EIGHTEENTH ANNUAL

Graduate Research Symposium

Sponsored By: GRADUATE SCHOOL & RESEARCH

ART BY:
Frank Vickery  MFA student in ceramics
Pieces are made from stoneware and fired in a high fire, reduction kiln.

MARCH 11, 2010  |  11AM – 8PM  |  UNIVERSITY CENTER
Dear Participants,

Welcome to the Eighteenth 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. I want to express my sincere appreciation to you for sharing your scholarly and creative work. In addition, I congratulate all the participating faculty and staff mentors for supporting and encouraging our presenters to participate in this meaningful 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 the first step in becoming recognized as a scholar in your chosen discipline. The skills that you learn as part of the research process and your ability to convey that research in writing and in person will enable you to establish your authority within your discipline and to improve the world in which we live.

I congratulate you on this significant milestone in your academic development. It is my hope that your experience today inspires you to continue to think about how you might contribute to our understanding of the significant issues facing our region, our state, and our world and propels you to take action.

I look forward to meeting each of you and having the opportunity to talk with you about your important work and your plans for the future. A celebration has been planned in your honor in the University Center Grand Room starting at 5:00pm. Come join your colleagues.

Scott E. Higgins
Dean, Graduate School and Research

Activities Overview

11AM
HUMANITIES .................... Rogers Room
SCIENCES .........................Cardinal Room
EDUCATION .................... Catamount Room
ENGINEERING AND TECHNOLOGY ...........Multipurpose Room A
SCIENCE ..........................Multipurpose Room B

12:30PM
HUMANITIES .................... Rogers Room
HUMANITIES .................... Rogers Room
FINE AND PERFORMING ARTS .........Catamount Room
ENGINEERING AND TECHNOLOGY ...........Multipurpose Room A
SOCIAL SCIENCES ....... Multipurpose Room B
HEALTH ........................................ Theater

2PM
HUMANITIES .................... Rogers Room
SCIENCES .........................Cardinal Room
FINE AND PERFORMING ARTS .........Catamount Room
ENGINEERING AND TECHNOLOGY ...........Multipurpose Room A
ENGINEERING AND TECHNOLOGY ...........Multipurpose Room B
HEALTH ........................................ Theater

3:30PM
HUMANITIES .................... Rogers Room
BUSINESS ..........................Carlisle Room
HUMANITIES .................... Catamount Room
ENGINEERING AND TECHNOLOGY ...........Multipurpose Room A
EDUCATION ......................... Multipurpose Room B
HEALTH ........................................ Theater

5PM
RECEPTION AND AWARDS ...... Grandroom

6:30PM
SOCIAL SCIENCES ....... Multipurpose Room A
FINE AND PERFORMING ARTS, SCIENCES, HUMANITIES, AND HEALTH ....... Multipurpose Room B

Student News Releases

WCU’s Office of Public Relations routinely sends news releases about student activities and honors to the students’ hometown/local newspapers. Participants in the Graduate Research Symposium who wish to take advantage of that service should visit the Web site http://www.wcu.edu/22961.asp to fill out an online form and submit it via e-mail to the Public Relations Office.

The Public Relations Office also can send photographs of students to their hometown/local newspapers to accompany the news releases. Students who wish to take advantage of that service are invited to come to Room 420 in H.F. Robinson Administration Building to have their photographs taken between 2 p.m. and 5 p.m. on one of these days:

Thursday, April 22
Wednesday, April 28
Tuesday, May 4

Students with scheduling conflicts that prevent them from taking advantage of these photo sessions may make a special appointment to have a photograph taken by calling the Public Relations photography office at 828-227-3081. Students’ personal photos will be considered for use, depending on quality. Head-and-shoulders shots may be e-mailed to rholcomb@wcu.edu.

