December 31, 2014
(revised 03/11/2015)

Office of Undergraduate Research (OUR-UT)
ANNUAL REPORT 2014

Due Date of Report: Fall Semester 2014
Time Period to be covered in report: AY 2013-2014, Summer 2014

Project Title: Office of Undergraduate Research

Persons Completing Report: Thomas Kvale, Ph.D. (Director, Office of Undergraduate Research and Prof. of Physics) and Larry Connin, Ph.D. (Assoc. Director, Office of Undergraduate Research and Administrative Coordinator, Honors College)

Summary Statement

OUR-UT has now completed its seventh year of existence and the OUR programs continued to receive healthy interest from the students and strong support from the faculty. This is reflected in the strong average FYSRE and USRCAP proposal review scores. This year was the first year of OUR-UT being located in MacKinnon Hall. Robbie Abdelhoq became our graduate assistant in the Fall semester. He left OUR-UT in the Spring semester to take a position in a different department. He was replaced by Lindsay Haubert, who was hired for the summer session. Jennifer Lucius joined OUR-UT as the graduate assistant in the Fall semester 2014.

Grant support: OUR-UT played a key supportive role for two state and national grants totaling about 1.5M$ over their current duration. All of these grants benefited from OUR’s summer seminar series UGR2980: Issues in Research and Scholarship, which concentrates on the safe and ethical conduct of research. Responsible conduct of research formal training is a high priority for state and national granting agencies such as the National Science Foundation. Individually, we were in the fourth year of the 1.53M$ grant from the OBOR-funded Choose Ohio First Scholarship Program: “Building Ohio’s Sustainable Energy Future.” (G. Martin P.I., with T. Kvale, a Co-P.I.) This grant involves collaboration between UT and BGSU to fund scholarships to students in the renewable energy area. A key component of this grant is the involvement of undergraduate students in research. OUR-UT played a supportive role in the NSF-REU (Research Experiences for Undergraduates) grant in Physics and Astronomy (R. Irving, P.I. and T. Kvale, Co-P.I.). This grant funded students from across the nation to conduct research in physics and/or astronomy at UT. A key component of this grant is the opportunity for several REU participants to conduct collaborative research at UT and a national facility. The students prepare for research at UT, then conduct the experiments at the national facility then travel back to UT to analyze the data and finish the research project. This past summer, Dr. Kvale mentored and accompanied two students to the Nevada Terawatt Facility at the University of Nevada, Reno. All of the REU students were required to attend the UGR2980 presentations and OUR-UT coordinated with Residence Life to house these students together to create a Living/Learning Center during summer 2014.

This past year we have established the web homepage and mechanism for the UT Journal of Undergraduate Research (UT-JUR). We have received three manuscripts and they have just finished the review stage, with the first publication expected early in the Spring semester 2015. Details of the journal are included in the Appendix.

Other objectives of the OUR-UT in the upcoming year include: continuous outreach to inform the undergraduate population of OUR-UT programs; develop an up-to-date and thorough data base of UT undergraduates involved in faculty-led research beyond the programs sponsored by OUR-UT; promote the creation of more research intensive courses across the university; enhanced funding both internal and...
external (mainly through the NSF-REU program); grow OUR-UT programs (including STARS and WSRP); grow the Posters at the Capitol event; and increase research activities by UT undergraduates, including students in the arts and humanities.

**Major Activities**

**Proposals/Grants** (Proposal Summaries included in the Appendix)
- Choose Ohio First Scholarship Program: “Building Ohio’s Sustainable Energy Future” (Co-Principal Investigator), OUR-UT to administer research positions/internships. 1.53M$ OBOR. Collaborating institutions: UT and BGSU. funded, Year 5 of 5, 08/2009.
- NSF-REU Physics and Astronomy (TJK Co-PI)
- Howard Hughes Medical Institute (HHMI, TJK Co-PI)

**Undergraduate Research Programs** (Details in Appendix)
- **AY2013-14 Research Programs:**
  - 2 STARS participants (Jacob Smithers 2k$, Kasasha Arum 1k$)
  - 2 AYRP participants (Jason Davis $400, Caleb Hiddleson 1k$)
  - 5 Travel Grants
    - Luke Cousino, American Geophysical Union, Conference on Climate Change, San Francisco, CA
    - Anna Mangan, American Speech Language Hearing Association Conference, Chicago, IL
    - Jennah Romansky, SCUSA Conference on U.S. Affairs, West Point, NY
    - Jessica Fredericks, Engineering Society Annual Meeting, Seattle, WA
    - Callan Bialorucki, ORS 60th annual conference in New Orleans, LA
- **Summer 2014 Research Programs:**
  - Selection committees met, March 2014. Summer 2014 research Proposals reviewed: FYSRE (15 proposals), Toledo Internship (3 applications + 1 USRCAP reassigned to TollIntern), USRCAP (35 proposals). FYSRE and USRCAP selection committees rated the proposals on a scale of 1-5, with 5 being outstanding. They (in each program) were instructed to identify at most twelve proposals with a rating of 5 and at most four proposals with a rating of 4. There were no limits on the number of proposals that could be rated 1-3.
  - FSYRE (13 participants/15 proposals)
    - Total FSYRE Average Proposal Score: 4.2/5.0
    - Number of FSYRE proposals scored >3.75: 13
  - UT-City of Toledo Internship Program (4 participants/4 applications)
  - USRCAP (29 participants/35 proposals)
    - Total USRCAP Average Proposal Score: 4.1/5.0
    - Number of USRCAP proposals scored >3.75: 28
  - End-of-Summer Undergraduate Student Research Presentations, July 31, 2014.

**Conferences** (Details in Appendix)
- **National Conference on Undergraduate Research (NCUR) 2014**
  - Event: University of Kentucky, April 03-05, 2014.
- **Posters At The Capitol: Undergraduate Research in Northwest Ohio**
  - Event: Ohio Statehouse Atrium, April 08, 2014.
- **16th National Council on Undergraduate Research (CUR) Conference**
- **UGR2980: Issues in Research and Scholarship** course, summer session III. Average attendance: 40. Summaries of two key evaluation questions for the course are included in the Appendix.
- **Student Research Handbook AY2013-14** Published electronically. Paper copies available upon request from OUR-UT.
- **UT Presentations for undergraduate research opportunities:**
  - Alpha Epsilon Delta, Pre-Med students, 12/12/2013
First Year Pharmacy students, 02/04/2014

- various individual class presentations.

- **Student Government Research Survey** (18 responses). Survey summaries included in the Appendix.

- **Proposal Writing Workshops** (Fieldhouse FH2030)
  - January 22, 2014 -- Sciences, Engineering, Medicine, Pharmacy, and associated disciplines
  - January 23, 2014 -- Arts, Humanities, Business, Education, and associated disciplines

- **Office of Undergraduate Research Advisory Committee -- ACUR (AY2013-14)**
  Please see Appendix for ACUR details

### Major expenditures for the period
- Undergraduate Research Major Expenditures 2013-2014 (grand total: $158,778)
  - OUR-UT (TOTAL - summer 2014): $148,500
    - FYSRE: $42,250
    - TollInterns: $12,000
    - USRCAP: $94,250
  - AYRP AY13-14 grant (J.D. & C.H.): $1,400
  - Travel Grants (L.C., A.M., J.R., J.F.): $1,900
  - STARS (J.S. & A.K.): $3,000
  - Posters at the Capitol: $1,590
  - CUR institutional membership: $800
  - CUR National Meeting (Washington, DC): $1,588
  - Publication of the AY2013-14 Student Research Handbook was electronic this year, so no direct printing costs were incurred.

### Assessment activities
- The Assessment Report for AY2013-14/Sum2014 is included in the Appendix.

### Development activities
- OUR-UT Development Plan is available from OUR-UT. No changes were made this year from last year.

### Challenges or problems encountered this period (if any)
- Main challenges encountered:
  - Due to tax law changes, stipends may be considered federal taxable income.
  - The university requires W-9 forms to be on record before any funds can be given to the students. This presented a problem for non-US students, since a Social Security Number must be obtained before submitting the W-9 form. An extra 6-8 weeks are required for this to happen.
  - Summer research supplies budget procedure for individual projects needs to be modified due to the fiscal year falling in the middle of the summer research period.
  - Final Report deadline was moved to September 01 from the end of the Fall Semester in order to increase student compliance of Final Report submission. Still, several students did not pick up all of their stipend checks at the end of summer.
  - Need to identify a suitable room for the UGR2980 presentations and the End-of-Summer Research Symposium.
  - To keep an accurate census of undergraduate research activities in individual faculty research, especially those supported by external funding agencies or volunteered time.

