

**DOCTOR OF PHILOSOPHY**

**IN**

**SPEECH, LANGUAGE, AND HEARING SCIENCES**

**2008-2009**

DEPARTMENT OF SPEECH, LANGUAGE, AND HEARING SCIENCES  
UNIVERSITY OF ARIZONA  
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## **GENERAL INFORMATION**

### **INTRODUCTION**

The Department of Speech, Language, and Hearing Sciences offers coursework leading to B.S., M.S., Au.D. and Ph.D. degrees. The undergraduate major is preparatory to graduate study. The master's program in speech-language pathology and the clinical doctoral program in audiology are accredited by the Council on Academic Accreditation (CAA) of the American Speech-Language-Hearing Association (ASHA).

The Master of Science (M.S.) program is a two-year course of study that includes a variety of clinical training opportunities for students desiring a career in speech-language pathology. Those master's level students planning to pursue studies leading to a Ph.D. degree should also plan to complete a master's thesis.

The Doctor of Audiology (Au.D.) program is a four-year course of study that is a first professional degree with a clinical emphasis in audiology.

The Doctor of Philosophy (Ph.D.) program prepares students for academic and research careers through coursework and participation in research projects.

The information that follows is subject to change. The Departmental requirements and practices summarized herein supplement those described in the University's General and Graduate Catalogs. In case of conflict, the appropriate Catalog prevails. Students are held to Departmental requirements in effect at the time they are admitted to the program unless they formally choose to meet new requirements.

**FACULTY AND PROFESSIONAL STAFF**  
**SPEECH, LANGUAGE, AND HEARING SCIENCES**

**CURRENT FACULTY:**

|                          |  |
|--------------------------|--|
| Alt, Mary                | Ph.D. Assistant Professor (Speech-Language Pathology)  |
| Barkmeier-Kraemer, Julie | Ph.D. Associate Professor (Speech-Language Pathology)  |
| Bayles, Kathryn A.       | Ph.D. Professor Emerita (Speech-Language Pathology)  |
| Beeson, Pelagie M.       | Ph.D. Associate Professor (Speech-Language Pathology)  |
| Boone, Daniel R.         | Ph.D. Professor Emeritus (Speech-Language Pathology)   |
| Bunton, Kate             | Ph.D. Assistant Research Scientist (Speech-Language Path)  |
| Christensen, Thomas      | Ph.D. Research Scientist   |
| Cone-Wesson, Barbara     | Ph.D. Professor (Audiology)  |
| Crooks, Kimberly         | B.S. Director, Autism Center   |
| Cuzner, Lea              | M.S. Clinical Assistant Professor (Speech-Language Pathology)  |
| Dai, Haunping            | Ph.D. Associate Professor (Audiology)  |
| DeDe, Gayle              | Ph.D. Assistant Professor (Speech-Language Pathology)  |
| DeFeo, Anthony B.        | Ph.D. Director, Speech-Language and Hearing Clinics  |
| Faux Muller, Cass        | M.S. Clinical Assistant Professor (Speech-Language Pathology)  |
| Foreman, Kelli           | M.S. Clinical Assistant Professor (Speech-Language Pathology)  |
| Glatke, Theodore J.      | Ph.D. Professor Emeritus (Audiology)   |
| Harris, Frances P.       | Ph.D. Retired Assistant Department Head (Audiology)  |
| Hawley, Janet            | M.S. Clinical Assistant Professor (Speech-Language Pathology)  |
| Hesse, Kristi            | Au.D. Clinical Assistant Professor (Audiology)   |
| Hixon, Thomas J.         | Ph.D. Director, Institute for Neurogenic Communication Disorders and Professor Emeritus (Speech-Language Path) |
| Hodgson, William R.      | Ph.D. Professor Emeritus (Audiology)   |
| Hoit, Jeannette D.       | Ph.D. Professor (Speech-Language Pathology)  |
| Holland, Audrey L.       | Ph.D. Regents Professor Emerita (Speech-Language Pathology)  |
| Kiernan, Barbara         | Ph.D. Director, Child Language Center  |
| Lee, Jungmee             | Ph.D. Assistant Professor (Audiology)  |
| Lotto, Andrew            | Ph.D. Assistant Professor (Audiology)  |
| Maas, Edwin              | Ph.D. University Associate, Research   |
| Matkin, Noel D.          | Ph.D. Professor Emeritus (Audiology)   |
| McDonald, Betty          | M.A. Clinical Assistant Professor (Speech-Language Pathology)  |
| Muller, Thomas           | Au.D. Clinical Assistant Professor (Audiology)   |
| Norrix, Linda            | Ph.D. Clinical Assistant Professor (Audiology)   |
| Plante, Elena            | Ph.D. Department Head (Speech-Language Path)   |
| Shelton, Ralph L.        | Ph.D. Professor Emeritus (Speech-Language Pathology)   |
| Story, Brad              | Ph.D. Associate Professor (Speech Science)   |
| Swisher, Linda           | Ph.D. Associate Professor, Retired (Speech-Language Pathology)   |
| Van Tasell, Dianne       | Ph.D. Professor (Audiology)  |
| Velenovsky, David        | Ph.D. Senior Lecturer (Audiology)  |
| Wymer, Carole            | M.S. Clinical Assistant Professor (Speech-Language Pathology)  |

