Twenty-Third Annual
Graduate Research Symposium

March 26, 2015 | 10 a.m. - 6:30 p.m. | University Center
graduatesymposium.wcu.edu

The College of Education and Allied Professions offers a diversity of graduate programs enabling professionals to excel in education, student affairs, administration, psychology, and human resources.
TWENTY-THIRD ANNUAL
Graduate Research Symposium

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Dear Participants,

Welcome to the Twenty-Third Annual Graduate Research Symposium! Since 1992, the Graduate Research Symposium, sponsored by Graduate School and Research, has provided graduate students the opportunity to showcase their scholarly research and projects, and I want to express my sincere appreciation to you for sharing your excellent work with your classmates, colleagues, and faculty. A warm thanks to all participating faculty and staff mentors: your active and continuing support and encouragement of your students and their research is the hallmark of Western’s graduate education experience.

For many of you, this will be your first opportunity to share empirical findings and creative works with the academic community. Today, you take a step in becoming recognized as a scholar in your chosen discipline. The skills you learn as part of the research process and your ability to convey that research in writing and in person will enable you to share your knowledge, intellectual passion, and commitment to ideas and to your discipline and profession. Congratulations on this significant milestone in your academic development!

It is my hope that your experience today inspires you to continue to contribute to our understanding of all areas of knowledge in the arts, humanities, education, health, social sciences, business, and sciences. You are helping to shape the future and the important issues facing our region, state, and world, and what you are doing today as students is just the beginning of all you can do to make a true difference. Thank you. I look forward to meeting each of you personally and to talking with you about your important work and your plans for the future.

Please join your faculty mentors, colleagues, and members of the Graduate School at the ten concurrent oral presentation sessions starting at 10 a.m. In addition, the research posters will be viewable starting at 10 a.m. and their authors will be available between 2:30 and 4 p.m. The Three Minute Thesis (3MT) competition will be in the University Center Theater at 4 p.m. followed by the reception and awards ceremony, in your honor, in the University Center Grand Room starting at 5 p.m. We look forward to seeing you and to celebrating your excellence.

Mimi Fenton, Ph.D.
Dean, Graduate School and Research

Activities Overview

10 a.m.
Psychology............................Cardinal Room
Communication Science and Disorders /
Nursing.................................Catamount Room
Poster Session..........................Multipurpose Room

11:30 a.m.
Engineering and Technology......Catamount Room
Psychology............................Cardinal Room
History / English /
College Student Personnel............Dogwood Room
Poster Session..........................Multipurpose Room

12:30 p.m.
Physical Therapy.........................Theater

1 p.m.
Math / Biology /
Engineering and Technology......Catamount Room
Psychology............................Cardinal Room
Poster Session..........................Multipurpose Room

2:30 p.m.
Education / Music / History ..........Dogwood Room
Psychology / Social Work..............Dogwood Room
Poster Session with Authors ......Cardinal Room

4 p.m.
Three Minute Thesis (3MT) Competition...Theater

5 p.m.
Reception and Awards ..................Grand Room

North Carolina Research Recognition

Special recognition and award for research related to the economic and community development of the State of North Carolina. The outcome of the research should result in processes or products that have significant promise for returning jobs to the economy of North Carolina.

Student News Releases

WCUs Office of Communications and Public Relations routinely sends news releases about student activities and honors to the hometown/local newspapers of the students involved. Students participating in the Graduate Research Symposium who wish to take advantage of that service should visit the website studentawards.wcu.edu to complete an online form and submit it via email to the Office of Communications and Public Relations.

Questions can be emailed to rholcomb@wcu.edu.

