

## Attention: SPLH Majors

Are you interested in getting involved in research for the **Fall 2019** semester? If so, attached is a description of two undergraduate research programs supported by the SPLH department: (1) SPLH departmental honors and (2) the KU research experience program (REP). Both programs are described in detail on pages 9–11 of this document and online at <http://splh.ku.edu/academics/degrees/ba/opportunities>. The departmental honors program has specific GPA requirements and also requires a total of 6-8 credits of research enrollment in SPLH 498 that can be taken over 2-4 semesters. The REP is more flexible, it has no GPA requirements or a set number of research credits required. Both programs do require students to complete a research project under the direction of a faculty mentor and to give a public presentation of your project at either the SPLH Undergraduate Research Symposium or some other forum (e.g., the university undergraduate research symposium; see pages 9–11). To be matched with a faculty mentor for Fall 2019, please complete **ALL QUESTIONS** on pages 2–4 of this document and return to Jonathan Brumberg **by email** at [brumberg@ku.edu](mailto:brumberg@ku.edu) by **5:00 pm on Thursday, April 11, 2019** along with a copy of your DPR and resume. Students will receive notification of their mentor matches in late October. Please use Adobe Acrobat Reader to complete and save the forms on pages 2–4. Please save your file with your last name, e.g., Research\_Application\_Brumberg.pdf. If you do not have Adobe Acrobat Reader, you can also use your web browser (Chrome) and use the “Save As PDF” or “Print to PDF” options.

If you are interested in completing undergraduate research, but do not plan to start in **Fall 2019** please **do not** complete the attached form. A similar announcement and information will be distributed each semester for students interested in pursuing research during the following semester.

Before completing the attached 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 enrolled (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 take place during normal business hours (8-6, Mon-Fri) because you will be meeting with your mentor and other research team members for assistance with your project. When planning your course schedule (and other activities), please be sure that you are able to block out an appropriate amount of time to work on your project. If you are only planning on completing 1 semester of research (applicable for a 1-semester REP project), you must be able to enroll in **at least 2** credits of research, though 3 credits is preferred.

Due to the limited availability of faculty mentors, it is possible that not all students who apply to the SPLH undergraduate research program will be accommodated in a given semester. Therefore, students are advised to have a back-up plan in the event you are not matched with a faculty member and not admitted to the program. Mentor matches are completed after the next semester enrollment begins, therefore students **SHOULD** register for an alternative class as a back-up plan. Students can drop the back-up class and add either SPLH 498 or 497 as appropriate if/when a mentor match is confirmed. **You will receive an e-mail notification of your mentor match, which will also include instructions on enrolling for research credits. You cannot enroll in research credits until you receive this e-mail.** Students who are not matched with a mentor may re-apply in future semesters. Each semester, matching is done through consideration of the research program (either Dept. Honors or REP), class standing (year in major), number of credits / semesters planned for research, number of SPLH courses completed, and GPA. Thus, not being admitted during one semester does not mean you won't be admitted in a future semester.

Please contact [brumberg@ku.edu](mailto:brumberg@ku.edu) if you have any questions about these undergraduate research programs or undergraduate research opportunities and resources in general.

## Speech-Language-Hearing Undergraduate Research Opportunities: Fall 2019

**Name:**

**Email:**

**Major(s):**

**Minor(s):**

**Current Year (click to select):**

<b>SPLH Course</b>	<b>Semester Taken or Planned</b>	<b>Grade</b>
SPLH 120 Physics of Speech		
SPLH 261 Survey of Comm Dis		
SPLH 462 Speech Science		
SPLH 463 Hearing Science		
SPLH 465 Clinical Phonetics		
SPLH 466 Language Science		
SPLH 565 Lang Sample Analysis		
SPLH 566 Lang Development		
SPLH 568 Intro to AUD		
SPLH 571 Intro to SLP		
SPLH 620 Communicating Brain		
SPLH 660 Research Methods		
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 descriptions at the end of this document):

- 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 2019, 3 credits Fall 2018; 2 credits Spring 2019). NOTE: Only complete this form if you plan to start your research in Fall 2019).**

**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 5–8. 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 project in the space provided on the next page.**

<b>Rank</b>	<b>Faculty Name</b>
1	
2	
3	
4	

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

Return pages 2–4 with your resume and current DPR checklist to [brumberg@ku.edu](mailto:brumberg@ku.edu) by 5:00 pm on Thursday, April 11, 2019 if you wish to apply for the REP or Departmental Honors Program in Fall 2019.

## SPLH Fall 2019 Research Opportunities

### **Brady; Early Language Learning and Fragile X Syndrome laboratories; [brady@ku.edu](mailto:brady@ku.edu)**

**Needs: 1–2 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 describe how children and adults with severe disabilities communicate with gestures, vocalizations and AAC during scripted communication assessments. The student will observe videotapes help describe communication using an 11 point scale.
- b. *Communication development 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.
- c. Other potential projects on teaching 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](mailto:brumberg@ku.edu)**

**Needs: 1–2 student completing 2–3 credits each semester for 2–3 semesters.**

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

Potential projects:

- a. *Evaluating a brain-computer interface for speech synthesis and accessing augmentative and alternative communication.* In this project students, alongside other lab members, will conduct an electroencephalography (EEG) experimental protocol that translates neurological activity into control signals for artificial speech synthesizers and AAC devices. 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. *Analyzing the neural correlates of speech production and orofacial muscular control.* In this project students will help conduct an EEG experimental protocol investigating the brain activity involved in speech planning and production. 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. *Event-related potentials of word learning.* In this project students will analyze ERP data collected from children with autism involved in a word learning paradigm. Students will gain hands on experience analyzing EEG/ERP data and statistical analysis. Co-mentoring with Nancy Brady.

