# Mesa State College

GRAND JUNCTION, COLORADO

# Mesa State College Student Showcase 2010

## Showcase Proceedings

**Wednesday, April 28, 2010**

## About the Student Showcase

The Student Showcase highlights student works involving creativity, discovery, research, innovation, and/or entrepreneurship through sessions by undergraduates at Mesa State College and Western Colorado Community College. The Student Showcase builds on classroom experience and is a venue where students can share their work with faculty, student peers, and community members. Students participating in this campus-wide forum have distinguished themselves as scholars. The sessions' abstracts are published in this *Showcase Proceedings*.

## Student Showcase Planning Committee

Andres Aslan, Physical and Environmental Sciences

Jennifer Barton, Academic Affairs

Julie Bruch, Languages, Literature and Mass Communication

Adele Cummings, Social and Behavioral Sciences

Carol Futhey, Academic Affairs

Suzie Garner, Art

Alma Jackson, Health Sciences

Luis Lopez, Languages, Literature and Mass Communication

Cindy Lueb, Sponsored Programs

Bill McCracken, Manufacturing Technology, Western Colorado Community College

Jessica Oviatt, Academic Affairs

Deborah Parman, Business

The Student Showcase Planning Committee extends appreciation to Mike Mansheim and Jeremy Smith for all of their design work in support of the showcase.

MESA STATE COLLEGE STUDENT SHOWCASE 2010

# Mesa State College
# Student Showcase
# Proceedings

**Wednesday, April 28, 2010**
**Grand Junction, Colorado**

# Faculty Mentors

| | |
|---|---|
| Jake Allee | Art |
| Andres Aslan | Physical & Environmental Sciences |
| Monte Atkinson | Music |
| Julie Barak | Languages, Literature & Mass Communication |
| Madeline Becker | Teacher Education |
| Ed Bonan-Hamada | Computer Science, Mathematics & Statistics |
| Steven Bradley | Art |
| Tim Brower | Physical & Environmental Sciences |
| Joshua Butler | Art |
| Rex Cole | Physical & Environmental Sciences |
| Arun Ektare | Computer Science, Mathematics & Statistics |
| Justin Gollob | Social & Behavioral Sciences |
| Phil Gustafson | Computer Science, Mathematics & Statistics |
| Jessica Herrick | Social & Behavioral Sciences |
| Glen Hoff | Western Colorado Community College |
| Alma Jackson | Health Sciences |
| Verner Johnson | Physical & Environmental Sciences |
| Darin Kamstra | Music |
| Phil Kavanagh | Computer Science, Mathematics & Statistics |
| Barry Laga | Languages, Literature & Mass Communication |
| Richard Livaccari | Physical & Environmental Sciences |
| Luis Lopez | Languages, Literature & Mass Communication |
| Warren MacEvoy | Computer Science, Mathematics & Statistics |
| Bill McCracken | Manufacturing Technology, WCCC |
| Max McFarland | Computer Science, Mathematics & Statistics |
| Tamera Minnick | Physical & Environmental Sciences |
| Doug O'Roark | Social & Behavioral Sciences |
| Rick Ott | Computer Science, Mathematics & Statistics |
| Deb Parman | Business |
| Brian Parry | Social & Behavioral Sciences |
| Elizabeth Propes | Social & Behavioral Sciences |
| Carolyn Quinn-Hensley | Art |
| Peter Rekemeyer | Physical & Environmental Sciences |
| Gigi Richard | Physical & Environmental Sciences |
| Abigail Richardson | Social & Behavioral Sciences |
| Robert Ryan | Kinesiology |
| William Sands | Kinesiology |
| Steve Schulte | Social & Behavioral Sciences |
| Dan Schultz Ela | Computer Science, Mathematics & Statistics |
| John Sluder | Process Systems, WCCC |
| Deborah Snider | Art |
| Johnny Snyder | Business |
| Jon St. Peter | Culinary Arts, WCCC |
| Darrell Tousley | Art |
| Thomas Walla | Biological Sciences |
| Alane Wooster | Administrative Office Technology, WCCC |

