2016-2017
Undergraduate Research
Annual Report
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# Acronyms and Definitions

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## Research Courses

- 285: Directed Studies
- 291: Research
- 485: Directed Studies
- 491: Research
- 497: Independent Honors Studies
Letter from the Associate Director for Undergraduate Research, LAUNCH

It has been an exciting year in LAUNCH: Undergraduate Research, beginning on 1 September 2016, when my predecessor Dr. Duncan MacKenzie turned over the reins to me after his highly successful five-year appointment as Associate Director. I am grateful to have inherited a fantastic program, Program Coordinator, Annabelle, Aymond, student worker, Dillon Jones, Program Aide, Matthew Bizzell, and to have added Program Assistant, Caroline Sonnier.

Given my background in the humanities, I started the year with a focus on expanding our Undergraduate Research Scholars (URS) thesis program to be more inclusive for those working in non-STEM fields. In addition to updating our existing template to be more user-friendly, we also quickly implemented a new humanities-friendly template to reflect the disciplinary norms for research in the arts and humanities. These templates and our revised thesis manual were ready for our scholars to begin using in mid-October. We are anticipating increases in scholarship in the humanities in the coming years as a result.

In this same vein, I had the great fortune to work with a talented group of faculty and staff in the Creative Works Focus Group we convened in the fall. The group met four times throughout the year, reviewed current literature on creative works projects in undergraduate research, and worked diligently to incorporate current best practices in their fields as well as in undergraduate research in order to design a new template for those students working in the creative arts. We also invited this group to suggest changes to the submission process for Explorations: The Texas A&M Undergraduate Journal to bring it more in line with vetting practices and outcomes expected in research-driven creative works publishing. LAUNCH: UGR will pilot this new creative works URS template during the 2017-18 year, and have implemented the new submission process for Explorations as we strive to make undergraduate research available and accessible to more students at Texas A&M. Research takes many forms in each discipline, and we will continue to work to recognize those scholars producing high-quality, inquiry-driven original scholarship in all fields.

This year we were assisted by a cohort of some of the best and brightest undergraduates in the LAUNCH: UGR Undergraduate Research Ambassadors program. These 29 undergraduate researchers are the faces that represent LAUNCH: UGR at our workshops and presentations, they volunteer at events, and many even organize their own informational sessions to get others excited and curious about doing research. Because of their input, we reorganized our Getting Started in Research workshop to allow interested students to interact more with the Ambassadors. Feedback from attendees let us know that the changes suggested by Ambassadors were highly successful. In April, two of our Ambassadors, Bailey Woods and Omar Wyman, were selected to present their research posters in Austin for the Undergraduate Research Day at the Capitol. They met with state officials and presented their research to the public. Finally, our Ambassadors have been integral in helping us begin work on our video series that will soon be available on our website.

We are also excited to announce other new initiatives that will continue to improve our programs. The LAUNCH: UGR staff has rewritten all content for our programs for the new website in order to both streamline and improve accessibility of information. We have also worked with partners in Student Financial Aid, Student Business Services, the Office of Admissions, the Office of the Provost, and many others to continue to improve, develop, and integrate policies that facilitate summer research at Texas A&M through NSF-REU and other summer undergraduate research experiences (SURE). These new policies will not only allow students to access resources and facilities on campus, but they will also help us attract those students that may be affected by financial constraints. If you are planning a summer undergraduate research experience, please attend our annual February coordination meeting and visit our website for updated university policies. Finally, in addition to new affiliated programs*, we are pleased to be working with our new liaison, Dr. Elizabeth Borda, the Undergraduate Research Associate Director on the Galveston campus. This year we were able to formalize funding procedures, set up a locally-taught section of the UGST 405 course (by Amy Caton), and incorporate the Galveston summer researchers into our College Station poster session in August. We are excited about the new Research Ambassadors program that will launch in 2017-18 in Galveston.

In June, Dr. Sumana Datta, the Executive Director of LAUNCH and Assistant Provost of Undergraduate Studies, and I presented at the Undergraduate Research Program Directors’ Conference, organized by the Council on Undergraduate Research. Our presentation, “Expanding Successful STEM Teams and Creating Similar Team-based Partnership-supported Humanities Scholars Programs” was well received, and we had the chance to engage in fruitful discussions about how to improve undergraduate research with colleagues from across the nation.

Finally, we would like to thank our generous donors, Mr. and Mrs. Ralph Cox, for their gift to Explorations: The Texas A&M Undergraduate Journal. Their support will allow us to continue to improve the publication and showcase the outstanding research that students are accomplishing at Texas A&M, as well as provide leadership opportunities for students to serve on the Board for this student-led journal. Our next volume will be available in November 2017.

