REALISE

Realising Inclusive Science Excellence

SIG. FIGs.
FALL 2018 BY THE NUMBERS

350

ACSAT students have responded to the REALISE student survey.

90%

Of Biology, Chemistry, & Physics faculty came to at least one REALISE event.

62

Students signed in at the ACSAT Career Studio.

156

Students presented at the Fall ACSAT Research Symposium.

26%

Of Fall ACSAT Research Symposium presenters were first-year students.

5

Faculty presented their redesigned courses at the December Faculty Mixer.

14

Average faculty attendance at Fall STEMed Reading Group.

74

Students attended Peer Role Model Drop-Ins.

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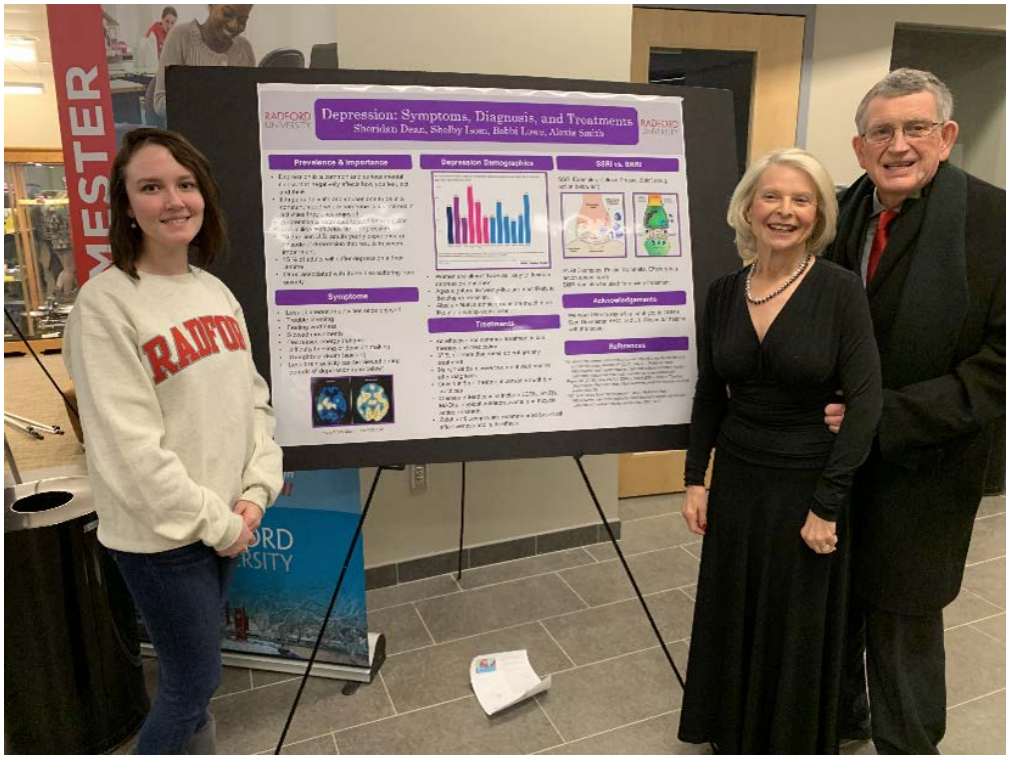
What is REALISE?

Fall ACSAT Research Symposium



First-year student and Artis Scholar Bobbi Lowe presents her research on depression to Nancy and Pat Artis (L-R).

An estimated 156 students presented course-based and independent research at the Fall ACSAT Research Symposium held at the Center for the Sciences lobby on December 6th. Poster after poster (54 in total!) affirmed that our students are eager and able to conduct outstanding research. Friends, family, and faculty, along with College V.I.P.s Pat and Nancy Artis, helped students celebrate their accomplishments.

