

LINGUISTICS

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American Sign Language and Irish Gaelic courses are sponsored by the Department of Linguistics and offered through the Penn Language Center. Please see <http://ccat.sas.upenn.edu/plc/>

Undergraduate Courses

L/R 001. Introduction to Linguistics. (C) Natural Science & Mathematics Sector. Class of 2010 and beyond. Staff.

A general introduction to the nature, history and use of human language, speech and writing. Topics include the biological basis of human language, and analogous systems in other creatures; relations to cognition, communication, and social organization; sounds, forms and meanings in the world's languages; the reconstruction of linguistic history and the family tree of languages; dialect variation and language standardization; language and gender; language learning by children and adults; the neurology of language and language disorders; the nature and history of writing systems. Intended for any undergraduate interested in language or its use, this course is also recommended as an introduction for students who plan to major in linguistics.

SM 051. Proto-Indo European Language and Society. (M) History & Tradition Sector. All classes. Noyer. Freshman Seminar

Most of the languages now spoken in Europe, along with some languages of Iran, India and central Asia, are thought to be descended from a single language known as Proto-Indo-European, spoken at least six thousand years ago, probably in a region extending from north of the Black Sea in modern Ukraine east through southern Russia. Speakers of Proto-Indo-European eventually populated Europe in the Bronze Age, and their societies formed the basis of the classical civilizations of Greece and Rome, as well as of the Celtic, Germanic and Slavic speaking peoples. What were the Proto-Indo-Europeans like? What did they believe about the world and their gods? How do we know? Reconstruction of the Proto-Indo-European language, one of the triumphs of comparative and historical linguistics in the 19th and 20th centuries, allows us a glimpse into the society of this prehistoric people.

In this seminar students will, through comparison of modern and ancient languages, learn the basis of this reconstruction -- the comparative method of historical linguistics -- as well as explore the culture and society of the Proto-Indo-Europeans and their immediate descendants. In addition, we will examine the pseudo-scientific basis of the myth of Aryan supremacy, and study the contributions of archaeological findings in determining the "homeland" of the Indo-Europeans. No prior knowledge of any particular language is necessary. This seminar should be of interest to students considering a major in linguistics, anthropology and archaeology, ancient history or comparative religion. (Also fulfills Cross-Cultural Analysis.)

SM 054. Bilingualism in History. (A) Freshman Seminar

This course introduces the foundations of linguistics - the scientific study of language - through exploration of multilingualism in the USA and in different societies around the world.

Contacts between groups of people speaking different languages are documented from earliest records, and around the world it remains the norm to find more than one language in regular use in a single community. In this course we will see that multilingualism is a catalyst for linguistic change: sometimes languages are lost; sometimes new languages are created; sometimes the structure of a language is radically altered. We will consider: Which parts of linguistic structure are most susceptible to change under conditions of bilingualism? Does language contact - whether a result of trade, education, migration, conquest, or intermarriage - influence language structure in predictable ways? How do individual speakers handle multiple languages? How have attitudes to speakers of multiple languages changed through history? How have socio-historical events shaped the linguistic situation in the USA?

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L/R 102. Introduction to Sociolinguistics. (B) Society Sector. All classes. Tamminga. Satisfies Quantitative Data Analysis

Human language viewed from a social and historical perspective. Students will acquire the tools of linguistic analysis through interactive computer programs, covering phonetics, phonology and morphology, in English and other languages. These techniques will then be used to trace social differences in the use of language, and changing patterns of social stratification. The course will focus on linguistic changes in progress in American society, in both mainstream and minority communities, and the social problems associated with them. Students will engage in field projects to search for the social correlates of linguistic behavior, and use quantitative methods to analyze the results.

103. Introduction to Language: Language Structure and Verbal Art. (A) Arts & Letters Sector. All Classes. Ringe.

The purpose of this course is to explore the relationship between linguistic structure and the use of language for artistic purposes. The syllabus is organized as a sequence of units, each built around a particular theme. These include the sound structure of poetry (meter, rhyme, and other linguistic patterns in Jabberwocky, the Odyssey, Shakespeare, the Troubadours, and others); how precise linguistic data can be used to solve an outstanding literary problem (determining the approximate date when Beowulf was composed); and the structure of folktales of various cultures and of narratives of everyday experience.

L/R 105. (CIS 140, COGS001, PHIL044, PSYC207) Introduction to Cognitive Science. (A) Brainard/Ungar. This is a Formal Reasoning course.

Cognitive Science is founded on the realization that many problems in the analysis of human and artificial intelligence require an interdisciplinary approach. The course is intended to introduce students to the problems and characteristic concepts of Cognitive Science, drawing on formal and empirical approaches from the parent disciplines of computer science, linguistics, neuroscience, philosophy and psychology. The topics covered include Perception, Action, Learning, Language, Knowledge Representation, and Inference, and the relations and interactions between such modules. The course shows how the different views from the parent disciplines interact, and identifies some common themes among the theories that have been proposed. The course pays particular attention to the distinctive role of computation in such theories, and provides an introduction to some of the main directions of current research in the field.