In October of 2017 we expanded our annual Undergraduate Research Expo. Instead of a two-hour resource fair, we hosted an entire day of events dedicated to highlighting opportunities to get involved in undergraduate research by faculty and students, discussed ways we can continue to be creative as we engage more with this high-impact practice, and displayed research being done by undergraduates...there’s so much to come!

Dr. Sarah M. Misemer

*Philosophy for Children, TAMU School of Law, Aggie Research Program, McFerrin Center for Entrepreneurship, Summer Creative Initiative (Writing Center and Department of English)
LAUNCH: Undergraduate Research promotes, coordinates, creates, and assesses undergraduate programs involving creative scholarship, inquiry, and research in all academic disciplines at Texas A&M. As a recognized ‘high impact practice,’ undergraduate research experiences increase undergraduate student learning and success, not only while students are at Texas A&M University, but long after graduation.
Texas A&M, a Land-, Sea-, Space-Grant University

**Sea-grant:** Texas Sea Grant’s mission is to improve the understanding, wise use, and stewardship of Texas coastal and ocean resources.

**Land-grant:** Land-grant institutions have traditionally pursued a threefold mission of extending access to higher education, cultivating practical fields like agriculture and engineering, and contributing to economic development.

**Space-grant:** Contribute to the nation's science enterprise by funding education, research and public engagement projects through a national network of university-based space-grant consortia.
Texas A&M is an institutional member of Council on Undergraduate Research

The Council on Undergraduate Research (CUR) and its affiliated colleges, universities, and individuals share a focus on providing undergraduate research opportunities for faculty and students at all institutions serving undergraduate students.

CUR believes that faculty members enhance their teaching and contribution to society by remaining active in research and by involving undergraduates in research, and students succeed in their studies and professional advancement through participation in undergraduate research.

Council on Undergraduate Research 5 Strategic Pillars

1. Integrating and Building Undergraduate Research into Curriculum and Coursework – focuses on building curriculum that is both research-based and supports undergraduate research as an outcome of curriculum.

2. Assessment of the Impact of Undergraduate Research – examines the outcomes of undergraduate research on students, faculty, curriculum and institutions.

3. Diversity and Inclusion in Undergraduate Research – offers undergraduate research to a wider audience of undergraduates, faculty, and institutions to increase the diversity of participants, particularly from underrepresented groups and institutions.

4. Innovation and Collaboration in Undergraduate Research – expands undergraduate research opportunities beyond academic institutions to research collaborations with businesses and nonprofit organizations as well as between higher education institutions.

5. Internationalization and Undergraduate Research – expands the opportunities for research exchanges, research collaboration, and field research in international settings.
Council on Undergraduate Research

What is Undergraduate Research?

“An inquiry or investigation conducted by an undergraduate student that makes an original intellectual or creative contribution to the discipline.”

- The Council on Undergraduate Research (CUR)

Benefits of Undergraduate Research

- Enhances student learning through mentoring relationships with faculty
- Increases retention
- Increases enrollment in graduate education and provides effective career preparation
- Develops critical thinking, creativity, problem solving and intellectual independence
- Develops an understanding of research methodology
- Promotes an innovation-oriented culture
Research at Texas A&M*

- $866 Million in Annual Research Funding
- 12 colleges & 80 departments at A&M offer Undergraduate Research
- #16 in Higher Education Research and Development Expenditures
- Over 200 Institutions and Centers for Research at A&M
- 16,400 Undergraduate Research Hours
- 3rd among public universities in the nation for Social Mobility, Research, and Service

*Retrieved from Division of Research and 2016-2017 howdy course enrollment
Research Credit Enrollment At Texas A&M*

<table>
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<tr>
<th>Year</th>
<th>Enrollment</th>
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<tr>
<td>2008-2009</td>
<td>2814</td>
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<tr>
<td>2009-2010</td>
<td>4461</td>
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<tr>
<td>2010-2011</td>
<td>5015</td>
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<tr>
<td>2011-2012</td>
<td>5046</td>
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<tr>
<td>2012-2013</td>
<td>5300</td>
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<tr>
<td>2013-2014</td>
<td>6039</td>
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<tr>
<td>2014-2015</td>
<td>6530</td>
</tr>
<tr>
<td>2015-2016</td>
<td>7475</td>
</tr>
<tr>
<td>2016-2017</td>
<td>9174</td>
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226% Growth over 8 years

28% Average growth

291, 285, 491, 485, 497

*Retrieved from 2016-2017 Howdy Research Course Enrollment
Total Student Enrollment by College Compared to Research Credit Enrollment

