SEVENTEENTH ANNUAL

Graduate Research Symposium

Sponsored By: GRADUATE SCHOOL & RESEARCH

Wind Shear
36” x 18” x 20”
hollow form steel
RICHARD CONN
MFA student in sculpture
Dear Participants,

Welcome to the Seventeenth 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 that 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 Grandroom starting at 5 p.m. Come join your colleagues.

Scott E. Higgins
Dean, Graduate School and Research

Activities Overview

11 AM
HUMANITIES ..... Rogers Room
HUMANITIES ..... Cardinal Room
FINE AND PERFORMING ARTS ..... Catamount Room
SCIENCES ..... Multipurpose Room A
SCIENCES ..... Multipurpose Room B

12:30 PM
HUMANITIES ..... Rogers Room
HUMANITIES ..... Cardinal Room
SOCIAL SCIENCES ..... Catamount Room
HEALTH, EDUCATION, AND SOCIAL SCIENCES ..... Multipurpose Room A
ENGINEERING AND TECHNOLOGY ..... Multipurpose Room B
HEALTH ..... Theater

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

3:30 PM
HUMANITIES ..... Rogers Room
SOCIAL SCIENCES ..... Catamount Room
SCiences ..... Multipurpose Room A
ENGINEERING AND TECHNOLOGY ..... Multipurpose Room B
HEALTH ..... Theater

5 PM
RECEPTION AND AWARDS ..... Grandroom

6:30 PM
EDUCATION ..... Multipurpose Room A
FINE AND PERFORMING ARTS ..... Multipurpose Room B

Student News Releases

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

The Office of Public Relations 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 Building to have their photographs taken between 8 a.m. and 5 p.m. on Thursday, April 23, or Wednesday, April 29.

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.

On the Cover

Wind Shear, 36” x 18” x 20”, hollow form steel, Richard Conn, MFA student in sculpture
11 AM–12:15 PM

HUMANITIES | English – TESOL | UC 209 | Rogers Room
CHANDRIKA BALASUBRAMANIAN, English, Moderator

Second Language Acquisition and Exceptional Learners: How Learning Difficulties Hinder Language Acquisition
Presenters: Kathleen Ryder
Sponsor: Chandrika Balasubramanian

Languaging: Finding the Balance between Function and Form in a Multi-Lingual World
Presenter: David “Forest” Caskey
Sponsor: Chandrika Balasubramanian

HUMANITIES | English | UC 214 | Cardinal Room
DEIDRE ELLIOTT, English, Moderator

Eastern Montana: Out of Our Comfort Zones
Presenter: Bessie Dietrich Goggins
Sponsor: Deidre Elliott

The Ritual
Presenter: David Joy
Sponsor: Deidre Elliott

Mr. Thomson’s Portable
Presenter: Brad Reisinger
Sponsor: Deidre Elliott

SCIENCEs | Mathematics and Computer Science | UC 232 A | Multipurpose A
REGIS GILMAN, Educational Outreach, Moderator

The Dynamics of a Spinning Plate
Presenter: Richard Peart
Sponsor: Jeff Lawson

The Equation $x^n = e$ and Cyclic Groups
Presenter: Kathleen Melhuish
Sponsor: Risto Atanasov

Some Polynomial Identities and Commutative Rings
Presenter: Michael Lomuscio III
Sponsor: Risto Atanasov

SCIENCEs | Chemistry and Physics | UC 232 B | Multipurpose B
BRIAN DINKELMEYER, Moderator

Glucose Oxidizing Enzymes
Presenter: Alisha Hunter
Sponsor: Aster Dewanti

Topochemical Polymerization using Tartaric and Muconic Acid Derivatives
Presenter: Shana Weathersby
Sponsor: Brian Dinkelmeyer

FINE AND PERFORMING ARTS | Music and Art | UC 215 | Catamount Room
Moderator: TBA

Jewish Signifiers in the Third Movement of Gustav Mahler’s First Symphony
Presenter: Cynthia L. Smith
Sponsor: Christina Reitz

Grainger’s Preservation of the English Folk Song Genre through Lincolnshire Posy
Presenter: Todd Ebert
Sponsor: Christina Reitz

Giotto’s Genius and How He Used Facial Expression to Connect Emotionally with Viewers
Presenter: Phyllis Jarvinen
Sponsor: Jonathan Farris

“Research is to see what everybody else has seen, and to think what nobody else has thought.”

