Graduate Student Orientation - CLASIC

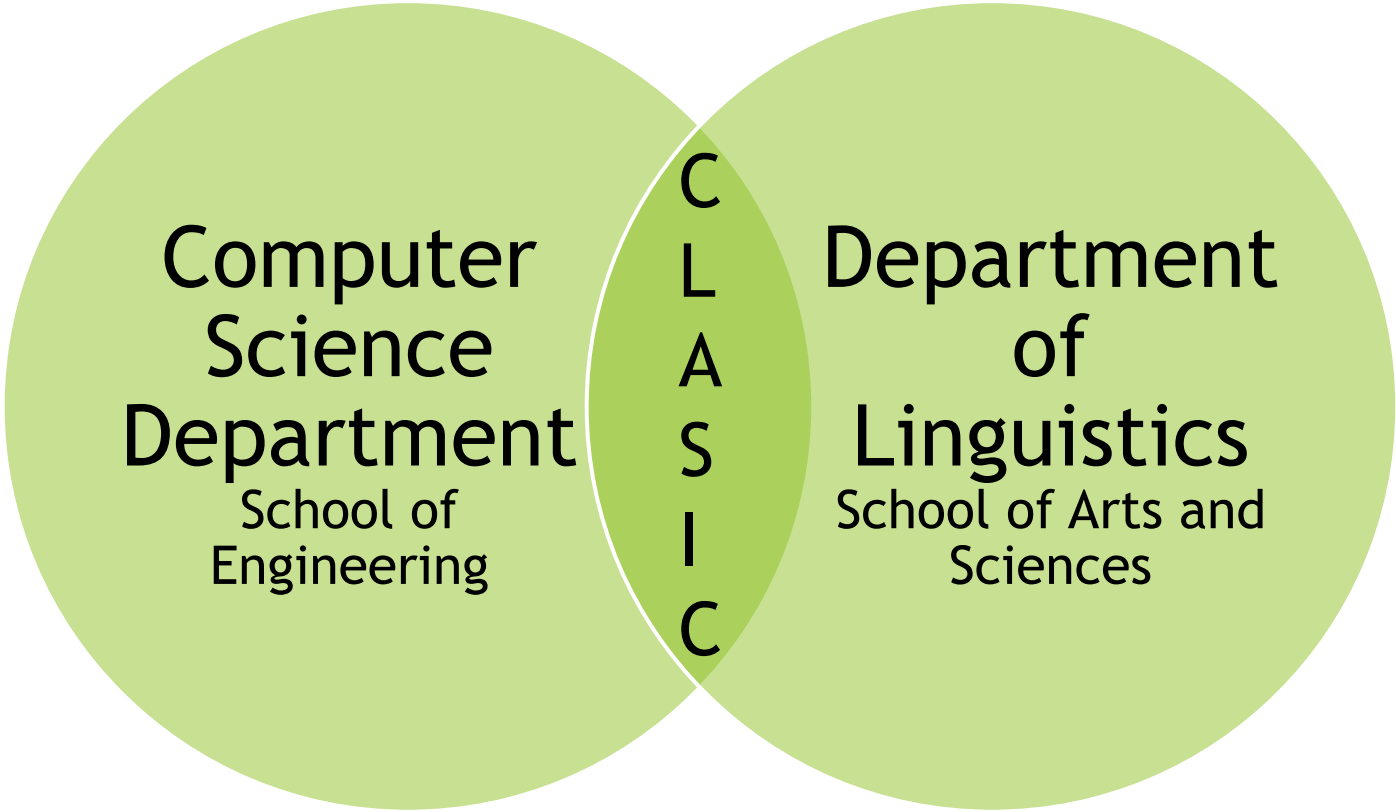
August 22, 2024

Susan Windisch Brown

Computational Language and EducAtion Research
C L E A R

University of Colorado **Boulder**

Welcome to CLASIC



People

- CLASIC Director
  - Susan W. Brown Susan.Brown@Colorado.EDU
- CLASIC Program Coordinator
  - Kris Stenzel clasic_contact@colorado.edu
- CLASIC Director Emerita
  - Martha Palmer Martha.Palmer@colorado.edu
- Other Faculty
  - Jim Martin, Maria Pacheco Gonzalez, Alexis Palmer
- Boulder NLP – weekly lab meetings (CompSem)
  - 11:30-1:00, Wednesdays, MUEN D430

