Meeting time: TTh 10:30-11:45  
Location: Gasson Hall 206
Instructor: Dr. Joshua Hartshorne  
Teaching assistant: Wei Li
Email: joshua.hartshorne@bc.edu

Office hours:
- JKH
  - Th 12:30-1:45, 3:00-4:00, McGuinn 522
  - Coffee “hour” (see below): Tue 9:30-10:15
- Wei Li
  - T 9:00-9:30, 11:45-12:45, W 3:30-4:30, Th 9:00-10:30, McGuinn Hall 524, with Zoom optional
    (https://bccte.zoom.us/j/2469800967?pwd=SDJJY0NXNWRib0piaW9zUHh4ODFDQT09)

Website: The website for this course is on CANVAS. All readings, files, and recordings will be posted here. You will also submit your assignments through the website.

Overview: Children have an instinct for language. Every typically-developing child learns language – something neither our most powerful machines or smartest non-human animals can do. Even adults do not learn language as quickly or successfully as children. If not exposed to a language, children will invent one. In this course, we try to understand how children learn language, why animals, machines, and adults have so much difficulty learning language, and what the answers to these questions say about what it means to be human. After completing this course, you will be able to:

- Explain the major scientific and philosophical quandaries about language.
- Summarize models and theories of language development.
- Understand how empirical data support or reject hypotheses about mechanisms supporting development.
- Contrast language acquisition in humans versus nonhuman primates.

Course Format: This is a lecture class. Lectures will reinforce key points from the materials, but will consist mostly of new material.

Course text: All readings and videos are free and available through the course website. If you feel that a textbook would be helpful, many of my colleagues use The Development of Language by Jean Berko Gleason & Nan Bernstein. A much cheaper (and more fun) alternative is The Language Instinct by Steven Pinker. While older than any of you, it still remains one of the best overviews of language available.

Grades: Exams (40%), Quizzes (50%), Class Activities (10%).

Exams. There will be three non-cumulative exams. Each covers the classes since the previous exam.

Quizzes. There is a multiple-choice quiz due half an hour before each class (exceptions: the first day of class, two review days, and the exam days). Each quiz covers the materials for that day. You can take the
quiz as many times as you like; only your final score will be counted. Note that you don’t get exactly the same questions each time. **Your two lowest scores will be excluded.**

**Class Activities.** Some classes will have in-class comprehension questions or other graded activities. These are worth 10% of the grade. Note that these are graded leniently: 80% for turning something in, 100% for getting it right.

**Extra Credit.** There will be one or more extra credit opportunities posted on Canvas. Read there for more information.

**Coffee “Hour”**

- This is a new thing I’m trying this year. I’ll buy coffee for up to 3 students at a time, Tuesday mornings at 9:30, at the chocolate café. This is your opportunity to discuss the class and all things language in a more informal setting. Sign up at https://signup.com/go/ALpACAR.

**Policy information:**

- **Inclusion, Equity, & Belonging.** It is my intent that students from all diverse backgrounds and perspectives be well-served by this course, that students' learning needs be addressed both in and out of class, and that the diversity that the students bring to this class be viewed as a resource, strength and benefit. It is my intent to present materials and activities that are respectful of diversity: gender identity, sexuality, disability, age, socioeconomic status, ethnicity, race, nationality, religion, and culture. Your suggestions are encouraged and appreciated. Please let me know ways to improve the effectiveness of the course for you personally, or for other students or student groups. **Also:** Language is deeply tied to identity, and people can – and should – have passionately-held opinions and beliefs. It is imperative that there be an atmosphere of trust and safety in the classroom. I will attempt to foster an environment in which each class member is able to hear and respect each other. Please be respectful of others’ emotions and mindful of your own. Please let me know if something said or done in the classroom, by either myself or other students, is particularly troubling or causes discomfort or offense.

- **Compassionate flexibility and support.** None of us can predict how the COVID-19 pandemic will affect us individually or collectively as the semester progresses. I recognize that you may face added obstacles to your classroom success this semester. I ask that you inform me – with as much advanced notice as possible – if you become unable to engage with the class material in the way it is outlined on this syllabus so that we can work together to develop a plan. In these uncertain times, I also hope you will view me as a part of your support network at Boston College; please reach out if you have questions or concerns, or would like help getting connected with other campus resources. **Please bear this in mind** as you read the following regulations, which are carried over from the Before Times.

- **Make-up exams, absences, etc.** My working assumption is that this will be a hard semester for everyone. My goal is for everyone to learn the material. Learning it on schedule would be nice, but is not my priority right now. If you feel there are accommodations that you need in order to learn the material to the best of your ability, please talk to me about them. I’ll be as flexible as I can within the constraints imposed by BC and also the constraints imposed by the pandemic on me (I’m swimming in the same ocean as you). I won’t compromise on learning outcomes, but everything else is up for discussion if needed. What works best is for you to come to me with a proposal, and we can take it from there.
• **Regrade.** If you are unhappy with the grading of your exam or data exercise, you can request a regrade of the entire document but not of a particular section. Additional points may be added or deducted during this regrade.

