# 2018 - 19 Calendar of Special Advising Sessions

## 2018 Fall

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<tr>
<th>Session</th>
<th>Location</th>
<th>Date and Time</th>
<th>Notes</th>
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<tr>
<td>Students Interested in Research</td>
<td>GRB 3rd Floor Lounge</td>
<td>8/27/18 at Noon</td>
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<tr>
<td>Students Applying to Graduate School</td>
<td>GRB 3rd Floor Lounge</td>
<td>9/18/18 at Noon</td>
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<tr>
<td>Pre-Registration Advising + Declaration of Major</td>
<td>GRB 3rd Floor Lounge</td>
<td>10/26/18 at Noon</td>
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<tr>
<td>BA/MA/PhD Program and Professional Master’s Program</td>
<td>GRB 3rd Floor Lounge</td>
<td>11/6/18 at Noon</td>
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<tr>
<td>Summer Research Opportunities</td>
<td>GRB 3rd Floor Lounge</td>
<td>11/27/18 at Noon</td>
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## 2019 Spring

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<tr>
<td>Non-MD/Non-PhD Career Options</td>
<td>GRB 3rd Floor Lounge</td>
<td>1/28/19 at Noon</td>
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<td>Declaration of Major</td>
<td>GRB 3rd Floor Lounge</td>
<td>TBD at Noon</td>
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<tr>
<td>Pre-Registration Advising + Declaration of Major</td>
<td>GRB 3rd Floor Lounge</td>
<td>3/22/19 at Noon</td>
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<td>Students Planning to Explore Graduate Studies</td>
<td>GRB 3rd Floor Lounge</td>
<td>4/10/19 at Noon</td>
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Undergraduate Research in BioSciences

Undergraduate research is an important component of a BioSciences education as it enhances the undergraduate experience and provides opportunities for career development. Research experience is becoming a critical prerequisite for admission to professional schools and is particularly important for those applying for biological graduate programs or intending to go directly into industry research labs. The undergraduate research programs in BioSciences have been designed to flow from observation through participation. Students are encouraged to seek undergraduate research opportunities whenever they are ready. Freshmen seminars (BIOC 115, EBIO 116, ENST 117) and laboratory fundamentals courses (BIOC 112, NSCI 120 & EBIO 213) are designed to provide students in each major with the exposure and basic skills to navigate early entry into labs. The following courses offer opportunities to experience and participate in active research programs at Rice and, for some, in the Texas Medical Center, Houston Zoo, Houston Museum of Natural Science, Houston Arboretum and Nature Center, Flower Garden Banks National Marine Sanctuary NOAA Office (Galveston), and other off-campus research sites.

BIOC 115/FSEM 115 Freshman Seminar in Local Biology Research

This course provides a program of independent research for students with previous training in the biosciences. Students are generally expected to spend an average of 3 hours per week in the laboratory for each semester hour of credit and to write a research paper. Students taking ≥2 hours of credit for this course are encouraged to present their research at the university annual undergraduate symposium in the spring semester. Venues for research are both inside Rice and in the larger Houston community. Permission of the instructor is required. Suggested prerequisite is EBIO 213.

ENST 117 Freshmen Seminar in Local Environmental Science Research

These half-semester seminar courses introduce freshmen interested in biology to the excitement of research at Rice and across Houston. Small groups meet weekly with a graduate student or postdoctoral researcher to explore a published research article by a local lab, gaining background information about the subject and exposure to the research techniques. At the end of the course, students will meet researchers and tour labs at Rice and elsewhere in the Houston research community. All first-year non-transfer students are eligible to enroll. EBIO 116 meets in the 1st half of each semester and BIOC 115 and ENST 117 meet in the 2nd half of each semester (www.bioc.rice.edu/bioc115/).

EBIO 306: Independent Research in Ecology & Evolutionary Biology

This course provides a program of independent research for students with previous training in the biosciences. Students are generally expected to spend an average of 3 hours per week in the laboratory for each semester hour of credit and to write a research paper. Students taking ≥2 hours of credit for this course are encouraged to present their research at the university annual undergraduate symposium in the spring semester. Venues for research are both inside Rice and in the larger Houston community. Permission of the instructor is required. Suggested prerequisite is EBIO 213.