CLASIC Advisory Board

- Salim Roukos (IBM)
- Marjorie Freedman (ISI)
- Peter Foltz (CU, formerly Pearson)
- Fei Xia (University of Washington)
- Claire Bonial (Army Research Lab)
- Katrin Erk (University of Texas)
- Yunyao Li (Adobe Experience Platform)
- Sebastian de la Chica (Microsoft)

Former board members

- Miriam Eckert (Nuance)
- Alessandro Moschitti (Amazon)
- Bill Dolan (Microsoft)
- Nancy Chang (Google)

Work opportunities

- Professional masters students are ineligible for teaching or research assistantships (TA and RA positions).
- Any hourly paid position at the university is fine.
- Common types:
  - Grading for computer science classes
  - Hourly student positions in research labs (CLEAR has several grant-funded research projects that often hire students.)
- Continuing summer internship during the school year

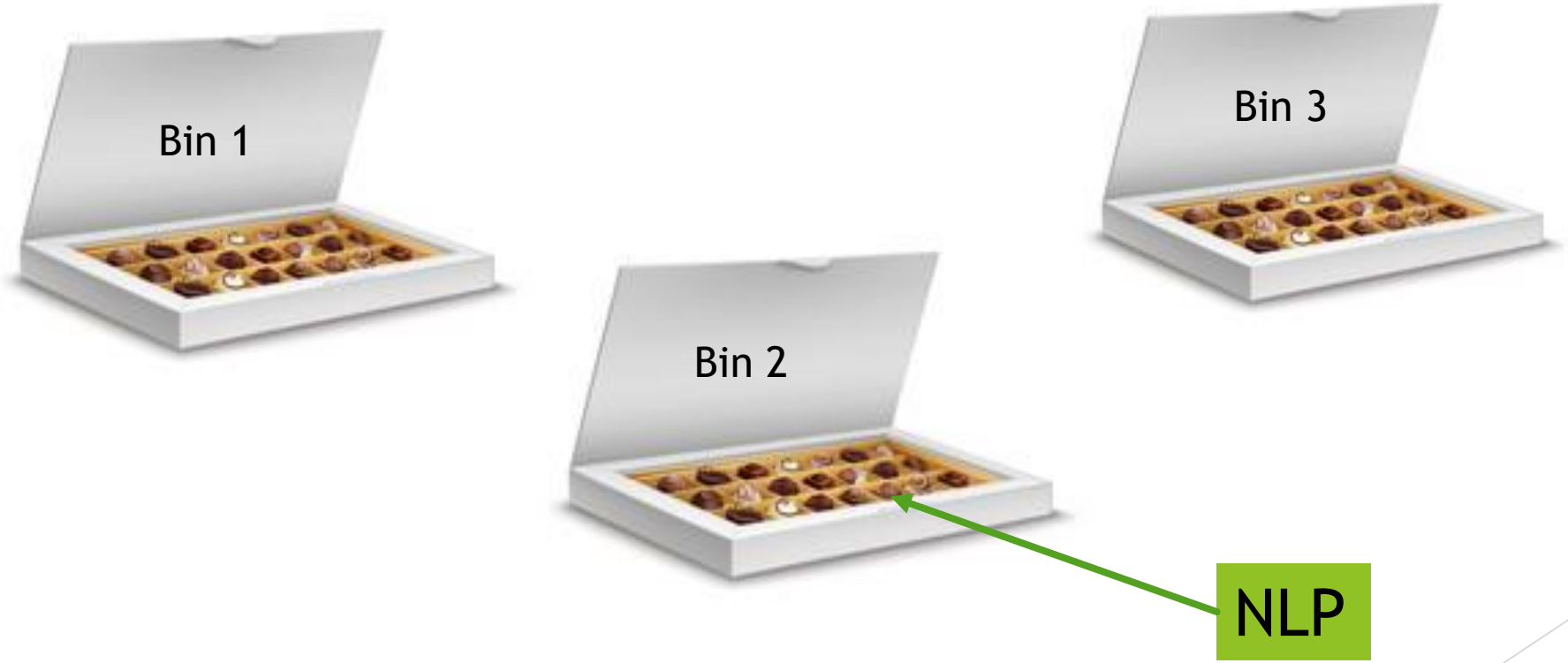
Registering for classes

- Advising session via Zoom or in person each semester
- Submit any prerequisite forms for CS classes
- Register directly for LING and CS classes
- Contact Kris Stenzel if you have problems registering for any classes