Albert Szent-Györgyi
(Hungarian Biochemist, 1937 Nobel Prize for Medicine, 1893-1986)
12:30–1:45PM

HUMANITIES | TESOL and Cherokee Studies | UC 209 | Rogers Room
CHRIS BLAKE, ENGLISH – TESOL, Moderator

The Language of Married Couples
Presenter: Courtney Cunningham
Sponsor: Chandrika Balasubramanian

What Do You Say For . . . ? An Analysis of Word Choice and Region English
Presenter: Russell Conover
Sponsor: Chandrika Balasubramanian

Towards a Multi-Dimensional Approach to Cherokee Immersion Language Arts: A Review and Application of Current Literacy Acquisition Research
Presenter: Rainy Summer Brake
Sponsor: Chris Blake & Hartwell Francis

HUMANITIES | English | UC 214 | Cardinal Room
MARSHA LEE BAKER, ENGLISH, Moderator

The Common Roots and Purpose of Performance Poetry
Presenter: Bessie Dietrich Goggins
Sponsor: Marsha Lee Baker

Through My Looking Glass
Presenter: Joy Jansen
Sponsor: Marsha Lee Baker

Sorting Out the Socrateses and Sophists in my Subconscious: A Nightmare Dialogue
Presenter: Joseph Telegen
Sponsor: Beth Huber

The Sounds of Silence: How Art Influenced Reality in Chile
Presenter: Caitlin Tierney
Sponsor: Beth Huber

SOCIAL SCIENCES | Psychology | UC 215 | Catamount Room
MILLICENT ABEL, Psychology, Moderator

The Nature of Alcohol Use Disorder Indications from a Brief Structured Interview
Presenter: Ashton C. Southard
Sponsor: Norman G. Hoffmann

Do Our Names Influence Attitudes, Preferences, and Behaviors?
Presenter: Kristen Barlow Ogden
Sponsors: William Peynter and Hal Herzog

Cheerfulness: Its Protective Value Against the Impact of Traumatic Events
Presenter: Erin Hambrick
Sponsor: Millicent Abel

HEALTH-CSR, EDUCATION-HPER, PUBLIC AFFAIRS
UC 232A | Multipurpose A
JUSTIN MENICKELLI, HPER, Moderator

Training Picture Exchange for Communication Using Milieu Intervention Strategies: Findings from a Young Child with Autism
Presenter: Ellen Wooten
Sponsors: Billy T. Ogletree & Georgia Hambrecht

The Attitude Changes of Second-Grade Peer Tutors Working with Students with Severe Disabilities through Laban's Movement Analysis
Presenter: Heidi Turlington
Sponsor: Justin Menickelli

Selected Educational Performance of K-12 County Public Schools in North Carolina
Presenter: Thomas E. Downing
Sponsor: Chris Cooper

Penniless, a High School Diploma, and Nothing to Live For
Presenter: Sami Disu
Sponsor: Chris Cooper

ENGINEERING & TECHNOLOGY | UC 232 B | Multipurpose B
PETER TAY, Engineering and Technology, Moderator

Transform of Voice to Synthesized Musical Instruments
Presenter: Dex Sprinkle
Sponsor: Peter Tay

Geometric Shape Methods for Improving Material Identification and Object Recognition in Hyper Spectral Imagery
Presenter: Yiming Ma
Sponsor: Peter Tay

Machine Vision Systems: A Look at Lighting
Presenter: Benjamin Guardiola
Sponsor: Peter Tay

“If we knew what it was we were doing, it would not be called research, would it?”
Albert Einstein (Theoretical physicist, 1879–1955)
2–3:15PM

SOCIAL SCIENCES | History | UC 209 | Rogers Room
LAURA CRUZ, History, Moderator

Bildungsroman: A Reassessment of German Society on the Eve of World War I
Presenter: Kevin Childers
Sponsor: Laura Cruz

A Modern Approach To Remembering The Past: Chattanooga’s Collaborative Efforts To Commemorate Ross’s Landing
Presenter: Melissa L. Crisp
Sponsor: Andrew Denson

The House of Discord: Humor and Gossip in Beverwijk 1652-1660
Presenter: James E. McFatter
Sponsor: Laura Cruz