• **Academic dishonesty.** Cheating on academic work will not be tolerated in any form, and will be subject to strong penalties in this class and the university system. When in doubt, listen to your conscience ... and the instructor. I am happy to answer your questions. See also the university policy (https://www.bc.edu/offices/stserv/academic/integrity.html).

• **Disabilities or special needs.** If you are a student with a documented disability seeking reasonable accommodations in this course, please contact Kathy Duggan, (617) 552-8093, dugganka@bc.edu, at the Connors Family Learning Center regarding learning disabilities and ADHD, or Rory Stein, (617) 552-3470, rory.stein@bc.edu, in the Disability Services Office regarding all other types of disabilities, including temporary disabilities. Advance notice and appropriate documentation are required for accommodations. Beyond that, you can talk to me. I'm reasonable.

• **Mental Health.** We will *not* get through the semester without somebody having a mental health crisis. These are the times we live in, and you all are the age. If you are feeling stressed, having challenges managing your time, sleep, or making choices around alcohol and food, the Office of Health Promotion (OHP) offers Individual and Group Health Coaching appointments with a trained Health Coach. Please reach out by going to the Health Promotion website or walk over to Gasson 025 and talk with a staff member. Seriously. Take care of yourselves.

• **Course evaluation.** Your feedback about this course is very important to me. I am constantly revising this course to make it better. Your feedback will help me make it better not just for future students, but for *you*. I'll ask for formal feedback during the semester, but please talk to me any time if you have something you would like me to consider.

**Assignment:**

• **Introduction I: Why is language possible at all, and why can't everyone do it?**
  - Descriptive & prescriptive grammar: [video](#)
  - Steven Pinker on the "language instinct": [video](#)
  - [LAAD Lecture 1.mp4](#) ← Sadly, Youtube doesn’t feel like all the content in this video is fair use, so it’s not available publicly
  - Optional:
    - "Where are all the talking robots?:" [article](#)

• **Introduction II: The shape of language development**
  - *The Language Instinct*. pp. 262-290
  - the first word in one child's vocabulary: [video](#)
  - babbling in sign language

• **A Brief Introduction to Language: Linguistic Structure**
  - First 26:52 min of "Linguistics as a Window into Human Nature"
  - Crash Course Linguistics: Morphology
  - Crash Course Linguistics: Morphosyntax
  - Crash Course Linguistics: Syntactic Trees
A brief introduction to language: Linguistic diversity

- **Part 1: Idiolects, Dialects, & Languages**
  - **Idiolects, dialects, and language**
  - African American Vernacular English ("ebonics") and Appalachian English.
  - Accents differ.
  - Cultural evolution.
  - Optional:
    - UK accents
    - A prose poem in three dialects.

- **Part 2: Pidgins & Creoles**
  - Overview from LingSpace
  - Hawaiian Pidgin
  - Jamaican Patois.
  - Optional
    - Pinker. The Language Instinct. pp. 31-39
    - Haitian Creole.

- **Part 3: Bilingualism**
  - First half of the Wikipedia article
  - Bilingualism seems to have some benefits: this short overview
  - This short video, gives a formal overview of "code switching"
  - The get an intuition as to people's motivations when they code-switch, read this Wikipedia article (up through “Types”), which focuses on switching between languages, and this one, which talks about switching between dialects.
  - Optional
    - Bialystok (2010) Bilingualism
    - Watch this video by Maria Polinsky
    - This very short video describing a recent study
    - A motheralking about her efforts to raise her child trilingual.

- **What is Language: Animal Communication**
  - Zuberbuhler (2015) Linguistic capacity of non-human animals
  - Video about bird communication: Link
  - Janik (2013) Cognitive skills in bottlenose dolphin communication
  - Herzing, Could we speak the language of dolphins?