L/R 106. Introduction to Formal Linguistics. (A) Staff. This is a Formal Reasoning course.

This course is intended as an introduction to the application of formal language theory, automata theory, and other computational models to the understanding of natural human language. Topics include regular languages and finite state automata; context-free languages and pushdown automata; recursive transition networks; augmented transition networks; tree-adjoining grammars.

L/R 115. Writing Systems. (A) History & Tradition Sector. All classes. Buckley.

The historical origin of writing in Sumeria, Egypt, China, and Mesoamerica; the transmission of writing across languages and cultures, including the route from Phoenician to Greek to Etruscan to Latin to English; the development of individual writing systems over time; the traditional classification of written symbols (ideographic, logographic, syllabic, alphabetic); methods of decipherment; differences between spoken and written language; how linguistic structure influences writing, and is reflected by it; social and political aspects of writing; literacy and the acquisition of writing.

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120. Introduction to Speech Analysis. (C) Kuang. Satisfies Quantitative Data Analysis

This course focuses on experimental investigations of speech sounds. General contents include: the fundamentals of speech production and perception; speech analysis tools and techniques; and topics in phonetic studies. The course consists of integrated lectures and laboratory sessions in which students learn computer techniques for analyzing digital recordings.

140. Construct a Language. (M) Legate.

In this course, students construct their own language, one that is compatible with what is known about possible human languages. To this end, the course investigates language typology through lectures and examination of grammars of unfamiliar languages. Topics include language universals, points of choice in a fixed decision space, and dependencies among choices.

160. (AFRC160) Introduction to African American and Latino English. (A) Staff.

An introduction to the use and structure of dialects of English used by the African American and Latino communities in the United States. It is an academically based service learning course. The field work component involves the study of the language and culture of everyday life and the application of this knowledge to programs for raising the reading levels of elementary school children.

230. (LING503) Sound Structure of Language. (B) Noyer. Prerequisite(s): Prerequisite: A prior course in linguistics or permission of instructor.

An introduction to phonetics and phonology. Topics include articulatory phonetics (the anatomy of the vocal tract; how speech sounds are produced); transcription (conventions for representing the sounds of the world's languages); classification (how speech sounds are classified and represented cognitively through distinctive features); phonology (the grammar of speech sounds in various languages: their patterning and interaction) and syllable structure and its role in phonology.

240. Structure of a Language. (M) Staff.

Designed to apply linguistic principles to the grammatical analysis of a particular language, this course focuses on a different language each time it is given, according to the decision of the instructor. It may be taken by students with prior knowledge of the language in question who have not taken previous courses in linguistics, and by students of linguistics who wish to explore a new language. The selected language will be announced prior to pre-registration for any semester in which it is given.

241. Language in Native America. (M) Buckley.

This course is an introduction to linguistic perspectives on the languages native to the Americas (their nature and distribution, typological similarities and differences), with an emphasis on North America. The diverse languages of this region will be examined from the point of view of particular linguistic phenomena, such as phonology, morphology, and syntax; and in addition we will study their historical development and their place in culture, society, and thought.

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255. Formal Semantics and Cognitive Science. (M) Schwarz. NOTE TO PSYCHOLOGY MAJORS: Ling 255 can be counted towards the 'Additional Psych Courses', as specified in the Undergraduate Handbook. NOTE TO COGNITIVE SCIENCE MAJORS: Ling 255 counts towards Concentration 3: Language and Mind

This course provides an introduction to the study of meaning in natural language. The first part of the course introduces a formal perspective on meaning in terms of truth conditions as well as the basic analytical tools necessary for this, primarily building on set theory and logic. The main part of the course covers a range of empirical investigations of phenomena related to meaning using experimental methods from psycholinguistics. Topics include a selection of issues on the semantics-pragmatics interface, such as conversational implicatures, presuppositions, reference resolution and perspective taking, and quantifier scope. Students will carry out a class project, possibly in groups, to develop (and, if possible, carry out) an experimental study of meaning-related phenomena of their own. Relevant tools for experimental design and the implementation of such studies will be introduced along the way. This provides students with the opportunity to engage in a scientific investigation of their own early on in their undergraduate career in a domain that is easily accessible and yet central to the general enterprise of the cognitive sciences.

247. Structure of American Sign Language. Fisher/Santorini. Prerequisite(s): Ling 001 or permission of instructor(s).

This course covers the linguistic structure of American Sign Language (ASL), including its phonology (articulatory features, phonological constraints, nonmanuals), morphology (morphological constraints, compounds, incorporation, borrowing), and syntax (syntactic categories, basic phrase structure, common sentence types). Also discussed are the topics of classifiers and deixis. In keeping with the comparative perspective of linguistic theory, parallels and differences between ASL and other (primarily spoken) languages are pointed out where appropriate. Historical and sociolinguistic issues are addressed where they are relevant to elucidating linguistic structure.

