

ATTENTION: SPLH Majors

Are you interested in getting involved in research for the **Fall 2017** semester? If so, attached is a description of two undergraduate research programs: SPLH departmental honors and the research experience program (REP). These programs are described in detail on pages 8-9 of the attachment. The departmental honors program has specific GPA requirements and requires 6-8 credits of research which can be distributed over 2-4 semesters. The REP is more flexible with no GPA requirements or set number of research credits. Both programs require you to complete a research project under the direction of a faculty mentor and present your project at the SPLH Undergraduate Research Symposium or other appropriate venues. The attachment describes potential projects and mentors for Fall 2017 (see pages 5-7). To be matched with a faculty mentor for Fall, complete **ALL QUESTIONS** on pages 2 and 3 of the attachment and return to Kostas Kokkinakis **via e-mail** (kokkinak@ku.edu) by **5:00 pm on Friday April 14, 2017** along with a copy of your DPR checklist PDF and resume. Students will receive their "mentor match" **late April**.

If you are interested in either program but do not plan to start the research experience in **Fall 2017**, do ***NOT*** complete the attached form. Similar information will be distributed each semester for students interested in pursuing research during the following semester.

Before completing the form, be sure that you have room in your schedule to enroll in research credits and an appropriate amount of time to devote to research. You should expect to spend 3 hours working on your research project each week for every credit you enroll in (i.e., 1 credit = 3 hours per week; 2 credits = 6 hours per week; 3 credits = 9 hours per week). Many of these hours will likely need to be worked during "business hours" (e.g., 8 - 6 Mon-Fri) because you will need to meet with your mentor and other research personnel for assistance with your project. When planning your course schedule (and other activities), be sure that you can block out an appropriate amount of time to work on your research project. If you are only planning on doing 1 semester of research (i.e., 1 semester REP project), you need to be able to enroll in **at least** 2 credits of research, and 3 credits is preferred.

Due to the limited availability of faculty mentors, it is possible that all students who apply to the program will not be accommodated in a given semester. Therefore, you should have a back-up plan if you are not matched with a faculty mentor and thus not admitted to the program. Specifically, you **SHOULD** register for the class that you would take if you are not matched with a mentor. If you **ARE** matched with a mentor, you can drop this class and add the research credits with your mentor. **The e-mail notifying you of your mentor match will provide instructions on how to enroll in research credits. You cannot enroll in research until you receive this e-mail.** If you are NOT matched, then you will take this class. Students who are not matched with a mentor may re-apply in future semesters. Each semester, matching is done with consideration of program applying for (e.g., Departmental Honors vs. REP), class standing (e.g., senior, junior, sophomore, freshman), number of credits/semesters planned for research, number of SPLH courses completed, and GPA. Thus, not being admitted during one semester does not mean that you won't be admitted in a future semester.

Please contact kokkinak@ku.edu if you have any questions about undergraduate research.

Speech-Language-Hearing Undergraduate Research Opportunities
FALL 2017

Name: _____ **E-mail:** _____

Major(s): _____ **Minor(s):** _____

Current Year (highlight 1): Freshman Sophomore Junior Senior Grad/Pre-reqs

SPLH Course	Semester Taken or Planned	Grade (for completed courses only)
SPLH 120 Physics of Speech		
SPLH 261 Survey of Comm Dis		
SPLH 620 Communicating Brain		
SPLH 465 Clinical Phonetics		
SPLH 466 Language Science		
SPLH 565 Lang Sample Analysis		
SPLH 566 Lang Development		
SPLH 660 Research Methods		
SPLH 462 Speech Science		
SPLH 463 Hearing Science		
SPLH 571 Intro to SLP		
SPLH 468 Intro to AUD		
SPLH 670/672 Practicum		
Statistics		

Please note any foreign languages you speak and your training (e.g., Spanish; 4 semesters completed at KU; study abroad in Madrid):

Research program you are completing (highlight all that apply; see description at end):

SPLH Departmental Honors: SPLH 498

SPLH Research Experience Program: SPLH 497

KU Honors Program

Human Biology Other (specify): _____

SPLH GPA _____

Overall GPA _____

Number of research credits you plan to complete each semester (e.g., 3 credits Fall 2017; 3 credits Spring 2018; 2 credits Fall 2018) **NOTE: Only complete this form if you plan to start your research in Fall 2017.**

Why are you interested in pursuing a research experience?

What areas of research/clinical practice interest you and why?

What days/times will you likely be available to meet with your mentor and work on your project?

