This is a unique interdisciplinary degree that provides a solid foundation in both computer science and linguistics graduate coursework as well as several courses focused on data-driven linguistics, computational linguistics and information processing. The training is aimed at preparing students for careers in areas such as predictive text messaging, search engines, question-answering, interactive virtual agents and machine translation.

Distance Education Option

Students can take individual courses toward a master’s degree or graduate certificate through distance education (online). For more information, connect with the individual graduate program directly.

Due to the hands-on learning experience, some courses must be taken on campus. This is a hybrid program.

Requirements

Students must complete at least 32 hours of approved graduate study, including a 2-credit capstone course focused on a publishable research project, which will run in conjunction with an internship or a CU-based research project. As part of the capstone, students will be evaluated by their employer or industry project manager. Students will also prepare a technical report on the completed project that the program directors and project leader will jointly evaluate. A minimum course grade is a B and a minimum GPA for graduation is 3.0.

To fulfill core requirements defined below, students must take graduate breadth courses in 3 different breadth bins. This includes core computer science (bins 1 and 3) and core CLASIC (bin 2).

Required Courses and Credits

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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</thead>
<tbody>
<tr>
<td></td>
<td><strong>Core Linguistics Courses</strong></td>
<td>9</td>
</tr>
<tr>
<td>Choose two of the following:</td>
<td></td>
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<tr>
<td>LING 5030</td>
<td>Linguistic Phonetics</td>
<td></td>
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<tr>
<td>LING 5420</td>
<td>Morphology and Syntax</td>
<td></td>
</tr>
<tr>
<td>or LING 6450</td>
<td>Syntactic Analysis</td>
<td></td>
</tr>
<tr>
<td>LING 5430</td>
<td>Semantics and Pragmatics</td>
<td></td>
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<tr>
<td>Choose one:</td>
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</tr>
<tr>
<td>Any LING course at the 5000-, 6000- or 7000-level (subject to advisor approval)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Core Computer Science Courses</strong></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Bin 1 (choose one)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recommended options:</td>
<td></td>
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</tr>
<tr>
<td>CSCI 5454</td>
<td>Design and Analysis of Algorithms</td>
<td></td>
</tr>
<tr>
<td>or CSCI 5444</td>
<td>Introduction to Theory of Computation</td>
<td></td>
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<tr>
<td>or CSCI 5714</td>
<td>Formal Languages</td>
<td></td>
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<tr>
<td>CSCI 5606</td>
<td>Principles of Numerical Computation</td>
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</tbody>
</table>

or CSCI 5645 Numerical Linear Algebra

Bin 3 (choose one) 1

Recommended options:

- CSCI 5253 Datacenter Scale Computing - Methods, Systems and Techniques
- CSCI 5448 Object-Oriented Analysis and Design
- CSCI 5535 Fundamental Concepts of Programming Languages

CLASIC Capstone

LING/CSCI 5140 CLASIC Capstone 2

Core CLASIC Courses

- CSCI/LING 5832 Natural Language Processing (Satisfies Bin 2 requirement) 3
- CSCI 7000/ LING 7800 Current Topics in Computer Science (Computational Lexical Semantics) 3
- CSCI/LING 7565 Computational Phonology and Morphology 3

Choose two of the following: 6

- CSCI 5352 Network Analysis and Modeling
- CSCI 5502 Data Mining
- CSCI 5622 Machine Learning
- CSCI 6622 Advanced Machine Learning
- CSCI 5352 Network Analysis and Modeling
- CSCI 5502 Data Mining
- CSCI 5622 Machine Learning
- CSCI 6622 Advanced Machine Learning

CSCI 7000 Current Topics in Computer Science (Inference, Models & Simulation for Complex Systems)

CSCI 7222 Topics in Nonsymbolic Artificial Intelligence (Probabilistic Models of Human & Machine Intelligence)

CSCI 7222 Topics in Nonsymbolic Artificial Intelligence (Representation Learning for Language)

LING 5200 Introduction to Computational Corpus Linguistics

LING 5800 Open Topics in Linguistics (Machine Learning and Linguistics)

LING 6300/3800 Topics in Language Use (Formal Models of Linguistics)

LING 6520 Topics in Comparative Linguistics (Computational Grammars)

PHIL 5440 Topics in Logic

PHIL 5460 Modal Logic

Any other CSCI or LING course at the 5000-, 6000- or 7000-level

Any Core course listed above (not already taken)

Total Credit Hours 32

1 Visit the computer science department website (http://www.colorado.edu/cs/current-students/graduate-students/graduate-breadth-courses) for a full list of course options in each of the 3 breadth bins. (Updated every two years.)

Learning Outcomes

The program is intended to:

- Provide a solid foundation in computer science, data-driven linguistics and natural language processing graduate coursework.
• Educate graduates to be specialists in the application of computers to the processing of natural languages, such as English, Chinese, Arabic and Urdu.
• Prepare students for jobs in the field of computational linguistics, also known as text analytics, natural language processing and informatics, a field critical to the success of mainstream global businesses who compete for employees qualified to address these needs.