Though the course focuses on ASL, it necessarily touches on issues concerning sign languages more generally, notably the possible effects of modality (sign vs. speech) on linguistic structure and the implications of the signed modality for general linguistics.

Although the course does not presuppose knowledge of ASL, it does require acquaintance with basic concepts of linguistics.

250. Introduction to Syntax. (B) Santorini.

This course is an introduction to current syntactic theory, covering the principles that govern phrase structure (the composition of phrases and sentences), movement (dependencies between syntactic constituents), and binding (the interpretation of different types of noun phrases). Although much of the evidence discussed in the class will come from English, evidence from other languages will also play an important role, in keeping with the comparative and universalist perspective of modern syntactic theory.

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252. Logical Analysis of Language. (M) Clark.

Everyone seems to think that language and thought are somehow intimately related. But what, exactly, is the relationship? For some people, language and thought are identical, so that pre-linguistic creatures are completely incapable of thought. This course examines language as an instrument to send and receive information. In part I, we will start with a computational approach to the problem of how an information agent would extract and use information from language. That is, we will take language to be an encoding of a mental content. The course considers some of the classic position papers on artificial intelligence and then moves on to develop a compositional account of computing meanings based on categorial grammar. We will, in addition, discuss some of the leading ideas in the theory of artificial neural nets and concept formation, particularly prototype theory.

In part II, we will focus on compositional theories of meaning; we will pay particular attention to categorial grammar, developing a strictly compositional theory of the encoding. In this section, we will develop some ideas from dynamic semantics and pragmatic theories of presupposition and implicature. In part III, we will explore reasons for supposing that meaning is largely social and not purely a question of mental content. This will lead us to a critical consideration of linguistic relativity, the idea that language can influence thought.

270. Language Acquisition. (M) Yang.

An introduction to language acquisition in children and the development of related cognitive and perceptual systems. Topics include the nature of speech perception and the specialization to the native language; the structure and acquisition of words; children's phonology; the development of grammar; bilingualism and second language acquisition; language learning impairments; the biological basis of language acquisition; the role in language learning in language change. Intended for any undergraduate interested in the psychology and development of language.

SM 300. Tutorial in Linguistics. (A) Legate. Prerequisite(s): Senior status or permission of the instructor. Majors only.

This tutorial allows students to deal in a concentrated manner with selected major topics in linguistics by means of extensive readings and research. Two topics are studied during the semester, exposing students to a range of sophisticated linguistic questions.

301. Conference. (C)

An independent study for majors in linguistics.

SM 302. (LING502) Linguistic Field Methods. (M) Buckley/Legate. Prerequisite(s): Ling 230 and Ling 250.

Instruction and practice in primary linguistic research, producing a grammatical sketch and a lexicon through work with a native-speaker consultant and some reference materials. Consultant work is shared with LING 502.

398. Senior Thesis. (C) Staff.

310. History of the English Language. (A) Ringe/Kroch.

This course traces the linguistic history of English from its earliest reconstructable ancestor, Proto-Indo-European, to the present. We focus especially on significant large-scale changes, such as the restructuring of the verb system in Proto-Germanic, the intricate interaction of sound changes in the immediate prehistory of Old English, syntactic change in Middle English, and the diversification of English dialects since 1750.

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354. Language and Game Theory. (M) Clark.

This course is an introduction to game-theoretic pragmatics. It focuses on aspects of meaning that follow from rational, strategic decision making. The course covers an introduction to the theory of games with an emphasis on coordination games and cooperation. We develop a game theoretic account of truth conditional semantics using zero-sum games. We then cover Gricean implicature; focal points and coordination; polysemy vs homophony; and a game account of reference tracking and pronoun interpretation.

380. (LING580) Introduction to Semantics. (A) Schwarz. Prerequisite(s): Ling 250.

This course provides an introduction to formal semantics for natural language. The main aim is to develop a semantic system that provides a compositional interpretation of natural language sentences. We discuss various of the aspects central to meaning composition, including function application, modification, quantification, and binding, as well as issues in the syntax-semantics interface. The basic formal tools relevant for semantic analysis, including set theory, propositional logic, and predicate logic are also introduced.

404. Morphological Theory. (M) Embick.

This course will explore some issues concerning the internal structure of words. After a brief introduction to some basic terms and concepts, we will discuss the interaction of morphology with phonology. We will look both at how morphology conditions phonological rules and how phonology conditions morphology. Then we will turn to the interaction of syntax and morphology. We will look at some problems raised by inflectional morphology, clitics and compounds. The main requirement for the class will be a series of homework exercises in morphological analysis and a short paper at the end of the semester.

SM 411. Old English. (M) Kroch.

The main purpose of this course is to teach students to read Old English ("Anglo-Saxon"), chiefly but not exclusively for research in linguistics. Grammar will be heavily emphasized; there will also be lectures on the immediate prehistory of the language, since the morphology of Old English was made unusually complex by interacting sound changes. In the first eight weeks we will work through Moore and Knott's "Elements of Grammar" and learn the grammar; the remainder of the term will be devoted to reading texts.