### Progress on goals set for AY2013-2014
This past year we have established the web homepage and mechanism for the UT Journal of Undergraduate Research (UT-JUR). We have received three manuscripts and they have just finished the review stage, with the first publication expected early in the Spring semester 2015.


Expanded the Research Travel Grant Program

Launch NASA Glenn Capstone Research Project.

Perform complete Assessment Tasks

Increase Research Intensive courses

Goals for AY2014-2015

Launch the UT Journal of Undergraduate Research.

Support proposals to be submitted to the National Science Foundation NSF-REU program and other external funding agencies.
  - Physics and Astronomy (TJK Co-PI -- Co-write and submit proposal)
  - Co-PI and contribute to the Howard Hughes Medical Institute (HHMI) grant proposal (D. Leaman, P.I.), Fall semester.

Increase the number of undergraduate students involved in research.

Produce a brochure describing the OUR-UT and research opportunities at UT

OUR-UT Office Organization

- Director of Undergraduate Research (Prof. Thomas Kvale)
- Associate Director of Undergraduate Research (Dr. Larry Connin)
- Graduate Assistant
  - Robbie Abdelhoq, AY2013-14
  - Lindsey Haubert, Sum 2014
  - Jennifer Lucius, AY2014 - present

OUR-UT is housed in the Honors College, MacKinnon Hall MK1010-A
Appendix:

Supporting Materials

UT Journal of Undergraduate Research
Web homepage
Announcement
Author & Coauthor Responsibilities

Grant proposals -- Summaries (funded)
CUR 2014

NCUR 2014

Posters at the Capitol: Undergraduate Research in Northwest Ohio
PATC 2014

STARS and Other Academic Year Programs

OUR-UT Summer Research Participants

UGR2980 Summary
(Selected Questions, Q1, Q2, and Q9)

Research Evaluation Summary -- Students

Student Government Survey Spring 2014

OUR-UT Graduate Assistant Specifications/duties

OUR-UT Advisory Committee

OUR-UT Assessment AY2013-14, Summer 2014
The UT-JUR is dedicated to publishing scholarly work conducted by undergraduate students at The University of Toledo on a regular basis. The topics encompass all fields of endeavor present at UT. The governing publisher will be the University of Toledo Press. Undergraduate students should be first author, but the articles can have multiple authors at all levels (undergraduate, graduate, postdoc, faculty, etc.).

Eligibility
- All UT undergraduates conducting research, creative activities, and/or other scholarly work (whether funded or not) are eligible to submit their work for publication.
- Non-UT undergraduate students conducting research, creative activities, and/or other scholarly work are eligible to submit their work for publication if their research was conducted at UT or mentored by a UT faculty member.

Structure
- Editor: Director, Office of Undergraduate Research
- Editorial Board
  - Editor
  - Students interested in Publishing (number TBD)
  - Associate Director, Office of Undergraduate Research
  - Chair, Advisory Committee on Undergraduate Research
  - member from The University of Toledo Press.
  - Publishing Assistant -- Graduate Assistant in the Office of Undergraduate Research
- Frequency -- Annual in Spring Semester
- Professionally-peer reviewed articles
- Content
  - Undergraduate Research news and events
  - The number of selected research articles per publication is variable
- Format
  - Electronic
  - Open access
  - Limited number of paper copies for archives, development/promotion, etc.
October 2012

Author & Coauthor Responsibilities

In this document, the word “research” also refers to “creative activity”.

Publishing in a professionally-refereed journal such as the *UT-Journal of Undergraduate Research* (*UT-JUR*) is a privilege and carries significant responsibility. By submitting manuscripts for consideration, the authors (first author and coauthors) and the faculty mentor endorsing this research affirm that this work conforms to the highest ethical standards of the Responsible Conduct of Research (RCR) code. The relevant points for publication are summarized below.

1. The research presented in the manuscript is original and/or builds or expands on previous research. The research must have been conducted by the author while the author was: i) a UT undergraduate student (on- or off-campus); ii) a non-UT undergraduate student conducting research at UT; or iii) a non-UT student mentored by a UT faculty member (off-campus).

2. If there are coauthors on the paper, each one should have made meaningful contributions to the work and should have had the opportunity to write/review/edit the manuscript. By the same token, all persons who made significant contributions to the work should be included as coauthors. Consistent with Point 1 above, the first author must have had undergraduate status when the research was conducted.

3. Each manuscript must have the endorsement of a faculty member (either UT or non-UT). The faculty member endorsing the manuscript must have full knowledge of all parts of the research even though they may or may not be identified as coauthors.

4. This manuscript does not contain copied sections of previous publications without providing due citation of those publications. Likewise, all significant previous works are properly cited.

5. This manuscript is not being simultaneously submitted for publication in other journals.

6. If the research contains data, the data/results are honestly reported and not selectively reported or not reported depending on the point(s) the author(s) are making in the paper. Fabrication of data/results and/or theft of data/results are a violation of the RCR code, and therefore are *strictly forbidden* and may result in criminal and/or civil legal action.

7. All pertinent information (data, results, methodology, procedure, notes, etc.) of the research will be properly maintained and archived for a reasonable length of time.

8. The author(s) should alert the editorial board if the research contains patentable and/or proprietary material so appropriate courses of action are taken prior to publication.

9. If the *UT-Journal of Undergraduate Research* agrees to publish the manuscript, the author(s) will grant UT-JUR publication rights as indicated in the Copyright Agreement.
Instructions for students/authors:


1. At the top of the screen click “register” and fill out the form below with all the relevant information. During the registration process, you will be asked to choose your “role.” Be sure to choose “AUTHOR”
2. Once you are registered, you will receive a confirmation email with your login credentials. Store that information in a safe place
3. Once you arrive at the home screen, click on “new submission” and be sure that your research meets the requirements listed on the “submissions checklist.” Check of all boxes if the requirements are met.
4. Click “save and continue” and you will be taken to the next screen where you will be asked to upload your data file.
5. You will be asked to click “save and continue” again. The next screen will ask you to provide the submission’s metadata. Fill out the appropriate information in the boxes.
6. If there are supplementary files, you will be asked to upload them on the next screen.
7. Finally, you will arrive at the 5th and final step of the process and you will be asked to click “finish submission.”
8. You will receive a confirmation email confirming that your research has been submitted and you will be provided with a link that will allow you to track the progress of your submission.

Good Luck!
Instructions for Readers (a.k.a. Referees/Reviewers):


1. At the top of the screen click “register” and fill out the form below with all the relevant information. During the registration process, you will be asked to choose your “role.” Be sure to choose “Reader”
2. Once you are registered, you will receive a confirmation email with your login credentials. Store that information in a safe place
3. This registration will result in the reader (you) receiving the Table of Contents for each new issue once it becomes available.
4. This list allows the journal to claim (and assign) a certain level of support or readership for each piece of literature.
5. On the right side of the screen, you will notice a “Notifications box” with the option “view.”
6. This option will allow you to “view” the selections that have been assigned to you for review.
7. Once you have reviewed the article, there will a feedback option available and finally, just click submit.

Good Luck!
Choose Ohio First Scholarship Program: “Building Ohio's Sustainable Energy Future”

Proposed Duration: 60 months
Starting Date: August 01, 2009
Amount Requested: $1,563,005 (OBOR); $1,275,381 (UT/BGSU/NSCC/OWENS/CC/TerraCC)

Principal Investigator
Geoffrey Martin, Vice President, Institutional Research / Associate Professor, Mathematics

Co-Principal Investigators:
Thomas Kvale, Director of Office of Undergraduate Research and Professor of Physics
Daryl Moorhead, Professor, Environmental Sciences
Brian Randolph, Associate Dean, College of Engineering
Charlene Gilbert, Director of the Catharine Eberly Center for Women

Project Summary
This proposal would increase the recruitment, training and graduation of STEM students to supply the growing job markets in renewable energy and sustainable environment technologies. Northwest Ohio has a growing reputation for research, development and manufacturing in the high technology, renewable energy fields of photovoltaics (PV) and wind. In addition, NW Ohio has major research and development strengths in environmental analysis and remediation technologies. In this Choose Ohio First Scholarship (COFSP) proposal, The University of Toledo (UT), Bowling Green State University (BGSU), and the Community Colleges of Owens, Terra, and Northwest State will leverage the enormous public interest and burgeoning job markets in these fields to recruit, educate, and retain the best and brightest of Ohio’s students to support these rapidly developing high tech professions.

