and psycholinguistics. Study of grammatical illusions: expressions the parser mistakenly accepts as grammatical despite making little sense and grammatical sentences which the parser has difficulty processing. Emphasis also on illusions and misconceptions about language, such as the belief that women speak more than men, that “vocal fry” can harm your voice, and that double negation is illogical.  SO

* LING 107a, Linguistic Diversity and Endangerment  Stephanie Fielding
Introduction to the complexity of the question "How many languages are there in the world?" Geographical and historical survey of the world’s languages; consideration of the ways in which languages can differ from one another. Language endangerment and the threat to world linguistic diversity it poses. Language reclamation and revitalization. None

LING 110a, Language: Introduction to Linguistics  Jim Wood and Matthew Barros
The goals and methods of linguistics. Basic concepts in phonology, morphology, syntax, and semantics. Techniques of linguistic analysis and construction of linguistic models. Trends in modern linguistics. The relation of linguistics to psychology, logic, and other disciplines.  SO

* LING 111b / LITR 152b / SAST 456b, Sanskrit Classics in Translation  David Brick
The chief genres of Sanskrit secular literature set against the background of the cultural history of ancient India. Various literary styles compared with those of other world literary traditions.  HU TR

LING 112a, Historical Linguistics  Jonathan Manker
Introduction to language change and language history. Types of change that a language undergoes over time: sound change, analogy, syntactic and semantic change, borrowing. Techniques for recovering earlier linguistic stages: philology, internal reconstruction, the comparative method. The role of language contact in language change. Evidence from language in prehistory.  WR, HU

* LING 115a / SKRT 110a, Introductory Sanskrit I  David Brick
An introduction to Sanskrit language and grammar. Focus on learning to read and translate basic Sanskrit sentences in Devanagari script. No prior background in Sanskrit assumed.  L1 1½ Course cr

LING 116b / CGSC 216b, Cognitive Science of Language  Robert Frank
The study of language from the perspective of cognitive science. Exploration of mental structures that underlie the human ability to learn and process language, drawing on studies of normal and atypical language development and processing, brain imaging, neuropsychology, and computational modeling. Innate linguistic structure vs. determination by experience and culture; the relation between linguistic and nonlinguistic cognition in the domains of decision making, social cognition, and musical cognition; the degree to which language shapes perceptions of color, number, space, and gender.  SO

LING 118a, The Mohegan Language  Stephanie Fielding
Introduction to the Mohegan language, one of the Algonquian (Native American) languages of Connecticut. Emphasis on acquiring speaking competence; how to put words together, sound system, sentences. Regular speaking, writing, and reading practice, interspersed with cultural and historical information.

LING 122a, Speech Perception  Jason Shaw
Introduction to speech perception and its relation to other areas of linguistics including phonological representations and sound change. The nature of the speech signal, auditory and motor theories or perception, computational models of spoken word recognition, analytical and experimental methods.  SO

LING 125b / SKRT 120b, Introductory Sanskrit II  David Brick
Continuation of SKRT 110. Focus on the basics of Sanskrit grammar; readings from classical Sanskrit texts written in Devanagari script. After SKRT 110.  L2 1½ Course cr

[ LING 130, Evolution of Language ]

LING 138a / SKRT 130a, Intermediate Sanskrit I  David Brick
The first half of a two-term sequence aimed at helping students develop the skills necessary to read texts written in Sanskrit. Readings include selections from the Hitopadesa, Kathasaritasagara, Mahabharata, and Bhagavadgita. After SKRT 120 or equivalent.  L3

[ LING 140, Computational Models in Cognitive Science ]

LING 148b / SKRT 140b, Intermediate Sanskrit II  David Brick
Continuation of SKRT 130, focusing on Sanskrit literature from the kavya genre. Readings include selections from the Jatakamala of Aryasura and the opening verses of Kalidasa’s Kumarasambhava. After SKRT 130 or equivalent.  L4
Linguistics

[ LING 150, Old English ]
[ LING 169, Meaning ]
[ LING 183, Readings in Old Norse Poetry and Prose: Chronicles of the Vikings ]

Intermediate Courses

Some courses in this group have prerequisites; others do not, and may be taken as a student’s first course in linguistics.

[ LING 200, Experimentation in Linguistics ]
* LING 202b, The Linguistics of the Voynich Manuscript Claire Bowern
  Introduction to basic ideas of linguistics and cryptography through study of the Voynich Manuscript (MS 408), a mysterious medieval manuscript held in the Beinecke Library. Review of major hypotheses about the manuscript, ranging from the fake, to code, to undeciphered language.