440. Pidgins and Creoles. (H)

The origins and development of pidgins (languages of intercommunication that have evolved for practical reasons in situations of trade, conquest, or colonization, and spoken as second or auxiliary languages) and creoles (languages with native speakers that have developed from previous pidgins); relations between creoles and other languages; implications of creole studies for general theories of language and language change.

SM 449. Language and Computation. (M) Yang.

The computational study of natural language and its implications for linguistic theories. Topics include finite state tools, computational morphology and phonology, grammar and parsing, computational models of language learning in children and machines.

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450. Languages in Contact. (I)

Multilingualism from a societal, individual, and linguistic point of view. The different types of contacts between populations and between individuals which give rise to multilingualism. Second-language acquisition and the problem of the "critical age." Cognitive and cultural aspects of multilingualism; applications to the teaching of languages. "Bidialectalism." Code-switching (alternation), interference and integration: the mutual influences of language in contact. Political and social aspects of multilingualism.

SM 470. (AFRC262, AFST260, FOLK470, LALS260) Narrative Analysis. (M)

The course will develop our understanding of narrative structure on the basis of oral narratives of personal experience, told by speakers from a wide range of geographic backgrounds and social classes. It will link the principles governing oral narratives to the narratological examination of myth, literature and film by Propp, Greimas, Prince, Chatman, and others. The principles that emerge from the study of oral narrative will be re-examined in literary narrative, including Scandinavian, Greek and Hebrew epics, medieval romances, film, and modern novels, with attention to the differences between vernacular, literary and academic style. The class will then consider the work of psychologists on how narratives are remembered and understood, based on the causal network theory of Trabasso, and apply these principles to narratives written to teach children to read, particularly those designed to reflect the cultural and linguistic framework of African American children.

Graduate Courses

SM 500. Research Workshop. (A) Embick.

This course is intended for advanced graduate students who are interested in developing a research paper. Each student will present his or her topic several times during the semester as the analysis develops, with feedback from the instructor and other students to improve the organization and content of the analysis. The goal is an end product appropriate for delivery at a national conference or submission to a journal.

510. Introduction to Historical and Comparative Linguistics. (A) Ringe.

Synchronic and diachronic systems. Analogic processes. Semantic change. Effects of contact. Internal reconstruction. Comparative method and reconstruction.

SM 502. (LING302) Linguistic Field Methods. (M) Buckley/Legate. Prerequisite(s): LING 530 and Ling 550.

Instruction and practice in primary linguistic research, producing a grammatical sketch and a lexicon through work with a native-speaker consultant and some reference materials. Consultant work is shared with LING 302. Each student will write a final paper on some aspect of the language.

503. (LING230) Sound Structure of Language. (B) Noyer.

An introduction to articulatory and acoustic phonetics; phonetic transcription; basic concepts and methods of phonological analysis.

505. Research Topics. (C)

A reading course on specialized topics in linguistics. Arranged by instructor.

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511. Language Variation & Change. (B) Tamminga. Prerequisite(s): LING 510 or equivalent.

Speech communities as a focus for the understanding of language evolution and change: language variation in time and space. The relationship between language structure and language use; between language change and social change. Populations as differentiated by age, sex, social class, race, and ethnicity, and the relationship of these factors to linguistic differentiation.

SM 515. Dynamics of Language. (C) Yang. Prerequisite(s): Ling 510.

This course introduces the tools, techniques, as well as current research on the approach to language as a dynamical system, which seeks to fruitfully integrate linguistic theory, psycholinguistics, corpus linguistics, and historical linguistics through the means of mathematical modeling. Topics include: string processing, dynamical systems and stability, stochastic processes, mathematical models of population dynamics, and dynamical models of language learning, processing, and change.

520. Introduction to Phonetics. (A) Liberman/Kuang. Prerequisite(s): An introductory course in linguistics, or consent of instructor.

Speech: its linguistic transcription, its quantitative physical description, and its relationship to the categories and dimensions of language structure and use. The physical basis of speech: acoustics, vocal tract anatomy and physiology, hearing and speech perception, articulation and motor control. Phonetic variation and change. Prosody: stress, intonation, phrasing speech rate. Phonetic instrumentation, the design and interpretation of phonetic experiments, and the use of phonetic evidence in linguistic research, with emphasis on computer techniques. Introduction to speech signal processing. Speech technology: introduction to speech recognition, text-to-speech synthesis, speech coding. This course will emphasize the phonetics of natural speech, and its connections to issues in other areas of linguistics and cognitive science.

521. Introduction to Phonetics II. (B) Kuang/Liberman. Prerequisite(s): LING 520.

This is a methodology course, which focuses on how to conduct phonetics research using very large speech corpora. Topics include scripting and statistical techniques, automatic phonetic analysis, integration of speech technology in phonetics studies, variation and invariability in large speech corpora, and revisiting classic phonetic and phonological problems from the perspective of corpus phonetics.

525. (CIS 558) Computer Analysis and Modeling of Biological Signals and Systems. (A) Liberman.