A Tale of Two Towns: How Community Attitudes Affect Athletics in Small Towns
Presenter: Daniel Mitchell
Sponsor: Laura Cruz

HUMANITIES | English | UC 214 | Cardinal Room
MIMI FENTON, English, Moderator

A Modernist View of Macbeth in All the King’s Men
Presenter: Adrienne Hollifield
Sponsor: James Addison

(Mis)shaping History: Milton’s Nationalist Rhetoric in Observations Upon the Articles of Peace
Presenter: Jennifer R. Doyle-Corn
Sponsor: Mimi Fenton

Milton’s Areopagitica in the Digital Age: The Surprising Virtue of Wiki
Presenter: Brad Reisinger
Sponsor: Mimi Fenton

SOCIAL SCIENCES | Psychology | UC 215 | Catamount Room
MILLICENT ABEIL, Psychology, Moderator

Sex Differences in Relationships between Jealousy and Relationship Experience
Presenter: Ashton C. Southard
Sponsor: Millicent H. Abel

Forgiveness and Vengefulness: The Roles of Religiosity and Dispositional Factors
Presenter: Kristy M. Kelso
Sponsor: Alvin Malesky

Response Bias in Screening County Jail Inmates for Addictions
Presenter: Steven L. Proctor
Sponsor: Norman G. Hofmann

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

Zora Neale Hurston
(American Novelist and Playwright, 1903–1960)
**SCIENCE**  |  Biology | UC 232A | Multipurpose A  
JOE PECHMANN, Biology, Moderator

**Connectivity of Carolina northern flying squirrel (Glaucomys sabrinus coloratus) foraging habitat**  
Presenter: Nicole D. Allman  
Sponsor: Beverly Collins  
NC-RESEARCH

**Patterns in Egg Mass Distribution of the Eastern Tent Caterpillar (Malacosoma americanum)**  
Presenter: Louise Burley  
Sponsor: Jim Costa  
NC-RESEARCH

**Are Non-Native Earthworms Negatively Affecting Native Salamanders?**  
Presenter: Jeremy Craft  
Sponsor: Joe Pechmann  
NC-RESEARCH

**ENGINEERING AND TECHNOLOGY**  |  UC 232 B | Multipurpose B  
DR. WEI GUO "BILL" YANG, Moderator

**Engineering Education: A New Perspective**  
Presenter: Edward L. Livingston  
Sponsor: Peter C. Tay

**Machining & Fabrication Shop Safety System**  
Presenter: Derek Norris  
Sponsor: Ronald Bumgarner

**Application of EMD and Hilbert-Huang Transform in Hand Tremor Detection**  
Presenter: Zijing Qin  
Sponsors: Peter Tay, James Zhang, Robert Adams

**HEALTH**  |  Physical Therapy | UC 315 | Theater  
LORI SCHRODT AND DAVID HUDSON, Moderators

**Using Real Time Ultrasound as Feedback: Do Healthy Adults Maintain the Ability to Actively Isolate Transversus Abdominis (TrA) Muscle When Performing a Variety of Tasks Under Different Conditions?**  
Presenters: Laurie Lenk, Jeremiah Blankenship  
Sponsors: Todd Watson and Sue McPherson

**Axial Torsion of the Tibia Relates to the Foot Progression Angle in Adults**  
Presenters: Zack Kemp, Brandi Radford  
Sponsor: David Hudson

**Effects of Trekking Poles on Knee Mechanics**  
Presenters: Jessica Risher, Ted Cuddy, Sharon Goss  
Sponsor: David Hudson

**Clinical Anatomy Education: A Service-Learning Collaboration Between Physical Therapy and Physical Therapist Assistant Students**  
Presenters: Carmen Gentry, Amanda Hayes, Nick Marshall, Katie Moench, Jennifer Phelps, Judd Wilson  
Sponsor: Kathy Starr

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“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)
3:30–4:45PM

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

- **A Meaningful Use of Punctuation in Graham Swift’s Waterland**
  Presenter: Melody Lindsey
  Sponsor: James Addison

- **“Reader, I Married Moderation and Accuracy”: Pre-Speech as Self-Construction in Jane Eyre**
  Presenter: Joseph Telegen
  Sponsor: Brent Kinser