### **Davidson; Comprehension and Language Learning Lab; [meghan.davidson@ku.edu](mailto:meghan.davidson@ku.edu)**

**Needs: 1–2 students completing 2–3 credits each semester for 2–4 semesters**

Coursework: SPLH 466 is required; SPLH 565, SPLH 566, and SPLH 660 are helpful but not required.

Potential projects:

- a. *Children's Books Text Analysis.* Children's books differ in their linguistic and social content. In this project, students will be transcribing and coding text from children's books to help create a measure (or measures) of how children's books differ. Students will also learn how to perform text analyses. This project will help future research studies to examine how information in the text impact's children's understanding of the books they read.

- b. *Early Spoken and Written Language Comprehension Project*. Relatively little is known about comprehension development from 7–9 years, which may be critical for language learning and later academic success. This project will initially focus on understanding comprehension in typically developing children, but then will shift to examining comprehension in children with disorders (mainly autism spectrum disorder and developmental language delay/specific language impairment). In this project, students will contribute to all or some aspects of the project, including helping to design and refine experimental tasks, learning eye tracking methodology, and testing participants. Students must have some availability after school (3:30p–7:00p) and weekends (Saturday and Sunday).

**Hunter; Speech Perception, Cognition, and Hearing Lab; [c.hunter@ku.edu](mailto:c.hunter@ku.edu)**

**Needs: 1–2 students completing 2–3 credits each semester for 2–4 semesters**

Potential projects:

- a. *Objective tracking of the cognitive demand of listening with electrophysiological and behavioral methods*. In this project, students will help to conduct an electroencephalography (EEG) experimental protocol investigating neural and/or behavioral (response time, accuracy) markers of cognitive effort during listening to spoken language in a variety of adverse listening conditions. Students will gain hands on expertise with EEG and behavioral methods as well as learn about the cognitive processes that support speech perception in adverse listening conditions (for example, in a noisy background or with a hearing loss) through data collection, analysis, and/or literature review.
- b. *Cognitive processing and speech perception in elderly adults with and without hearing loss*. In this project, students will assist with data analysis for an investigation of elderly adults' performance on a variety of cognitive and speech perception tasks. Students will gain hands-on skills with software for statistical analysis and data visualization and will learn about the relation between cognitive aging, hearing loss, and speech perception through literature review and data analysis.

**Meehan; Schiefelbusch Speech-Language-Hearing Clinic; [smeehan8@ku.edu](mailto:smeehan8@ku.edu)**

**Needs: 1 student completing 2–3 credits each semester for 1–2 semesters.**

Project description:

My area of interest and expertise revolves around augmentative and alternative communication (AAC). I am particularly interested in the preparation of preservice speech-language pathologists to serve clients who need and use augmentative and alternative communication, how best to support families and communication partners of people who use AAC, and the factors that contribute to long term positive outcomes for people who use AAC. Potential research projects could include surveying graduate programs in communicative disorders, reviewing the literature on disposition and motivation of graduate students, and/or developing comprehensive ways to support partners and families. Collaboration on personal projects of related interest is encouraged.

**Rong; Speech Science and Disorders Lab; [prong@ku.edu](mailto:prong@ku.edu)**

**Needs: 1–2 student 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](mailto:bsalley@kumc.edu)**

**Needs: 1–2 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.

**Storkel; Word and Sound learning Lab; [hstorkel@ku.edu](mailto:hstorkel@ku.edu)**

**Needs: 2 students to assist two PhD student projects for 1–2 semesters.**

Coursework: Varies (see project descriptions below)

- a. *Pediatricians' screening practices (with Krista Voelmle).* 1 student completing 2-3 credits each semester for 1-2 semesters. SPLH 660 and/or transcription experience would be helpful but not required. This project aims to explore how pediatricians are screening infants and toddlers for early communication delays. Students will gain experience with analysis of short interviews with pediatricians and analysis of open-ended survey questions. Students will gain hands-on experience and skills with transcribing short semi-structured interviews and identifying themes throughout transcriptions. The students' responsibility would be either initial coder or reliability coder. Furthermore, students may also gain experience with creating figures/tables to explore preliminary results.
- b. *Comparing language assessments in children with Developmental Language Disorder (with Mollee Pezold).* 1 student completing 2-3 credits each semester for 1-2 semesters. Completion or co-enrollment in SPLH 565 and 566. The goal of this project is to learn about the relationship between different methods of assessing, scoring, and rating measures of children's language skills. The student will transcribe narrative language samples from kindergarten children with DLD, complete coding of vocabulary and grammar, and learn about data collection and analysis.

**Warren; Fragile X Syndrome Research Lab; [sfwarren@ku.edu](mailto:sfwarren@ku.edu)**

**Needs: 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.

**Wegner; Schiefelbusch Speech-Language-Hearing Clinic; [jwegner@ku.edu](mailto:jwegner@ku.edu)**

**Needs: 1 student 2-3 credits each semester for 2-3 semesters.**

Project description:

Communication Coaching in Context: A Case Study. The research student would implement and document communication support provided to a young woman with Down syndrome who is attending KU as part of the KU-TPE Program and living in a dorm. She received Communication Coaching through the Schiefelbusch Clinic 3 hours a week but needs support and coaching in context to apply what she is learning in the clinical setting to her daily interactions. The undergraduate researcher would work with me to develop the program, collect baseline data that will include social networks, rating scales, and communication behaviors, document implementation, and then replicate the baseline data at the end of the semester.

## 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)**

Director, Center for Undergraduate Research: Alison Olcott ([olcott@ku.edu](mailto:olcott@ku.edu); 864-7351)

SPLH Contact: Jonathan Brumberg ([brumberg@ku.edu](mailto:brumberg@ku.edu); 864-1061)

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](mailto: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.