## **ADJUNCT FACULTY AND CLINICAL INSTRUCTORS:**

|                          |   |
|--------------------------|---|
| Ascher, Sarah Super      | M.S. Audiologist, Carondelet St. Joseph's Hospital                            |
| Bailey, E. Fiona         | Ph.D. Adjunct Assistant Research Professor (Physiology)                       |
| Casteix, Jennifer        | M.S. University Associate, Tucson Medical Center                              |
| Cevette, Michael         | Ph.D. Adjunct Associate Professor (Audiology)                                 |
| Childers, Robert L.      | Ph.D. Adjunct Associate Professor (Audiology)                                 |
| Coppola, Lisa            | M.S. University Associate, St. Joseph's Hospital                              |
| Emami, Afshin J.         | M.D. Adjunct Assistant Professor  |
| Fragomeni-Nuttall, Mary  | M.S. Director, Outpatient and Pediatric Therapies,<br>Tucson Medical Center   |
| Gapp, E. Elizabeth       | M.S. University Associate, Marana Public Schools                              |
| Gasch, Janis W.          | M.S. Audiology, Arizona Hearing Specialists                                   |
| Gilabert, Nancy          | M.S. Speech-Language Pathologist, Roberts Elementary                          |
| Glose, Diana M.          | M.S. Audiologist, VA Medical Center   |
| Hirsch, Fabiane          | Ph.D. University Associate (Speech-Language)                                  |
| Hill, Emmeline K.        | M.S. Audiologist, Children's Clinics for Rehabilitative<br>Services           |
| Howard, Sherril          | M.S. University Associate, Instruction, Speech Center of<br>Southern Arizona  |
| Johnsen, Debora          | M.S. University Associate   |
| Keller, Lyn M.           | Au.D. University Associate  |
| McMullen, Nathaniel      | Ph.D. Associate Professor (Anatomy, Speech, Language and<br>Hearing Sciences) |
| Primeau, Richard L.      | M.A. Audiologist, VA Medical Center   |
| Rapsak, Steven Z.<br>and | M.D. Professor (Neurology, Psychology & Speech, Language<br>Hearing Sciences) |
| Robinette, Martin        | Ph.D. Adjunct Professor (Audiology)   |
| Welker, Rebecca D.       | M.S. Speech-Language Pathologist  |
| Wilson, Kent             | Ph.D. Adjunct Associate Professor (Speech-Language Path.)                     |

## RESEARCH FACILITIES

The Department of Speech, Language, and Hearing Sciences at the University of Arizona includes laboratories in the following areas: psychoacoustics, speech physiology, child language, and aphasia. These laboratories complement the Department's practicum facilities and are used for both faculty research and student research training.

The current research interests of the faculty include:

- Mary Alt: Receptive language development with a particular emphasis on the learning mechanisms that contribute to Specific Language Impairment.
- Julie Barkmeier-Kraemer: Normal anatomy and physiology of the larynx for voice production and swallowing, neuroanatomy and neurophysiology of the larynx, voice disorders, and dysphagia.
- Pelagie Beeson: Neurogenic communication disorders, with particular emphasis on the nature and treatment of aphasia, acquired alexia and agraphia.
- Kate Bunton: Motor speech disorders, aging speech physiology, speech intelligibility testing and measurement, and normal speech development.
- Thomas Christensen: Neuroanatomy and functional organization of brain networks involved in language processing with emphasis on the intersecting roles of attention and memory in attentive listening, using functional magnetic resonance imaging and related techniques.
- Barbara Cone-Wesson: Human auditory system development and methods for assessing hearing in infants at risk for hearing loss or neurologic impairment.
- Gayle DeDe: Neurogenic communication disorders and cognitive aging; real-time processes underlying sentence comprehension, the role of general cognitive abilities (e.g., working memory) on sentence comprehension, sentence comprehension impairments in aphasia.
- Anthony DeFeo: Language disorders of school-age children, clinical assessment and treatment strategies for speech-language disorders, disordered articulation in children, and case studies.
- Thomas Hixon: Speech breathing, normal and abnormal speech motor control, motor speech disorders.