* LING 211b, Grammatical Diversity in U.S. English Raffaella Zanuttini
  Language as a system of mental rules, governing the sound, form, and meaning system. The (impossible) distinction between language and dialect. The scientific study of standard and non-standard varieties. Social attitudes toward prestige and other varieties; linguistic prejudice. Focus on morpho-syntactic variation in North-American English: alternative passives (“The car needs washed”), personal datives (“I need me a new printer”), negative inversion (“Don’t nobody want to ride the bus”), ”drama SO” (“I am SO not going to study tonight”).

LING 212b, Linguistic Change Claire Bowern
  Principles governing linguistic change in phonology and morphology. Status and independence of proposed mechanisms of change. Relations between the principles of historical change and universals of language. Systematic change as the basis of linguistic comparison; assessment of other attempts at establishing linguistic relatedness. Prerequisites: LING 112, 232, and 253.

LING 217a / EDST 237a / PSYC 317a, Language and Mind Maria Piñango
  The structure of linguistic knowledge and how it is used during communication. The principles that guide the acquisition of this system by children learning their first language and adults learning a second language. The processing of language in real-time. Language breakdown as a result of brain damage.

[ LING 219, The Evolution of Language and Culture ]

LING 220b / PSYC 318b, General Phonetics Dustin Bowers
  Investigation of possible ways to describe the speech sounds of human languages. Acoustics and physiology of speech; computer synthesis of speech; practical exercises in producing and transcribing sounds.

[ LING 225, Computing Meanings ]

LING 227a / PSYC 327a, Language and Computation I Robert Frank
  Design and analysis of computational models of language. Topics include finite state tools, computational morphology and phonology, grammar and parsing, lexical semantics, and the use of linguistic models in applied problems. Prerequisite: prior programming experience or permission of instructor.

[ LING 229, Language and Computation II ]
[ LING 230, Techniques in Neurolinguistics ]

LING 232a, Introduction to Phonological Analysis Dustin Bowers
  The structure of sound systems in particular languages. Phonemic and morphophonemic analysis, distinctive-feature theory, formulation of rules, and problems of rule interpretation. Emphasis on problem solving. Prerequisite: LING 220, or a grade of B or above in LING 110. (Formerly LING 132)

* LING 235b, Phonological Theory Jonathan Manker
  Topics in the architecture of a theory of sound structure. Motivations for replacing a system of ordered rules with a system of ranked constraints. Optimality theory: universals, violability, constraint types and their interactions. Interaction of phonology and morphology, as well as the relationship of phonological theory to language acquisition and learnability. Opacity, lexical phonology, and serial versions of optimality theory. Prerequisite: LING 232 or permission of instructor.

* LING 236a, Articulatory Phonology Jason Shaw
  Study of experimental methods to record articulatory movements using electromagnetic articulography and/or ultrasound technologies and analytical approaches for relating articulatory movements to phonological structure. Hands-on training in laboratory techniques are paired with discussion of related experimental and theoretical research. Prerequisites: LING 220 and LING 232 or permission of instructor.

* LING 241a, Field Methods Jonathan Manker
  Principles of phonetics, phonology, morphology, syntax, and semantics applied to the collection and interpretation of novel linguistic data. Data are collected and analyzed by the class as a group, working directly with a speaker of a relatively undocumented language. Open to majors in Linguistics, and to others with permission of instructor.
LING 247, Indigenous Languages of Australia

LING 253a, Syntax I  Raffaella Zanuttini
An introduction to the syntax of natural language. Generative syntactic theory and key theoretical concepts. Syntactic description and argumentation. Topics include the structure of clauses and noun phrases, movement operations, and the notion of parameter. (Formerly LING 153)

LING 254b, Syntax II  Jim Wood
Recent developments in the principles and parameters approach to syntactic theory. In-depth exploration of theoretical and empirical issues in long-distance dependencies (island effects, dependency types, movement vs. binding), the character of syntactic structure (constituency, thematic mapping, functional categories), and the architecture of grammatical derivations (logical form, operations for structure building, anaphora). Prerequisite: LING 253.

LING 263a, Semantics I  Matthew Barros
Introduction to truth-conditional compositional semantics. Set theory, first- and higher-order logic, and the lambda calculus as they relate to the study of natural language meaning. Some attention to analyzing the meanings of tense/aspect markers, adverbs, and modals.

LING 272b, Formal Pragmatics  Matthew Barros
The function of definite and indefinite noun phrases in discourse, the notions of topic and focus, discourse representation theory, presupposition, and implicature. Formal tools necessary to do original research in pragmatics, the subfield of linguistics concerned with language use in context. Prerequisite: LING 263.