Western Carolina University

Western Carolina is a campus of the University of North Carolina system and enrolls more than 9,000 students. WCU 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 is a critical part of WCU’s tradition of academic excellence.
11AM–12:15PM

HUMANITIES | English | UC 209 | Rogers Room
ANNETTE DEBO, English, Moderator

Breaking the Gendered Binary Code:
A Phonological and Prosodic Study of the ‘Gay Voice’
Presenter: David “Forrest” Caskey
Sponsor: Christopher Blake

A Room of Their Own?:
The Rhetoric of African American Women
Presenter: David “Forrest” Caskey
Sponsor: Beth Huber

White, Not Quite; Black, Get Back!: Ambivalence,
Posturing and Signifying in the Poetry of Langston Hughes
Presenter: Jason Hertz
Sponsor: Annette Debo

SCiences | Mathematics and Computer Science | UC 214 | Cardinal Room
RISTO ATANASOV, Mathematics and Computer Science, Moderator

Modeling the Spread of Alliaria Petiolata across Different Landscape Distributions
Presenter: Michael Lomuscio
Sponsor: Erin McNelis
Sponsor: NC-RESEARCH

Galois Groups of Quartic Polynomials
Presenter: Kathleen Melhuish
Sponsor: Risto Atanasov

Optimal Anchoring of Wave Energy Converters
Presenter: Murugan Vinayagam
Sponsor: Jeffrey K. Lawson

EDUCATION | Human Services | UC 215 | Catamount Room
CATHY GRIST, Human Services, Moderator

Gender Bias in Books for Young Children: An Examination
of Two Early Childhood Educators’ Children’s Literature Collections
Presenter: Donna Harris
Sponsor: Cathy Grist

Are Personality and Emotional Intelligence Hidden Factors
Contributing to Work-Family Conflict: A Theoretical Model
Presenter: Angela Joyce
Sponsor: Marie-Line Germain

ENGINEERING AND TECHNOLOGY | UC 232A | Multipurpose A
ROBERT ADAMS, Engineering and Technology, Moderator

Hardware Implementation of an Improved
Voice Stress Analysis Using Empirical Mode
Presenter: Joshua Schwartz
Sponsor: Robert Adams

Activity Recognition Using Hidden Markov Models and Grey Prediction
Presenter: Kirke L. Shouse
Sponsor: James Zhang

Performance Analysis of UWB System
Presenter: LakshmiNarasimhan SrinivasasRaghavan
Sponsor: James Zhang

Dynamic Bandwidth Allocation Based on Grey Prediction for Computer Networks
Presenter: Mukundan Rangaswamy Vasundara
Sponsor: Robert Adams

SCiences | Chemistry and Physics | UC 232 B | Multipurpose B
JACK SUMMERS, Chemistry and Physics, Moderator

Superoxide Dismutase Inhibition Screening and Characterization Using 19F NMR
Presenter: Megan Arrington
Sponsor: Jack Summers

Kinetic Studies on Superoxide Dismutase
Presenter: Jonathon Markley
Sponsor: Jack Summers

Boronic Acid Derivatives as Molecular Sensors
Presenter: Terryol Wilson
Sponsor: William Kwochka

“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)
12:30–1:45PM

HUMANITIES | History | UC 209 | Rogers Room
CHARLOTTE COSNER, History, Moderator

American Art in the Colonial/Revolutionary Period and New Republic: The Effect of American Identity on Portraiture
Present: Matt Blaylock
Sponsor: Richard Starnes

Women in England and Colonial America: The Gender Roles that Shaped the Atlantic World
Present: Megan Percy
Sponsor: Charlotte Cosner

HUMANITIES | English | UC 214 | Cardinal Room
LAURA WRIGHT, English, Moderator

(Re)creation of History in Tiananmen Square 1989
Present: Nicole Jarosinski
Sponsor: Marsha Lee Baker

The Pacification of the Oral Narrative in Achebe’s Things Fall Apart
Present: Bradford Reisinger
Sponsor: Laura Wright

Living in Borrowed Splendor: The Rhetoric of the 1944 Polio Epidemic in Hickory, North Carolina
Present: Heather Williams
Sponsor: Beth Huber

FINE AND PERFORMING ARTS | Art and Design | UC 215 | Catamount Room
JOAN BYRD, Art and Design, Moderator

The Sacred Vessel: Creating Reverence through Imagery and Orientation
Present: Julie Fawn Boisseau
Sponsor: Joan Byrd