- Jeannette Hoit: Normal and abnormal speech motor control, aging speech and hearing physiology, motor speech disorders, research ethics and practices.
- Barbara Kiernan: The atypical language-learning characteristics of children with specific language impairment.
- Jungmee Lee: Understanding mechanism of human auditory system to process spectral and temporal information of sounds through behavioral measurements, psychoacoustics for normal-hearing and hearing impaired population
- Andrew Lotto: Auditory cognitive science; the roles of auditory encoding and perceptual learning in the perception of complex sounds, such as speech
- Edwin Maas: Speech production, particularly phonological planning and motor planning for speech, disorders of spoken language production in adults and children, effects of conditions of practice and feedback in treatment of motor speech disorders
- Elena Plante: Brain-language relations in developmental language disorders and language assessment.
- Brad Story: Speech acoustics/analysis/signal processing, synthesis/simulation of speech and voice, relation between articulation and acoustics, volumetric imaging of vocal, nasal, and subglottal systems, speech-to-speech transformation, perception of natural and synthetic speech.

## COURSES IN SPEECH, LANGUAGE, AND HEARING SCIENCES

All courses, with the exceptions noted below, carry three (3) semester hours of credit. Prerequisites (P) are indicated in parentheses and CR indicates Concurrent Registration.

| <u>Catalog Number</u> | <u>Course Title</u>   | <u>Semester</u><br><u>Fall(I), Spring (II)</u>     |
|-----------------------|---|--|
| 207                   | Survey of Human Communication and Its Disorders   | I, II  |
| 261                   | Anatomy and Physiology of the Speech Mechanism<br>(4, includes lab) (P two Tier One NATS courses) | II   |
| 262                   | Neurobiology of Communication (P two Tier One NATS courses)                                       | I  |
| 267                   | Acoustics for the Speech and Hearing Sciences<br>(P Math 110)                                     | I  |
| 270                   | Scientific Thinking in Speech and Hearing Sciences  | I  |
| 282                   | Biology of Sensation (P two Tier One NATS courses)  | I  |
| 310                   | Family Health and Deafness (P two Tier One INDV)  | I, II  |
| 340                   | Language Science  | I  |
| 341                   | Language Development (P INDV 101)   | I  |
| 367                   | Phonetics   | I  |
| 380                   | Hearing Science (4, includes lab) (P 267)   | II   |
| 392                   | Directed Research (1-6)   | I, II, 1 <sup>st</sup><br>& 2 <sup>nd</sup> Summer |
| 399                   | Independent Study (1-3)   | I, II  |
| 399H                  | Honors Independent Study (1-3)  | I, II  |
| 420/520               | Cognitive Neuroscience of Hearing (P 270)   | I  |
| 441/541               | Language Acquisition (P 340)  | II   |
| 454/554               | Audiologic Rehabilitation-Lifespan (P 483R)   | II   |
| 458/558               | Clinical Studies: Speech-Language<br>Pathology (1-3) (P 441 or CR)                                | I, II, 1 <sup>st</sup><br>& 2 <sup>nd</sup> Summer |
| 459/559               | Clinical Studies: Audiology (1-3)<br>(P 483R or CR)   | I, II, 1 <sup>st</sup><br>& 2 <sup>nd</sup> Summer |
| 460R/560R             | Speech and Hearing Science Instrumentation (2)<br>(P 380 or CR)                                   | I  |
| 460L/560L             | Speech and Hearing Science Instrumentation<br>Laboratory (1)                                      | I  |
| 464                   | Cultural Diversity: SLP and Audiology Relevance   | I  |
| 468/568               | Speech Perception (P 267, LING 314 or equivalent)   | II   |
| 470/570               | Introduction to Stuttering (P senior status only)   | I  |
| 471/571               | Articulation Disorders and Therapies<br>(P 340, 367, 473)   | I  |
| 473                   | Pediatric Communication Disorders (P 261 or CR)   | II   |
| 477/577               | Adult Communication Disorders (P 261)   | I  |
| 478/578               | Speech Technology (P 267 or LING 314)   | II   |