Western Carolina University

Western Carolina is a campus of the University of North Carolina system and enrolls more than 10,000 students. WCUs is located in a beautiful valley between the Blue Ridge and Great Smoky Mountains, an hour west of Asheville, N.C., and 2.5 hours northeast of Atlanta, Ga. Here you will find convenient access to a region that offers tremendous opportunities for outdoor research and recreation. Engagement of students and faculty in service learning and other community activities are a critical part of WCUs tradition of academic excellence.
10 - 11:15 a.m.  
**Psychology**  
UC 214, Cardinal Room  
Kia Asberg, Psychology, Moderator  

**Psychopathy and Substance Use Consequences in Male Veterans: A Brief Overview**  
Presenters: Kristen Kemp, Jade Quintero, Mary Moussa, Leonardo Bobadilla  
Sponsor: Kia Asberg  

**Drinking and Drug Use Among Veterans and Inmates in Treatment**  
Presenters: Jade Quintero, Mary Moussa, Kristen Kemp, Kia Asberg  
Sponsor: Kia Asberg  

**Do Certain Personality Traits Make Veterans with Substance Disorders Less Vulnerable to PTSD?**  
Presenter: Sydney Hurt  
Sponsor: Kia Asberg  

**PTSD, TBI, and SUD in Veterans: An Exploration of PTSD and Co-Occurring Mental Disorders**  
Presenter: Karen Shebuski  
Sponsor: Kia Asberg  

**Is There a Link Between Sexual Revictimization and Substance Use?**  
Presenter: Mary Moussa  
Sponsor: Kia Asberg  

10 - 11:15 a.m.  
**Communication Sciences and Disorders / Nursing**  
UC 215, Catamount Room  
Georgia Hambrecht, Communication Sciences and Disorders, Moderator  

**A Case Study of Pre-implementation, Implementation, and Generalization of Proloquo2go iPad App as an AAC Device for Expressive Language**  
Presenters: Sarah Savarese, Laura Newman, Angela Chapman  
Sponsor: Georgia Hambrecht and Patricia Davis  

**Building a Culture of Safety in Nurse Anesthesia Practice from the Ground Up: A QSEN-guided Patient Safety Science Initiative**  
Presenter: Cheryl Johnson  
Sponsor: Shawn Collins  

**Psychological Safety in Work Teams: Creating Conditions for Interprofessional Collaborative Practice**  
Presenter: Renee Barnwell  
Sponsors: Judy Neubrander and Ramona Whichello  

10 - 11:15 a.m.  
**Poster Session**  
UC 232, Multipurpose Room  
Please see the 2:30 - 4 p.m. time slot for the list of poster authors, faculty sponsors, and titles  

11:30 a.m. - 12:45 p.m.  
**Engineering and Technology**  
UC 215, Catamount Room  
Martin Tanaka, Engineering and Technology, Moderator  

**Design of Powered Ankle Orthotic for Rehabilitation**  
Presenter: Theo Walz  
Sponsor: Martin Tanaka  

**Maximize Energy Extraction from Ocean Waves with a Slider Crank Ocean Wave Energy Converter**  
Presenter: Yuanrui Sang  
Sponsor: H Bora Karayaka  

**Gaze Estimation Method for Directing Assistive Robotics**  
Presenter: Cole Drawdy  
Sponsor: Paul Yanik  

**A Comparative Study of Mechanical Properties of 316L Stainless Steel between Traditional Production Methods and Selective Laser Melting**  
Presenter: Alton Lackey  
Sponsor: Wes Stone  

**Magnetorheological (MR) Damping for Vibration Mitigation: Experimental Analysis**  
Presenter: William Deaton  
Sponsor: Sudhir Kaul  

11:30 a.m. - 12:45 p.m.  
**Psychology**  
UC 214, Cardinal Room  
Erin Myers, Psychology, Moderator  

**Effect of Sexist Humor on Women's State Self-Esteem**  
Presenters: Olivia Muse, Sabrina Teeter, Alma Plaza-Rodriguez  
Sponsor: Erin Myers  

**The Effect of Sexist Humor on Women's Social Influence**  
Presenter: Kyle Richardson  
Sponsor: Thomas Ford  

**Exploring How Sex and Love are Defined in Adulthood: Conversations with Women about Romantic Relationships**  
Presenter: Martha Davis  
Sponsor: Ellen Sigler  

**Protective Benefits of Rape Myth Acceptance for Women**  
Presenter: Justine Diener  
Sponsor: Erin Myers  

**Mate Value and Perceptions of Relationship Quality Following Infidelity: Does Self-Esteem Play a Role?**  
Presenter: Amelia Hill  
Sponsor: Erin Myers
11:30 a.m. - 12:45 p.m.
**History / English / College Student Personnel**
UC 212, Dogwood Room
Charlotte Cosner, History, Moderator