This COFSP: Building Ohio’s Sustainable Energy Future (BOSEF) proposal will broaden and enhance several ongoing programs at the collaborating institutions that have already demonstrated success in these areas. Our program will recruit broadly into these fields and enhance student success through a cooperative summer bridge program focused on mathematics, undergraduate research experiences for all, and integration with the Wright Center for PV Innovation and Commercialization, the Lake Erie Research Center, Center of Photochemical Sciences, and the Environmental Remediation and Restoration Experimental Park. It will prepare students for scientific and technical careers by providing internships with business, industry, agencies and non-profits in renewable energy and environmental sustainability fields. Recruiting and retaining minority and women scientists is a goal of this program and our students will benefit from the active collaboration of the existing AIMS (BGSU) and WISE (UT) programs. New undergraduate Minor degree programs in Renewable Energy also will introduce students to the broader natural and social science connections of energy and sustainability. Although the primary program focus is on the undergraduate STEM pipeline, it will include Ph.D. students and in-service high school teachers working toward M.S. degrees.

Through this grant, the participating institutions will have a comprehensive and vertically integrated approach to STEM education that will maximize student success and provide skilled professionals in these crucial STEM areas. The principal components of this program are:

- Scholarships for undergraduate students pursuing a relevant degree program.
- Stipends for summer research projects for undergraduate students pursuing a relevant degree program.
- Stipends for first year BOSEF students to attend the AIMS summer bridge program.
- Faculty Interest Group seminar series on a Sustainable Energy Future (FIG:SEF).
- Mentoring to enhance student success and retention.
- Graduate student and K-12 teacher participation.
“REU Site: Research Experiences for Undergraduates in Physics and Astronomy at The University of Toledo”

Proposed Duration: 36 months
Starting Date: May 01, 2013
PHY-1262810

Amount Requested: $300,000 (NSF); $105,017 (UT)

Principal Investigator
Richard Irving, Jr., Research Assistant Professor, Physics and Astronomy

Co-Principal Investigators:
Thomas Kvale, Director of Office of Undergraduate Research and Professor of Physics

Project Summary
Funding is requested from the National Science Foundation to allow The University of Toledo (UT) to continue its successful Research Experiences for Undergraduates program in physics and astronomy. The duration of the program each summer is ten weeks, usually from the Tuesday after Memorial Day to the first week of August. Funding is requested for twelve undergraduate REU research participants per year, chosen from across the United States. Research areas available to the students at UT include at least five different fields of physics/astrophysics/medical physics, with many different subfields within the general fields, as discussed below. To enhance our recruitment of students in underrepresented and/or disadvantaged groups, we are collaborating with four community colleges in providing priority selection to five REU positions per year to those community college students. This is a renewal proposal for the current NSF grant: PHY-0648963, REU Site: Research Experiences for Undergraduates in Physics and Astronomy. The students are required to: devote priority time/effort to research, register for 1 credit hour in PHYS4910: Research Topics in Physics and Astronomy (tuition/fees paid by the REU grant) attend ARS2980: Issues in Research and Scholarship, present a mid-summer Progress Talk, make a Final Presentation to the department, and write a 10-20 page Final Report.

Intellectual Merit
The department provides a great diversity of cutting-edge research opportunities for undergraduate students in: Astrophysics/Astronomy; Atomic/Molecular/Optical Physics; Biological/Health/Medical Physics; and Condensed Matter/Materials Science Physics (with specialization in thin films, photovoltaics and photonics) with extramural funding increasing since the last proposal to over 3.5M$ per year. Opportunities exist in these areas for both experimental and theoretical research. The research projects are chosen such that the student's project will lead to eventual publication in the appropriate professional research journals. REU students have coauthored at least 40 refereed publications and have over 80 presentations at professional meetings over these eighteen years of REU support. Undergraduate participation in our departmental research program has been vigorously supported by our faculty.

Broader Impact of our Program
In order to involve students from diverse backgrounds in our expanded physics/astronomy research program, we have formed collaboration agreements with four community colleges (three in northwest Ohio and one in northern Minnesota). The students' experiences will be enhanced by their participation as mentors in the Physics Summer Camp for high school science students. We are expanding the Physics Summer Camp and involving the physics teachers from two highly respected, local schools in its planning and operation. The REU students will be required to participate in the university-wide, undergraduate research ethics seminar series and the Physics/Astronomy Bag Lunch series as described in the body of this proposal. The NSF-REU funding of UT for the past eighteen years has allowed 232 undergraduate students from across the US the opportunity to conduct state-of-the-art research in a variety of subfields.
of physics and astronomy. In just the past three years, 42 students participated in our program (plus two additional students with separate funding) from 30 institutions in 15 states.

The University of Toledo (lead institution with four other institutions) was recently awarded a Choose Ohio First Scholarship Program grant totaling 1.5M$ over five years in the focus area of renewable energy and sustainability. This grant has provided the impetus for the increased articulation with three local community colleges. The renewable energy area is central to Physics and Astronomy, and the REU students will benefit from this investment with added research opportunities and interactions with environmental scientists/students and photovoltaic manufacturers as discussed later in the proposal.
Abstract:
The University of Toledo’s Office of Undergraduate Research (OUR-UT) has research programs available to undergraduates, which include: First Year Summer Research Experience, Research Travel Grant Program, City of Toledo Internships, and the primary research experience: the Undergraduate Summer Research and Creative Activity Program. In order to maintain the vibrancy of undergraduate research, we added a graduate student to the office staff. This has enhanced the office’s ability to promote our programs across campus, as well as provided the graduate student with thesis research opportunities. We have recently developed assessment tools to evaluate the value and impact these research experiences have for students. The results from previous summers will be presented along with an overview of the undergraduate research programs, development of the UT-Journal of Undergraduate Research (electronic), Research Intensive Courses, the Student Research Handbook, proposal writing workshops, and other activities offered by the Office of Undergraduate Research.

Suma Kolla, “The Role of Asterless Domains in Embryogenesis,” (Biological Sciences -- Tomer Avidor-Reiss).

James Moriarty, “Comparing Two Different Fish Sampling Methods to Evaluate Fish Communities of the Ottawa River, Lucas County, Ohio,” (Environmental Sciences -- Johan Gottgens and Todd Crail).


Posters at the Capitol: Undergraduate Research in Northwest Ohio

April 08, 2014

(Location moved to the Statehouse Gallery just before the event)

Schedule of Events  Statehouse Atrium  April 08. 2014

- 10:15am - 10:30am  Arrive and set-up posters
- 10:30am - 12:00pm  Morning session - present research
- 12:00am - 1:00pm   Lunch, Group photo, Remove posters and leave

PATC 2014 Group Photo

Students presenting:
- BOSEF grant BGSU&UT (3 posters / 19 co-authors)
- Bowling Green State University (3 posters / 6 co-authors)
- Heidelberg University (4 posters / 4 co-authors)
- Ohio Northern University (11 posters / 24 co-authors)
- The University of Findlay (11 posters / 38 co-authors)
- The University of Toledo (8 posters / 10 co-authors)

Complete Book of Abstracts is available upon request
Students, Research Presentation Titles (Faculty Mentor)

Multi-Institution Collaborative Research

Choose Ohio First Scholarship Program: “Building Ohio’s Sustainable Energy Future”

Jeff Beegle, Casey Fukely, Ben Kuhaneck, Stephanie Clendenen, Sarah Jindra, Clara Bittner, Anthony Kalani, and Katie Burns, Energy Production from Waste Agricultural Biomass and other Biomass Sources (Dr. Daryl Dwyer)

Jennifer Collier, David Krane, Stephanie Parrott, Badal Kewlani, and Jessica Ezzie, Wind Turbines: Voyaging Through Offshore Potential (Drs. Brian Randolph and Thomas Kvale)

Ryan Oaks, Kyle Corbin, Keith Burns, Jessica Ezzie, Isaac Burns, and Logan Rickle, Tidal and Wave Energy Production at Lake Erie (Drs. Brian Randolph and Thomas Kvale)

Bowling Green State University†

Elizabeth Crowther and Jennifer Gluvna, Bowling Green, Ohio Recycling Outreach (Dr. Robert Midden)

Lisa Frey, and Cara Sumner, Disordered Eating Symptomatology in Men and Women: An Examination of Psychosocial Correlates (Allison Kiefner-Burmeister)

Nadejda Mirochnitchenko and Kelsey Ruckert, Survey of the Sources of Contamination within the Upper Tributaries of the Portage Watershed to Reduce the Economic and Ecological Impact of Harmful Algal Blooms in Lake Erie (Dr. Robert Midden)

† Some BGSU students are also participating in the Choose Ohio First Scholarship program “Building Ohio’s Sustainable Energy Future” (BOSEF).