| <u>Catalog Number</u> | <u>Course Title</u>   | <u>Semester</u><br><u>Fall(I), Spring (II)</u>     |
|-----------------------|---|--|
| 483/583R              | Principles of Audiology (P 380)   | II & Sum.  |
| 483/583L              | Laboratory in Principles of Audiology   | II   |
| 486/586               | Pediatric Audiology (P 380, 483R)   | II   |
| 492                   | Directed Research (1-6)   | I, II  |
| 496A                  | Seminar: Clinical Observations and Analysis (1)<br>(P 477, 473, 483R)           | I, II  |
| 498                   | Senior Capstone (1-3)   | I, II  |
| 498H                  | Honors Thesis   | I, II  |
| 499                   | Independent Study (1-5)   | I, II, 1 <sup>st</sup><br>& 2 <sup>nd</sup> Summer |
| 499H                  | Honors Independent Study  | I, II  |
| 500                   | Introduction to Research Methods in Speech<br>and Hearing Sciences              | II   |
| 501                   | Professional Issues in Speech-Language Pathology<br>and Audiology (1)           | I  |
| 502                   | Principles of Neuroanatomy (4)  | II   |
| 510                   | Counseling Techniques in Communication Disorders                                | II   |
| 512                   | Evaluation Process in Speech-Language Pathology                                 | I  |
| 544                   | Adult Language Disorders: Aphasia & Right<br>Hemisphere Syndrome                | I  |
| 545B                  | Adult Language Disorders: Dementia and TBI (2)                                  | II   |
| 552                   | Language Disorders in School Age Children (P 441 or 541)                        | II   |
| 555                   | Developmental Language Disorders: Preschool-<br>Level (P 441 or 541))           | I  |
| 557                   | Dysphagia   | II   |
| 558                   | Clinical Studies: Speech-Language<br>Pathology (1-3)                            | I, II, 1 <sup>st</sup><br>& 2 <sup>nd</sup> Summer |
| 559                   | Clinical Studies: Audiology (1-3)<br>(P 589R/L or CR)                           | I, II, 1 <sup>st</sup><br>& 2 <sup>nd</sup> Summer |
| 562A                  | Anatomy and Physiology of Auditory &<br>Vestibular Systems                      | I  |
| 562B                  | Psychophysical Acoustics  | II   |
| 562L                  | Laboratory in Psychoacoustics   | I, II  |
| 564                   | Cultural Diversity: SLP and Audiology Relevance                                 | II   |
| 565                   | Acoustics for the Speech and Hearing Sciences<br>(P Math 110)                   | I  |
| 567                   | Preclinical Speech Science  | I  |
| 572                   | Voice Disorders (P 567)   | I  |
| 574                   | Cleft Palate, Other Craniofacial Disorders,<br>and Communication (P 471 or 571) | I  |

| <u>Catalog Number</u> | <u>Course Title</u>   | <u>Semester</u><br><u>Fall(I), Spring (II)</u>     |
|-----------------------|---|--|
| 575                   | Neuromotor Speech Disorders (P 567)                           | II   |
| 576                   | Communicative Aspects of Aging (1)                            | II   |
| 580                   | Occupational and Community Audiology (2)                      | II   |
| 581A                  | Amplification I   | II   |
| 581B                  | Amplification II  | I  |
| 582A                  | Disorders of Hearing and Balance (4)<br>(P 380, 483R)         | II   |
| 585                   | Audiologic Habilitation: Children (P 483 or 583R)             | I  |
| 587                   | Lab in Hearing Aids and Audiologic Rehabilitation (1)         | I, II  |
| 588A                  | Physiological Evaluation of the Auditory System               | I  |
| 588B                  | Assessment and Rehabilitation of the Balance System           | II   |
| 588C                  | Electrophysiology of Auditory Perception and<br>Cognition (2) | II   |
| 588L                  | Laboratory in Electrophysiology                               | I, II  |
| 589R                  | Advanced Audiologic Evaluation (P 380, 483 or 583R)           | I  |
| 589L                  | Laboratory in Advanced Audiologic Evaluation (1)              | I  |
| 595A                  | Colloquium  | I, II  |
| 596                   | Seminar (1-3)   |  |
|                       | A Experimental Phonetics                                      | I, II  |
|                       | B Clinical Audiology  | I, II  |
|                       | C Hearing: Physiology and Psychophysics                       | I, II  |
|                       | D Language and Language Disorders                             | I, II  |
|                       | E Speech Pathology  | I, II  |
|                       | G Cochlear Implants   | II   |
|                       | I Research Forum in Audiology                                 | I, II  |
|                       | J Business Aspects of Audiology                               | Pre-session  |
|                       | K Imaging Technologies  | II   |
|                       | L Aging and the Auditory System                               | II   |
|                       | M Tinnitus  | 1 <sup>st</sup> Summer                             |
|                       | N Educational Aud & Speech-Lang Path                          | 1 <sup>st</sup> Summer                             |
| 597                   | Workshop (1-3)  |  |
|                       | A Supervision in Speech and Hearing                           | 1 <sup>st</sup> Summer                             |
|                       | B Professional & Legal Issues in Audiology                    | II   |
|                       | C Cerumen Management  | 1 <sup>st</sup> Summer                             |
|                       | H Human Neuroanatomy (P PSYC 502)                             | I, II  |
| 599                   | Independent Study (1-5)                                       | I, II  |
| 649                   | Survival Skills and Ethics                                    | II   |
| 658                   | Advanced Clinical Studies: Speech-Language<br>Pathology (1-3) | I, II 1 <sup>st</sup><br>& 2 <sup>nd</sup> Summer  |
| 659                   | Advanced Clinical Studies: Audiology (1-3)                    | I, II, 1 <sup>st</sup><br>& 2 <sup>nd</sup> Summer |