A hands-on signal and image processing course for non-EE graduate students needing these skills. We will go through all the fundamentals of signal and image processing using computer exercises developed in MATLAB. Examples will be drawn from speech analysis and synthesis, computer vision, and biological modeling.

530. Phonology I. (A) Noyer. Prerequisite(s): LING 503 or equivalent.

First half of a year-long introduction to the formal study of phonology. Basic concepts in articulatory phonetics; the distribution of sounds (phonemes and allophones); underlying and surface forms, and how to relate them using both ordered-rule and surface-constraint approaches. The survey of theoretical topics in this term includes distinctive features (context, organization, underspecification); the autosegmental representation of tone; and the theory of phonological domains and their interaction with morphological and syntactic constituency. Emphasizes hands-on analysis of a wide range of data.

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531. Phonology II. (B) Buckley.Prerequisite(s): LING 530.

Second half of a year-long introduction; continues LING 530. Topics to be surveyed include syllable structure and moraic theory; the prosodic hierarchy; the properties and representation of geminates; templatic and prosodic morphology; reduplication and emergence of the unmarked; and metrical phonology (properties of stress, foot typology, and issues of constituency). Emphasizes hands-on analysis of a wide range of data.

SM 538. Computational Methods in Linguistic Research. (M) Staff.

This course aims to provide students with the knowledge and skills needed to use computational techniques to facilitate linguistic research. It introduces the computer representation of linguistic data, the construction of linguistic databases, ways of searching for and extracting information of interest, and ways of generating useful displays of the results. Topics covered include the representation of text on computers (multilingual character encoding, mark-up schemes, means of converting among representations); regular expressions and their use in searching; context free grammars; basic parsing techniques; properties and uses of databases; approaches to annotation; and sorting as a tool for searching and organizing data.

549. (CIS 477) Mathematical Techniques in Natural Language Processing. (A) Joshi.

Basic concepts of set theory, relations and functions, properties of relations. Basic concepts of algebra. Grammars, languages, and automata-finite state grammars, regular expressions, finite state transducers, context-free grammars and pushdown automata. Context-sensitive grammars- string context sensitivity and structural context-sensitivity. Mildly context-sensitive grammars. Turingmachines. Grammars ad deductive systems, parsing as deduction. Stochastic grammars. The course will deal with these topics in a very basic and introductory manner, i.e., the key ideas of the proofs and not detailed proofs will be presented. More importantly, throughout the course plenty of linguistic examples to bring out the linguistic relevance of these topics will be discussed.

545. (COGS501, PSYC501) Mathematical Foundations for Language and Communication Sciences I. (D) Liberman.

This two-semester sequence will provide basic mathematical modeling and algorithmic tools for interdisciplinary research in animal, human or machine communication, in association with the IRCS IGERT program. Topics include signal processing, statistical modeling and machine learning, information theory, game theory, and formal language theory. The courses will be taught in a laboratory setting, and will emphasize practical skills as well as basic concepts.

546. (PSYC646) Mathematical Foundations of Language Communication II. (D) Liberman.

This two-semester sequence will provide basic mathematical modeling and algorithmic tools for interdisciplinary research in animal, human or machine communication, in association with the IRCS IGERT program. Topics include signal processing, statistical modeling and machine learning, information theory, game theory, and formal language theory. The courses will be taught in a laboratory setting, and will emphasize practical skills as well as basic concepts.

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SM 548. Proof Theoretic Foundations of Linguistic Structure. (A) Clark.

This course covers the fundamentals of proof theory and logic as they apply to linguistics. The notion of a well-formed derivation is fundamental to all flavors of formal linguistics and all sub-disciplines of linguistics-phonology, morphology, syntax and semantics. It rests, ultimately, on axiomatic systems developed by logicians to encode the process of valid formal reasoning. We will place a particular emphasis on constructive methods and, where appropriate, develop connections with parsing theory, automatic theorem proving and computational semantics. Time permitting, we will consider some introductory topics in substructural logic-systems that encode some proper sub-part of first order logic. These systems have proven very important in planning, theorem proving, dynamic logic and computational linguistics. The course is intended as a preparation for Linguistics 553 (Formal Semantics I). It includes a review of the propositional and predicate calculus before introducing tableaux and resolution systems, unification, axiomatic systems, natural deduction and sequent calculi. The latter two systems are particularly relevant for grammar formalisms like phrase structure grammars, TAGs and Categorical Grammar.

550. Syntax I. (A) Kroch.

A general introduction at the graduate level to the analysis of sentence structure. The approach taken is that of contemporary generative-transformational grammar.

551. Syntax II. (B) Legate. Prerequisite(s): LING 550 or permission of instructor.

The second half of a year-long introduction to the formal study of natural language syntax. Topics to be covered include grammatical architecture; derivational versus representational statement of syntactic principles; movement and locality; the interface of syntax and semantics; argument structure; and other topics. The emphasis is on reading primary literature and discussing theoretical approaches, along with detailed case-studies of specific syntactic phenomena in different languages.