Sally Mann: Artistic Practices
Present: Phyllis Jarvinen
Sponsor: Seth McCormick

Western Carolina University and the Jackson County Green Energy Park: Creating Ecologically Sustainable Social Entrepreneurship through the Arts in North Carolina
Present: Tracy Michele Kirchmann
Sponsor: Joan Byrd

ENGINEERING AND TECHNOLOGY | UC 232A | Multipurpose A
KEN BURBANK, Engineering and Technology, Moderator

Comparative Study of the Derivations of Polylactic Acid, between Corn Starch and Sugar Cane
Present: Michael Scott Conner
Sponsor: William McDaniel

Development of an Automated Putty Injection Process
Present: Joshua L. Ellis
Sponsor: Aaron Ball

High Temperature Solar Water Heating
Present: William Kuykendall
Sponsor: Phil Sanger

SOCIAL SCIENCES | Public Affairs | UC 232 B | Multipurpose B
CHRISTOPHER COOPER, Political Science and Public Affairs, Moderator

Incorporation vs. Annexation
Present: Charlie Foxx
Sponsor: Christopher Cooper

The Town of Sylva: Parking Planning in Downtown
Present: Thaddeus N. Huff
Sponsor: Christopher Cooper

An Analysis of Permanent Outcomes for Abused, Neglected and Dependent Children in Buncombe County, North Carolina
Present: Jennifer E. Nehlsen
Sponsor: Gibbs Knotts

NC STEP Grant
Present: Brianna Rogers
Sponsor: Christopher Cooper

“If we knew what it was we were doing, it would not be called research, would it?”
Albert Einstein (Theoretical physicist, 1879–1955)
HEALTH | Communication Sciences and Disorders | UC 315 | Theater
GEORGIA HAMBRECHT, Communication Sciences and Disorders, Moderator

Community Service Learning: A Collaborative Effort to Support and Extend our Graduate School Experience

Presenters: Lauren Rhein, Nicole McRight, Tyra Minton, Jordan Simmons, Michael Taylor, Rhian Vanderburg, and Caroline Workman

Sponsors: Georgia Hambrecht and Bill Ogletree

HUMANITIES | English | UC 209 | Rogers Room
BRENT KINSER, English, Moderator

Paths of National Redemption: J.M. Coetzee and Keri Hulme in Conversation

Presenter: Jason Hertz
Sponsor: Laura Wright

Truth, Fiction, Reconciliation, and Social Change

Presenter: Joy Neaves
Sponsor: Laura Wright

SCIENCES | Biology | UC 214 | Cardinal Room
LAURA DEWALD, Biology, Moderator

Patterns of Recruitment and Culm Morphology in Arundinaria Gigantea ([Walt.] Muhl.) Canebrakes in Western North Carolina

Presenter: Keith Hoffman
Sponsor: Laura DeWald

NC-RESEARCH

Great Laurel (Rhododendron Maximum) Effects on Microhabitat Use and Abundances of Southern Appalachian Salamanders

Presenter: Kyle K. Pursel
Sponsor: Joseph Pechmann

FINE AND PERFORMING ARTS | Music | UC 215 | Catamount Room
JASON SOLOMON, Music, Moderator

Music Theory as Theology

Presenter: Michael Collings
Sponsor: Jason Solomon

The Perception of Music’s Influence on Human Emotion and Behavior

Presenter: Judith Gilbert
Sponsor: Jason Solomon

Defining Musical Gesture

Presenter: Cynthia Smith
Sponsor: Jason Solomon

“Research is formalized curiosity. It is poking and prying with a purpose.”

Zora Neale Hurston
(American Novelist and Playwright, 1903–1960)
A Feasibility Study of Two Alternate Proton Radiation Compensator Designs for Use in Proton Radiation Therapy
Presenter: Johnathan Tyler Bennett
Sponsor: Chip Ferguson

A Novel Shape Feature to Classify Microcalcifications
Presenter: Yiming Ma
Sponsor: Peter Tay

The Automated Loading and Detection of Radioactive Seeds for Use in Brachytherapy Prostate Treatments
Presenter: Jason A. Proffitt
Sponsor: Aaron Ball

Optical Assembly of Far-Field Super-Resolution Imaging via Optical Gain
Presenter: Joshua S. Deaver
Sponsor: Bill Yang