| <u>Catalog Number</u> | <u>Course Title</u>                        | <u>Semester</u><br><u>Fall(I), Spring (II)</u>     |
|-----------------------|--|--|
| 691                   | Preceptorship (1-3)                        | I, II  |
| 695A                  | Colloquium - Motor Control (2)             | II   |
| 696                   | Seminar (1-3)                              |  |
|                       | A Topics in Speech, Language & Hearing Sc. | I, II  |
|                       | B Clinical Audiology                       | I, II  |
| 699                   | Independent Study (1-3)                    | I, II, 1 <sup>st</sup><br>& 2 <sup>nd</sup> Summer |
| 759                   | Externship in Audiology (1-14)             | I, II, 1 <sup>st</sup><br>& 2 <sup>nd</sup> Summer |
| 793A                  | Internship in Audiology (1-14)             | I, II, 1 <sup>st</sup><br>& 2 <sup>nd</sup> Summer |
| 795A                  | Clinical Grand Rounds in Audiology (1)     | I, II  |
| 799                   | Independent Study (1-3)                    | I, II, 1 <sup>st</sup><br>& 2 <sup>nd</sup> Summer |
| 900                   | Research (1-3)                             | I, II, 1 <sup>st</sup><br>& 2 <sup>nd</sup> Summer |
| 908                   | Case Studies (1-3)                         | I, II  |
| 910                   | Thesis (1-6) (maximum total: 6 units)      | I, II, 1 <sup>st</sup><br>& 2 <sup>nd</sup> Summer |
| 920                   | Dissertation (1-9)                         | I, II, 1 <sup>st</sup><br>& 2 <sup>nd</sup> Summer |
| 930                   | Supplementary Registration (1-9)           | I, II, 1 <sup>st</sup><br>& 2 <sup>nd</sup> Summer |

## **Doctor of Philosophy Program**

The Ph.D. program in the Department of Speech, Language, and Hearing Sciences has as its goal the development of outstanding independent researchers and teachers. Program graduates will have a broad base of knowledge about human communication sciences and disorders and significant in-depth preparation in their special areas of concentration within the discipline. Students should seek multidisciplinary experiences and skills to enhance their research careers.

The Department encourages diversity among applicants to the program and will develop programs of study for individual students. Each student's program is designed in consultation with the student's program committee. Further, each doctoral student will go through a rigorous mentoring process involving the major professor selected by the student. In addition, a range of research experiences with members of the faculty of the University, principally inside the Department, but also outside of it will be provided as is appropriate to the student's program of study. It is expected that students will engage in scholarly, publishable research endeavors throughout their course of study at the University of Arizona.

The following information is intended to supplement that which is provided in the Graduate Catalog which can be found online at: <http://grad.arizona.edu/Catalog/>. In general, the Graduate College requirements focus on admission formalities; certain examinations and the dissertation; the makeup of committees that conduct the examination; and the sequencing of events leading up to completion of the degree requirements. The department requirements address admission to the program, coursework, research internships, teaching preceptorships, the format of written portions of examination, and the development of the dissertation prospectus.

## ACADEMIC PROGRAM

Graduate credit that was earned within the last ten years may be applied toward the Ph.D. degree with approval of the student's program committee. Individuals who have not completed a M.S. or M.A. thesis prior to enrolling will be **required** to complete a project in lieu of a thesis during the first year of residence. When the project is completed, the student is expected to present a report of the study during a Department Colloquium.

### Major

Students are **required** to complete a minimum of 36 graduate semester hours pertaining to human communication and its disorders (not all of which must be in residence or offered in the Department of Speech, Language and Hearing Sciences) exclusive of dissertation research and audits. A 9-unit minor is required, as well as 18 units of dissertation (SP H 920). At least 23 units must be in courses in which regular grades (A,B,C) have been earned.

Three courses, **required** of all doctoral students, account for 15 of the 36 credit hours:

- SP H 649** Survival Skills and Ethics (one 3-unit registration)
- SP H 696a** Topics in Speech, Language, and Hearing Sciences (two 2-unit registrations in Seminal Readings and one 2-unit registration in grant writing)
- SP H 900** Research (two registrations for 3 units each)

It is also *recommended* that students complete a graded research course (non-900 level).

### Research Rotations (SP H 900)

Research training is the core of the Ph.D. program. All doctoral students are expected to be engaged in one or more research projects each semester of their doctoral program. Students are **required** to complete a minimum of two research rotations for course credit prior to beginning dissertation research. These rotations are to be selected and designed to expose the student to various facets of the research enterprise and to lead the student to increasing independence. One of the rotations must be completed with a faculty member who does **not** serve as the student's major advisor. Each rotation will result in the development of a suitable report prepared by the student. In most cases the report will be developed into a manuscript destined for submission to an appropriate refereed publication.

