

# **Promoting Inclusion in the Geosciences: Recruitment, Team-based Multidisciplinary Research Scholarship, and Service Learning** Phillipe Wernette<sup>1</sup>, Chris Houser<sup>2</sup>, Judy Nunez<sup>3</sup>, and Chris Quick<sup>4</sup>



Abstract: Promoting diversity and inclusion in the geosciences at Texas A&M University has been able to cultivate undergraduate student development. GeoX and effective learning community. Intensive student recruitment programs, undergraduate student development. GeoX and effective learning opportunities are some of the ways that the College of Geosciences at Texas A&M University has been able to cultivate undergraduate student development. GeoX and effective learning community. iGeo are intensive high-school on-campus recruitment programs have been highly effective at increasing awareness of what 'geosciences' means while connecting each discipline to the multitude of associated diverse career paths. The traditional one-on-one approach and locations to promote greater understanding of opportunities in the geosciences' means while connecting each discipline to the multitude of associated diverse career paths. The traditional one-on-one approach and locations to promote greater understanding of opportunities in the geosciences' means while connecting each discipline to the multitude of associated diverse career paths. to undergraduate and graduate aproach to research that can promote dialogue and increase inclusion at a research-intensive university. The programs are structured such that a faculty member serves as a mentor to leverage the experience and perspective that a faculty member serves as a mentor to seniors. Undergraduate students, freshmen to seniors. Undergraduate teams are encouraged to be multidisciplinary in order to leverage the experience and perspective that a faculty member serves as a mentor to one or more graduate students, freshmen to seniors. Undergraduate students are encouraged to be multidisciplinary in order to leverage the experience and perspective that a faculty member serves as a mentor to seniors. it removes the pressure of becoming an expert in all topics relating to the research. Eventually, the younger students and will have the opportunity to serve as mentors for incoming students will advance through to senior students and will have the opportunity to serve as mentors for incoming students. The College of Geosciences has been effective as mentors for incoming students and will have the opportunity to serve as mentors for incoming students and will have the opportunity to serve as mentors for incoming students and will have the opportunity to serve as mentors for incoming students and will have the opportunity to serve as mentors for incoming students and will have the opportunity to serve as mentors for incoming students and will have the opport at the pressure of becoming an expert in all topics relating to the research. Eventually, the younger students and will have the opport at the pressure of becoming at the pressure of becoming at the pressure of becoming at the pressure at at promoting diversity and inclusion through innovative recruitment strategies, vertically-tiered research opportunities, and hands-on learning.

## **College Recruitment - iGEO & GeoX**

### Investigate the Geosciences (iGEO)

Introduces motivated and talented under-represented high school juniors and seniors to the geosciences.

### **Geosciences Exploration (GeoX)**

Weeklong experience for high school students to discover careers through hands-on experiences.



### Pathways to the Geosciences

A gateway for students to discover and consider the geosciences starting as a college freshman.

Proactive in helping students at partner institutions find information they need to effectively transfer to a 4-year program.

Pathway template is less confusing than more degree plan formats.

Milestone column helps guide students towards tasks that will benefit them academically, professionally, and personally.

Course numbers of the first four semesters should reflect a close-match to thew course numbers used in the respective college.

Pathway identifies the prerequisites that a student must/should have in their first two semesters prior to applying to Texas A&M University.

Sequencing of courses are based upon successful semesters of current students.

Career information at the bottom of page 2 helps identify the diversity of career paths geoscience majors have upon graduation.

Template demonstrates completion to degree in 4 years, and shows the path a successful student should have for entering a career, graduate school, or professional school upon graduation.



Sample worksheet for Brookhaven College.



Sample worksheet for Blinn College.

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### **High-Impact Experiences** Fieldwork **Faculty Mentor** Hands-on experience and training in field observation and field equipment. Team Leader **Team Leader** - UG Scholar - UG Scholar - UG Scholar - UG Scholar **UG Scholar** - UG Scholar UG Scholar UG Scholar UG Scholar UG Scholar **Aggie Research Programs Aggie Research Leaders Program** Gain mentoring and management experience for industry and academic careers. AM Increase research productivity. Network with leaders in research who can provide professional references. Earn certification as an Aggie Research Leader. **Conference Presentations and Publications** Undergraduate student researchers present research at local, regional, national, and Ehnance grant opportunities through undergraduate student international conferences. engagement. Students develop excellent written and visual communication skills to a broad audience.

A&M University.

programs (LAUNCH).



# Multidisciplinary Team-Based Undergraduate Research Scalable, vertically-tiered, multidisciplinary approach to research mentoring at Texas Research-intensive community Tier One Program (TOP) supported by Office of Graduate and Professional Studies (OGAPS) and Learning communities, Academic excellence, Undergraduate research, National fellowships, Capstones, and Honors Increase undergraduate student involvement in research and encourage hands-on learning in geosciences through fieldwork, conferences, and research collaborations. Enhance professional development opportunities for faculty, graduate and professional students, and undergraduate students through active mentoring relationships. **Aggie Research Scholars Program**

Gain valuable research experience in a multidisciplinary team.

Develop opportunities to produce publishable research.

Network with practicing scholars and secure professional reference.

Earn certification as an Aggie Research Scholar.

Develop interpersonal communication skills through papers and presentations.

Opportunities for hands-on learning (i.e. fieldwork) to develop marketable skills.

# **Assessment and Team Leader Meetings**

Weekly online assessments track undergraduate student and team leader perceptions about research and their project.

**Q1.** I am currently satisfied with how the team has been enabled to make progress toward its project goals.

**Q2.** At this time, I am confident that I can perform research tasks that meet team needs.

Q3. I am currently making contributions to the project that are useful to the team.

**Q4.** What I am currently working on for the project is very important to me.

**Q5.** Overall, what is your enthusiasm level with the team-based research?

**Q6.** Overall, what is your frustration level with your research?



Sample ARLP team progress report.



Monthly team leader meetings help individual team leaders develop and disseminate effective mentoring and management practices based on guidelines set by the national Center for Integration of Research, Teaching and Learning (CIRTL).

Faculty Facilitator: Faculty member who introduces leadership principles and guide reflection on experiences of team leaders.

Aggie Research Leaders: Team leaders who discuss challenges of managing and mentoring teams, identify best practices, and complete certification.













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Enhanced opportunites for graduate school networking.

Develop external research collaborations.

For sample poster, see poster 8-46 by Larry Tuttle et al ("Mapping the geologic framework of Padre Island National Seashore using geophysical surveys").