Potential research projects are described on pages 4-6. Please rank in order the faculty who you would like to work with. Lower numbers = faculty you would most like to work with (i.e., #1 choice). Do not put a number next to anyone who you would NOT want to work with. If you would like to propose your own project, please provide details about your topic in the space provided in the next page.

Rank	Faculty Name

Description of Student-Initiated Research Project (only required for those proposing their own research topic)

Return pages 2 and 3 with your resume and a DPR checklist form to Kostas Kokkinakis, kokkinak@ku.edu by 5:00 pm April 14, 2017 if you wish to start either the REP or the Honors program in FALL 2017.

SPLH Fall 2017 Research Opportunities

Brady; Early Language Learning and Fragile X Syndrome laboratories; nbrady@ku.edu

Needs: 2 students completing 2-3 credits each semester for 2-4 semesters.

Coursework: Completion or co-enrollment in SPLH 566, SPLH 660, and statistics helpful but not required

Potential projects:

- a. *Communication assessment for nonverbal individuals.* In this project, students will learn to code nonverbal communication in children and adults with severe disabilities, including communication with gestures, vocalizations and AAC during scripted communication assessments. The student will observe videotapes help describe communication using an 11 point scale.
- b. *Communication interventions for children with autism.* Students will help create materials used in a multimodal intervention project for children between 5-8 with autism, transcribe utterances from parents and teachers of children with autism, and code responses from intervention sessions.
- c. *Communication development in children with fragile X syndrome.* Fragile X syndrome (FXS) is the leading cause of inherited mental retardation, yet little is known about early communication development in children with FXS. We have been collecting data on a cohort of families with at least one child with FXS for 4 years. Students participate in coding mother-child interactions, and have the opportunity to develop their own projects. The student will also help to organize and analyze the data in order to describe early communication development in a group of children with FXS.
- d. Other potential projects on tassing and eaching new words to children with autism; prelinguistic and early linguistic development in children with FXS, deaf-blindness, autism, or Down syndrome.

Brumberg; Speech and Applied Neuroscience Lab; brumberg@ku.edu

Needs: 2 students completing 2-3 credits each semester for 1-4 semesters.

Coursework: completion or co-enrollment in SPLH 660 is required, statistics and (co)-enrollment in SPLH 620 helpful but not required.

Potential projects:

- a. *Evaluating a brain-computer interface for speech synthesis.* In this project students, alongside other lab members, will conduct an electroencephalography (EEG) experimental protocol that translates neurological activity into artificially synthesized speech output. Students will gain hands-on experience with EEG as well as learn about the principles of motor learning and the roles of sensory feedback in brain-computer interfaces through data collection and analysis.
- b. *Development and analysis of EEG / ERP experiments in speech production and perception.* In this project students will participate in the development and execution of an EEG experimental protocol investigating the relationship between speech perception and production. A number of recent studies have identified a specific link between speech motor programs and “active” perception during speech. Students will investigate these links through literature reviews and experimental protocols that will test hypotheses about the neurological and behavioral factors that underlie perception-production interactions in speech.

- c. *Analyzing acoustic characteristics of segmental suprasegmental speech (prosody)*. In this project, students will gain experience analyzing acoustic features of segmental speech (formant frequencies) and suprasegmental speech / prosody (fundamental frequency, intensity) as they relate to typically developing children, healthy adults and adults with dysarthria.

Rong; Speech Science and Disorders Lab; prong@ku.edu

Needs: 2 students completing 2-3 credits each semester for 1-4 semesters.

Coursework: completion or co-enrollment in SPLH 462 and SPLH 660 is required, statistics helpful but not required.

Potential projects:

- a. *Speech kinematic tracking and analysis*. In this project, students will assist with the collection and analysis of speech kinematic data in adults with and without dysarthria. Speech kinematics provide essential information to help us understand the physiologic mechanisms of normal and dysarthric speech. Students will gain experience with the WAVE Articulography system, which is an electromagnetic instrument that tracks articulatory kinematic movements. Students will also learn to use a software program to post-process and analyze kinematic data.
- b. *Identifying acoustic markers of dysarthria*. In this project, students will gain experience analyzing the acoustic features of normal and dysarthric speech using various analysis tools. Based on these acoustic features, students will learn to apply hypothesis-driven and data-driven approaches to identify acoustic markers of dysarthria.
- c. *Assessment of facial muscle activity during speech*. In this project, students will assist with development of an Electromyographic (EMG) study to understand the relationship between facial muscle activity and speech production in adults with normal and dysarthric speech. Students will participate in experimental design, data collection, and analysis.