Facial Expression Recognition Using Fast BEMD Based Edge Detection
Presenter: Zijing Qin
Sponsor: James Zhang

A Comparison for the Accuracy of a Three Dimensional Point Cloud Generated from Parts Scanned Using the ATOS White Light Interferometers
Presenter: Christopher W. Rhoades
Sponsor: Chip Ferguson

Effectiveness of a Community-Based Balance Exercise Program in Older Adults
Presenters: Heather Barnard, Melissa Berry, Jodie Johnson, Lori Peek, and Mela Pinnix
Sponsor: Lori Schrodt

Clinical Anatomy Workshops: Physical Therapy
Students Provide Service Learning for Physical Therapist Assistant Students
Presenters: Zachary Githens, Andrea Klocko, Megan Lukey, and Marion Macy
Sponsors: Kathy Starr and Elisa Zuber

Western Athletic Knee Scale (WAKS) 2010: Reliability of an Assessment Tool for Knee Injuries in the General and Athletic/Active Populations
Presenters: Elizabeth Heltz, Tamara May, Amanda Roach, and Emily Walgate
Sponsor: James Scifers

The Hammer of Truth: A Tool for Jefferson’s Use
Presenter: Terri Downing
Sponsor: Richard Starnes

The Leader and His Programs: President Franklin D. Roosevelt and the New Deal in the South, 1927-1939
Presenter: Brittany L. Keating
Sponsor: Gael Graham

Three Days at Paris: Outmoded British Government and the Bristol Riots of 1831
Presenter: James McKee
Sponsor: Alexander Macaulay

The tax consequences of LIFO abandonment due to the adoption of IFRS
Presenter: Rob Heyer
Sponsor: Roger Lirely

An Empirical Examination of the Usefulness of Peer-Assessed Research Presentations
Presenter: Courtney D. Vanhook
Sponsors: Debasish Bannerjee and Roger Lirely

“The most exciting phrase to hear in science, the one that heralds new discoveries, is not ‘Eureka!’ but rather ‘hmm...that’s funny.’”
Isaac Asimov
(American Novelist and Biochemist, 1920-1992)
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3:30–4:45 PM

**HUMANITIES** | English | UC 215 | Catamount Room

**ELIZABETH HEFFELFINGER,** English, Moderator

Adventures in Postcolonial Photojournalism: The Spiti Situation

**Presenter:** Ethan Burns

**Sponsor:** Laura Wright

A Most Recalcitrant Patriot: Oscar Wilde’s Irish Vision of Socialism

**Presenter:** Jennifer R. Doyle-Corn

**Sponsor:** Brent Kinser

The Difference of One Sun’s Rise: Conflicting Time in Sindiwe Magona’s Mother to Mother

**Presenter:** Heather Williams

**Sponsor:** Beth Huber

5–6:15 PM

**ENGINEERING AND TECHNOLOGY** | UC 232A | Multipurpose A

**BRIAN HOWELL,** Engineering and Technology, Moderator

Algorithmic Optimization for Propulsion in Station Keeping of a Marine Vehicle

**Presenter:** Josh Brede

**Sponsor:** Brian Howell

Fluorescence Spectroscopy

**Presenter:** Justin Bullins

**Sponsor:** Brian Howell

The Optimization of Swarm Robotic Constellation Communication for Object Detection and Event Recognition

**Presenter:** Matthew Ryan Proffitt

**Sponsor:** Brian Howell

Multi-Sensory Object Recognition in Lake or Estuary Environments

**Presenter:** A.J. Punch

**Sponsor:** Brian Howell

EDUCATION | Educational Leadership & Foundations, Human Services | UC 232 B | Multipurpose B

**SHARON DOLE,** Human Services, Moderator

How Do Gifted Students Exhibit Leadership Traits?