## **Additional Major Requirements**

Doctoral students must complete or present coursework to the Qualifying Committee that is equivalent to:

- SP H 500 - Introduction to Research Methods in Speech and Hearing Sciences.  
Doctoral students should plan on enrolling in SP H 500 in the spring semester of their first year of study if they have not had equivalent coursework prior to enrolling at the University of Arizona.
- SP H 564 – Cultural Diversity: SLP and Audiology

Each student, in consultation with his or her program committee, will plan additional coursework in both the area of specialization **and** in any areas of speech, language, or hearing where the student may be deficient.

In the area of specialization, any chosen course should meet the following conceptual criteria:

1. Provides core information related to the student's proposed line of research.
2. Provides tools for the conduct of research (e.g., statistics, programming, measurement, technologies employed in research)
3. Contributes to the development of a conceptual theme underlying the student's training program.

In areas of deficiency in speech, language, or hearing, students may register for graduate classes or independent studies that are designed to cover core information. Independent studies require the student and instructor to develop a plan of study that may include attending lectures in an undergraduate class, readings, and a project that allows the student to demonstrate knowledge in the core area. The details of the project will be determined by the course instructor and the student. However, independent studies cannot be used solely as a replacement for existing classes.

The Doctoral Degree Study Program should be completed by the end of the first year (see Appendix A).

## **Research Competencies to be obtained through Laboratory Experiences and Coursework**

Procedural competencies:

1. Knowledge of research instrumentation and hardware.
2. Knowledge of general use software programs (e.g., Excell, Adobe, Powerpoint), and lab specific software (e.g., Matlab, SPM, EPrime, Direct RT).
3. The ability to search the literature, including searching electronic databases and being able to pursue a theme through the literature.

4. Knowledge and application of statistics and other mathematical models for understanding data.
5. How to keep lab records.
6. In some cases, knowledge of specific techniques (e.g., ERP, dissection) that is necessary or beneficial for a specific area of research.

Writing competencies:

1. The ability to abstract and summarize information.
2. The ability to write in the style of publications in the field.
3. The ability to present information in poster format.
4. The ability to write and manage human subjects-related documents.

Scientific competencies:

1. The ability to discuss lab projects in terms of the scientific method and aspects of validity.
2. The ability to design a project that measures/manipulates a target effect and controls extraneous effects.
3. The ability to manage the day-to-day aspects of completing a research project from conceptualization through data collection and manuscript production.

## Minor

The Graduate College **requires** that a student complete a formal minor course of study. The minor is to reflect a student's research interest with specific coursework determined by the minor department. The minor must consist of at least 9 units of graduate-level coursework.

## Teaching Preparation

It is **strongly** recommended that students pursuing an academic career complete the following in preparation for teaching:

- |           |  |
|-----------|--|
| Year 1:   | Obtain information from the UA Teaching Center<br>Take A ED 697c – Workshop on Teaching at the College Level   |
| Years 2-4 | Preceptor in a course or a selected unit or units within a course<br>Prepare a portfolio to include:<br>Syllabus<br>Learning Objectives<br>Test items<br>Lecture Notes<br>Be observed by supervising professor |

## Making Satisfactory Academic Progress

The Ph.D. degree is typically completed in four years, yet some individuals complete in three. Doctoral students must maintain a 3.0 minimum GPA during the doctoral program.

Adherence to the following timeline will assure satisfactory progress:

### Year 1

|   |                            |
|---|----------------------------|
| Complete human subjects training              | First semester             |
| Establish qualifying exam committee           | First semester             |
| Take qualifying examination                   | First semester             |
| Choose minor area of study                    | First semester             |
| Establish major and minor committees          | Second semester            |
| Prepare degree study program (department)     | Second semester            |
| Complete a full load of coursework            | First and second semesters |
| Complete an independent study in mentor's lab | First or second semester   |
| File annual progress report with committees   | Second semester            |

### Year 2

|   |                            |
|---|----------------------------|
| Submit Plan of Study (Graduate College)**     | Third semester             |
| Continue with a full load of coursework       | Third and fourth semesters |
| Complete a research rotation or preceptorship | Third or fourth semester   |
| File annual progress report with committees   | Fourth semester            |

### Year 3

|  |                                 |
|--|---------------------------------|
| Complete a second research rotation or preceptorship | Fifth or sixth semester         |
| Identify a Comprehensive Examination Committee       | Fifth or sixth semester         |
| Complete the written and oral comprehensive exam     | Fifth or sixth semester         |
| Identify a Dissertation Committee                    | Fifth or sixth semester         |
| Prepare a prospectus for dissertation                | Fifth or sixth semester         |
| Obtain approval of dissertation concept              | Do before colloquium            |
| Present a colloquium on dissertation concept         | Sixth or early seventh semester |
| File annual progress report with committees          | Sixth semester                  |