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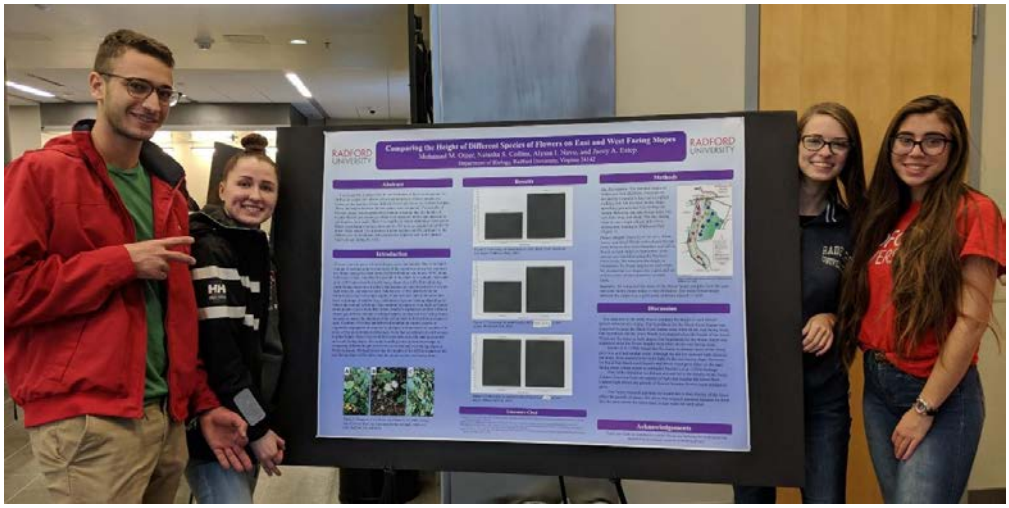
Course Spotlight: BIOL 131 with Dr. Jamie Lau



Mohamed Omar, Natasha Collins, Alyssa Novo, and Jacey Estep (L-R) present research conducted in Dr. Jamie Lau's BIOL 131 class at the Fall ACSAT Research Symposium.

Dr. Jamie Lau's BIOL 131 (Ecology and Adaptation) students conducted course-based research this semester on behalf of **Pathways for Radford**, a local trail advocacy organization. Students examined how ecological communities differ between two key habitats at Wildwood Park: a drier, eastern-facing slope and a wetter, western-facing slope. Jamie scaffolded the project to coach students through every stage of the research process. Students developed research questions, designed sampling protocols, spent two weeks collecting data at Wildwood Park, and analyzed their data using R (!). Along the way, students practiced presenting, drafted a manuscript, and mastered foundational statistical tests. Students presented their findings at the Fall ACSAT Research Symposium. The students' work addresses outstanding questions about the ecology of Wildwood Park, which may help guide decisions about the park's future management.

Thoughts from 131 students:

How would you describe your experience with this project?

"We got to use R Studio! It was really cool!" **– Rosemary Lavelle**

"This project helped me learn how to be self-reliant and show commitment."
– Daelen Williams

"I don't normally like to be outside, but doing field work was fun! This project broadened my views of what I can do."
– Abigail Poindexter

Thoughts from Jamie:

What would success look like for you in this course?

"Each student should have a solid understanding of their own research project. They should have the ability to explain the rational behind the project, why they chose a particular statistical test to analyze the data, and what their results mean."

What has been your biggest challenge so far?

"Managing teams so that work is equally divided. In my experience, conflict arises if tasks are unequally

distributed because the students putting in most of the effort feel as though they are being taken advantage of while their group members feel bored or under-utilized."

What would you say to a colleague who might be reluctant to assign a long-term research project to first-year students?

"Students will rise to the occasion. You can make the project more manageable for yourself by limiting the topic. For example, I usually limit my students to studying insects and plants because those are the taxonomic groups I'm most comfortable working with."

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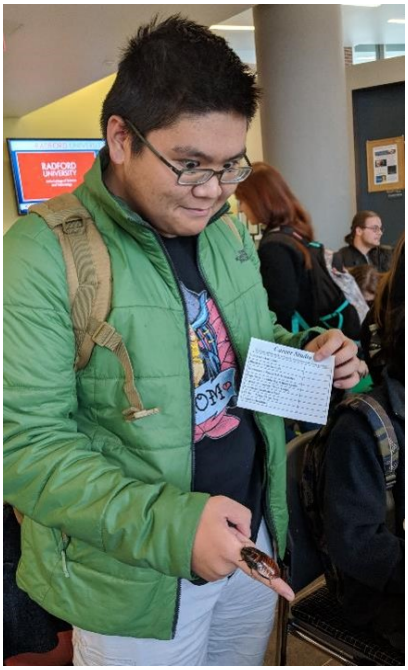
Career Studio attendees sketch out futures



The REALISE Peer Role Models partnered with the **Center for Career and Talent Development** in sponsoring the ACSAT Career Studio in the CS lobby on November 14th. The 62 students in attendance explored their identities as young professionals at nine themed stations focused on skills, such as networking, and opportunities, such as undergraduate research. Representatives from the College of Graduate Studies and the Peace Corps were also available to answer questions.

Left: First-year student Arvin Nguyen encounters a giant cockroach at the station devoted to undergraduate research.