Heidelberg University

Cody Buhrman, The Static Renewal – Acute Toxicity Test of Potassium Chloride on Daphnia magna (Dr. Kenneth Krieger)

Jacob Cochran, Comparison of a Mature and Recently Restored Floodplain forest Along Big Darby Creek in Central Ohio (Dr. Ken Baker)

Andrew Fons, Trail Widening at Woodruff Scout Reservation (Dr. Amy Berger)

Christopher Osborne, Modeling Best Management Practices (BMPs) in the Sandusky River Watershed with the Soil and Water Assessment Tool (SWAT) and Geographic Information System (GIS) (Dr. Remegio Confesor)

Ohio Northern University

Tyler Bernardy, The Modernization of Engineering Education: A Video Game Approach (Dr. Kenneth Reid)

Joanne Berry and Abigail Thayer, Human Waste Stream Loadings in an Agricultural Watershed: Nutrients, Biomarkers, and Bacteria (Dr. Christopher Spiese)

Albert Bui, Paige Garber, Nathaniel Mabe, Lauren Fehrman, and Sarah Seeley, RGS 2 and RGS 4 Differentially Modulate G Protein Coupled Receptor Signaling in the Mouse Aorta (Dr. Boyd Rorabaugh)
Graham Fennell, *Is Project Lead the Way Worth It* (Dr. Kenneth Reid)

Tyler Hertenstein, *Project Based Learning: Developing a STEM Pathway for High School Students* (Dr. Kenneth Reid)

Alexander Kneubehl, Elizabeth Lendrum, and Michael Herman, *Biological Activity of the Saponin Content of Jewelweed, I capensis* (Drs. Vicki Motz, Christopher Bowers, Linda Young, and David Kinder)

Ryan Paulus, Renee Chen, Alex Roth, Michael Bridges, Shyla Woodyard, and Lauren Titus, *Impact of Caffeine on Cognitive Function and Brainwave Activity* (Drs. Nancy Woodley, Vicki Motz, and Rema Suniga)

David Reeping, *Student Perceptions of Engineering: Cases of STEM Outreach* (Dr. Kenneth Reid)

Stephanie R. Schottke and Brooke E. Larsen, *A Study Applying SPERM HY-LITER™ PI Technology to Forensic Casework* (Dr. Dennis De Luca)

Angela Smith, *CYP2C19 Genotyping in a Research Laboratory: Supporting Clinical Decision Making* (Drs. David Kisor and David Bright)

Nicholas Weiner, *Characterization of radio frequency plasma sheath using levitated dust particles* (Drs. Terrence Sheridan and William Theisen)

**The University of Findlay**

Akaterina Davros and Dakota Esteline, *Effect of Salinity on Nitrosomonas and Nitrobacter Populations in Aquariums* (Dr. Bethany Henderson-Dean)


Jessica Gordon, Courtney Timmons, and Cameron Koepp, *Phylogeny of Zoanthids (Phylum: Cnidaria; Order: Zoantharia) Generated from Nuclear and Mitochondrial Sequences* (Dr. Jessica Wooten)

Emily Herr, Anna Bitting, Katrina Hohenberger, and Catherine Dickey, *Mycoremediation of agricultural fertilizers using the edible gourmet oyster mushroom Pleurotus ostreatus* (Dr. Donald Walker)

Ailsa Hershaw, Graham Rossi, Emily Green, and Meredith Evans, *The Effects of Fungal Extracts on the Cell Cycle* (Dr. Michael Edelbrock)

Kaleigh Kenny, Dakota Bennett, Shawn Warner, Rebecca Amos, Leann Tatar, and Joe Hunter, *Mutation Rate Assay in Presence of Secondary Metabolites of Fungal Extracts* (Dr. Michael Edelbrock)

Vadim Kutsar, Jordan Wanner, Samuel LaFollette, and Samuel Gothke, *Genotoxic Potential of Omeprazole on Human Peripheral Lymphocytes* (Dr. Alexander Vaglenov)

Samuel LaFollette, Vadim Kutsar, and Samuel Gothke, *Investigation on Genotoxic Effects of Olanzapine* (Dr. Alexander Vaglenov)

Hannah Speckhart, Emily Kronander, Katie McAlister, Kayla Brown, Brooke Kaufman, Ashley Ruz, Laura Kelly, and Kelsey Yoder, *Does Occupational Therapy Programming Equip Inmates with the Necessary Life Skills for Successful Community Reentry as Perceived by County Jail Inmate Population?* (Drs. Tara Griffiths and Mary Beth Dillon)

Mychal Taubken, *Expression Of Tet Genes In Multi-drug Resistant Microbes* (Dr. Bethany Henderson-Dean)
Sarah Tegtmeier, Chelsea Bering, and Ashley Putman, Patterns of Antibiotic Resistance and Modes of Transmission in Septic System Leachate Contaminated Watersheds (Dr. Bethany Henderson-Dean)

The University of Toledo†

Omaima Ahmad, Filamin A Promotes Migration and Expression of Matrix Metalloproteinases in Ovarian Cancer Cells (Dr. Malathi Krishnamurthy and Subham Dayal)

Sandy Baghdy, The Role of Centrosome Reduction in Fertilization (Dr. Tomer Avidor-Reiss)

Nicole Clark, B9d1 and Cep290 Chromosomes Genetically Interact (Dr. Tomer Avidor-Reiss)

James Dunaway, Progress towards the Enantioselective Total Synthesis of derhodinosylurdamycin A (Dr. Jianglong Zhu)

Nicholas Franzer and Chuanxiao Xiao, Study of Copper-Antimony-Chalcogenide Semiconductors for Solar Cell Application (Drs. Yanfa Yan and Naba Paudel)

Pearl Gambrell, What can Lolita Culture tell us about the direction of Japanese Culture (Dr. Joseph Hara)

David Martin, Life Cycle Assessment of Rainwater Harvesting in Different Types of Buildings (Drs. Defne Apul and Jay Devkota)

Jon Stone and Suneth Watthage, Optical Absorption Control in Carbon Single Walled Nanotube Films in an Electrochemical Cell (Drs. Adam Phillips and Michael Heben)

† Some UT students are also participating in the Choose Ohio First Scholarship program “Building Ohio’s Sustainable Energy Future” (BOSEF).
STARS and Other Academic Year Programs

Description
The Student Achievement in Research and Scholarship Program (STARS) is an undergraduate research program designed to prepare high achieving low-income, (potential) first generation and students from underrepresented groups for the next level in their educational continuum through graduate education and professional careers. STARS is open to all undergraduate students that are Pell Grant eligible at all levels, but high priority will be given to sophomores and juniors that are goal oriented, highly motivated, and high achieving.

The STARS Program offers undergraduate students the opportunity to conduct scholarly research with a faculty mentor, receive paid research assistantships that will better prepare them for the graduate school admissions process and for the Graduate Record Exam (GRE). While the immediate focus of the program is to encourage and help undergraduate students successfully enroll and participate in graduate school, the long-term goal of the program is to enlarge the pool of those wishing to become college faculty members and/or trained professions in Ohio.