Salley; KUMC Baby Lab; bsalley@kumc.edu

Needs: 1-3 students completing 2-3 credits each semester for 2-4 semesters.

Potential projects:

- a. *Language and early attention project*. In this study, infants are recruited in the first year of life to participate in a longitudinal study mapping associations among ween early attention, social development and joint attention to predict emerging language skills in the second year of life. Students may be involved in recruitment, research visits and data collection, behavioral coding (e.g., attention tasks, parent-child interactions, free play, experimenter-child interactions). Students have the opportunity to develop their own projects.
- b. *Early Learning Project*. This project is a pilot randomized control intervention to promote high quality book sharing strategies for parents and infants. Students may be involved in the intervention visits, assessment visits in the lab, behavioral coding of tasks and interactions. Students may be involved in recruitment, research visits and data collection, behavioral coding (e.g., attention tasks, parent-child interactions, free play, experimenter-child interactions). Students have the opportunity to develop their own projects.

Viswanathan; Speech, Language, and Cognition Lab; navin@ku.edu

Needs: 2 students completing 2-3 credits each semester for 2-4 semesters.

Coursework: completion or co-enrollment in SPLH 466 is required, Statistics, Courses in Linguistics, or Cognitive Psychology are helpful but not required.

Potential projects:

- a. *Studying Speech Perception and Production using an interactive task.* In this project, pairs of participants will play a word matching game designed to elicit particular phonemes. Students will assist in the running, design, and analyses. Role requires careful attention to detail. Some knowledge of basic phonetics would be helpful though not required.
- b. *Cross-Linguistic Speech Perception and Production.* In this project, students will have the opportunity to investigate how native speakers of one language (e.g., English) perceive, produce, and learn language sounds of other languages that are difficult to acquire. In particular, students will be involved in performing acoustic measurements, rudimentary data analyses, and running subjects in experiments.
- c. *Speech Rate Effects.* In this project, students will participate in the design and execution of experimental studies that are aimed to investigate how listeners cope with acoustic changes in the speech signal that arise from the speaker altering their rate of speech production. Recent studies have indicated that perceptual adjustment to speech rate changes can happen at the level of phonemes and at the level of words. In this project, we aim to examine the listening conditions that lead to such perceptual adjustment.
- d. *Effects of Coarticulation in Speech Perception.* Connected speech involves production of speech segments that are influenced by the properties of neighboring segments. In this project, we investigate how listeners overcome variability in connected speech. In particular, we focus on designing empirical situations that test the predictions of existing accounts of this phenomenon in particular and, more broadly, of theories of speech perception.

Students working on any of the projects in the Speech, Language, and Cognition Lab will learn how to review literature, design and conduct empirical studies, perform basic analyses, and present their research in both oral and written forms. Students with interests in basic questions regarding speech perception and production and second language learning are especially encouraged to apply. Multi-semester involvement is preferred.

Warren; Fragile X Syndrome Research Lab; sfwarren@ku.edu

Needs: 1 or 2 students completing 2 or 3 credits per semester for 1 to 3 semesters. Professor Nancy Brady and I are conducting a longitudinal study of the impact of parenting on the development of children with FXS, the leading genetic cause of intellectual and developmental disabilities including autism. Students will participate in the coding and analysis of data related to the central themes of this research and have an opportunity to create their own projects working as part of our research team.

Description of Research Programs

SPLH Departmental Honors (from the Undergraduate Catalog). Most departments and programs allow qualified majors to work toward graduation with departmental honors. Graduation with departmental honors is awarded in recognition of exceptional performance in the major, completion of a program of independent research or an alternative project, and a strong overall academic record.

In addition to the requirements of individual departments and programs (which must be approved by the College committee on undergraduate studies and advising), the College requires the following for graduation with departmental honors:

1. Candidates must declare the intention to work for departmental honors with the appropriate departmental honors coordinator(s) no later than the time of enrollment for the final undergraduate semester, but sooner if required by the department(s). Copies of the intent form should be returned to College Student Academic Services.
2. At the end of the final undergraduate semester, the candidate must have achieved an overall grade-point average of at least 3.25 and a grade-point average of at least 3.5 in the major. Both overall and major grade-point averages include work completed at other institutions, as well as at KU. No minimum grade-point average is required to declare candidacy for graduation with departmental honors unless specified by the department.
3. Each candidate's departmental honors work must include independent research or an acceptable alternative project. The results of research are presented in a form appropriate to the requirements of the major department. Equivalents to the independent research component are established by approved departmental honors programs. In courses meeting the independent research requirement, the candidate must earn a grade of B or higher. Successful completion of all departmental honors requirements must be certified to the departmental honors coordinator(s) by a panel composed of at least three members of the College faculty who have read the report of the independent research and heard the oral presentation, where required.