Degree Overview – 32 credit hours

CS Core - 6 credit hours	LING Core - 9 credit hours	CLASIC Core - 17 credit hours		
		Computational Linguistics Classes – 9 credit hrs	2 Electives – 6 credit hrs	Capstone Research Project – 2 credit hrs
• 1 class from CS Bin 1 • 1 class from CS Bins 1, 2 or 3	2 of these 3 courses: • Syntax • Semantics & Pragmatics • Phonetics +1 of any advisor-approved LING course	3 Courses: 1. Natural Language Processing 2. Computational Lexical Semantics 3. Computational Phonology	Choose from: • Topic Modeling • Speech Recognition • Formal Semantics • etc.	• Summer Internship or university project • Course in Spring of Year 2

Computer Science Core: 3 breadth areas (“Bins”)



- https://www.colorado.edu/cs/graduate-breadth-courses

Computer Science Core: Our recommendations:

Bin One

- CSCI 5229 – Computer Graphics
- CSCI 5254 – Convex Optimization
- CSCI 5434 – Probability for Computer Science
- CSCI 5444 – Introduction to Theory of Computation
- CSCI 5446 – Chaotic Dynamics
- CSCI 5454 – Design and Analysis of Algorithms
- CSCI 5576 – High-Performance Scientific Computing
- CSCI 5606 – Principles of Numerical Computation
- CSCI 5636 – Numerical Solution of Partial Differential Equations
- CSCI 5646 – Numerical Linear Algebra
- CSCI 5654 – Linear Programming
- CSCI 5676 – Numerical Methods for Unconstrained Optimization

Computer Science Core:

Bin Two

- CSCI 5302 – Advanced Robotics
- CSCI 5322 - Algorithmic Human Robot Interaction
- CSCI 5352 – Network Analysis and Modeling
- CSCI 5402 - Research Methods in Human Robot Interaction
- CSCI 5502 – Data Mining
- CSCI 5616 - Introduction to Virtual Reality
- CSCI 5622 - Machine Learning
- CSCI 5722 - Computer Vision
- CSCI 5832 – Natural Language Processing
- CSCI 5839 – User Centered Design
- CSCI 5849 - Input Interaction and Accessibility
- CSCI 5922 - Neural Networks and Deep Learning

Computer Science Core:

Bin Three

- CSCI 5135 – Computer-Aided Verification
- CSCI 5253 – Datacenter Scale Computing
- CSCI 5273 – Network Systems
- CSCI 5403 – Intro to Cyber Security
- CSCI 5413 – Ethical Hacking
- CSCI 5448 – Object-Oriented Analysis and Design
- CSCI 5525 – Compiler Construction
- CSCI 5535 – Fundamental Concepts of Programming Languages
- CSCI 5573 – Advanced Operating Systems
- CSCI 5673 – Distributed Systems
- CSCI 5828 - Foundations of Software Engineering
- CSCI 5854 – Theoretical Foundation of Cyber-Physical System

Linguistics Core:
2 of the following 3 LING courses +1 approved LING course

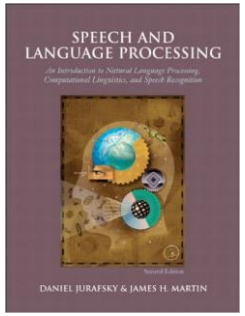
- LING 5030 Phonetics (offered in fall)
- LING 5420 Morphology and Syntax (offered in fall)
- LING 5430 Semantics and Pragmatics (offered in spring)

Possible Linguistics electives

- LING 5200 Computational Corpus Linguistics
- LING 5800 Machine Learning and Linguistics
- LING 6300/3800 Formal Models of Linguistics
- LING 6200 Issues and Methods in Cognitive Science
- LING 7800 Open Topics in Linguistics

CLASIC Core:
5 courses

*Jim Martin wrote the book



- **REQUIRED:** CSCI/LING 5832 Natural Language Processing
- **REQUIRED 2 of 3:**
  - CSCI 7000/LING 7800 Computational Lexical Semantics
  - CSCI/LING 7565 Computational Morphology and Phonology
  - LING 7800 Computational Models of Discourse
- **2 Electives,** approved by advisor