BIOC 310 and NEUR 310: Independent Research in Biochemistry & Cell Biology/Neuroscience

These courses provide research-for-credit; students perform research for an average of 3 hours per week per credit hour in faculty laboratories in BioSciences at Rice and elsewhere in the Texas Medical Center, prepare a research proposal, provide weekly reports, and a research paper (Fall/Spring) or poster (Spring), and receive course credit for their effort. Those intending to participate in BIOC 310 or NEUR 310 undergraduate research should take the BIOC 112 or NSCI 120 or BIOC 211 (with permission). Please read the Independent Research web site for complete course information and requirements. (https://biosciences.rice.edu/undergraduate-studies).

If intending to pursue research off-campus, please submit an application to the instructor at least 3 weeks before the start of the semester for permission to enroll. Students working off campus may not take BIOC 310 or NEUR 310 for fewer than 3 credit hours (9 hours of research/week).

BIOC 401/402/412: Honors Research in Biochemistry & Cell Biology

The Biochemistry & Cell Biology Honors Research Program is a suite of courses offering our seniors and advanced juniors the opportunity to perform a two-semester, individual research project in a research laboratory in biochemistry & cell biology at Rice or elsewhere in the TMC and requires substantial time devoted to the research project (minimum 3 hr/week per credit hour). This immersive program is intended to give a first-hand experience of what a career in research would entail. Students interested in graduate school are strongly encouraged to apply for consideration for honors research. Information and application at: https://biosciences.rice.edu/undergraduate-studies

EBIO 403/404: Senior Research in Ecology & Evolutionary Biology

This course for research in EBIO is open only to undergraduate majors during their senior year and requires permission of the research supervisor and chair. Completion of the EBIO 403/404 sequence includes an original thesis describing the results of their research. Applications are due in April of the previous academic year. Registration for EBIO 403/404 implies a commitment to participate in research for at least 2 semesters.

BioSciences Opportunities OwlSpace Site

On this “joinable” site we post various biology-related opportunities. Examples include: Research opportunities, summer internship programs, information sessions, fellowships, jobs, study abroad, et al. This site mailing list is a great way to hear about biological and biomedical research opportunities on/off the Rice campus. To join, log on to your OwlSpace account and go to “My Workspace”-> “Membership” -> “Joinable Sites” and select BioSciences Opportunities.
Finding and Securing Research Opportunities

Undergraduate Research Contact Information:

Biochemistry & Cell Biology: Dr. Dereth Phillips, 340 ABL, derethp@rice.edu
Ecology & Evolutionary Biology: Dr. Scott Solomon, 130D ABL, scott.solomon@rice.edu
Neuroscience: Dr. Jon Flynn, W102 George R. Brown Hall, flynn@rice.edu

Tips for starting your search

Think about the sorts of research that may be of interest to you and talk to students and advisors in that area of research. Explore on your own by searching through different research departments at Rice, at the Texas Medical Center, or in the greater Houston area. You can learn about the research in a particular department by going to the “Faculty” or “People” tab and clicking through the various faculty names and research statements. At the same time, join the “BioSciences Opportunities” OwlSpace site to receive information about research opportunities at Rice and elsewhere. When you have found a lab(s) of interest, scan through recent research articles from that lab and contact the professor to express your interest. [If you are a BIOC major, before contacting the professor, it may be helpful to read the BIOC 310 course manual to get a feel for the expectations of an undergraduate researcher (www.bioc.rice.edu/bioc310/)]. Determine the nature of your engagement (volunteer, for pay, for credit, for one semester/summer, for multiple years). If you are interested in receiving credit for your research, contact the instructor of the research-for-credit/independent study course in the appropriate department. Links to the BioSciences Department and to various off-campus departments may be found on the department website in the section “Research and Internships” under “Undergraduate Studies.”