LING 275a, Pragmatics  Laurence Horn
Context-dependent aspects of meaning and inference. Speech act theory, presupposition, implicature. Role of pragmatics in the lexicon and in meaning change. The semantics-pragmatics distinction from different perspectives; the position of pragmatics in linguistic theory.

LING 276b, Formal Pragmatics  Matthew Barros
The theory of word structure within a formal grammar. Relation to other areas of grammar (syntax, phonology); basic units of word structure; types of morphology (inflection, derivation, compounding). Prerequisites: LING 232 and 253, or permission of instructor.

Advanced Courses and Seminars

LING 334, Experimental Semantics
LING 341, Topics in Phonology: Prosody at the Interfaces
LING 355, Doubling in Syntax

LING 359a, Copular Clauses, Meaning, Structure, and Use  Matthew Barros
The proper analysis of copular clause structure, interpretation, and usage in discourse. Comparison between English and other languages. Focus on current open questions in the field surrounding different types of copular clauses: existentials (There’s a dog in the garden), locatives (A dog is in the garden), presentatives, (Here’s Jack), and different kinds of clauses in Higgins’ taxonomy. Prerequisite: LING 253.

LING 372, Meaning, Concepts, and Words
LING 376, Implicature and Pragmatic Theory
LING 390, Negation and Polarity

Research Courses

LING 471a, Special Projects  Dustin Bowers
Special projects set up by students with the help of a faculty adviser and the director of undergraduate studies to cover material not otherwise offered by the department. The project must terminate with at least a term paper or its equivalent and must have the approval of the director of undergraduate studies. Only one term may be offered toward the major; two terms may be offered toward the bachelor’s degree.

LING 490a / PSYC 372a, Research Methods in Linguistics  Raffaella Zanuttini
Development of skills in linguistics research, writing, and presentation. Choosing a research area, identifying good research questions, developing hypotheses, and presenting ideas clearly and effectively, both orally and in writing; methodological issues; the balance between building on existing literature and making a novel contribution. Prepares for the writing of the senior essay.

LING 491b, The Senior Essay  Raffaella Zanuttini
Research and writing of the senior essay under the guidance of a faculty adviser. Students present research related to their essays in a weekly colloquium. Prerequisite: LING 490.
Related Courses

* ANTH 332a, Endangered Languages in Social Context  J. Joseph Errington
An introduction to language endangerment as a global phenomenon. Topics include politics of bilingualism and language shift, politics of linguistic identity, ethnic and national communities, and language in media.  SO
Anthropology: Linguistic

* ANTH 332b, Bilingualism in Social Context  J. Joseph Errington
The linguistic phenomenon of bilingualism presented through broad issues in social description inseparably linked to it: growth and change in bilingual communities; bilingual usage, social identity, and allegiance; and interactional significances of bilingual speech repertoire use.  SO
Anthropology: Linguistic

CGSC 110a / PSYC 130a, Introduction to Cognitive Science  Brian Scholl
An introduction to the interdisciplinary study of how the mind works. Discussion of tools, theories, and assumptions from psychology, computer science, neuroscience, linguistics, and philosophy.  SO

CGSC 216b / LING 116b, Cognitive Science of Language  Robert Frank
The study of language from the perspective of cognitive science. Exploration of mental structures that underlie the human ability to learn and process language, drawing on studies of normal and atypical language development and processing, brain imaging, neuropsychology, and computational modeling. Innate linguistic structure vs. determination by experience and culture; the relation between linguistic and nonlinguistic cognition in the domains of decision making, social cognition, and musical cognition; the degree to which language shapes perceptions of color, number, space, and gender.  SO

* CGSC 437b / PSYC 437b, Minds, Brains, and Machines  Julian Jara-Ettinger
Exploration of the implications that the brain is a kind of computer that gives rise to the mind. Readings combine classical and cutting-edge research in psychology, philosophy, and artificial intelligence.  SO  RP

* CHLD 128b / EDST 128b / PSYC 128b, Language, Literacy, and Play  Nancy Close and Carla Horwitz
The complicated role of play in the development of language and literacy skills among preschool-aged children. Topics include social-emotional, cross-cultural, cognitive, and communicative aspects of play.  WR, SO  RP

CPSC 201a or b, Introduction to Computer Science  Stephen Slade
Introduction to the concepts, techniques, and applications of computer science. Topics include computer systems (the design of computers and their languages); theoretical foundations of computing (computability, complexity, algorithm design); and artificial intelligence (the organization of knowledge and its representation for efficient search). Examples stress the importance of different problem-solving methods. After CPSC 112 or equivalent.  QR
Math: Stat/Applied Math

[ CPSC 430, Formal Semantics ]