<table>
<thead>
<tr>
<th>NAME</th>
<th>Department</th>
<th>Research Title (Faculty Mentor)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jacob Smithers</td>
<td>Biological Sciences</td>
<td>The Role of Sas-4 Interaction With ( \gamma )-tubulin in Centrosome Biogenesis (Tomer Avidor-Reiss), $2,000 + $500 supplies</td>
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<tr>
<td>Kasasha Arum</td>
<td>Biological Sciences</td>
<td>Discovering the Genetic Basis of Centrosome Reduction” (Tomer Avidor-Reiss), $1,000</td>
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<table>
<thead>
<tr>
<th>NAME</th>
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<tbody>
<tr>
<td>Jason Davis</td>
<td>Chem. and Env. Eng.</td>
<td>Antifouling Properties of Polyphenol-Ferrite Coatings (Dong-Shik Kim), $400</td>
</tr>
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<table>
<thead>
<tr>
<th>NAME</th>
<th>Department</th>
<th>Travel (Faculty Mentor -- Amount)</th>
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<tbody>
<tr>
<td>Luke Cousino</td>
<td>Environ. Sciences</td>
<td>Trip to the American Geophysical Union’s fall conference on climate change in San Francisco. (Richard Becker -- $400)</td>
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<tr>
<td>Anna Mangan</td>
<td>Speech Pathology</td>
<td>Trip to the American Speech Language Hearing Association Conference in Chicago. (Caroline Menezes -- $300)</td>
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<tr>
<td>Jennah Romansky</td>
<td>Political Science</td>
<td>Trip to the SCUSA Conference on U.S. Affairs in West Point, N.Y. Faculty Mentor: Dr. (Larry Connin -- $400).</td>
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<td>Jessica Fredericks</td>
<td>Bioengineering</td>
<td>Trip to the Biomedical Engineering Society Annual Meeting in Seattle, WA. (S. Molitor, E. Hippensteel and MR Dressler -- $400).</td>
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<td>NAME</td>
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<tr>
<td>Uchenna Anene</td>
<td>Chemistry</td>
<td>Molecular Modeling of How Anti-cancer Drug Imatinib Binds to Its Target Protein (Xiche Hu)</td>
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<td>Yasmine Ayoub</td>
<td>Biological Sciences</td>
<td>EGCG mediated suppression of pro-inflammatory cytokines induced by ODN in prostate cancer cells (Malathi Krishnamurthy)</td>
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<td>Sandy Baghdy</td>
<td>Biological Sciences</td>
<td>The Role of Centrosome Reduction in Fertilization (Tomer Avidor-Reiss)</td>
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<td>Nuray Baylan</td>
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<td>The Role Of Mechanical Stimuli In Bone Metastasis Within 3-D Mineralized Matrix (Eda Yildirim-Ayan)</td>
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<td>Nina Campbell</td>
<td>Medical Physics</td>
<td>Optimisation of the Planning Target Volume for Patients being treated for Prostate Cancer (David Pearson)</td>
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<td>Nathan Diemler</td>
<td>Chemistry</td>
<td>Synthesis of Single-Sized Silver Nanoparticles (Terry Bigioni)</td>
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<td>John Dilworth</td>
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<td>Evaluating well log and LIDAR data to determine the shoreline of Lake Agassiz during the Moorhead Phase (Timothy Fisher)</td>
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<tr>
<td>James Dunaway</td>
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<td>Chemical Synthesis of Simplified Analogues of Antitumor Antibiotic Derhodinosylurdamycin A (Jianglong Zhu)</td>
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<td>Sydney Edinger</td>
<td>Chemistry</td>
<td>Low Temperature Synthesis of Scandium Iron Molybdate (Cora Lind-Kovacs)</td>
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<td>Pearl Gambrell</td>
<td>English</td>
<td>Computational Linguistics: The Bridge between Computer and Language (Douglas Coleman)</td>
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<td>Kiersten Gamby</td>
<td>Global Studies</td>
<td>Anti-Trafficking Measures: The Effectiveness of the United States’ Immigration Customs Enforcement Agency and Possible Global Implications (Jetsabe Caceres)</td>
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<td>Chelsea Gerhan</td>
<td>Ea. Child., Phys. &amp; Sp. Ed.</td>
<td>Researching a Tactile Map of the University of Toledo for Students who are Blind and Visually Impaired (Sakui Malakpa)</td>
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<tr>
<td>Katelyn Greenhill</td>
<td>Art</td>
<td>Medical Art: The Application of Medical Imaging As An Interactive Tool (Thomas Lingeman)</td>
</tr>
<tr>
<td>NAME</td>
<td>Department</td>
<td>Research Title (Faculty Mentor)</td>
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<tr>
<td>Caleb Hiddleson</td>
<td>Chem. Engineering</td>
<td>Characterization and Application of Midi-GAGR for Alzheimer’s Disease Treatment (Dong-Shik Kim)</td>
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<td>Eileen Iannone</td>
<td>Geography &amp; Planning</td>
<td>Investigations of Urban Infrastructure: A Study of Viable Options for Growth in Downtown Toledo (Page Armstrong)</td>
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<tr>
<td>Samuel P. Johnson</td>
<td>Chemistry</td>
<td>The Synthesis and Application of a Biotin-conjugated Ebselen Probe (Steve Sucheck)</td>
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<td>Cristopher Kapela</td>
<td>Foreign Language</td>
<td>English in Japanese Culture (Joseph Hara)</td>
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<tr>
<td>Hannah Kissel</td>
<td>Foreign Language</td>
<td>Natural Medicine in German Society: a Cross-Cultural Study of Natural Medicine (Friederike Emonds)</td>
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<td>Kayla Lockhart</td>
<td>Biological Sciences</td>
<td>Determining if IFA-2 and IFA-3 have Redundant Function in the Epidermis of C. elegans (John Plenefisch)</td>
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<tr>
<td>Robert Maltby</td>
<td>Physics</td>
<td>Nucleation near metal and dielectric surfaces: extension of classical nucleation theory (Victor Karpov)</td>
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<td>Jacqueline Page</td>
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<td>Relating the Sensitivity of the Sudd Marshes Extent to Climate Variability: Measurements from Space Using GRACE and MODIS (Richard Becker)</td>
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<td>Kevin Samson</td>
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<td>Characterization of a unique lipid A structure found in Burkholderia pseudomallei (Dragan Isailovic)</td>
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<td>Alisha Sangal</td>
<td>Biological Sciences</td>
<td>Polycystic Ovarian Syndrome-Related Insulin Resistance Induced by the Lymphocytic Immune Response (Jennifer W. Hill)</td>
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<td>Emily R. Scott</td>
<td>Biological Sciences</td>
<td>Serotonin Regulation Leads to Chronic Pain in the Body (Bruce Bamber)</td>
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<td>Sierra Parker</td>
<td>Med. &amp; Bio. Chemistry</td>
<td>Roles of Traditional Japanese Medicine in Japanese Healthcare (Steven Peseckis and Kasumi Yamazaki)</td>
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<tr>
<td>Jacob Smithers</td>
<td>Biological Sciences</td>
<td>The Significance of Sas-4 Interaction with γ− tubulin in Centrosome Biogenesis (Tomer Avidor-Reiss)</td>
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<td>Andrew Trumbull</td>
<td>Bioengineering</td>
<td>The Role of Physiologically Relevant Extracellular Mechanical Stimulation on Mesenchymal Stem Cell Differentiation Towards Osteoblast Cells (Eda Yildirim-Ayan)</td>
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<td>Nathan Wagner</td>
<td>Biological Sciences</td>
<td>Rho GTPase Signaling in C. elegans Nervous System Development (Robert Steven)</td>
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<td>Rachel Wagner</td>
<td>Bioengineering</td>
<td>Equilibrium reactive-extraction of biomass sugars: Evaluation of binding constants for process optimization (Patricia Relue)</td>
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<tr>
<td>NAME</td>
<td>Department</td>
<td>Research Title (Faculty Mentor)</td>
</tr>
<tr>
<td>Sarah Gerren</td>
<td>Chem. Engineering</td>
<td>Comparing the Antifouling Properties of Polyaniline-Iron Oxide and Polyphenol-Ferrite Coatings (Dong-Shik Kim)</td>
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<tr>
<td>NAME</td>
<td>City Office</td>
<td>City Supervisor</td>
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<td>-------------------</td>
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<tr>
<td>Isaiah Ingram</td>
<td>Chemistry</td>
<td>Synthesis and Screening of Tuned Ionic Liquids as Stationary Phases in Multidimensional Gas Chromatography (Jared Anderson)</td>
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<td>Ashley LaFountain</td>
<td>Biological Sciences</td>
<td>Importance of Conserved Domain in Centrosomal Protein, Cep290 (Tomer Avidor-Reiss)</td>
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<tr>
<td>Batool Mehdi</td>
<td>Biological Sciences</td>
<td>The role of MLK4 signaling in ovarian cancer cell proliferation and invasion (Deborah Chadee)</td>
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<tr>
<td>Bryan Nguyen</td>
<td>Biological Sciences</td>
<td>Role of hGBP-1 in GBM cell migration (Deborah Vestal)</td>
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<tr>
<td>Samuel Park</td>
<td>Mathematics</td>
<td>Investigations into Frame Theory and its Applications in Abstract and Applied Mathematics (Trieu Le)</td>
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<tr>
<td>Nadeen Sarsour</td>
<td>Chemistry</td>
<td>Metal Ion Binding to the DNA substrates of Bacteriophage T4 RNase H (Timothy Mueser)</td>
</tr>
<tr>
<td>Rebecca Shaheen</td>
<td>Bioengineering</td>
<td>Extraction of Ketose from Aldose Sugars using Simultaneous Isomerization and Reactive Extraction (Patricia Relue)</td>
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<tr>
<td>Emily Simone</td>
<td>Biological Sciences</td>
<td>The Role of the S-CAPTC Complex (Tomer Avidor-Reiss)</td>
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<tr>
<td>Jason Wanamaker</td>
<td>Biological Sciences</td>
<td>Removing Calcium–Activated Ion Channels in Caenorhabditis elegans (Bruce Bamber)</td>
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<tr>
<td>Melissa Yamsek</td>
<td>Chemistry</td>
<td>Utilization of Magnetic Ionic Liquids in the Extraction and Isolation of Deoxyribonucleic Acid (DNA) (Jared Anderson)</td>
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<td>Lucille Frank</td>
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<tr>
<td>Timothy Kosmyna</td>
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<tr>
<td>Thomas Connin</td>
<td>Finance</td>
<td>George Sarantou</td>
</tr>
<tr>
<td>Christina Pinciotti</td>
<td>Parks</td>
<td>Bryon McIntosh</td>
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UGR2980: “Issues in Research and Scholarship”
Research Seminar Schedule
Summer 2014