CLASIC Core: 2 electives

Bin Two

- CSCI 5302 – Advanced Robotics
- CSCI 5322 - Algorithmic Human Robot Interaction
- CSCI 5352 – Network Analysis and Modeling
- CSCI 5402 - Research Methods in Human Robot Interaction
- CSCI 5502 – Data Mining
- CSCI 5616 - Introduction to Virtual Reality
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- CSCI 5832 – Natural Language Processing
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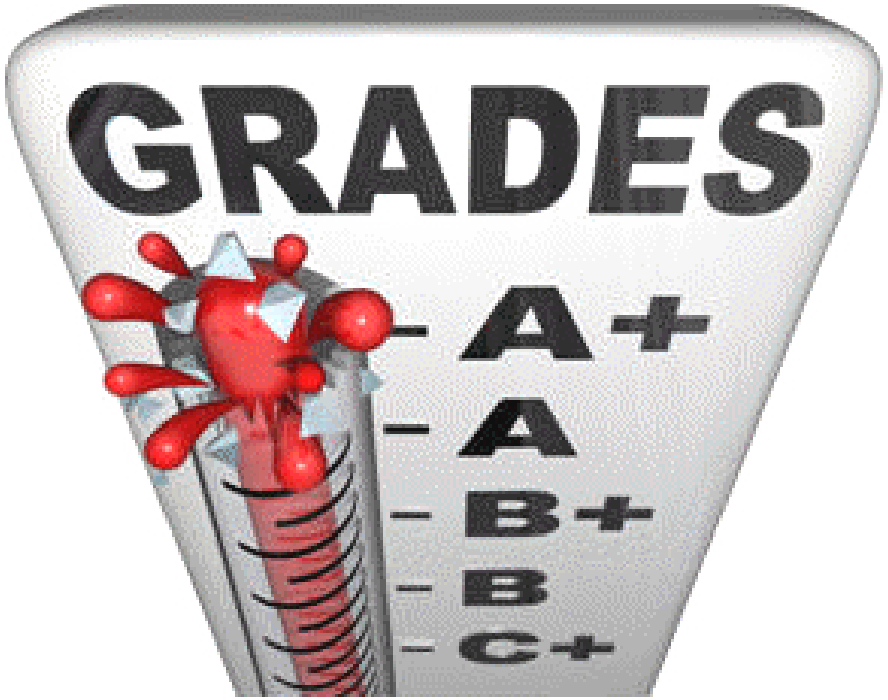
- CSCI 5922 - Neural Networks and Deep Learning

CLASIC Core:
Other possible electives

- LING 6520 Topics in Comparative Grammars: Computational Grammars
- CSCI 7000 Inference, Models and Simulation for Complex Systems
- CSCI 5822 Probabilistic Models of Human and Machine Intelligence
- CSCI 7222 Topics in non-symbolic AI: Representation Learning for Language
- LING 5200 Computational Corpus Linguistics
- LING 5800 Machine Learning and Linguistics
- LING 7800 Open Topics in Linguistics
- INFO 5604 Applied Machine Learning

Degree Overview – 32 credit hours

CS Core - 9 credit hours	LING Core - 9 credit hours	CLASIC Core - 14 credit hours		
		Computational Linguistics Classes – 6 credit hrs	2 Electives – 6 credit hrs	Capstone Research Project – 2 credit hrs
• NLP (req) Bin 2 • 1 class from CS Bin 3 • 1 class from CS Bin 1, 2 or 3	2 of these 3 courses: • Syntax • Semantics & Pragmatics • Phonetics +1 of any advisor-approved LING course	2 of these 3 Courses: 1. Comp. Lexical Semantics 2. Comp Phonology 3. Comp Models of Discourse	Choose from: • Topic Modeling • Speech Recognition • Formal Semantics • etc.	• Summer Internship or university project • Course in Spring of Year 2



- We expect students to get at least a B
- CS Bin courses must be B or higher (no B-)
- Graduate School **only** accepts C or higher (no C-)

Capstone Project and Class Timeline

- **Spring 2025** Find an internship or CU-based research project.
- **May 2025** Develop a training and research plan in collaboration with your Capstone project leader.
- **August 2025** Write short summary of internship, approved by project leader at the end of the internship.
- **Spring 2026** Prepare a technical report during the Capstone class on the completed project, which will be presented to your fellow cohort members and submitted to a conference or workshop in Spring 2025.

Finding the internship

In mid fall, we will have an internship information session

Questions?