# Showcase Participants & Categories

| Student | Category | Location | Time | Page # |
|---|---|---|---|---|
| Aksztulewicz, Tyler | CTP | Academic Quad | 4:00 | 32 |
| Andrus, Jadie | PP | ACB 2nd Floor, east | 3:00 - 5:00 | 9 |
| Arbeiter, Samantha | LLSS | ACB 217 | 4:15 | 8 |
| Archer III, Robert W. | LLSS | ACB 217 | 3:30 | 8 |
| Arisawa, Rebecca | MCSME | GMH MPR (1) | 4:31 | 24 |
| Arnol-Martin, Miriam | FPA | MPAC 139 | 4:15 | 8 |
| Atkinson, Lauren | FPA | MPAC 139 | 4:30 | 23 |
| Ball, Timothy | FPA | FA 303 | 4:45 | 21 |
| Ballard, Eric | PP | FA 214 | 3:30 | 35 |
| Barnes, Britni | PP | ACB 2nd Floor, east | 3:00 - 5:00 | 9 |
| Bassett, Christian | MCSME | GMH MPR (1) | 4:18 | 23 |
| Batchelder, Greg | LLSS | ACB 110 | 4:15 | 9 |
| Berg, Elliot | ME | Academic Quad | 3:00 - 5:00 | 36 |
| Betancourt, Jose | ME | Academic Quad | 3:00 - 5:00 | 38 |
| Bisbee, Taylor | FPA | FA 201 | 3:00 | 9 |
| | FPA | FA Lobby/111 | 3:45 - 4:30 | 10 |
| Blake, John | SCI | ACB 2nd Floor, west | 3:00 - 5:00 | 10 |
| Blehm, Joseph | MCSME | GMH MPR (1) | 4:05 | 30 |
| Bowden, Jennifer | CTP | ACB 217 | 4:30 | 34 |
| Brewer, Jesse | ME | Academic Quad | 3:00 - 5:00 | 38 |
| Brightman, Kyle | LLSS | ACB 217 | 3:45 | 10 |
| Brittingham, Sheri L. | FPA | FA Lobby | 3:45 - 4:30 | 25 |
| Bro, Jeremy | CTP | Academic Quad | 4:15 | 11 |
| Brown, Isaac | ME | Academic Quad | 3:00 - 5:00 | 36 |
| Bruch, Christina | CTP | ACB 217 | 4:30 | 34 |
| Buckingham, Stephen | ME | Academic Quad | 3:00 - 5:00 | 36 |
| Busker, Matthew | ME | Academic Quad | 3:00 - 5:00 | 37 |
| Caddy, James | FPA | FA Lobby | 3:45 - 4:30 | 25 |
| Cady, Jacob | FPA | FA Lobby | 3:45 - 4:30 | 11 |
| | MCSME | GMH MPR (2) | 3:39 | 11 |
| Cahoon, Scot | FPA | MPAC 139 | 3:45 | 12 |
| Calegory, Ian | MCSME | GMH MPR (1) | 3:13 | 12 |
| | MCSME | GMH MPR (1) | 3:00 | 12 |
| Capshaw, Cheryl | LLSS | ACB 110 | 3:00 | 13 |
| Cardin, Donald M. | CTP | Academic Quad | 4:15 | 11 |
| Cart, Ed | PP | FA 214 | 3:15 | 15 |
| Chatfield, Shane | MCSME | GMH MPR (2) | 4:31 | 13 |
| Chipchase, Jack | FPA | MPAC 139 | 4:30 | 23 |
| Chynoweth, Heidi | MCSME | GMH MPR (2) | 4:05 | 13 |
| Cline, Marcie | ME | Academic Quad | 3:00 - 5:00 | 36 |
| Clymer, Aaron | FPA | MPAC 139 | 3:00 | 14 |
| Collazo, Amey | PP | ACB 2nd Floor, east | 3:00 - 5:00 | 14 |
| Combs, Brittany L. | FPA | FA Lobby | 3:45 - 4:30 | 25 |
| Conger, Shana | CTP | ACB 217 | 4:30 | 34 |
| Cook, Brian | ME | Academic Quad | 3:00 - 5:00 | 36 |
| Cook, Fred A. | SCI | ACB 2nd Floor, west | 3:00 - 5:00 | 14 |