All presentations are scheduled for Thursdays, Wolf Hall Room 1205.
May 29 11:00am “Meet and Greet” Lakeesha Ransom, Dean, Jesup Scott Honors College
   11:15am “Summer Schedule & Procedures” – Thomas Kvale, Office of Undergraduate Research
   11:30am “Laboratory Safety” Heather Lorenz, Office of Safety & Health
   12:30pm Pizza Lunch

June 05 9:00am “Research Ethics and Compliance” Walter Edinger, Office of Research & Sponsored Programs

June 12 9:00am “Advanced Research in the Library” Wade Lee, University Libraries

June 19 9:00am “Math in Academic and Industrial Research” David Corliss, PhD Astrophysics and Ford Motor Company

June 26 9:00am “Seelio & Recording Research” Holly Stuart, Educational Services Director, Seelio

July 03 9:00am Independence Day Holiday  No presentation

July 10 9:00am “Ethics in Research” William Messer, Vice President of Research

July 17 9:00am “Business Prospects and Patents” Mark Fox, Office of Research & Sponsored Programs

July 24 9:00am “Summer Overview and Summation” Thomas Kvale and Lindsey Haubert, Office of Undergraduate Research

July 31 (All day)  Summer Research Presentations (Student Union SU2582-84):
   • 9:00am - 9:30am Oral and Poster Presentation Set-up
   • 9:30am - 11:30am Oral Session 1
   • 11:30am - 12:00n Poster Session 1
   • 12:00n - 12:15pm Welcoming Remarks -- Margaret Traband, Senior Vice Provost for Academic Affairs
   • 12:15pm - 1:00pm Pizza Lunch and Poster Session 2
   • 1:00pm - 3:00pm Oral Session 2
UGR2980 Course Summary Questionnaire 2014
(Selected Questions, Q1, Q2, and Q9)
Office of Undergraduate Research (OUR-UT) Summer Research Programs
The University of Toledo

1. Is research just an enhanced classroom experience or is it something different?
   a. _9_ an enhanced classroom experience   b. _31_ something different

2. What are the ramifications of your answer to the above question? This could involve: ethics issues, budgetary concerns, learning outcomes/expectations, etc.
   Many responses with research having more serious consequences than in academia.

9. Listed below are examples that are unethical (or highly questionable) practices in research. Please rank them for seriousness, with 1 being the least serious infraction and 5 being the most serious infraction. If you think that that practice is OK, write 0 or “N/A” as your response.
   _____ putting your friend as a co-author on a research publication
   _____ fabricating data
   _____ deleting data because they didn’t fit the preconceived theory
   _____ not citing previous work and/or not citing competitor’s work
   _____ submitting the same data/paper to multiple journals
   _____ not keeping a good, complete research journal
   _____ plagiarizing work/data
   _____ allowing your relationship with co-researchers to become personal

Summary of Q9:

<table>
<thead>
<tr>
<th>Practice</th>
<th>putting your friend as a co-author</th>
<th>fabricating data</th>
<th>deleting data</th>
<th>not citing previous work</th>
<th>adding or fabricating references</th>
<th>submitting the same data/paper</th>
<th>not keeping a complete research journal</th>
<th>plagiarizing work/data</th>
<th>allowing your relationship with co-researchers to become personal</th>
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<tr>
<td>average</td>
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<td>4.88</td>
<td>3.95</td>
<td>4.05</td>
<td>4.33</td>
<td>2.68</td>
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<td>5</td>
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<td>0</td>
<td>8</td>
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</table>
RESEARCH PROGRAM EVALUATION - STUDENT
Office of Undergraduate Research (OUR-UT) Summer Research Programs
The University of Toledo
2014

To help us improve our summer research program in future years, please give us your confidential opinion on the following questions. Please note that the term “research” used in this form is meant to also include “creative activity” and “internship”. Thank you very much. Indicate your selection by CIRCLING (or putting an “X” by) the number.

All responses will be kept anonymous.

In which research program did you participate? CIRCLE (or put an “X” by) your program.
FYSRE  USRCAP  TolInterns  BOSEF  Other (Name):

1. Did this summer’s research experience live up to your expectations in general?
   Definitely Yes  Neutral  Definitely No
   1  2  3  4  5  6  7
   FYSRE Average (11): 1.7  USRCAP Average (23): 1.8  TollInterns Average (4): 1.2

2. How much do you think that your research experience has helped you educationally?
   Learned a Lot  Neutral  Not Worth Much
   1  2  3  4  5  6  7
   FYSRE Average (11): 1.3  USRCAP Average (23): 1.2  TollInterns Average (4): 1.0

3. How do you rate the level of your research project this summer in regards to your educational level?
   Far above my level  About Right  Far below my level
   1  2  3  4  5  6  7
   FYSRE Average (11): 2.4  USRCAP Average (23): 3.0  TollInterns Average (4): 4.0

4. How skilled in the tools/techniques/methods of inquiry in the profession of the research project did you start with at the beginning of the summer?
   Very skilled/knowledgeable  Neutral  Not very skilled/knowledgeable
   1  2  3  4  5  6  7
   FYSRE Average (11): 4.6  USRCAP Average (23): 4.0  TollInterns Average (4): 4.5

5. How skilled in the tools/techniques/methods of inquiry in the profession of the research project did you acquire by the end of the summer?
   Very skilled/knowledgeable  Neutral  Not very skilled/knowledgeable
   1  2  3  4  5  6  7
   FYSRE Average (11): 2.4  USRCAP Average (23): 1.9  TollInterns Average (4): 2.0

6. How much time did your faculty mentor spend per week personally mentoring you on your research project?
   0-1hrs/wk  1-2 hrs/wk  2-3 hrs/wk  3-4 hrs/wk  4-5 hrs/wk  5-6 hrs/wk  >6 hrs/wk
   1  2  3  4  5  6  7
   FYSRE Average (11): 4.9  USRCAP Average (23): 3.7  TollInterns Average (3): 2.7

7. How do you rate your faculty mentor/supervisor’s interactions in helping you in your research experience?
   Very Helpful  Neutral  Not Helpful
   1  2  3  4  5  6  7
   FYSRE Average (11): 1.6  USRCAP Average (23): 2.1  TollInterns Average (3): 2.3
8. How do you rate your research experience in terms of the freedom you had to do things your own way?

<table>
<thead>
<tr>
<th>None: I did what I was told</th>
<th>About Right</th>
<th>Too much: I got lost</th>
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<tr>
<td>1</td>
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</table>

FYSRE Average (11): 3.6  USRCAP Average (23): 4.6  TolInterns Average (4): 3.2

Critical Reflection Questions (Use additional pages and/or backs of these pages if desired.)

1. Why did you choose to become involved in a research project this summer?

2. What prior knowledge did you find useful in your research project (e.g., courses, experiences, etc.)?

3. What knowledge was missing that would have helped you in your research project (e.g., courses, experiences, etc.)?

4. What new knowledge central to your project did you discover in your research?

5. What new knowledge tangential or incidental to your project did you discover in your research (e.g., new methods, connections, resources, etc.)?

6. How might your research project impact the greater community (professional and/or societal)?

Please list any additional comments.

If eligible, are you interested in participating in one of the OUR-UT summer research programs again?

<table>
<thead>
<tr>
<th>Definitely Yes</th>
<th>Neutral</th>
<th>Definitely No</th>
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</table>

FYSRE Average (11): 1.7  USRCAP Average (23): 1.7  TolInterns Average (4): 1.2

Thanks again for your time, and best wishes for continued success in all of your endeavors. As part of the tracking we need (and want) to do, please tell us about your degrees received and your career activities (grad school, work, etc) after participating in our program. Please keep in touch with us!