- **From Harry to Sir Henry: Social Mobility in the 17th Century Caribbean**
  Presenter: John Davis
  Sponsor: Charlotte Cosner

- **Brewing the Past: Reviving a Beer Recipe from 18th Century Europe**
  Presenter: Christopher Hilgar
  Sponsor: Laura Cruz

- **Science and Government in the Blazing World: Cavendish’s Advocation of Absolute Power and Natural Philosophy**
  Presenter: Holly Cian
  Sponsor: Mary Adams

- **Does Engagement Promote Distress? Examining the Relationship Between Distress Levels and Student Engagement Among Undergraduate Students**
  Presenter: Christopher Adam Ray
  Sponsor: Adriel Hilton

11:30 a.m. - 12:45 p.m.
**Poster Session**
UC 232, Multipurpose Room
Please see the 2:30 - 4 p.m. time slot for the list of poster authors, faculty sponsors, and titles

12:30 - 3 p.m.
**Physical Therapy**
UC 315, Theater
David Hudson, Physical Therapy, Moderator

- **Does a Nine Week Core Stabilization Training Program Improve Measures of Balance and Performance Among Competitive Collegiate Dancers? A Single-blind, Randomized Controlled Trial**
  Presenters: Joshua Edwards, Elizabeth Carter, Taylor Burgess, Andrew Allison, Isaac Melcher
  Sponsors: Todd Watson and Jessica Graning

- **Students Teaching Students: A Service Learning Approach to Teaching Clinical Anatomy**
  Presenters: Sarah Parris, Kristin McCrosky, Sunny Sain, Jamie Fugett
  Sponsor: Kathy Starr

- **Feasibility and Effectiveness of a Community-based Otago Exercise Program for Older Adults**
  Presenters: Caitlin Hubbard, Jeannine Noble, Elizabeth Tygielski, Jordan Widgeon, Karen Wik
  Sponsor: Lori Schrodt

- **Educating Lay Health Workers about Arthritis Prevention and Management in Farmworkers: A Collaborative Effort**
  Presenters: Brandi Bridges, Christopher Garcia, Timothy Icard, Ian Youmans
  Sponsors: John Carzoli and Karen Lunnen

- **Immediate Impact of Over-the-counter Orthoses in Children Who In-toe: A Case Series**
  Presenters: John Kellie and Gilliam Hodges
  Sponsor: David Hudson

- **The Impact of Instructional Strategies on Seated Trunk Control in Healthy Adults and Adults Post Stroke: Preliminary Data**
  Presenters: Meghan Kieta, Alex Litaker, Heather Naschke, Joshua Gleeson-Warren, Avery Bowles, Kayla Osborn
  Sponsors: Sue McPherson and Ashley Hyatt

- **The Effect of Femoral and Tibial Torsion on Temporal-Spatial Measures of Gait**
  Presenters: Matthew Hanley and Lauren Page
  Sponsor: David Hudson

- **Strength and Structure of the Lower Body in Subjects with Activity Related Knee Pain**
  Presenters: Walter Young and Amy Broadwell
  Sponsor: David Hudson

“Somewhere, something incredible is waiting to be known.”

“Research is to see what everybody else has seen, and to think what nobody else has thought.”
Albert Szent-Gyorgyi (Hungarian Biochemist, 1937 Nobel Prize for Medicine, 1893-1986)
1 - 2:15 p.m.
Math / Biology / Engineering and Technology
UC 215, Catamount Room
John Wagaman, Math, Moderator

Exploring Fermentation Rate in Homebrewing
Presenter: Jamie Rowell
Sponsor: John Wagaman and Sean O’Connell

A Lifting of Graphs to 3-Uniform Hypergraphs, Its generalization, and Further Investigation of Hypergraphs Ramsey Numbers
Presenter: Aaron Rapp
Sponsor: Mark Budden

Agrgression Affects Distributions and Hybrid Zone Expansion in Montane Plethodon Salamanders
Presenter: Jeffrey Drummond, Jr.
Sponsor: Joseph Pechmann

SPR Image Processing and Data Estimation
Presenter: Le Chen
Sponsor: Yanjun Yan

A Statistical Analysis of Ionic Air Moving Devices for Optimization of its Geometry
Presenter: Adam Henson
Sponsor: Sean June

