**Seeking 8th-12th grade students interested in field science research**

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**Research Apprenticeship Program**

UA Science: Sky School (<https://skyschool.arizona.edu>) is seeking students who are excited to learn more about science and enjoy being in the outdoors. We are recruiting students in grades 8-12 to develop and execute field-based research projects for the regional science fair, run by the Southern Arizona Research, Science, and Engineering Foundation (SARSEF). Each student will be paired with a University of Arizona (UA) undergraduate student mentor and a UA graduate student science advisor to conduct an original field study, culminating in a final presentation at SARSEF. This is a valuable opportunity to gain experience in the scientific inquiry process, utilizing the unique environment of Sabino Canyon.

**Students will benefit by:**

* Learning how to develop and implement your own field-based scientific research project
* Having access to equipment, transportation, and other resources to do authentic scientific research
* Utilizing skills from a variety of science and engineering disciplines
* Relating learning to the larger framework of science research and how it applies to your own life
* Gaining confidence and skills in science and engineering to pursue higher education and STEM careers
* Developing and maintain working relationships with UA scientists
* Developing a better ‘sense of place’, the natural and cultural history, of the Tucson region

**Your commitment:**

|  |  |
| --- | --- |
| October, 2016 | * Mandatory!—Explore field sites October 1st & October 8th or 9th \*
* Meet with mentor after school to write up project proposal
 |
| October-December, 2016 | * Field visits to collect data\*. These will be on weekends and you must attend a minimum of 4 days, 8:30 am – 3 pm.

(October 22, 23, 29, 30; November 5, 6, 19, 20; December 3, 4) |
| January-March, 2017 | * Meet with mentor on weekends or after school to do data analysis and create your presentation for SARSEF (schedule TBD)
 |
| March-April, 2017 | * Research presented at SARSEF (March 29-April 1)
* Poster displayed at UA and/or Sabino Canyon Visitor Center
 |

****\*Transportation provided from the University of Arizona

**To apply:**
Complete the accompanying application, including:

* Student application (plus attached sheet for written answers)
* Parent form (plus attached sheet for written answers)
* Teacher advisor form & Teacher recommendation

 **Applications are due Wednesday, September 21, 2016**

Mail to or drop off at: UA Science: Sky School, c/o Rebecca Lipson, 933 N. Cherry Ave., Tucson, AZ 85721 Or scan it and send to the address below.
Questions? Contact Rebecca Lipson at rlipson@email.arizona.edu or (520) 904-6208.

**Research Apprenticeship Program**

 **Student Application**

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E-mail address \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Phone number \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

School \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

School address \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Grade \_\_\_\_\_\_\_\_\_\_\_\_\_\_ School hours: Start time \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Dismissal \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Which days are you usually available for meetings? Is before or after school better for you to meet (plan on an hour)?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
**October 1st and 8th from 8:30 am to 3:00 pm (departing from and returning to UA) are mandatory field days.**

Field work days will be on weekends October-December (see calendar on next page). Do you prefer to attend field days on Saturdays or Sundays? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

If you plan to work in a team (up to 3 students total on a team), please list your partner(s):

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Research Apprenticeship students may conduct their own research project, but will work in a small research group consisting of a UA graduate student science advisor, a UA undergraduate mentor for each student (or team of students), and other students in grades 8-12 from a wide variety of schools in and around Tucson.

Each research group will have a specific focus, dependent on the area(s) of expertise of the graduate student science advisor. In order to support you in pursuing a research topic that is interesting to you, please number the choices below with 1 being the area you are most interested in studying and 4 being the least. Every effort will be made to place you with either your first or second choice. Please comment below if there is a specific topic you would like to study that is not listed here or to provide more information about your selections.

\_\_\_\_\_ Hydrology, geology

\_\_\_\_\_ Entomology, macroinvertebrates

\_\_\_\_\_ Plant ecology, plant physiology

\_\_\_\_\_ Human-wildlife interactions (wildlife corridors, habitat disruption, etc.), recreational uses of natural areas

Comments:

**Student Application continued…**

**On a separate paper, please answer the following questions:**

1. Describe your interest in science, include classes you’ve taken and the subjects that most interest you.
2. Have you done a science fair project in the past? If so, what was your topic and what did you learn?
3. Why would you like to participate in this opportunity to do a field-based research project with Sky School and SARSEF?
4. What qualities do you have that make you a good candidate for this opportunity?
5. Doing fieldwork can involve strenuous activity, possibly at high elevation, in a variety of weather conditions. What type of physical activities (sports, physical training, etc.) or outdoor experiences (hiking, camping, gardening, etc.) have you had that might prepare you to work in the outdoors?

**Fall calendar for project development and data collection** (field days are 8:30 am-3:00 pm)**:**

Oct 1, Sat—1st field day (Mandatory!)