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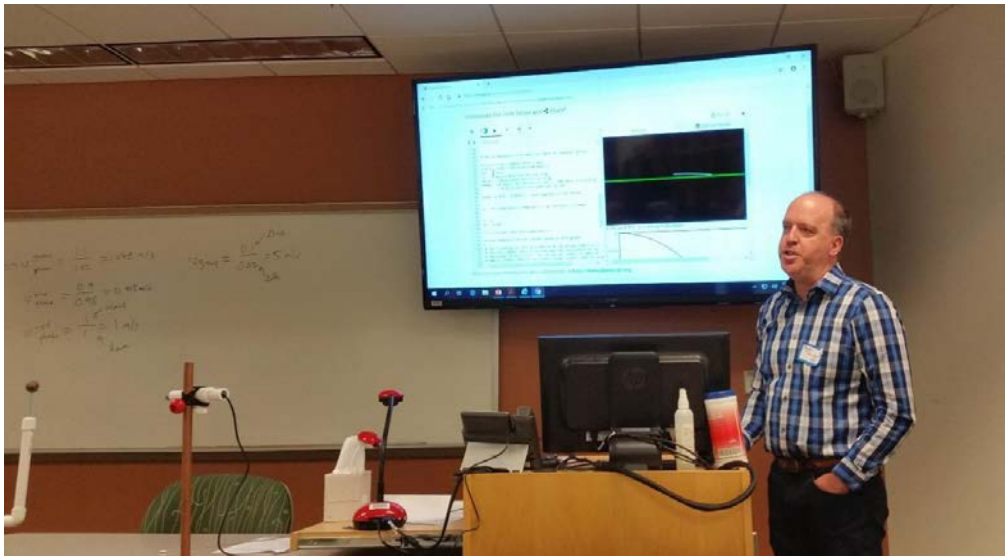
Physics faculty present new inquiry-based activities at education conference



Brett Taylor presents computer coding activities at a physics education conference.

Rhett Herman, Todd Rutkowski, and Brett Taylor (Physics) showcased three innovative teaching activities at the Fall Meeting of the **Chesapeake Section of the American Association of Physics Teachers** at Tidewater Community College (Virginia Beach, VA) on November 10th. The hands-on activities developed by Radford faculty will allow first- and second-year students to explore physics and astronomy content while practicing key skills such as computer coding and experimental technique.

Use of the Lawrence Hall of Science Orrery for Exoplanet Light Curves
Rhett Herman
When planets align! Using an easy-to-build model to demonstrate how occulting planets alter light spectra

Fan carts with Arduino Microcontrollers
Todd Rutkowski
Using programmable, low-friction carts to measure the position and velocity of moving objects

Computational Activities Share-a-Thon
Alex Barr, Howard Community College
Carl Mungan, U.S. Naval Academy
Brett Taylor, Radford University
Using Google Sheets, Desmos, and VPython to investigate physics concepts

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REALISE student survey update

Over 350 students have responded to the REALISE student survey. The REALISE team would like to thank faculty that helped encourage students to participate in the survey! As a reminder, we plan to run this survey each semester so that we can monitor how our students are responding to the inclusive environment that we are striving for in the Artis College of Science and Technology.

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What is REALISE?

The challenge: From 2013-2015, Biology, Chemistry, and Physics retained ~50% of new majors. Another subset persisted, but didn't thrive academically or engage in the experiences we know are most impactful for our students.

The goal: To improve student success through strategic, evidence-based reforms targeting freshman, sophomore and transfer students.

The rationale: We know close student-faculty relationships, mentored research, student STEM clubs, and the like are amazing for our students. But we lose ~1/2 of our students before they can participate in our most valuable experiences. More students will succeed if we can provide those experiences earlier, and critically, provide them within courses where they are available to everyone

What REALISE offers faculty:
- Support to pursue impactful and inclusive educational practices, such as project-based learning and course-embedded research projects.
- Opportunities to just talk with your colleagues about what works for them, in their classrooms.
- Time – time to reflect, think, plan, and implement the kind of lessons you wish you had the time to do.

What REALISE offers students:
It may be surprising, but most students drop out of STEM not from disinterest or inability to meet the academic challenges, but because they don't feel like they belong, or don't feel welcome. Thus, REALISE is trying to generate stronger social and academic support networks among student peers and between students and faculty.

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An open invitation...

Whether you are interested, excited, nervous, or skeptical, we'd love to meet with you on-on-one to chat about how we can:

- Help you share your own expertise and experience with others.
- Use your concerns to improve the project as we go.
- Help you find what you need to try something new in your course (e.g., materials, time, technical/instructional expertise).
- Help you identify a part of the initiative that resonates with what you already do and value.
- Plan for how you can get involved.
- Figure out what the heck "Inclusive Excellence" means.

Contact **Sarah**, **Tara**, or **Jeremy** and we can share ideas over coffee.

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