% of students enrolled in Research Courses

- ENGR: 7%
- LBAR: 24%
- COAL: 16%
- CEHD: 10%
- MAYS: 4%
- SCIE: 37%
- VET: 16%
- ARCH: 7%
- GEOS: 35%

# of students enrolled by college

- ENGR: 31857
- LBAR: 16107
- COAL: 15054
- CEHD: 14279
- MAYS: 12124
- SCIE: 6282
- VET: 6156
- ARCH: 5860
- GEOS: 2886

Top 5 Departments by # of students enrolled

- Psychology, 789
- General Engineering, 613
- Animal Science, 397
- Biology, 703
- Health/Kinesiology, 552

*Retrieved from 2016-2017 Howdy Research Course Enrollment †retrieved from total student enrollment
Humanities Research At Texas A&M

Research Credit Enrollment in the Humanities
(# of students)*

*Retrieved from 2016-2017 Howdy Research Course Enrollment
**However, non-humanities research is growing 9x faster than humanities research**

---

**Humanities Research Growth**  
(# of students)*

*Retrieved from 2016-2017 Howdy Research Course Enrollment*
Over 1,000* Students Reached

54 Events and Workshops

3 Flagship Programs

1 Office

*Student Reach defined as the number of students in programs and attendance at events, workshops and presentations
Students Applied: 285
Students Completed: 230
Theses Written: 200

1 Program

*2016-2017 URS Program Data
*Discrepancy between Students Completed and Theses Written is from team projects
“Having to actually write out what I’ve learned from my project allowed me to really grasp the big picture of my research.”

“I really enjoyed the challenge of writing a gigantic thesis, mostly to prove to myself that I can take on a writing project of that magnitude. I loved my topic, and really enjoyed getting to know my fellow scholars.”

“It was a cool way to engage in the academic world in a research setting while still in undergraduate courses. It gave a taste of graduate school. Also, it was a great way to learn how to effectively communicate in writing, both in the thesis as well as in emails and IRB proposals.”

“Building a rapport with my research professor and building new friendships with fellow scholars was the best thing I experienced from the program. Writing a thesis was an unexpected achievement for me as an undergraduate, but it was fun to compose and be an authority over a subject matter.”

*2016-2017 URS Exit Survey*
Explorations: the Texas A&M Undergraduate Journal

1 Journal

790 Lifetime Submissions

311 Published Pieces

9 Volumes

311 Lifetime Submissions
Explorations Vol. 9*

- Life Science: 25%
- Agriculture: 8%
- Short Story: 8%
- Poetry: 9%
- Hard Science: 17%
- Engineering: 25%
- Humanities: 25%

12 Articles

22 Scholarly Submissions
25 Creative Submissions
12 Accepted Submissions

*Explorations Vol. 9 Data
The Undergraduate Research Ambassadors work to inspire broader engagement in undergraduate research by educating and serving the Texas A&M University community.

33 Scheduled Events

227 Volunteer hours

26 Undergraduate Ambassadors

1 Program*

*2016-2017 Ambassadors Program Data
Brand new Video Series

Semester Luncheon

Presenting to freshmen at UGR EXPO

Ambassadors in 2016-2017
2016-2017 Undergraduate Research Ambassadors

Centura Anbarasu
Biomedical Sciences

Anna Gould
Psychology

Vanessa Page
Biomedical Engineering

Matt Ballard
Geographic Science
Info and Technology

Mae Hinson
Ocean and Coastal Resources

Hannah Pearce
Biomedical Engineering

Mikayla Barry
Biomedical Engineer

Dillon Jones
Wildlife and Fisheries Sciences

Devyn Rice
Applied Mathematics

Melissa Brumley
Biomedical Sciences

Katherine Kang
Forensic and Investigative Science

Jennifer Tran
Biochemistry/Genetics

Andrea Darrh
Geosciences

Gabrielle Lessen
Biochemistry

Brooke Versaw
Chemistry

Joshua Fuller
Psychology/Spanish

Sarah Mack
Industrial and Systems ENGR

Colton Wayne
Zoology

Anthony Gasacan
Biomedical Sciences

Joshua Murley
Chemical Engineering

Sean Whitney
Aerospace Engineering

Kanika Gakhar
Aerospace Engineering

Kelly Nieto
Chemistry

Bailey Woods
English and Classics

Omar Wyman
Biomedical Engineering

Karissa Yamaguchi
Biochemistry/Genetics
2017-2018 Undergraduate Research Ambassadors

Brooke Versaw, Chemistry
Morgan Chapman, Chemical Engineering
Dillon Jones, Wildlife and Fisheries Sciences
Devyn Rice, Applied Mathematics
Sarah Mack, Industrial Engineering
Gabrielle Sutton, Molecular and Cell Biology, Psychology

Matthew "Brent" Price, Biomedical Sciences
Jennifer Tran, Biochemistry, Genetics
Anthony Gasacan, Biomedical Sciences
Tommy Settlemyre, Physics, Mathematics
Karissa Yamaguchi, Biochemistry, Genetics
Andrea Darrh, Geophysics

Nicolas Moreno, Genetics, Animal Science
Kelly Nieto, Chemistry
Rachel Thomas, Public Health
Olivia Oliver, English
Quinton Lawton, Meteorology
Gabrielle Lessen, Biochemistry

Kanika Gakhar, Aerospace Engineering
Madison Mcilvoy, Chemistry

UNDERGRADUATE RESEARCH AMBASSADORS
Beckman Scholars Program*

To provide an in-depth, sustained undergraduate research experience in chemistry, biochemistry, biological, and medical sciences.