### Year 4

|   |                                    |
|---|------------------------------------|
| Complete doctoral research  | Seventh semester                   |
| Submit Doctoral Advancement to<br>Candidacy (Graduate College)**            | Beginning seventh semester         |
| Schedule final Oral Defense Examination                                     | Eighth semester                    |
| Submit the Announcement of Oral Defense<br>Examination (Graduate College)** | 3 weeks before date of examination |
| Submit the final 2 library copies of dissertation                           | See Grad College deadlines         |

\*\*Graduate College forms can be downloaded from the following website:

[http://grad.arizona.edu/Current\\_Students/Forms/GC\\_Forms.php](http://grad.arizona.edu/Current_Students/Forms/GC_Forms.php)

## **Annual Report**

Students are required to file an annual report at the end of each spring semester (see Appendix B) and to maintain satisfactory progress toward the degree. Your advisor and program committee will evaluate your progress annually and provide specific, written feedback each year. If changes are recommended, the consequences of not making the changes will be listed. Your advisor will discuss the recommendations with you and you will be asked to summarize your understanding of them. The evaluation and recommendations, together with your summary, will be circulated among the tenured faculty and placed in your file. You are welcome to discuss the recommendations with individual faculty or with the faculty as a whole at a scheduled meeting.

## **Policy on Major Advisor**

Although the major advisor is selected prior to admission into the program, circumstances may develop that cause you to want to change your major advisor. The first step in this process is to discuss a possible change with your current major advisor and a potential advisor. If changing advisors is amicable for all involved, the only interaction necessary with the Doctoral Committee will be a signature to officially make the change. In addition, the Department Head should be made aware of the change. However, if the change of advisors becomes problematic, the Doctoral Committee and/or the Department Head may serve as an arbitrator/liaison to help solve the problem.

## **HIPAA Client/Patient Confidentiality Clinical Policy**

HIPAA stands for the Health Insurance Portability and Accountability Act, a federal law regarding confidentiality of client/patient information. Students will receive information about departmental policies for protecting the confidentiality of client/patient information on Orientation Day. All students must receive HIPAA training to participate in any clinical endeavor. Please see Appendix C for a copy of the departmental policy and the actions that will be taken should a policy violation occur.

## **Human Subjects Training**

All students are required to complete the Human Subject Training Program. This can be done online at <http://www.irb.arizona.edu/training>

## **Institutional Review Board (IRB) Approval**

Students should obtain Human Subjects approval before they begin research: each thesis or dissertation that deals with human subjects must have separate IRB (Human Subjects) approval with the student as the Principal Investigator. Separate approval is required for theses

or dissertations even if the research data are obtained from another individual's approved project. No approval can be granted retroactively, so it is essential that before a student gathers any data, he or she have proper approval.

The Graduate College Degree Certification prefers that an IRB approval letter for dissertation research be included with the Advancement to Candidacy form (there is a checkbox to indicate if Human Subjects will be used). However, because this form should be submitted to the Graduate College soon after completing the comprehensive exam, many students will not yet have obtained IRB approval for their research. In such a case, submit the Advancement to Candidacy form and include a note stating that it is understood that IRB approval is required for final acceptance of the dissertation and that a letter of approval will be forthcoming.

To obtain the forms and information about IRB approval, refer to the Human Subjects Office for guidance: <http://www.irb.arizona.edu/>

## **EXAMINATIONS AND COMMITTEES**

### **Policy on Committees**

Doctoral students have four committees during their training: the Qualifying Exam Committee, the Program Development Committee, the Comprehensive Exam Committee, and the Prospectus/Dissertation Committee. The student's major advisor typically chairs each committee. The student is responsible for recruiting faculty to serve on each committee. Note: there is not an automatic carryover of members from one committee to another and it may be advantageous to have different committee members throughout the program. The responsibility of a faculty member serving on a particular committee ends when that committee has finished its designated task.

If the need arises for a student to change committee members for a specific committee, the student is responsible for discussing the change with the major advisor and the affected committee members. Again, if there are conflicts associated with the change, the Doctoral Committee can arbitrate; otherwise they will not be involved.

### **Qualifying Examination and Program Development Committee**

The qualifying examination committee consists of a minimum of three members of the faculty of the Department of Speech, Language, and Hearing Sciences. The qualifying examination will be given to all doctoral students in their first semester in the doctoral program. The purpose of the examination is to assess a student's research potential, identify strengths and weaknesses as they relate to the student's goals and department requirements for a Ph.D. in Speech, Language and Hearing Sciences.

The examination is comprised of three parts:

Part 1: Students will be given 2-3 journal articles, book chapters, etc. to read that are selected by their major advisor. The advisor will also give the student 3-5 questions based on the reading material to answer in essay form. Some questions will relate to data analysis and methodology. This part of the written exam can be completed at a location of the student's choice. One week will be allowed for completion.