Independent Research in BioSciences and Beyond

Once you have found a research position, you may be eligible to receive course credit in an appropriate department. Most of the following courses may be taken by permission only. Please contact the course instructors for additional details and requirements.

BIOC 310/401/402—BioSciences: Program in Biochemistry & Cell Biology
EBIO 306/403/404—BioSciences: Program in Ecology & Evolutionary Biology
NEUR 310/401/402—Neuroscience Program
BIOE 400/401—Bioengineering
CHEM 391/491/492/493—Chemistry
CHBE 499—Chemical & Biomolecular Engineering
ESCI 481—Earth Science
KINE/HEAL 495/496—Kinesiology
UNIV 301—University-wide, zero-credit, for all majors, all types of projects qualify
HONS 470/471 (RUSP)—University-wide companion course for research in all majors

Find the course number/department that best matches your research interests. Most departments, including those not listed here, have an independent study/research course.

Note for those interested in the health professions: There are many types of research that can improve human health outside of the biological sciences (health disparities, healthcare economics, medical sociology, psychology of addiction, etc.). For the most fulfilling research experience, make sure to pursue the research that most interests you rather than that which you perceive is desired by medical schools.
WHAT YOU NEED TO KNOW

Working in a Lab or in the Field as an Undergraduate

Am I ready for research?
Being prepared for a research experience is less about having the appropriate course prerequisites or experience and more about your awareness of what a research experience entails. Professors search for students at a variety of experience levels. Some professors are looking only for juniors and seniors with upper-level coursework under their belts, whereas others seek freshmen or sophomores with an interest in a multi-year research experience. Regardless of previous experience or coursework, common indicators of undergraduate research success are diligence, curiosity, responsibility, interpersonal communication skills, and resilience to failure. As research at any level requires dedication, you will want to make sure that you have time and space in your schedule (physical and mental) to take on a research project. Do you have time in your schedule for 9+ hours of research per week? Do you have large open blocks of time (3+ hours) to set up and run your experiments? During semesters in which you will be participating in research, we usually recommend that your total credit load, including 3 credits of research, not exceed 15 or 16 hours total.

Decide what you want out of your research experience.
Are you just looking for a job for extra money or do you want research experience? Would you prefer to perform mostly laboratory maintenance or do you want to be performing research as part of an ongoing project in the lab? Do you want to work for pay (including work study) and/or course credit? In some labs, paid positions will be lab maintenance, and actual research will only be available for students working for credit during the academic year. However, many labs offer some paid positions over the summer.

Where do I start?
Join the BioSciences Opportunities site on Owl-Space for research postings and updates. Look at the various research summaries of the faculty on the web (see “Surfing” below). Look for a lab that is interesting to you. Talk to juniors and seniors about their lab experiences. Which labs do they recommend? Discuss your research interests and goals with advisors in the BioSciences Department and ask which research group might be a good match (advisor contact information can be found at: https://biosciences.rice.edu/undergraduate-studies/advising). If you are serious about joining a particular research group, visit the lab, ask to meet the undergrads already working there, and inquire as to the best method of approaching that particular professor.

Surfing for scientists.
You can learn about the research in a particular department by going to the “Faculty” or “People” tab and clicking through the various faculty names and research statements. To find research faculty in the Texas Medical Center, start with “GSBS UT” or “GSBS BCM” to identify clusters of faculty affiliated with area graduate programs. Surf the web using terms such as: “[topic/organism/disease] research Houston”. Read the research summaries of scientists to learn more about the field. Many community environmental research organizations, zoos and museums are also open to Rice interns, so don’t be afraid to contact people in those institutions as well.

How do I contact a PI (Principal Investigator, head of a lab)?
Do your homework. Most positions are not advertised, but are filled from among the students who contact the PI. Read about the PI’s work and, if possible, talk with people working in the lab to get a feel for the personality and expectations of the PI. Write a personal email to the PI. Do not send a mass email to multiple faculty members or your email will be considered spam and ignored!!

