

# MASTER OF SCIENCE PROGRAM

## HUMAN LANGUAGE TECHNOLOGY

The recent explosion of online data, social networking, and high-speed communication has fostered an increased demand for the analysis of natural language, requiring the development of innovative tools and techniques. Human Language Technology (HLT) is an exciting and rapidly growing, interdisciplinary field which combines sophisticated methods and vital ideas from Computer Science, Linguistics, Artificial Intelligence, Cognitive Science, Psychology, and related fields to make sense of an increasingly complex and multi-faceted world.

## INDUSTRY EMPLOYMENT

HLT is one of the fastest developing areas for employment. Qualified graduates have a wide range of opportunities in industry including:

- Speech recognition and processing
- Machine translation
- Internet search
- e-learning
- Human-Computer interaction
- Data mining and Analytics
- Text understanding and Summarization
- Question answering and cross-linguistic information retrieval

## WHY THE UNIVERSITY OF ARIZONA?

The University of Arizona is a leading public research university that is home to a world-class Linguistics department offering undergraduate and graduate programs. The department is comprised of a large number of faculty with broad interdisciplinary research interests and specializations. Faculty and students enjoy extensive collaborations with a wide range of closely-related programs on campus, including Cognitive Science; Neuroscience; Psychology; Speech, Language and Hearing Sciences; Second Language Acquisition and Teaching; Computer Science; and Information Sciences, Technology and Arts. The university is also home to a wide variety of modern language departments.

## DEPARTMENT WEBPAGES

### Linguistics Department:

[linguistics.arizona.edu](http://linguistics.arizona.edu)

### HLT homepage:

<http://linguistics.arizona.edu/master-science-human-language-technology-hlt>

## FELLOWSHIP OPPORTUNITY

Arizona residents applying to the HLT Master's program may be eligible for the **Workforce-Ready Master's Fellowship**:

<http://grad.arizona.edu/financial-resources/workforcemasters>

## CONTACT INFO AND APPLYING TO THE PROGRAM

**If you have any questions about the program or want more information, please contact:**

Sandiway Fong, HLT Program Director  
Human Language Technology  
Master of Science Program  
Douglass Bldg., Room 301  
Tucson, AZ 85721  
[sandiway@email.arizona.edu](mailto:sandiway@email.arizona.edu)  
<http://dingo.sbs.arizona.edu/~sandiway/>

**If you would like to apply to the program or have any questions about the application process, please contact:**

Shayna Walker, Linguistics Program Coordinator  
Department of Linguistics  
Communication Bldg., Room 103B  
Tucson, AZ 85721  
[shaynaw@email.arizona.edu](mailto:shaynaw@email.arizona.edu)  
520-621-2113

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## PROGRAM STRUCTURE

The Master of Science program is a two-year program designed to help students enter a competitive and fast-growing workforce. The minimum total number of units is 36 (30 instructional units and 6 units of internship). Students with little to no background in Linguistics are encouraged to take LING 500 Linguistics for Non-Majors (or its equivalent) before formally enrolling in the program. Students with no programming experience are strongly encouraged to acquire familiarity with basic programming concepts prior to arrival.

### Required Courses:

- LING 503 Syntax (3 units)
- LING 538 Computational Linguistics (3 units)
- LING 539 Statistical Natural Language Processing (3 units)
- LING 578 Speech Technology (3 units)
- LING 581 Advanced Computational Linguistics (3 units)
- LING 593A HLT Internship (6-9 units)

### Strongly Recommended Electives:

- LING 501 Formal Foundations (3 units)
- LING 508 Programming for Linguists (3 units)
- LING 515 Phonological Phonetics (3 units)

### Other Electives (include but are not limited to):

- LING 504 Advanced Syntax
- LING 505 Theories of Grammar
- LING 509 The Psycholinguistics of Writing Systems
- LING 510 Phonology I
- LING 514 Phonology II
- LING 522 Lexical Semantics
- LING 535 Morphology
- LING 564 Formal Semantics

Other classes, including those from other departments, may also be used as electives with the permission of the HLT Director and Graduate Advisor if they are appropriate to the student's plan of study.

## INTERNSHIP

The internship (LING 593, 6 to 9 units) is an integral part of the Master's program, designed to provide the student with supervised workplace experience within the HLT field. The internship substitutes for a Master's thesis and may be hosted on or off campus in an appropriate industrial or research setting. The report associated with the internship must be of a quality comparable to that of a Master's thesis.

## INTERNSHIPS AND JOB PLACEMENTS



### Students in the program have interned at:

- Apple
- Long Now Foundation
- Rosetta Stone
- QUALIA, Athens, Greece
- Air Force Research Laboratory
- The Max Planck Institute for Psycholinguistics, Radboud University, Nijmegen, The Netherlands
- University of Arizona School of Natural Resources and the School of Law
- University of Arizona Center for the Management of Information
- University of Arizona Department of Electrical and Computer Engineering

### Recent job placements include:

- Research Scientist, L3-Communications, Link Simulation and Training, Performance and Learning Models Laboratory
- Postdoc at the Italian Institute of Technology
- Natural Language Processing Scientist with the Pacific Northwest National Laboratory
- Lead Speech Technologist, L3-Communications, Link Simulation and Training, Air Force Research Laboratory
- Associate Professor, Osaka Kyoiku University
- Editor in publishing company, Athens, Greece

## ACCELERATED MASTERS PROGRAM

The Accelerated HLT Master's program is ideally suited to UA undergrads maintaining a 3.3 GPA and who will have completed 90 undergraduate units by the beginning of the program. Applicants should have some programming and Linguistics background. Students considering the program are strongly encouraged to discuss this opportunity with our Director of Undergraduate Studies, Diane Ohala, and our HLT director, Sandiway Fong.

## HLT FACULTY

### Core HLT Faculty

#### Sandiway Fong, PhD

Associate Professor and Director for the HLT program

**Research Specialty:** Parsing, sentence processing, syntax, computational morphology, syntactic annotation, semantic networks



#### Mike Hammond, PhD

Professor

**Research Specialty:** Computational linguistics, mathematical linguistics, phonology, psycholinguistics, poetic meter, Celtic esp. Welsh



#### Natasha Warner, PhD

Professor and Director of Douglass Phonetics Lab

**Research Specialty:** Phonetics, experimental phonology, language revitalization



### Affiliated HLT Faculty

#### Tom Bever, PhD

Regents' Professor

**Research Specialty:** Cognitive science, psycholinguistics and sentence processing.



The UA Linguistics department has more than 20 faculty members with diverse research specializations in phonetics, phonology, morphology, syntax, semantics, psycholinguistics, language acquisition, and Native American studies. Other related departments with whom we work closely include Cognitive Science; Neuroscience; Psychology; Speech, Language and Hearing Sciences; Second Language Acquisition and Teaching; Computer Science; and Information Sciences, Technology and Arts.