1 - 2:15 p.m.
Psychology
UC 214, Cardinal Room
David McCord, Psychology, Moderator

Increasing Ecological Validity in Correlating Eye Metrics with Self Report Measures of Thought Disorder
Presenters: Margaret Achee, Tiffany Harrop, Elissa Cannon, William Poynter, Erica Gillette, Patricia McCall
Sponsor: David McCord

Correlations between eye-tracker variables and MMPI-2-RF scales measuring behavioral/externalizing dysfunction.
Presenters: Tiffany Harrop, Elissa Cannon, Margaret Achee, Patricia McCall, Erica Gillette, William Poynter
Sponsor: David McCord

Negative Affect Correlations between Eye-tracker Variables of Ecologically Valid Stimuli and MMPI-2-RF Scales
Presenters: Elissa Cannon, Tiffany Harrop, Margaret Achee, Erica Gillette, Patricia McCall
Sponsor: David McCord

The effects of Exercise and Gender on Central Executive Cognitive Function
Presenters: Katy Wormley and Javier Martin-Fernandez
Sponsor: Winford Gordon

The Effects of Nesting on Grandparental Investment
Presenter: Stephanie Deese
Sponsor: David McCord

1 - 2:15 p.m.
Poster Session
UC 232, Multipurpose Room

Please see the 2:30 - 4 p.m. time slot for the list of poster authors, faculty sponsors, and titles

“Contrary to what Asimov says, the most exciting phrase in science, the one that heralds new discoveries, is not ‘Eureka!’ or ‘That’s funny...’, it’s ‘Your research grant has been approved.’”
John Alejandro King (American Comic)
El Sistema: Music Education in Impoverished Communities  
Presenter: David Leitch  
Sponsor: Michael Schallock

The Influences of English Folk Music on Holst and his Second Suite in F  
Presenter: Michael Tanguay  
Sponsor: Michael Schallock

Developing Comprehensive Middle School Percussionists through Repertoire  
Presenter: Dillon Ingle  
Sponsor: Michael Schallock

Forgotten Voices: The Role of Women within the 1929 Loray Mill Strike  
Presenter: Ashley West  
Sponsor: Gael Graham

2:30 - 3:45 p.m.  
Psychology / Social Work  
UC 214, Cardinal Room  
Thomas Ford, Psychology, Moderator
To Suppress or Not to Suppress: the Mediating Effect of Anti-gay Humor on Existence of the Rebound Effect  
Presenter: Sabrina Teeter  
Sponsor: Tom Ford
Assessing Personality in Preschool: a Comparison of Two Measures  
Presenter: Sabrina Gretkierewicz  
Sponsor: Cathy Grist
A Study of Implicit Prejudice against Students with Disabilities  
Presenters: Joseph Melnyk, Dylan Herndon, Kody Young, Cara Ross  
Sponsor: Ellen Sigler and David McCord
Facilitators and Barriers to Receiving Care in the Undocumented Spanish Speaking Community of Western North Carolina  
North Carolina Research Recognition  
Presenter: Megan Jackson  
Sponsor: Pat Morse