Part 2: Students will be given a specific question by their committee to be completed in the Department.

Part 3: Students will be given an oral examination by their committee. The oral examination will include questions related to the written exam, specific knowledge of the field, as well as other directed discussion.

Doctoral students must also choose a minor area of study. The minor department may employ other formats for the qualifying examination in the minor area.

### **Comprehensive Exam Committee**

“The examining committee must consist of a minimum of four members. The Major Advisor and two additional members must be tenured, or tenure track. The fourth member may be tenured or tenure-track, or a special approved member. Special members must be pre-approved by the Dean of the Graduate College. Any members beyond the fourth can also be tenured or tenure-track, or special approved members.” *From UA Graduate College website.* A faculty member of the student's minor department may also be a member of the comprehensive exam committee, depending on that department's requirements.

The comprehensive examination consists of two parts, written and oral. The written portion of the examination must be completed before the oral portion may be scheduled. The requirement of a written comprehensive examination in the major area can be satisfied in one of two ways: (1) through a traditional "closed-book" written examination, or (2) an "open-book" written examination. Under the closed-book option, the student completes one three-hour examination in each of the areas of study represented by the examination committee members. In open-book option, the student is given a set of questions developed by their committee, for which they are given two-weeks to write answers (i.e., two weeks to write answers to all of the questions). Because of the time allowed and open access to resources, the questions in this second option typically require more in-depth answers than in the first option.

The minor department may prefer other formats for the written comprehensive examination in the minor area. The student must comply with the minor department requirements.

Upon successful completion of the written examinations in the major and minor(s), the Oral Comprehensive Examination is conducted before the examining committee of the faculty.

This is the occasion when faculty committee members have both the opportunity and obligation to require the student to display a broad knowledge of the chosen field of study and sufficient depth of understanding in areas of specialization. Discussion of proposed dissertation research may be included. The examining committee must attest that the student has demonstrated the professional level of knowledge expected of a junior academic colleague.” *From UA Graduate College website.*

The formal oral examination is administered by the examination committee. A member of the committee (other than the advisor) acts as a reporter for the Graduate College to insure that the exam is administered fairly. This individual will file a report with the Graduate College. The oral examination is usually structured on the basis of the previous written work (traditional examination or research option), but it may cover any aspect of the student's preparation. This examination must be completed within 6 months of the submission of the written materials. Graduate College requirements regarding the Comprehensive Examination can be found in the Graduate Catalog online at:

[http://grad.arizona.edu/Current\\_Students/Program\\_Requirements/Comprehensive\\_Examination](http://grad.arizona.edu/Current_Students/Program_Requirements/Comprehensive_Examination).

If a student fails the written examination, they are required to meet with each committee member to discuss the negative result. The exam committee will also meet to decide whether the student will be allowed to retake the exam, and if so, the conditions for the retake (e.g., how soon the exam can be retaken, preparation, etc.). If a student fails the oral exam the procedure is the same; the committee will decide whether to allow a retake, and if so, the conditions of the retake. The difference, however, is that the Graduate College must be informed of the failing evaluation on the oral examination.

### **Prospectus/Dissertation Committee**

The prospectus/dissertation committee may comprise those individuals who have served on previous committee's for the student, or its composition may be adjusted to reflect the direction of the dissertation research.

From the Graduate College Handbook website:

“The Graduate College requires a minimum of three members, all of whom must be University of Arizona tenured, tenure-track, or approved as equivalent. If a committee has only three members, all must approve the dissertation. In departments that require four or five members, there may be one dissenting vote. The fourth member may be tenured or tenure-track, or a special approved member. Special members must be pre-approved by the Dean of the Graduate College. Any members beyond the fourth can also be tenured or tenure-track, or special approved members.”

The first step\* toward the dissertation is preparation of a prospectus document. It should include a review of the relevant literature, statement of hypotheses and specific aims, description of the research methods, and report of pilot data and data analyses if available. The expected format and extent of the document should be discussed and negotiated between the student and advisor. For example, a prospectus might be written in the form of a grant application, as a first

draft of the dissertation document, or some other format. These agreed upon expectations should be made clear to the other members of the dissertation committee. A prospectus meeting is then scheduled where the student presents the proposal to the committee. The committee serves to advise the student on the quality of the dissertation proposal and may suggest modifications and/or additions to any aspect of the proposal. The committee should receive the written prospectus at least one week prior to the scheduled prospectus meeting.

\* During the development of a prospectus, it may be advantageous for the student to schedule one or more “pre-prospectus” meetings with the committee in order to obtain input concerning the dissertation topic, hypotheses, possible methods to be used, etc.

The members of the prospectus committee usually also serve on the final dissertation examination committee. The dissertation director presides over the examination.