**SOCIAL SCIENCES**  | Psychology  | UC 215  | Catamount Room
| DAVID MCCORD, Psychology, Moderator

- **Cyberbullying and Transgender Victims: Does Social Support Matter?**
  Presenter: Erin Hambrick
  Sponsor: Alvin Malesky

- **Is There a Relationship Between Exercise Dependency and the Extroversion Domain as Indicated by the Five Factor Model of Personality?**
  Presenter: Jodi Harstrom
  Sponsor: David McCord

- **The Effects of Newspaper Media and Location on Fear of Victimization Among College Students**
  Presenter: Michelle L. Hutton
  Sponsor: Alvin Malesky

**SCIENCES**  | Biology  | UC 232A  | Multipurpose A
| BEVERLY COLLINS, Biology, Moderator

- **Deleting Genes of the RNAi Pathway in Cryptococcus Neoformans: Does RNAi Play a Role in Production of Certain Virulence Factors?**
  Presenter: Alan Dale Curtis, II
  Sponsor: Indrani Bose

- **Clarifying the Status of Micranthes Careyana and M. Caroliniana as Distinct Species Based on Morphological and Molecular Differences**
  Presenter: Max Lanning
  Sponsor: Kathy Mathews

- **Development of Bacterial Oxidative Stress Assays Utilizing a Fluorescence Microplate Reader Viability Assay**
  Presenter: Amanda Marie Schoonover
  Sponsor: Lori Seischab

**ENGINEERING AND TECHNOLOGY**  | UC 232 B  | Multipurpose B
| WES STONE, Engineering and Technology, Moderator

- **The Effects of Part Build Orientation on Resulting Tolerances During Rapid Prototyping**
  Presenter: Brett Ronald Banther
  Sponsor: Wes Stone

- **The Effect of Build Orientation and XYZ Shrinkage Factor on ABS FDM Prototypes Resisting Shear Loads**
  Presenter: Johnathan Tyler Bennett
  Sponsor: Wes Stone

- **Optimal Processing Parameters for Injection Molding Polylactide Biopolymer**
  Presenter: Johnson Busick
  Sponsor: Aaron Ball

**HEALTH**  | Physical Therapy  | UC 315  | Theater
| LORI SCHRODT AND DAVID HUDSON, Moderators

- **Balance, Posture and Activity Modification in Older Women: Is Low Bone Mass a Factor?**
  Presenters: Lindsey Pearson, Rachael Shoffner, Kathryn Yarbrough, Emily Mikel, Michelle Crosby, Whitney Barrier
  Sponsor: Lori Schrodt

- **The Reliability of Double Inclinometer Versus Single Inclinometer in Measuring Spinal Range of Motion**
  Presenters: Grant Shanks, Justin Meyers
  Sponsor: Todd Watson

- **Western Athletic Knee Scale (WAKS) 2009: Reliability of an Assessment Tool for Knee Injuries in the General and Athletic Populations**
  Presenters: Scott Baden, Adam Hartman, Dana Teat, Erin Weaver, David Yount
  Sponsor: Jay Scifers

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

Carl Sagan
5–6:15PM

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 Research Awards and the Graduate Teaching Assistant award will be presented at this reception.

Since the Symposium continues at 6:30, we will begin promptly at 5 p.m. Light refreshments and hors d’oeuvres will be available.

6:30–7:30PM

EDUCATION  |  UC 232A | Multipurpose A

ELEANOR HILTY, Educational Leadership and Foundations, Moderator

Pre-College Program 7th Grade Students’ Drawings of a Scientist

Presenter:  Liddell Shannon
Sponsor:  Terre Folger
NC-RESEARCH

Barriers to Black Male Enrollment in the NC Community College System

Presenters:  K. Paul Knott, Anne Wade
Sponsor:  Eleanor Hilty
NC-RESEARCH

FINE AND PERFORMING ARTS  |  UC 232 B | Multipurpose B

CHRIS COBURN, Biology, Moderator

Balance in a New World

Presenter:  Michael Polomik
Sponsor:  Marie Cochran

The Jackson County Green Energy Park and Western Carolina University College of Fine and Performing Arts: Partnering to Promote a More Sustainable Future for the Arts in Western North Carolina with Landfill Gas

Presenter:  Tracy Kirchmann
Sponsor:  Joan Falconer Byrd
NC-RESEARCH

“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)