- 1 Invention Patented
- 5 Peer Reviewed Publications
- 4 National Fellowship Awards
- 6 National Fellowship Nominations
- 17 Grad School Applications
- 13 Prestigious Awards
- 34 Presentations
- 6 Students

*Lifetime Program Data
225 Students
150 Posters
30 Programs

1 Summer

*Summer 2017 Data
24 Summer Programs

150 Student Presenters

66 Texas Students

76 Out-of-State Students

8 International Students

* Summer 2017 Data
LAUNCH: UGR Introduces Undergraduates to Research Opportunities

Summer Poster Session
REU/SURE programs highlight the diversity of research at A&M. Summer undergraduate researchers present at a professional poster session sponsored by LAUNCH: UGR.

Ambassadors Video Series
The Undergraduate Research Video Series answers the questions undergraduates have when first venturing into research at A&M. Meet the UGR Ambassadors at tx.ag/AskUsAboutUGR.

Research Opportunities Database
The LAUNCH: UGR website maintains a database of research opportunities both at A&M and elsewhere. Check it out at ugr.tamu.edu.

Undergraduate Research Ambassadors
At workshops, panels, and informational sessions, our UGR Ambassadors encourage students to start their research careers as undergraduates.

Undergraduate Research Expo
The Undergraduate Research Expo (UGR Expo) spotlights research opportunities at Texas A&M. This annual event is one of the best opportunities for undergraduates to learn about research at Texas A&M.
LAUNCH: UGR selects student representatives to present their research at Undergraduate Research Day at the Capitol, a day where undergraduates from institutions around Texas share their research with Texas Legislators and the public.

Government Relations

Collaboration with the Office of Government Relations illustrates the impact of undergraduates. As a Land-, Sea-, Space-Grant Institution, we are responsible for training and educating Texas’ upcoming workforce.

CUR Highlights

LAUNCH: UGR submits student research published within 6 months to the Council on Undergraduate Research publication, CUR Quarterly.

Social Media

LAUNCH: UGR engages students on various social media platforms and connects with research departments throughout A&M. @tamu_UGR @ExplorationsUGR

URS Outstanding Thesis Awards

LAUNCH: UGR celebrates undergraduate research by awarding Outstanding Thesis Awards in STEM and Liberal Arts/Humanities.
LAUNCH: UGR works to improve inclusivity/diversity in Undergraduate Research

**Humanities Representation**
Undergraduate Research in the Humanities is represented in all LAUNCH: UGR programs. 9% of students in LAUNCH: UGR programs are pursuing a Humanities degree.

**Explorations, an Interdisciplinary Journal**
*Explorations* accepts and publishes research, scholarly, and creative works from all disciplines at Texas A&M.

**New Liberal Arts/Humanities Template for URS**
The new undergraduate thesis template allows students to write a professional thesis in line with their disciplinary norms.

**Ambassadors’ Representation**
UGR Ambassadors represent the wide variety of programs and disciplines across campus. This year, 20 Ambassadors come from 18 departments across campus.

**UGR Outreach to Learning Communities**
Learning Communities assist underrepresented groups across campus achieve visibility and excel. LAUNCH: UGR works to promote undergraduate research opportunities to these students.
LAUNCH: UGR programs recognize Undergraduate Research

Ambassador Luncheon

UGR Ambassadors attend end-of-semester luncheons, and meet with administrators and special guests. These lunches are an opportunity for UGR Ambassadors to learn about professional organizations and provide feedback on their experiences in the program to LAUNCH: UGR.

Explorations Journal Release

*Explorations* recognizes authors and artists, as well as the board members, faculty, staff and donors that work to make the journal possible each year. Each journal release features the author of the journal’s introductory letter as the keynote speaker. The speaker is always a Texas A&M Faculty Member that has demonstrated their dedication to supporting undergraduates through leadership, scholarship, and the pursuit of knowledge.

URS Graduation Distinction

Students who have successfully completed the Undergraduate Research Scholars program are recognized at commencement, receive an Undergraduate Research Scholars medallion as graduation regalia, and are noted as an Undergraduate Research Scholars on their transcript.
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