- **Recommended:**
  - King & Janik (2013) Bottlenose dolphins can use learned vocal labels to address each other.
- Ouattara et al. (2009) Campbell’s monkeys concatenate vocalizations into context-specific call sequences

- Sign Language (+ language development)
  - many different sign languages: [Link](#)
  - three common sign languages: [Link](#)
  - less well-known sign language: [Link](#)
  - Wikipedia page on sign languages: [Link](#)
  - Sign language poetry: [Link](#)
  - babbling ... in sign language: [Link](#)
  - home signs on Wikipedia: [Link](#)
  - Highly recommended:
    - deaf music videos are a thing: [Link](#)
    - That video that was upbeat, good, and PG. The more adventurous might check out this list: [Link](#)

- The Poverty of the Stimulus, The Paradox of Diversity, & Some Broad Principles
  - Features English is lacking, but most languages have
  - What English does, but most languages can’t
  - Theories of Language Acquisition: Ben Ambridge
  - first 8 minutes of this [Interview with Adele Goldberg](#)
  - Induction and Abduction
  - Recommended
    - How to understand the deep structures of language

- Phonology I
  - Videos:
    - children are noticeably bad at pronouncing things.
    - such errors are not easy to fix
    - time-lapse speech portrait
  - Watch this three-part overview of pronunciation:
    - Crash Course Linguistics: [Phonetics 1](#)
    - Crash Course Linguistics: [Phonetics 2](#)
    - Crash Course Linguistics: [Phonology](#)
  - More videos:
    - clicks in Xhosa
    - The Click Song.
    - tones
    - very short overview of prosody
  - Recommended:
    - Informants videos from Week 2 of *Human Language*
    - Chapters from World Atlas of Language Structures
      - consonant inventories
      - vowel quality inventories
• **consonant-vowel ratio**
  - Steve Pinker’s overview of phonology, from 32:05 - 43:33 in [this video](#)

• **Phonology II & Learning Wordforms**
  - Two videos about Werker’s classic studies of learning phonology
    - [Werker and learning phonology](#)
    - [More Werker](#)
  - [Werker & Gervain (2012) Speech perception in infancy](#)
  - Ling Space for more on phonological development: [Link](#)
  - Statistical learning. Watch from 9:00 to 13:45 of this interview with Prof. Saffran: [Link](#)
  - [Romberg & Saffran (2010) Statistical learning and language acquisition](#)
  - Recommended
    - Lingthusiasm has a nice, 30-min podcast on phonemes and phoneme acquisition [here](#)
    - a brief overview of statistical learning in the visual modality same phenomenon in vision: [Link](#)
    - [this recent paper](#) on the neuroscience of critical periods in speech perception.

• **What is semantics?**
  - video on [Semantics](#) from Crash Course Linguistics.
  - overview from our friends at Coursera.
    - "[Layers of meaning ](#)"
    - "[Semantics ](#)"
  - Pinker. *The Stuff of Thought*. Chapter 4: Cleaving the Air.
  - [Malt & Majid (2013) How thought is mapped into words](#)
  - [Wolff & Holmes (2010) Linguistic relativity](#)

• **Semantics/Words: Cross-Situational Learning & Poverty of the Stimulus**
  - [Cross-situational learning](#), a brief introduction
  - [A grue gavagai counted to 10](#)
  - [The Ship of Theseus](#)
  - An excerpt from [an interview with Chomsky](#) on semantics
  - [The problem of induction](#), through end of Sec. 2
  - something completely different: [Link](#)
  - Recommended
    - more from Chomsky: [video](#) from 54:30 to 1:03:30
    - importance of 'grue' and 'bleen' to philosophy and logic: [Link](#)

• **Word-learning Heuristics**
  - [Markman (1990) Constraints children place on word meanings](#)
  - Mutual Exclusivity: [Link](#)
  - [Bloom 2002 Precis of How Children Learn the Meanings of Words](#) (target article only)
  - [Ostensive Labeling](#)
  - [Human simulation paradigm](#)
  - [Fisher et al. (2010) Syntactic bootstrapping](#)
  - Recommended
    - LingSpace on word learning: [Link](#)
The commentaries from the Bloom paper was from Brain & Cognitive Sciences.

- **Syntax I**
  - Reviewing the two videos we watched earlier on syntax [here](#) and [here](#).
  - Coursera course:
    - Morphology
    - Word Order A
    - Word Order B
    - Scroll down to the 'language informants' section -- there are 6 short videos
  - [Piraha in the New Yorker](#)
  - Recommended:
    - If you are still feeling iffy on word order and syntactic trees, try out this video on word order, grammar, and phrase structure rules.

- **Syntax II: Development & Poverty of the Stimulus**
  - [How do babies build sentences? The stages of child syntax](#) from Ling Space
  - [acquisition of morphology](#)
  - Pinker. The Language Instinct. pp. 39-45
  - [Laurence & Margolis (2001) The Poverty of the Stimulus argument](#) (through page 233)
  - One of the important empirical findings that challenged empiricism: [Link](#)
  - Special Case: Baker's Paradox illustrated by the Chomsky Hierarchy:
    - Chomsky Hierarchy
    - Baker’s Paradox: [Link](#)
  - Recommended:
    - I only assigned the first part of the Laurence and Margolis paper. The rest is good, too.
    - [Crain & Thornton (2012) Syntax acquisition](#)

- **Syntax III: Typology & It All Gets Weird**
  - [Universal Grammar](#)
  - [open letter](#) to the creator of the Dothraki language for Game of Thrones
    - [his reply](#)
  - [Noam Chomsky](#) on language’s great mysteries
  - The Classification of Languages
  - Levinson & Gray (2012) Tools from evolutionary biology shed new light on the diversification of languages
  - Cormier (2014) Pronouns, agreement and classifiers: What sign languages tell us about linguistic diversity and linguistic universals
  - Recommended:
    - Sinnemak (2014) Cognitive processing, language, typology, and variation
    - Greenberg's Univerals
    - WALS has 144 chapters on different aspects of language that may vary. I recommend spending some time skimming through it.