SM 556. Historical Syntax. (M) Kroch. Prerequisite(s): LING 551 or the equivalent.

Introduction to the study of the syntax of languages attested only in historical corpora. The course will cover methods and results in the grammatical description of such languages and in the diachronic study of syntactic change.

SM 560. The Study of the Speech Community: Field Methods. (C)

For students who plan to carry out research in the speech community. Techniques and theory derived from sociolinguistic studies will be used to define neighborhoods, enter the community, analyze social networks, and obtain tape-recorded data from face-to-face interviews. Students will work in groups and study a single city block.

SM 562. Quantitative Study of Linguistic Variation. (I) Tamminga. Prerequisite(s): LING 560 and either STAT 500 or STAT 501 (or permission of instructor).

This course provides students with the opportunity to hone their statistical, computational, and organizational skillsets while conducting original linguistic research on data gathered in continuing fieldwork in the speech community. Topics include forced alignment and vowel extraction, auditory and automated variable coding, the application of linear and logistic regression, and techniques for effective data visualization.

SM 563. Sound Change in Progress. (M) Prerequisite(s): LING 520.

The study of current sound changes in the speech community through instrumental means. Causes of linguistic diversity and consequences for speech recognition.

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580. (LING380) Semantics I. (A) Schwarz.Prerequisite(s): Ling 550. Corequisite(s): Ling 550.

This course provides an introduction to formal semantics for natural language. The main aim is to develop a semantic system that provides a compositional interpretation of natural language sentences. We discuss various of the aspects central to meaning composition, including function application, modification, quantification, and binding, as well as issues in the syntax-semantics interface. The basic formal tools relevant for semantic analysis, including set theory, propositional logic, and predicate logic are also introduced.

568. (LING368) Dialect Geography. (M) Tamminga.

This course traces the origins and characteristics of regional dialects. Beginning with a survey of the traditional dialectology literature beginning in the 19th century, we will discuss the influences of social, political, and physical geography on language change. We will then move on to examine the foundations of North American English dialect regions and the large-scale language changes that underlie their development. Students enrolled in 368 will complete a final project on American English accents; students enrolled in 568 will write an original research paper on a non-English dialect topic of their choosing.!

SM 570. Developmental Psycholinguistics. (B) Yang.

The generative literature on language acquisition has produced many accurate and insightful descriptions of child language, but relatively few explicit accounts of learning that incorporate the role of individual experience into the knowledge of specific languages. Likewise, the experimental approach to language development has identified processes that could provide the bridge between the data and the grammar, but questions remain whether laboratory findings can sufficiently generalize to the full range of linguistic complexity. This course is an overview of research in language acquisition with particular focus on the important connection between what children know and how they come to know it.

575. Mental Lexicon. (M) Yang.

An investigation of the psychological representations and processing of words. Topics include: the extraction of words from speech; lexical access and production; the induction of morphological and phonological regularities in word learning; decomposition of morphologically complex words; frequency effects in morphological processing; storage vs. computation in the lexicon; the past tense debate; morphological change. This course makes extensive use of linguistic corpora. Students will also be familiarized with experimental design issues in the psycholinguistic study of the lexicon.

581. Semantics II. (B) Schwarz.Prerequisite(s): Ling 551. Corequisite(s): Ling 551.

The first part of the course expands the system from LING 580 to include intensional contexts. In particular, we discuss analyses of modals, attitude verbs, and conditionals, as well as the scope of noun phrases in modal environments. The second part of the course discusses a selection of topics from current work in semantics, such as the semantics of questions, tense and aspect, donkey anaphora, indefinites, genericity, degree constructions, events and situations, domain restriction, plurality and focus.

590. Linguistic Pragmatics I. (A) Staff.Prerequisite(s): LING 550 or permission of instructor.

This course is the first of a two-term introduction to linguistic pragmatics, the branch of linguistics whose goal is to provide a formal characterization of discourse competence, i.e. of what people know when they "know" how to use (a) language. Among the topics investigated are: The Cooperative Principle, conversational and conventional implicature, speech acts, reference, and presupposition.

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SM 591. Linguistic Pragmatics II. (B) Staff.Prerequisite(s): LING 590.

This course is the second of a two-term introduction to linguistic pragmatics. Among the topics investigated are: given/new information, definiteness/ indefiniteness, topic/comment, Centering Theory, discourse structure, and the functions of syntax.

595. Game Theoretic Pragmatics. (M) Clark.

A great deal of linguistic meaning can be explained if we conceive of language as being a signaling system used by rational agents. Game theory provides an explicit mathematical account of rational, strategic interaction. This course will lay out the fundamentals of game theory, evolutionary game theory and multi-agent systems necessary to develop a theory of "radical pragmatics." We will discuss game theoretic models of implicature; presupposition and accommodation; reference tracking; scalar implicature as well as a number of other phenomena.

SM 596. Pragmatics Workshop. (A) Clark.