In SPLH, student research is performed under the mentorship of a faculty member. The project may be an independent research idea generated by the student or may be a more collaborative project closely related to the mentor's research program. Students must complete 6 to 8 credits of enrollment in SPLH 498 Departmental Honors Research with their faculty mentor. Students are required to present their final project at a departmental research symposium during the semester of completion.

Research Experience Program (REP)

University Coordinator: John Augusto (jaugusto@ku.edu; 864-7351)

SPLH Contact: Kostas Kokkinakis (kokkinak@ku.edu; 864-4467)

KU's Research Experience Program (REP) acknowledges a student's participation in the full undergraduate research process, from that initial interest in subject material gained through coursework to the design and implementation of an independent project to the presentation of a research or creative product to others. REP certification appears on a student's official KU transcript, communicating to others the student's educational experiences unique to a national research university like KU.

Benefits to you:

- **Integration:** Tie together your coursework and out-of-class experiences through your independent project.
- **Discovery:** Expand on your coursework to investigate the topics and issues that matter to you through an independent project.
- **Recognition:** Have your efforts recognized by an official REP designation on your KU transcript.

There are two components of the SPLH version of this program: (1) coursework in research/creative methods and (2) an independent research/creative project under the direction of SPLH faculty.

1. In terms of the coursework requirement, students must complete 2 research/creative methods courses with a grade of C or better. Options include:
 - a. SPLH 465 Fundamentals of Clinical Phonetics;
 - b. SPLH 565 Language Sample Analysis;
 - c. SPLH 660 Research Methods.
2. In terms of the research/creative project, students must complete at least one semester of SPLH 498 Departmental Honors Research or SPLH 497 Mentored Research Experience, where they will pursue a research/creative project under the mentoring of SPLH faculty. Each student's completed project must be shared with a wider audience. Options for sharing the research/creative project include:
 - a. Presentation at the SPLH Undergraduate Research Symposium (occurs at the end of each semester)
 - b. Presentation at the KU Undergraduate Research Symposium (occurs each Spring)
 - c. Written thesis
 - d. Presentation at a national meeting
 - e. Submission of the paper as author/co-author for publication
3. Complete certification online certification form.

Comparison of Departmental Honors and REP

In terms of the relationship between the REP and the departmental honors program, the REP is a more flexible program. The departmental honors program has a set GPA requirement (i.e., 3.50 in the major; 3.25 overall). The departmental honors program also requires completion of 6 credits of SPLH 498 Departmental Honors Research. The REP has no GPA requirement (although students must earn a C or better in the research/creative methods courses) and only requires a semester of research activity (although students are able to complete a maximum of 8 credits of SPLH 498 or SPLH 497). Thus, the REP may be more appropriate for students who do not meet the departmental honors program GPA requirements or those who have more restricted schedules. Students are able to "double count" the research experience. That is, those completing the departmental honors program also meet the requirements for REP and can apply for REP certification. In addition, completion of REP or departmental honors can fulfill one of the six requirements of the University Honors Program.

KU Honors Program

Contact: honors@ku.edu

Students in the University Honors Program must finish 8 honors units, a freshman honors seminar (or current/transfer honors seminar) and have a minimum 3.25 GPA in courses at KU to complete the Honors Program (your KU GPA rather than the KU+Transfer GPA).

Breakdown of the 8 Honors units:

1. Honors Courses Requirement (minimum of 6 courses). Must be fulfilled by completing Honors Courses, Graduate Level (700+) Courses, a Less Commonly Taught Language, and/or an Honors Course Contract. The freshman honors seminar (or current/transfer honors seminar) is a separate requirement and does not count towards this requirement.
2. Honors Experiences Requirement (minimum of 1). Must consist of the following Honors Experiences: Study Abroad, departmental honors, documented Research experience, approved and documented Internship experience or approved and documented Community Service. **Students interested in using an Honors Experience which will not appear on their transcript for one of their honors units are required to fill out an Honors Experience Form. For questions about fulfilling this requirement, call 785-864-4225.**
3. The 8th unit may be fulfilled with either an Honors Course or Honors Experience.