- **Classic Empiricism vs. Universal Grammar**
  - A nice historical overview: [Link](#)
  - Cook & Newson (2014) Chomsky’s Universal Grammar pp. 1-17
  - Ambridge & Lieven (2011) Child Language Acquisition. Sec. 4.2: Constructivism
Optional:
- If it's not obvious to you how Constructivism differs from Generative Grammar, take a look at this brief overview of Generative Grammar
- Ambridge & Lieven (2011) Child Language Acquisition, Sec. 6.3.2 (Preemption & Entrenchment)
- Goldberg & Suttles (201) Construction Grammar
- Recommended
  - Cook & Newson (2014) Chomsky’s Universal Grammar pp. 18-39
  - discussion of Constructivist approaches to language acquisition: [here](#)

- The Language Instinct: Language Creation
  - [Nicaraguan Sign Language](#)
  - [What sign language creation teaches us about language](#)
  - Annmarie Kocab, (from 13;15 to 42;40) on development of Nicaraguan Sign Language
  - Bickerton, (1983) Creole languages
  - Recommended
    - NSL with detail in other areas: [video](#) and [Gleitman & Newport (1995)](#) The invention of language by children.

- It gets weirder again: unsupervised learning, self-supervised learning, Bayesian learning
  - [Supervised Learning](#)
  - [Unsupervised Learning](#)
  - [Reinforcement learning](#)
  - [Artificial learning learns to learn entirely on its own](#)
  - [Bayes Rule](#)
  - [Bayesian Learning](#)
  - [Probabilistic models of cognition](#)
  - Recommended
    - [Deep Mind explained](#)

- Case Study 1: Bootstrapping & the Semantics of Syntactic Frames
  - Pinker “What our language habits reveal” (first 10 min, 15 sec)
  - Now watch these videos my lab produced for our VerbCorner project:
    - [dative alternation](#) ← not publicly available yet
    - [causative alternation](#) ← not publicly available yet
  - This paper by Ed Kako and Laura Wagner does a nice job of briefly describing several types of theories
  - Reread: Fisher et al. (2010) Syntactic bootstrapping
  - Recommended
    - Kako (2006) The semantics of syntactic frames

- Case Study 1: Psych Verbs
  - Hartshorne et al. (2016) Psych verbs, the linking problem, and the acquisition of language
  - core knowledge
  - Recommended:
    - the wikipedia page on semantic bootstrapping

- Case Study 1.5: Conceptual Nativism
- **Semantic Bootstrapping**
- Hartshorne & Snedeker (in prep) Conceptual Bootstrapping ← not yet publicly available
- Recommended
  - [Roy (2005) Grounding words in perception and action: computational insights](#)

  - **Case Study 2: The Great Past Tense Debate I**
    - Several videos from a course on machine learning:
      - [Artificial Neural Networks](#)
      - [Artificial Neural Networks quiz](#)
      - [Quiz answer](#)
    - McClelland & Rumelhart’s claim that their neural networks actually solve syntax was highly controversial, and many linguists and language acquisition researchers (most prominently, Steve Pinker; much less prominently, your instructor) pushed back:
      - Pinker & Ullman (2002) *The past and future of the past tense*
      - McClelland & Patterson (2002) ‘Words or Rules’ cannot exploit the regularity in exceptions
      - Pinker & Ullman (2002) Combination and structure, not gradedness, is the issue
    - Recommended

  - **Case Study 2: Great Past Tense Debate, Postscript**
    - a friendly introduction to recurrent neural networks
    - The Great AI Awakening
    - The year of monster models

  - **The Language Instinct: Critical Periods 1**
    - watch this short video about Genie: [Link](#)

  - **Case Study 3: Animals (failing at) learning language**
    - Pinker. *The Language Instinct*. pp. 335-342
    - Videos:
      - Kanzi talks to reporters
- Kanzi and novel sentences
- The dog who knows 1,000 words
- The language of dolphins
- Irene Pepperberg & Alex
- Snowball not language, but can’t not watch
  - Highly Recommended
  - Kanzi’s lexigram system: Link