* feedback form from students and mentors at the end of the day will help match mentors and students

Oct 2, Sun—Mentor assignments sent out

Oct 3-Oct 7—Mentors meet with student(s) at their schools

* meet supervising teacher
* meet parent(s) if they choose to be present or when they pick up their child
* discuss project ideas and interests and/or begin writing project proposal—research for background
* choose field days together (you must attend a minimum of 4 field days, in addition to the mandatory days)

Oct 8-9, Sat-Sun—(Mandatory—choose either Saturday or Sunday) 2nd field day to develop specific project idea, work out methodology, practice taking data

Oct 10-21—Schedule individual meetings, whole team meets to write 1st draft of project proposal—include background, procedures (materials and methods), hypotheses, identify variables (if there is no control, discuss why not)

Oct 22-23, Sat-Sun—field days

Oct 29-30, Sat-Sun—field days

Nov 5-6, Sat-Sun—field days

Nov 19-20, Sat-Sun—field days

Dec 3-4, Sat-Sun—last field day or work day at the library if needed

\*Note: Transportation is provided from UA for all field days. You must have transportation to and from UA.

***Participants for the UA Science: Sky School’s Research Apprenticeship Program will be selected based on demonstrated interest in science research, willingness to learn, and ability to work cooperatively. We will consider the student application, teacher recommendation, and parent form in making our selections.***

**Research Apprenticeship Program**

 **Parent Form**

Student name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Student’s school \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Grade \_\_\_\_\_\_\_\_\_\_\_\_\_

Student’s ethnicity—This information is used to secure grants to support this program. It is optional for you to respond, but your response is helpful for fundraising purposes.

How do you describe your child (you may select more than one)?

* American Indian or Alaska Native
* Asian
* Black or African American
* Hispanic of any race
* Native Hawaiian or Other Pacific Islander
* White or Caucasian
* Other

Parent/Guardian name(s) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E-mail address \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Phone numbers: Home \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Work \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Cell \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Your child will be expected to

* work within a cooperative group setting, possibly collaborating in a team
* follow directions from adults in regards to his/her work and safety
* show respect for staff, peers, the environment, and others property

**On a separate paper, please complete the following:**

1. Describe your child's eagerness to learn about science and engage in scientific research.
2. Tell us about your child’s personality, particularly as it relates to a school or work type of setting.
3. What are your child’s strengths and challenges?
4. Doing fieldwork can involve strenuous activity, possibly at high elevation, in a variety of weather conditions. Is your child prepared for potentially strenuous physical activity?
* Yes
* Maybe
* No

Comments:

|  |
| --- |
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**Research Apprenticeship Program**

**Teacher advisor form**

Students (individually or working in teams of up to 3 per school) must have a teacher at the school who is willing to be their advisor on this project. This teacher will be responsible for arranging a meeting space for and being present for any after school meetings between the student and mentor, periodically checking in with students, and serving as the school contact person for the mentor.

Students, please identify a teacher to serve as your advisor at the school for your project. Have that teacher complete the information below. This does not need to be the same person who writes your recommendation, nor does it need to be a science teacher.

Teacher name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E-mail \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Phone number \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signature \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| --- |
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 **Note to teacher advisors:**

As a teacher advisor, you do not need to attend any of the field days. The main responsibility of the teacher advisor is to be present at and provide a location for any after school meetings between the student and mentor. Though the mentors will go through a background check as part of the fingerprint clearance, just as teachers do, per UA guidelines the mentors should not be put in a situation where they are alone with a minor. If you are not able to be present, I appreciate you arranging another public space for the mentor and student to meet, such as the school library. You can read the UA unenrolled minors policy here: <http://youth.arizona.edu/policy>

I appreciate you checking in with the student(s) to be sure they are on track and not having any difficulties communicating with their mentor. I will be following up weekly with each of the mentors. I know some of you have laboratory or classroom space at school that may be beneficial for your student(s) to use. If you are able to assist in this, I greatly appreciate it. I will do my best to provide resources from the University, but our Sky School office does not have a laboratory or extensive storage space for each of the students involved. I will work with each mentor and you to work out the details for each project.

Thank you for supporting your student(s) in this endeavor. Please contact me if you have any questions.

Rebecca Lipson, UA Sky School Assistant Director

**Research Apprenticeship Program**

**Teacher Recommendation**

Student Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Teacher Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Teacher e-mail \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Teacher phone \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

School \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Subject taught or relationship to student \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

How long have you known the student? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

How would you describe this student’s overall academic performance?

* Straight A student
* A/B student
* B student
* This student occasionally receives a C grade
* C student
* Below C student

Please rate the student on the following:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Above Average** | **Average** | **Satisfactory** | **Needs Improvement** | **Unknown** |
| Aptitude for science |  |  |  |  |  |
| Eagerness to learn |  |  |  |  |  |
| Ability to cope with new situations |  |  |  |  |  |
| Cooperating in a group |  |  |  |  |  |
| Ability to follow directions |  |  |  |  |  |
| Being a self-motivated learner |  |  |  |  |  |
| Time management |  |  |  |  |  |

**On an attached page, please describe the student’s strengths and weaknesses (at least one of each) that you feel are most relevant to his or her participation in the Sky School’s Research Apprenticeship.**

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| --- |
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