SM 603. Topics in Phonology. (M) Buckley/Noyer.Prerequisite(s): LING 530-531.

Topics are chosen from such areas as featural representations; syllable theory; metrical structure; tonal phonology; prosodic morphology; interaction of phonology with syntax and morphology.

SM 604. Topics in Discourse Analysis. (C) Staff.Prerequisite(s): LING 550 and LING 590 or permission of instructor.

Selected topics in discourse and pragmatics, e.g. reference, presupposition, functions of syntax.

SM 608. Topics in Semantics and Pragmatics. (M) Clark/Schwarz.

SM 610. (GRMN602) Seminar in Historical and Comparative Linguistics. (C) Ringe.

Selected topics either in Indo-European comparative linguistics or in historical and comparative method.

SM 615. Comparative Indo-European Grammar. (E) Ringe.

A survey of phonology and grammar of major ancient Indo-European languages and the reconstruction of Proto-Indo-European. A knowledge of at least one ancient Indo-European language is required.

SM 640. Formal Semantics and Mathematical Linguistics. (B) Clark.

Advanced readings in formal semantics and discrete and continuous models of linguistic behavior.

SM 616. Comparative Indo-European Grammar II. (C) Ringe.

A survey of phonology and grammar of major ancient Indo-European languages and the reconstruction of Proto-Indo-European. A knowledge of at least one ancient Indo-European language is required.

SM 620. Topics in Phonetics. (M) Liberman/Kuang.

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SM 630. Seminar in Morphology. (M) Noyer/Embick. Prerequisite(s): LING 530.

Readings in modern morphological theory and evaluation of hypotheses in the light of synchronic and diachronic evidence from various languages.

SM 650. Topics in Natural-Language Syntax. (C) Kroch/Legate. Prerequisite(s): LING 551 or permission of instructor.

Detailed study of topics in syntax and semantics, e.g., pronominalization, negation, complementation. Topics vary from term to term.

SM 653. Topics in the Syntax-Semantics Interface. (A) Kroch.

Topics in the Syntax-Semantics Interface

SM 656. Seminar in Historical Syntax. (M) Kroch.

This course analyzes several well documented syntactic changes in the European languages with the tools of modern grammatical and quantitative analysis. The focus is on the competition between forms and systems as in the loss of the verb-second constraint in English and French and the competition between head initial and head final word orders in the several West Germanic languages.

SM 660. Research Seminar in Sociolinguistics. (M) This course will have different topics each term.

Students approaching the dissertation level will explore with faculty frontier areas of research on linguistic change and variation. Topics addressed in recent years include: experimental investigation of the reliability of syntactic judgments; the development of TMA systems in creoles; transmission of linguistic change across generations. The course may be audited by those who have finished their course work or taken for credit in more than one year.

SM 662. Topics in Experimental Sociolinguistics.

SM 670. Topics in the Cultural Evolution of Language. Roberts.

Readings in the cultural evolution of language. This encompasses research on the contribution of processes of cultural change to the emergence of language in the human species, the emergence of new languages, and language change viewed as a cultural-evolutionary process. There will be an emphasis on research employing empirical methods, particularly experimentation. Otherwise focus varies from term to term.

999. Independent Study and Research. (C) Student must submit brief proposal for approval. May be repeated for credit.

Language Courses

071. American Sign Language I. (C) Staff. Offered through the Penn Language Center

Introduction to learning and understanding American Sign Language (ASL); cultural values and rules of behavior of the Deaf community in the United States. Includes receptive and expressive readiness activities; sign vocabulary; grammatical structure; facial expressive, body movement, gestures signs; receptive and expressive fingerspelling; and deaf culture.

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072. American Sign Language II. (C) Staff.Prerequisite(s): LING 071 or Permission of the Instructor.
Offered through the Penn Language Center

Increased communication skill in American Sign Language (ASL); cultural values and behavioral rules of the deaf community in the U.S.; receptive and expressive activities; sign vocabulary; grammatical structure; receptive and expressive fingerspelling and aspects of Deaf culture.

073. American Sign Language III. (C) Staff.Prerequisite(s): LING 072 or permission of instructor.
Offered through the Penn Language Center

Expanded instruction of American Sign Language (ASL). Receptive and expressive activities; sign vocabulary; grammatical structure; receptive and expressive fingerspelling; narrative skills, cultural behaviors; and aspects of Deaf culture. Abstract and conversational approach.

074. American Sign Language IV. (C) Staff.Prerequisite(s): LING 073 or permission of instructor.
Offered through the Penn Language Center

Increases the emphasis on more abstract and challenging conversational and narrative range. Includes receptive and expressive readiness activities; sign vocabulary; grammatical structure; receptive and expressive fingerspelling; various aspects of Deaf culture and cultural behavior rules.