Your introductory email conveys an important first impression and can influence how easy it will be for you to find a lab home. All PIs of research labs will have either a PhD or an MD degree and should be addressed as “Dr.” or “Prof.” and not “Ms., Mrs., or Mr.” In your email, tell the PI who you are (name, year at Rice), why you are looking for a position in a research lab, and why you are interested in his or her lab in particular. Include mention of any relevant course work or prior research experience, even if it was in high school. You also may want to include whether you are looking for a one-semester or longer (preferred) experience, if you are seeking a particular compensation (e.g., credit and/or pay), and how many hours per week you would like to devote to lab work. Your
application will be looked on with greater favor if it appears that your motivation is scientific interest rather than a
desire to pad a medical school application. If you are considering graduate school after Rice, include this interest in
the letter. If you are applying to an on-campus lab and are eligible for work-study, you can mention this asset.

**How many labs should I contact?**
Getting into a lab is partly timing and luck, so do not be discouraged if your first efforts are not successful. Contact
one or two at a time but be aware that you will probably need to contact multiple labs over the course of your
search before you find a position. If you know someone in a lab where you want to work, ask that person to put in a
good word for you. If you are not successful after several attempts, you may wish to ask for feedback on your
contact letter from the undergraduate research coordinators.

**What is expected of me in a lab?**
Your research advisor will expect you to keep regular hours, especially at the beginning. In many labs, you will not
be working directly with the PI, but with a graduate student or postdoctoral fellow who has volunteered to train
you. This person probably is not doing this extra work out of pure altruism, but rather hopes that your addition to
the team will further his or her research agenda. This person has a full-time job even without mentoring you, so be
respectful of his or her time.

It is very difficult to train a student if s/he does not work the same hours as his/her advisor. You will be expected to
work closely with your advisor until you are sufficiently well trained to complete procedures on your own, which
might take weeks or months. Even after those first few weeks, it is advisable to maximize your overlap with your
advisor.

You are expected to ask questions any time you are confused. Your co-workers prefer that you ask them for help
rather than having you risk breaking equipment or wasting time and resources. You are part of a team and should be
very conscientious of the effect that your actions have on others in the lab. Be neat and clean up after yourself,
particularly when using common areas or equipment. Return materials to their proper locations after use. Do not
use your co-worker’s materials unless you have been invited to do so. Complete your lab jobs in a timely fashion.
Let your co-workers know if you will not be able to make it to lab or if you will be late so that any ongoing
experiments can be monitored in your absence. Clearly communicate (both verbally and by email) the days that you
will be gone due to vacations or finals. It is a good practice to post above your bench a paper calendar that lists your
anticipated in-lab times, when you are in classes, and your contact information.

Pay attention and pace yourself. Mistakes are a fact of life, but repeated avoidable mistakes indicate a pattern of
carelessness. Remember that research is a marathon not a sprint. Take the time to perform each experiment as
carefully as you can and take assiduous notes so that problems can be documented and corrected.

You will be judged not only on your performance while you are in the lab, but also on the gracefulness of your exit.
First, let everyone you are working with in the lab know that you will be leaving the lab and when. Prior to leaving
the lab, make sure that you document everything that you have done and leave precise instructions as to where to
find your stocks and other materials. It is crucial that those who will follow you in your research project are able to
pick up where you left off. It is also more than a nice gesture to keep in touch with the PI of the lab. Even if you left
what you believe were explicit notes, your lab mates may still have occasional questions about stocks, protocols,
etc. that you made or used.

**What should I expect throughout my research experience?**
You should expect that your questions about protocols, equipment, and the research subject will be welcomed and
that you will gain valuable experience in the process. You should expect that hard work, regular hours, enthusiasm,
and attention to detail will be rewarded with positive feedback and perhaps a positive letter of recommendation by
your research advisor.

**Establish and guard your good reputation within the community**
You are part of a small close-knit community. Remember that Rice faculty and staff share information about
student behavior good and bad, and that communication crosses departmental boundaries and employee rank. An
administrator in one school at Rice may play tennis with the dean of another school. It is always in your best
interest and the interest of our community to treat all Rice employees and students with kindness and respect and to
establish a pattern of responsible behavior throughout campus.