CPSC 470a, Artificial Intelligence  Dragomir Radev
Introduction to artificial intelligence research, focusing on reasoning and perception. Topics include knowledge representation, predicate calculus, temporal reasoning, vision, robotics, planning, and learning. After CPSC 201 and 202.  QR

CPSC 472b, Intelligent Robotics  Brian Scassellati
Introduction to the construction of intelligent, autonomous systems. Sensory-motor coordination and task-based perception. Implementation techniques for behavior selection and arbitration, including behavior-based design, evolutionary design, dynamical systems, and hybrid deliberative-reactive systems. Situated learning and adaptive behavior. After CPSC 201 and 202 or equivalents. May not be taken after CPSC 473.  QR

CPSC 477b, Natural Language Processing  Dragomir Radev
Linguistic, mathematical, and computational fundamentals of natural language processing (NLP). Topics include part of speech tagging, Hidden Markov models, syntax and parsing, lexical semantics, compositional semantics, machine translation, text classification, discourse, and dialogue processing. Additional topics such as sentiment analysis, text generation, and deep learning for NLP. Prerequisites: CPSC 202 and CPSC 223, or permission of instructor.  QR

* FREN 198b, Applied Advanced French Grammar  Constance Sherak
In-depth study of grammar and discourse strategies. Advanced grammar exercises, linguistic analysis of literary selections, and English-to-French translation. Intended to improve students’ written command of French and to prepare them for upper-level courses; recommended for prospective majors. After FREN 150 or higher, or a satisfactory placement test score. May be taken after courses in the 200-449 range.  15

GREK 390a, Greek Syntax and Stylistics  Victor Bers
A review of accidence and syntax, elementary composition, and analysis of Greek prose styles of the fifth and fourth centuries B.C., including a comparison of “prosaic” and “poetic” syntax. Prerequisite: previous familiarity with some Greek prose beyond the elementary level, or permission of instructor.  15,  HU
LATN 110a, Beginning Latin: The Elements of Latin Grammar  Staff
Introduction to Latin. Emphasis on morphology and syntax within a structured program of readings and exercises. Prepares for LATN 120. No prior knowledge of Latin assumed. Preregistration, which is required, takes place at the Academic Fair. See the Calendar for the Opening Days or the departmental Web site for details about preregistration.  L1  RP  1½ Course cr

LATN 120b, Beginning Latin: Review of Grammar and Selected Readings  Staff
Continuation of LATN 110. Emphasis on consolidating grammar and on readings from Latin authors. The sequence LATN 110, 120 prepares for 131 or 141. Prerequisite: LATN 110 or equivalent.  L2  RP  1½ Course cr

* LATN 390b, Latin Syntax and Stylistics  Joseph Solodow
A systematic review of syntax and an introduction to Latin style. Selections from Latin prose authors are read and analyzed, and students compose short pieces of Latin prose. For students with some experience reading Latin literature who desire a better foundation in forms, syntax, idioms, and style.  L5, HU

* MUSI 343b / CGSC 343b, Music Cognition  Ian Quinn
A survey of historical and current approaches to questions about the perception and cognition of music. Topics include psychoacoustics; the cognitive neuroscience of music; relationships between music and language; the nature of musical knowledge; and debates about aesthetics, evolutionary psychology, and musical universals. Prerequisite: MUSI 110 or familiarity with music notation.  SO

PHIL 115a, First-Order Logic  Kenneth Winkler
An introduction to formal logic. Study of the formal deductive systems and semantics for both propositional and predicate logic. Some discussion of metatheory.  QR

PHIL 267a, Mathematical Logic  Sun-Joo Shin
An introduction to the metatheory of first-order logic, up to and including the completeness theorem for the first-order calculus. Introduction to the basic concepts of set theory. Prerequisite: PHIL 115 or permission of instructor.  QR
Math: Logic/Foundations

PHIL 277b, Frege and Analytic Philosophy  Jason Stanley
Gottlob Frege’s view of arithmetic as an abstract reality no less real than the ordinary objects of sight and touch. His attempt to place arithmetic on an absolutely firm foundation, and wider views of meaning and representation that emerged from the attempt. Frege’s contributions to logicism, analytic philosophy, and the notation for quantification and variables; his influence on the emerging discipline of logic and on later study of the meaning properties of natural languages. Prerequisite: PHIL 115 or equivalent, or with permission of instructor.  HU

* PHIL 427b, Computability and Logic  Sun-Joo Shin
A technical exposition of Gödel’s first and second incompleteness theorems and of some of their consequences in proof theory and model theory, such as Löb’s theorem, Tarski’s undefinability of truth, provability logic, and nonstandard models of arithmetic. Prerequisite: PHIL 267 or permission of instructor.  QR, HU
Math: Logic/Foundations