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|---|---|---|---|---|
| Cooper, Kyle | FPA | MPAC 139 | 3:45 | 12 |
| Coquoz, Jesse | ME | Academic Quad | 3:00 - 5:00 | 36 |
| Corbet, Natalie | FPA | MPAC 139 | 3:30 | 15 |
| Côté, Joey | FPA | MPAC 139 | 3:45 | 12 |
| Courtney, Deborah | PP | ACB 2nd Floor, east | 3:00 - 5:00 | 9 |
| Craig, Justin | CTP | Academic Quad | 3:45 | 17 |
| Cribari, Clinton | ME | Academic Quad | 3:00 - 5:00 | 38 |
| Cripps, Cally | PP | FA 214 | 3:15 | 15 |
| Crossen, Tammie Lee | SCI | ACB 2nd Floor, west | 3:00 - 5:00 | 15 |
| Crouse, Orin | ME | Academic Quad | 3:00 - 5:00 | 36 |
| Davis, Alexandria | ME | Academic Quad | 3:00 - 5:00 | 36 |
| Davis, Krista N. | FPA | FA Lobby | 3:45 - 4:30 | 25 |
| De Mers, Christina | CTP | ACB 217 | 4:30 | 34 |
| DeRuiter, Brittani | PP | FA 214 | 3:30 | 35 |
| Dickey, Stephanie R. | LLSS | ACB 110 | 3:30 | 16 |
| Dinnel, Cy | CTP | Academic Quad | 3:30 | 16 |
| Divinny, Darryl | CTP | Academic Quad | 3:45 | 17 |
| Dobbins, Dylan | CTP | Academic Quad | 4:00 | 32 |
| Donohue, Meghan | PP | ACB 2nd Floor, east | 3:00 - 5:00 | 17 |
| Downing, Tyler | MCSME | GMH MPR (2) | 3:52 | 17 |
| Drawbridge, Kristina | PP | FA 214 | 4:00 | 18 |
| Dyke, Janine M. | PP | ACB 2nd Floor, east | 3:00 - 5:00 | 18 |
| Ebersohl, Candace | CTP | ACB 217 | 4:30 | 34 |
| Echtermeyer, Tom | SCI | ACB 111 | 4:00 | 19 |
| Fergeson, Cassinda | FPA | FA Lobby | 3:45 - 4:30 | 25 |
| | FPA | FA Lobby/111 | 3:45 - 4:30 | 19 |
| Fillpot, Baron | ME | Academic Quad | 3:00 - 5:00 | 38 |
| Fitzgerald, Andy | CTP | Academic Quad | 3:15 | 34 |
| Flemming, Eric | ME | Academic Quad | 3:00 - 5:00 | 37 |
| Flowers, April | PP | ACB 2nd Floor, east | 3:00 - 5:00 | 19 |
| Foster, Maureen | ME | Academic Quad | 3:00 - 5:00 | 36 |
| Franck, Jacob M. | FPA | FA Lobby | 3:45 - 4:30 | 25 |
| Franklin, Jason | FPA | MPAC 139 | 3:15 | 20 |
| Freeborn, Craig | ME | Academic Quad | 3:00 - 5:00 | 39 |
| Gagliardi, Morgan | FPA | MPAC 139 | 4:30 | 23 |
| Garcia, Daniell | ME | Academic Quad | 3:00 - 5:00 | 37 |
| Garcia, Ellen | PP | FA 214 | 4:30 | 20 |
| Gardner, Cody | ME | Academic Quad | 3:00 - 5:00 | 37 |
| Gardner, Ryan | ME | Academic Quad | 3:00 - 5:00 | 37 |
| Garoutte, Clancy | ME | Academic Quad | 3:00 - 5:00 | 37 |
| Gatt, Daniel | ME | Academic Quad | 3:00 - 5:00 | 37 |
| Geary, Steven | ME | Academic Quad | 3:00 - 5:00 | 36 |
| Geddes, Jessica | FPA | FA 202 | 3:30 | 23 |
| Geng, Richard | PP | FA 214 | 4:15 | 20 |
| Gerding, Brandon | ME | Academic Quad | 3:00 - 5:00 | 37 |
| Giglio, Richard | FPA | FA 303 | 4:45 | 21 |
| | MCSME | GMH MPR (1) | 3:52 | 21 |
| Gillespie, Logan | ME | Academic Quad | 3:00 - 5:00 | 37 |
| Glenn, Jay | CTP | Academic Quad | 3:45 | 17 |
| Golden, Melinda | MCSME | GMH MPR (1) | 4:31 | 24 |
| Golesh, Adam | PP | FA 214 | 3:30 | 35 |
| Gore, Eric | MCSME | GMH MPR (1) | 3:52 | 21 |
| Gorenc, Mark | SCI | ACB 111 | 4:15 | 21 |
| | SCI | ACB 2nd Floor, west | 3:00 - 5:00 | 21 |