Thomas Kvale, director of the Office of Undergraduate Research

Please return this questionnaire either via email (undergradresearch@utoledo.edu) or by campus mail:

Office of Undergraduate Research
The University of Toledo
Sullivan Hall (SL1120), Mail Stop 504
Toledo, Ohio 43606
Net Experience and/or Skillset Gain
FYSRE/USRCAP Summer 2014

Average Experience Gain:
FYSRE  2.27
USRCAP  2.13
Internal funding for undergraduate research at UT has increased significantly 2006. What should be the next phase of undergraduate research enhancement, keeping in mind that priorities may have to be set? Rank the following items, with 1 = highest priority, 6 = lowest priority. Please do NOT list duplicate numbers.

<table>
<thead>
<tr>
<th>Number of Respondents: 17</th>
<th>Increase summer stipend amount</th>
<th>Increase number of summer stipends</th>
<th>Include summer housing</th>
<th>Include summer course credit (tuition)</th>
<th>Create focused, interdisciplinary research groups</th>
<th>Create academic year research programs</th>
<th>Other</th>
<th>Other: Description &amp; Suggestions</th>
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Priority: 1 = Highest priority, 6 = lowest priority

Increase summer stipend amount
Increase number of summer stipends
Include summer housing
Include summer course credit (tuition)
Create focused, interdisciplinary research groups
Create academic year research programs

Other: Description & Suggestions
### Student Government Survey AY2013-14

Which of the following are good methods to inform students about research programs, opportunities, events, etc.? 1 = best method to reach the most number of students, 6 = reaches the least number of students. Duplicate numbers are OK for this question.

<table>
<thead>
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<th>MYUT</th>
<th>direct emailing</th>
<th>faculty</th>
<th>Information kiosks and bulletin boards around the campuses</th>
<th>iCollegian ads</th>
<th>Student Government / Student Affairs</th>
<th>Other</th>
<th>Other: Description &amp; Suggestions</th>
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<td>0.56</td>
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<td>1</td>
<td>0</td>
<td>0</td>
<td>2</td>
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<td>0</td>
<td>1</td>
<td>5</td>
<td>3</td>
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<tr>
<td>Number of 4s</td>
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<td>1</td>
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<td>0</td>
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<td>5</td>
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<td>Number of 5s</td>
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<td>6</td>
<td>10</td>
<td>3</td>
<td>2</td>
<td></td>
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</tbody>
</table>

**Information Transmittal:** 1 = Best method for most students, 6 = least number of students

- **MYUT**
- **direct emailing**
- **faculty**
- **Information kiosks and bulletin boards around the campuses**
- **iCollegian ads**
- **Student Government / Student Affairs**
Office of Undergraduate Research (OUR-UT)

Job Description:

The Office of Undergraduate Research graduate assistant is offered an opportunity to gain a variety of responsibilities and skills associated with mentoring and facilitating undergraduate research and scholarship. Essentially working in cooperation with the Honors College and across the various university Colleges and Departments, the graduate assistant will gain experience with such areas as office management and organization; program and event planning; assessment and experiential learning objectives/outcomes; faculty/student/alumni database management; research programs participation requirements verification; and undergraduate mentorship.

Primary Responsibilities:

- Routine or reoccurring tasks of the office.
  - Provide “First Contact or Q&A” for students interested in research involvement.
  - Maintain tracking of grant applications.
  - Help maintain the OUR website and email system.
- Coordinate with the marketing personnel to develop advertisements, flyers, brochures, and news for/about undergraduate research.
- Work with the Director and Assoc. Director of OUR and the Honors Staff in planning and programming of events such as: the Proposal Writing Workshops, Research Receptions, research and scholarship panels, the annual Posters at the Capitol event, the End-of-Summer Research Symposia, and others that may need to be scheduled.
- Coordinate, promote, and track Research Intensive courses.
- Participate in recruitment activities for prospective students and their families.
- Participate in the OUR Annual Reports, OUR Self-Studies, external funding proposals, and Assessments.
- Coordinate with the Honors staff, various College and Departmental personnel, and students to facilitate and/or enhance opportunities for undergraduate research and scholarship.
- Develop new and creative ways to better serve student’s research needs.
- Work with the Director and Assoc. Director of OUR in other ways as may arise for the better functioning of the office.

Graduate assistants are able to tailor their experience working with the Office of Undergraduate Research to their particular interests and needs. The identified duties could be appropriate for the student’s graduate thesis research. Some examples of additional opportunities include:

- Teaching research and scholarship preparation to undergraduates
- Develop learning communities for scholars and researchers
- Advising of students seeking scholarship endeavors
- Coordinate discussions with faculty panels
- Coordinate student research retreats
- Work closely with select groups of Honors students to prepare them for post-graduate endeavors
- Design and implement additional programs, such as career development seminars, panel discussions, and social events

Supervisor: Thomas Kvale, Director, Office of Undergraduate Research
Time Commitment: 20 hours per week
Contract Dates: AY2011-12 and Summer 2012
Remuneration: Stipend plus tuition and fee coverage.
Contact Person: Thomas Kvale
Sullivan Hall, Rm 2140, MS504, Toledo, OH 43606
telephone: 419/530-2983 e-mail: undergradresearchs@utnet.utoledo.edu
http://www.utoledo.edu/honors/undergradresearch
Advisory Committee for Undergraduate Research
(revised 01/2012)

Charge:
To oversee, advise, and assist the Office of Undergraduate Research (OUR-UT) in promoting and conducting undergraduate research at The University of Toledo.

Composition:
The following colleges will have one member each (with the exception of the Judith Herb College of Education, Health Science & Human Service). These members will be appointed by their respective college offices.
- College of Adult & Lifelong Learning
- College of Business & Innovation
- College of Engineering
- College of Languages Literature & Social Sciences
- College of Medicine
- College of Natural Sciences & Mathematics
- College of Nursing
- College of Pharmacy & Pharmaceutical Sciences
- College of Visual & Performing Arts
- Honors College
- Judith Herb College of Education, Health Science & Human Service
  - One member from Education
  - One member from Health Science & Human Service
- University Libraries

Also serving on the committee:
- Director, Office of Undergraduate Research, (ex officio)
- Associate Director, Office of Undergraduate Research, (ex officio)
- One member from the Office of Research
- One member from Student Government

Duties:
The committee will meet at the beginning of each semester to establish the calendar for that semester, and as needed throughout the semester. The committee will form the selection committee to determine the recipients of the university-wide, internally-funded undergraduate research programs (currently, the Academic Year Research Program (AYRP), the First Year Summer Research Experience (FYSRE), Research Abroad/Away Program, Undergraduate Summer Research and Creative Activities Program (USRCAP) and the Work-Study Research Program (WSRP). The director of the Office of Undergraduate Research will present an Annual Report to the committee each Fall semester covering the previous academic year and summer.

Duration:
The expected service duration of the committee members from the colleges and the University Libraries is three years, with the possibility of reappointment. The service duration of the member from Student Government and the Office of Research is one year, with the possibility of reappointment. The Director and Associate Director of the Office of Undergraduate Research are permanent members of this committee.
Bylaws of the Advisory Committee for Undergraduate Research
(Amended January 2012)

1. College representatives serving on the committee are eligible to also serve as the chair of the committee. The committee chair elect will be elected by a vote of the committee members during the first meeting of the committee each Fall semester. The chair elect will become the chair of the committee at the start of the Fall semester of the year following his or her election, or if the current chair is unable to serve.

2. To promote continuity, the three-year duration membership terms will be staggered. Each term runs from the Fall semester through the summer of the third year. The composition and appointment cycle of each group is as follows:
   Cycle A: Terms ending 2013, 2016, 2019, …
   - College of Adult & Lifelong Learning
   - College of Engineering
   - Honors College
   - College of Nursing
   - College of Pharmacy & Pharmaceutical Sciences
   Cycle B: Terms ending 2014, 2017, 2020, …
   - College of Business & Innovation
   - Judith Herb College of Education Health Science & Human Service: Education Departments
   - College of Medicine
   - College of Visual & Performing Arts
   Cycle C: Terms ending 2015, 2018, 2021
   - Judith Herb College of Education Health Science & Human Service: Health Sciences & Human Services Departments
   - University Libraries
   - College of Languages Literature & Social Sciences
   - College of Natural Sciences & Mathematics
   After their initial terms, the representatives from all of the above named colleges will serve three year terms (with possibility of reappointment).