075. American Sign Language V. (C) Staff.Prerequisite(s): LING 074 or permission of instructor.
Offered through the Penn Language Center

This is an advanced ASL course in which students expand their conversational and narrative range. While receptive readiness activities continue to be an important part of the class, the emphasis moves toward honing expressive sign skills through narrative presentation and ASL-only class discussions. Various aspects of Deaf culture and cultural behavior rules will be incorporated into the course. A large component of the course is a unit on Deaf history in which students read and discuss major events and famous deaf people via readings, film, class lectures and discussions, and other outside resources.

SM 076. Deaf Literature, Performance, Art, and Film. (B) Draganac-Hawk.Prerequisite(s): Ling 074 and prior language experience or permission from instructor.

This course is an advanced/conversational ASL course that explores several key topics related to Deaf culture and the Deaf experience s influence on literature (both written and signed), theatre, fine and visual arts, and film -both Deaf and hearing directed and acted. Using only ASL in class, students learn about various perspectives and approaches to each of the themes and topics of the course. Some questions to explore and answer in this course will be: What is Deaf Literature? The Deaf Lens: What is it? How is it different from a hearing perspective on film? How is Deafness expressed differently in each of the arts discussed in this course? Analysis and discussion will come from readings as well as viewings of various types of Deaf arts.

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077. ASL/Deaf Studies - ABCS. Fisher. Prerequisite(s): Ling 078 and permission from instructor.

For this course, students will attend Pennsylvania School for the Deaf on a weekly basis where they will participate in and contribute to the school community via tutoring or other mutually agreeable activities. Students will also have formal class on a weekly basis with discussions and activities centering on reflection of community experiences through linguistic as well as cultural lenses. Additionally, drawing from the required Linguistics and other ASL/Deaf Studies coursework, students will develop an inquiry question and conduct preliminary community-based research to analyze sociolinguistic variations of ASL and Deaf cultural attitudes, behaviors, and norms. Ongoing reflections and discussions-formal and informal-on Deaf cultural/theoretical topics drawing from readings as well as community experiences will be integral to the course experience. LING 078, Topics in Deaf Culture and permission from the instructor, are required for this course.

SM 078. Deaf Culture. (C) Fisher. Prerequisite(s): LING 074 or permission from coordinator. Offered through Penn Language Center

This course is an advanced/conversational ASL course that explores several key topics related to Deaf Culture. Using only ASL in class, students will read and discuss books, articles, and films related to the following topics: What is Deaf Culture?, The History of the Deaf American, Communication Issues and Pathological Perspectives on Deafness, Deafness and Education, Deaf/Hearing Family Dynamics, and Deaf Theatre, Arts, and Poetry. Vocabulary, grammar, and idioms related to the topics will be presented through direct instruction as well as through the course of class conversation.

081. Beginning Irish Gaelic I. (D) Blyn-LaDrew. Offered through the Penn Language Center

Irish Gaelic, spoken primarily on the west coast of Ireland, is rich in oral traditions, song, poetry and literature. Knowledge of this language provides a foundation to understanding Celtic folklore and linguistics and also enhances the study of Anglo-Irish literature and history. The first-year course will include reading, conversation, listening and speaking.

082. Beginning Irish Gaelic II. (C) Blyn-LaDrew. Prerequisite(s): LING 081 or permission from instructor. Offered through Penn Language Center

083. Intermediate Irish Gaelic I. (C) Blyn-LaDrew. Prerequisite(s): LING 082 or equivalent. Offered through the Penn Language Center

085. Advanced Irish Gaelic I. (C) Blyn-LaDrew. Prerequisite(s): LING 084 or equivalent. Offered through Penn Language Center

086. Advanced Irish Gaelic II. (C) Blyn-LaDrew. Prerequisite(s): LING 085 or equivalent. Offered through the Penn Language Center

This course will emphasize reading of literary texts, and advanced aspects of grammar, composition, and conversation.

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088. History of the Irish Language. (L) Blyn-LaDrew. Offered through the Penn Language Center

From downloadable lists of computer terminology in Irish to Ogam inscriptions chiseled in stone in the 5th century, the history of the Irish language reflects the history of the people themselves. This course outlines the language's changes through time and emergence from the unwritten Celtic, proto-Celtic, and Indo-European speech of its ancestors. Beginning in the modern period, when the very status of Irish as a living language has been hotly debated, the course will look backwards at the Celtic cultural revival of the late 19th century, the impact of the famine, nationalism, colonialism, the arrival of Christianity and the Roman alphabet, and the position of Irish within the Celtic branch of the Indo-European language family. Term papers may be based on fieldwork in the Irish-American community, or research. Audio and visual resources will supplement the lectures. Knowledge of Irish Gaelic is not required.

091. American Sign Language III/IV. (M) Staff. Prerequisite(s): LING072 or by permission of instructor. Corequisite(s): Expanded instruction of ASL. Offered by Penn Language Center; permit from Penn Language Center required for admission.

Expanded instruction of American Sign Language (ASL). Includes receptive and expressive readiness activities; sign vocabulary; grammatical structure; receptive and finger-spelling; narrative skills; cultural behaviors; and aspects of Deaf culture. Increases the emphasis on more abstract and challenging conversational and narrative range. Abstract and conversational approach.