

Attention: SPLH Majors

Are you interested in getting involved in research for the **Fall 2018** 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 7-9 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 7-9). To be matched with a faculty mentor for Fall 2018, please complete **ALL QUESTIONS** on pages 2-4 of this document and return to Jonathan Brumberg **by email** at brumberg@ku.edu by **5:00 pm on Monday, April 2, 2018** along with a copy of your DPR and resume. Students will receive notification of their mentor matches in early-April. 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., UGResearch_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 2018** 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 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 2018

Name:

Email:

Major(s):

Minor(s):

Current Year (click to select):

SPLH Course	Semester Taken or Planned	Grade
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 2018, 3 credits Fall 2018; 2 credits Spring 2019). NOTE: Only complete this form if you plan to start your research in Fall 2018).

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 5–6. 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 project in the space provided on the next page.

Rank	Faculty Name
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 by 5:00 pm on Monday, April 2, 2018 if you wish to apply for the REP or Departmental Honors Program in Fall 2018.

SPLH Fall 2018 Research Opportunities

Brady; Early Language Learning and Fragile X Syndrome laboratories; 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

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

Chertoff; Department of Hearing and Speech, University of Kansas Medical Center; mchertof@kumc.edu

Needs: 1 student completing 2–3 credits for 1 semester

Project description:

Students will analyze examine audiologic data identify the location of lesion(s) within the cochlea and auditory nerve, and to describe the pathophysiology within the peripheral auditory system that leads to hearing loss.

**Green; Schiefelbusch Speech-Language-Hearing Audiology Clinic; krystagreen@ku.edu
Needs: 1 student completing 2–3 credits for 1–2 semesters**

Project description:

Students will analyze and collect audiometric and hearing data related to hearing health and conservation. Students will learn to store and analyze audiological data, and conduct statistical analyses.

**Pedersen; Schiefelbusch Speech-Language-Hearing Clinic; kpetersen@ku.edu
Needs: 1–2 students completing 2+ credits for Fall 2018 and / or Spring 2019.**

Project description:

Facilitate Creative Movement groups for young children and families at the SPLH Clinic and in the community. Groups will focus on enhancing language and social skills through movement. Interdisciplinary experience will be obtained with students and professionals from Dance, Social Welfare, Early Childhood Special Education and Occupational and Physical Therapy. Students may facilitate groups, develop curriculum and materials and/or collect data on speech, language and social development.

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

Needs: 1 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.

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: Jonathan Brumberg (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

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.