   Appointed each year
   - Student Government
   - Office of Research & Sponsored Programs

   ex officio members
   - Director, Office of Undergraduate Research
   - Associate Director, Office of Undergraduate Research

3. Research Intensive Courses
Research Intensive (RI) identified courses designation proposal was adopted by Faculty Senate on March 31, 2009. OUR-UT is charged with playing an integral role in the designation process. To this end, the RI Course Designation Committee will be formed and composed of 6 members chosen by the Advisory Committee for OUR-UT and 2 members selected by Faculty Senate. The Director and Associate Director of the Office of Undergraduate Research will also serve on this committee as ex-officio members. The selection procedure for the six members chosen by the Advisory Committee for OUR-UT will be determined by the Advisory Committee.
<table>
<thead>
<tr>
<th>College</th>
<th>Representative</th>
<th>Term ending Summer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult &amp; Lifelong Learning</td>
<td>Mark Cuthbertson</td>
<td>2016</td>
</tr>
<tr>
<td>Business &amp; Innovation</td>
<td>Margaret Hopkins</td>
<td>2014</td>
</tr>
<tr>
<td>Health Sciences &amp; Human Services</td>
<td>Phillip Gribble</td>
<td>2015</td>
</tr>
<tr>
<td>Education HSHS</td>
<td>Florian Feucht</td>
<td>2014</td>
</tr>
<tr>
<td>Engineering</td>
<td>Youngwoo Seo</td>
<td>2016</td>
</tr>
<tr>
<td>Honors</td>
<td>Ashley Pryor</td>
<td>2016</td>
</tr>
<tr>
<td>Languages Literature &amp; Social Sciences</td>
<td>Gbenga Ajilore</td>
<td>2015</td>
</tr>
<tr>
<td>Medicine</td>
<td>Joshua Park</td>
<td>2014</td>
</tr>
<tr>
<td>Natural Sciences &amp; Mathematics</td>
<td>Deborah Chadee</td>
<td>2015</td>
</tr>
<tr>
<td>Nursing</td>
<td>Kristina Reuille</td>
<td>2016 (ACUR chair-elect)</td>
</tr>
<tr>
<td>Pharmacy &amp; Pharmaceutical Sciences</td>
<td>Zahoor Shah</td>
<td>2016</td>
</tr>
<tr>
<td>Research</td>
<td>Elsa Nadler</td>
<td>2014</td>
</tr>
<tr>
<td>Student Government</td>
<td>Jacob Smithers</td>
<td>2014</td>
</tr>
<tr>
<td>University Libraries</td>
<td>Wade Lee</td>
<td>2015 (ACUR chair)</td>
</tr>
<tr>
<td>Visual &amp; Performing Arts</td>
<td>Barbara Miner</td>
<td>2014</td>
</tr>
<tr>
<td>Undergrad Research</td>
<td>Thomas Kvale</td>
<td>ex officio</td>
</tr>
<tr>
<td>Undergrad Research</td>
<td>Larry Connin</td>
<td>ex officio</td>
</tr>
</tbody>
</table>
Part One: Identify the program and guiding principles.

Program/Unit Name: Office of Undergraduate Research Date: 11/10/2014

Program/Unit Director(s) Thomas Kvale Person(s) completing this report: Thomas Kvale

Type of Program (Please Check One):
- [x] Undergraduate
- [ ] Undergraduate Certificate
- [ ] Graduate/Professional
- [ ] Post-Baccalaureate Certificate
- [ ] Associate

Student learning outcomes:
List the student learning outcomes (SLOs) for the academic or educational program.

Student Learning Outcomes from participation in the programs of the Office of Undergraduate Research:
1. Students will be able to formulate a research project and convey its significance to professionals outside of their area of research.
2. Students will develop time-management skills be able to work diligently on their research for an extended period of time.
3. Students acquire increased proficiency/knowledge of the tools/techniques/methods of inquiry in the profession in which the research project was conducted.
4. Students will develop analysis skills to critically-examine their results and reach conclusions based on their findings.
5. Students will develop presentation skills to present their research to the general public and other professionals (both orally and through written materials).
**Part Two: Identify the types of measures utilized in your program.**

**Assessment measures:**
Complete the following table. Please provide a minimum of two measures with at least one direct measure.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Applicable student learning outcomes</th>
<th>What is the process by which this assessment data is examined by the program and lead to action by the program?</th>
</tr>
</thead>
<tbody>
<tr>
<td>SLO1: review/rating of submitted proposals</td>
<td>Students learn how to effectively formulate and convey a research project.</td>
<td>OUR-UT Staff and Advisory Committee review and rate the proposals</td>
</tr>
<tr>
<td>SLO2: timecards from participants</td>
<td>Students learn how to effectively concentrate on a project over an extended period of time.</td>
<td>OUR-UT keeps track of the hours spent on the research projects</td>
</tr>
<tr>
<td>SLO3: UGR2980 and Research Evaluation Forms</td>
<td>Students learn the safe and ethical conduct of research through UGR2980. Students gain proficiency in their chosen research field.</td>
<td>OUR-UT Staff reports finding to the OUR-UT Advisory Committee</td>
</tr>
<tr>
<td>SLO4: Final Reports of Students’ research projects</td>
<td>Students learn how to effectively report a research project.</td>
<td>OUR-UT collects and maintains the Final Reports</td>
</tr>
<tr>
<td>SLO5: Student Presentations</td>
<td>Students learn how to present a research project to the general public and/or other professionals.</td>
<td>OUR-UT organizes the End-of-Summer Research Symposium</td>
</tr>
</tbody>
</table>

**Comments:**

See following page for details
SLO1: Students will be able to formulate a research project...
Review/rating of submitted proposals to the Summer 2014 FYSRE and USRCAP programs.

| COUNT total number of USRCAP proposals (Funded) | 35 (29) |
| COUNT the number of proposals rated >3.75 (Funded) | 28 (25) |
| AVERAGE rating score (1.0-5.0) (Funded) | 4.1 (4.2) |
| COUNT total number of FYSRE proposals (Funded) | 15 (12) |
| COUNT the number of proposals rated >3.75 (Funded) | 13 (12) |
| AVERAGE rating score (1.0-5.0) (Funded) | 4.2 (4.2) |

Note: Each individual in the Review committee can score at most 10 proposals with the highest rating of 5 and at most 10 proposals with the next highest rating of 4. There are no limits on scores 1-3 for the USRCAP proposals and same for the FYSRE proposals. This year there were three high-rated USRCAP proposals and one FYSRE proposal withdrawn because the students accepted other research positions. One FYSRE proposal was re-assigned to the TolInternship program due to it being a better fit of the project.

Significance: Since a limited number of proposals can be scored 4 and above, the count of the number of proposals rated 3.75 and above and the average proposal rating score indicates that the students are learning to design and articulate research projects to other professionals.

SLO2: time management: Data are being summarized

SLO3 and SLO4: Students acquire increased proficiency/knowledge...

Research Evaluation Questions 4 and 5 -- Student responses Summer 2014

| 4. How skilled in the tools/techniques/methods of inquiry in the profession of the research project did you start with at the beginning of the summer? |
| Very skilled/ knowledgeable | Neutral | Not very skilled/ knowledgeable |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| 5. How skilled in the tools/techniques/methods of inquiry in the profession of the research project did you acquire by the end of the summer? |
| Very skilled/ knowledgeable | Neutral | Not very skilled/ knowledgeable |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Students responses are summarized on the following graph.
**Significance:** The range goes from -6 (entered the summer with a mastery of the field and ended the summer with no skills) to +6 (entered the summer with no skills and ended the summer with a mastery of the field). The FYSRE average gain of 2.4 differs from last year’s gain of 1.9. The USRCAP average gain of 2.2 is statistically similar to last year’s skillset gain. Overall, the research experiences have been extremely valuable. The skillset average gain for USRCAP is expected to be in the neighborhood of 2.0 since the USRCAP students are typically older, more experienced, and possibly already had a prior research involvement. The differences in the three years of skillset comparisons for both FYSRE and USRCAP experiences are statistically similar.

**SLO5: Students will develop presentation skills...**

The FYSRE, TolInterns, and USRCAP summer 2014 programs are applicable for this assessment report. These research programs require that the students write a Final Report (currently being collected) and present their research (either orally or a poster presentation) at the End of Summer Research Symposium. The schedule to talks is posted on the Undergraduate Research website and can be made available upon request.
Part Three: Please provide examples of change based on review of assessment results. What changes are being made and why?

No changes were needed for this year based on last year’s assessment data.

Part Four: Suggestions for change in your program assessment process.

No changes have been identified as needed for next year based on this year’s assessment data.

Part Five: What aspects of student learning do you think the university should work on?

Examples: Access to library services; communication skills; writing skills

A central location should be identified to accommodate UGR2980 presentations and the annual Research Symposium.