**Presenter:** Debra Dearman

**Sponsors:** Lisa Bloom and Sharon Dole

Artistic Insubordination

**Presenter:** Eric Pitts

**Sponsor:** Frederick Buskey

6:30–8:00 PM

**HEALTH** | Physical Therapy | UC 315 | Theater

**DAVID HUDSON,** Physical Therapy, Moderator

The Effects of Hiking Poles on Plantar Surface Pressure

**Presenters:** Katherine Bumgarner and Sarah Miller

**Sponsor:** David Hudson

The Relationship among Arch Measurements and Plantar Pressure of the Foot

**Presenters:** Daryl MacInnes and Michael Hudson

**Sponsor:** David Hudson

A Methodological Study Exploring Pre and Post Intervention Variability of Healthy Adults’ Transversus Abdominis Contraction during Functional Tasks

**Presenters:** Stacy Sannem, Ali Clark, and Josh Clark

**Sponsors:** Sue McPherson and Todd Watson

**RECEPTION AND AWARDS** | Grand Room

Please join us for a brief reception in honor of graduate students, their mentors, and the graduate programs at Western Carolina University.

The Graduate Teaching Assistant Award, Karen Nicholson Thesis Award, North Carolina Research Recognition Award, and Research Awards in Business, Education, Fine and Performing Arts, Health, Humanities, Sciences and Technology, and Social Sciences will be presented at this reception.

The Symposium continues at 6:30pm, so we will begin promptly at 5:00pm.

Light refreshments and hors d’oeuvres will be available.

6:30–8:00 PM

**SOCIAL SCIENCES** | Public Affairs | UC 232A | Multipurpose A

**GIBBS KNOTTS,** Political Science and Public Affairs, Moderator

H.R. Capstone Project

**Presenter:** Thomas Allen

**Sponsor:** Christopher Cooper

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

Carl Sagan

Latinos and Access to Higher Education: A Resource Guide for Students and their Families
Presenter: Sarah Nunez
Sponsor: Christopher Cooper
NC-RESEARCH

Proposed Homeless Recruitment Plan for Buncombe and Madison County Head Start
Presenter: Sarah Shepelwich
Sponsor: Christopher Cooper

ART, BIOLOGY, ENGLISH, AND NURSING | UC 232 B | Multipurpose B
CHRIS COBURN, Biology, Moderator

The Art of Kudzu
Presenter: Jan Parker
Sponsor: Marya Roland
NC-RESEARCH

Application of a DNAzyme to Probe RNA Secondary Structure
Presenter: Donald Patterson
Sponsor: Chris Coburn

Wulfert Road and the Alligators: Turning Fear into Respect for Sanibel Island’s Natural Ecology
Presenter: Paula Bolado
Sponsor: Deidre Elliott

Blended vs. Lecture Learning: Outcomes for Staff Development
Presenter: Heidi Sherman
Sponsor: Linda Comer

THE FOLLOWING STUDENTS PRESENTED THEIR RESEARCH AT A PSYCHOLOGY SESSION HELD ON MONDAY, MARCH 8, 2010:

The Effects of Sex and Relationship Status on Body Image
Presenter: Ashley Bridges
Sponsor: Millie Abel

First Person Descriptions of the Experiences of School-Aged Females with Attention-Deficit/Hyperactivity Disorder and their Teachers
Presenter: Blair Burke
Sponsor: John Habel

To Climb or Not to Climb: Increasing Self-Efficacy in College Freshmen
Presenter: Susan Denny
Sponsor: Windy Gordon

Effects of Location and Gender of Joke Teller on Sexist Humor Ratings
Presenter: Jared Gray
Sponsor: Millie Abel

Comparing Clinical Measures of Depression to the Five-Factor Model of Personality
Presenter: Adam Hicks
Sponsor: David McCord

Perceptions toward Civil Commitment of Sex Offenders
Presenter: Alicia Isenberg
Sponsor: Alvin Malesky

Personality and Public Policy Opinion
Presenter: Andrew Johnson
Sponsor: David McCord

Personality Differences and the Effectiveness of Pediatric Camp Counselors
Presenter: Sara Soyars
Sponsor: David McCord

Codependence or CORI: Core Origin and Relationship Issues
Presenter: Ashton Southard
Sponsor: Norman Hoffman

The Effects of Social Support and Perceived Stress on Body Image: Does Emotion Regulation also Play a Role?
Presenter: Audra Wagaman
Sponsor: Kia Asberg

North Carolina Research Recognition
Special Recognition and Award for research related to the economic, cultural, and artistic development of the State of North Carolina.

“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)