2:30 - 4 p.m.  
Poster Session  
UC 232, Multipurpose Room  
Chip Ferguson, Kim Winter, and Tim Carstens, Poster Judges
Kyle Bailey, Engineering and Technology; Sponsor: Peter Tay  
Wave Energy Detection through the Use of Hyperspectral Imaging
Emily Butcher, Chemistry; Sponsor: David Evanoff  
Multilayered Metallic Nanostructures with an embedded internal standard as surface enhanced Raman substrates
Jordan Chaires, Engineering and Technology; Sponsors: Bora Karayaka, Yanjun Yan, Patrick Gardner  
Solar Farm Integration of Super-Cap and Battery System
Sherri Deaton, Biology; Sponsor: Mark Wilson  
Optimization of a Method for the Extraction of DNA from Human Skeletal Remains
Chaoke Dong, Engineering and Technology; Sponsor: Martin Tanaka  
Locating Basins of Stability of the Human Torso Using the Basin of Stability Chair
Kenyaatta Fortune, Engineering and Technology; Sponsor: Peter Tay  
A Local Positioning System for AGV Navigation
Shahab Karimi, Engineering and Technology; Sponsor: Martin Tanaka  
Diagnosing Human's Control System's Capability Using Bandwidth
Stephen McNeil, Engineering and Technology; Sponsor: Martin Tanaka  
Sign Language Recognition through Virtual Interface
Harrison Orr, Engineering and Technology; Sponsor: Peter Tay  
Electronic Communications Textbook Project
Robert Rice, Engineering and Technology; Sponsor: Paul Yanik and Bill Yang  
Internetwork Communication of Network on Chip Systems
Jacob Rogers, Engineering and Technology; Sponsor: Aaron Ball  
Statistical Quality Characterization of Selective Laser Melting (SLM) for Additive Manufacturing
Lee Sechrest, Engineering and Technology; Sponsor: Sudhir Kaul  
Dynamic Response of Critical Components Produced With Selective Laser Melting
Mitra Shabani Samghabady, Engineering and Technology; Sponsor: Martin Tanaka  
Mathematical Modeling of Glioblastoma Tumors
Benjamin Stewart, Engineering and Technology; Sponsor: Sudhir Kaul, Aaron Ball, and Robert Adams  
Application of Magnetorheological Dampers in a Motorcycle Rear Swing Arm Suspension
Elijah White, Biology; Sponsor: Joseph Pechmann  
Life Cycles of a Salamander with Alternative Adult Body Forms at High Elevation
Yang Zhou, Engineering and Technology; Sponsor: Martin Tanaka  
Low Total Harmonic Distortion (THD) Resonant Converter for Cooker Magnetron Power Supply

“If we knew what it was we were doing, it would not be called research, would it?”  
Albert Einstein (Theoretical Physicist, 1879-1955)
Three Minute Thesis Competition

Brian Kloeppel, Graduate School, Moderator

We thank Dr. Kathleen Brennan, Department Head of Anthropology and Sociology, who served as the 3MT “Coach” for this competition.

We thank Prof. Jack Sholder and his students, Scotlan Sturrock and Shyris Gamble in the Motion Picture and Television Program, for filming the 3MT competition.

Sabrina Teeter, Psychology
Analyzing How Transnational Identities are Structured through Language and Cultural Participation in Literature Works

Kayla Tadsen, Health Sciences
A Systematic Review of How Telemedicine Can Increase Public Health Outcomes while Simultaneously Reducing Health Care Costs

Mitra Shabani Samghabady, Technology
Mathematical Modeling of Brain Cancer

Lena Robertson, School Administration
Changing Our Culture ... One Habit at a Time

Kyle Richardson, Psychology
The Effect of Sexist Humor on Women’s Social Influence

Aaron Rapp, Mathematics
A Lifting of Graphs to 3-Uniform Hypergraphs, Its Generalization, and Further Investigation of Hypregraph Ramsey Numbers

Tiffany Harrop, Psychology
Problematic Behavior: Correlates of Psychological and Physiological Measures

Martha Davis, Psychology
Exploring How Sex and Love are Defined in Adulthood: Conversations with Women about Romantic Relationships

Le Chen, Technology
SPR Data Estimation with Particle Swarm Optimization

HELPFUL BACKGROUND FOR THE 3 MINUTE THESIS COMPETITION

Rules:

1) A single static powerpoint slide is permitted: no slide transitions, animations, or movement of any description

2) No additional electronic media (e.g. sound or video) are permitted

3) No additional props (e.g. costumes, instruments, equipment) are permitted

4) No notes, cards, or written sheets are allowed

5) Competitors exceeding the 3 minutes are disqualified

6) Presentations are to be spoken word in English (e.g. no poems or songs)

7) Presentations have commenced when a presenter starts by movement or speech

8) Presentations must be aimed at the educated non-specialist; no disciplinary jargon can be used unless explained as part of the 3 minutes

Judging Criteria:

1) Communication Style: was the topic and its significance communicated in language appropriate to an intelligent, but non-specialist audience?

2) Comprehension: did the presentation help the audience understand the topic?

3) Engagement: did the presentation make the audience want to know more?

4) Impact: did the presentation enlighten the audience on why they should care about the topic?