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|---|---|---|---|---|
| Graham, Josh | FPA | FA 303 | 4:45 | 21 |
| Grant, Justin | MCSME | GMH MPR (2) | 3:00 | 22 |
| Grice, Kathryn | PP | ACB 2nd Floor, east | 3:00 - 5:00 | 19 |
| Groff, Courtney | SCI | ACB 2nd Floor, west | 3:00 - 5:00 | 22 |
| Haberkorn, Brittni | CTP | Academic Quad | 3:15 | 34 |
| Hager, Maro | FPA | FA 202 | 3:30 | 23 |
| Hart, Jon Eric | CTP | Academic Quad | 3:15 | 34 |
| Heidemen, John | CTP | Academic Quad | 3:15 | 34 |
| Heinz, Lane | FPA | MPAC 139 | 3:45 | 12 |
| Hernandez, Andres | ME | Academic Quad | 3:00 - 5:00 | 37 |
| Hilken, Kevin | ME | Academic Quad | 3:00 - 5:00 | 38 |
| Holcomb, Christian | ME | Academic Quad | 3:00 - 5:00 | 38 |
| Holman, Amanda | PP | ACB 2nd Floor, east | 3:00 - 5:00 | 14 |
| Hoogeveen, Micah | ME | Academic Quad | 3:00 - 5:00 | 38 |
| Hoppe, Dustin A. | MCSME | GMH MPR (1) | 4:18 | 23 |
| Howe, Rebecca | ME | Academic Quad | 3:00 - 5:00 | 36 |
| Howell, Brandon | ME | Academic Quad | 3:00 - 5:00 | 38 |
| Hudson, Issac | ME | Academic Quad | 3:00 - 5:00 | 38 |
| Humphrey, Britton | ME | Academic Quad | 3:00 - 5:00 | 36 |
| Hurshman, Daniel | FPA | MPAC 139 | 4:30 | 23 |
| Jacob, Douglas | MCSME | GMH MPR (2) | 3:26 | 24 |
| | MCSME | GMH MPR (1) | 4:31 | 24 |
| Jenson, Garrett | CTP | Academic Quad | 3:30 | 16 |
| Johnson, Jeffrey | FPA | FA 211 | 3:15 | 24 |
| Johnson, Timothy | ME | Academic Quad | 3:00 - 5:00 | 39 |
| Keck, Nate | PP | FA 214 | 4:30 | 20 |
| | PP | FA 214 | 4:15 | 20 |
| King, Kristina | FPA | FA Lobby | 3:45 - 4:30 | 25 |
| Kowalsky, Rob | MCSME | GMH MPR (1) | 3:52 | 21 |
| Lambrecht, Lynnsey | FPA | MPAC 139 | 4:00 | 25 |
| Larson, Tor | FPA | FA Lobby/111 | 3:45 - 4:30 | 25 |
| Latner, Don | CTP | Academic Quad | 3:30 | 16 |
| Lidberg, Matthew | ME | Academic Quad | 3:00 - 5:00 | 39 |
| Lindsey, Derrell | ME | Academic Quad | 3:00 - 5:00 | 39 |
| Linn, Paul | ME | Academic Quad | 3:00 - 5:00 | 38 |
| Logan, Zachary | SCI | ACB 111 | 4:30 | 26 |
| Logsdon, Jason | ME | Academic Quad | 3:00 - 5:00 | 38 |
| Lueck, Robert | ME | Academic Quad | 3:00 - 5:00 | 37 |
| Luke, Kyle | ME | Academic Quad | 3:00 - 5:00 | 37 |
| Lusk, Jon | MCSME | GMH MPR (1) | 4:18 | 23 |
| | MCSME | GMH MPR (2) | 3:13 | 34 |
| MacIntosh, Zachary | ME | Academic Quad | 3:00 - 5:00 | 39 |
| Madrid, Oscar | ME | Academic Quad | 3:00 - 5:00 | 38 |
| Mahon, Michael S. | LLSS | ACB 110 | 3:15 | 26 |
| Malone, Amber | CTP | ACB 217 | 4:30 | 34 |
| Malone, Holly | PP | ACB 2nd Floor, east | 3:00 - 5:00 | 17 |
| Martens, Tiffany | PP | ACB 2nd Floor, east | 3:00 - 5:00 | 9 |
| Mates, Ashley E. | LLSS | ACB 217 | 3:00 | 26 |
| McGowan, Ian | ME | Academic Quad | 3:00 - 5:00 | 38 |
| McGrath, Molly | FPA | FA 303 | 4:45 | 21 |
| McKelvey, Britney | SCI | ACB 2nd Floor, west | 3:00 - 5:00 | 27 |
| Megee, Laverne Lenita | SCI | ACB 111 | 3:45 | 27 |
| Mellor, Jonathon | MCSME | GMH MPR (1) | 3:26 | 29 |

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|---|---|---|---|---|
| Merrell, Larisa | MCSME | GMH MPR (2) | 4:44 | 27 |
| Messano, Daniel | MCSME | GMH MPR (1) | 4:44 | 28 |
| Middleton, Kelsi | MCSME | GMH MPR (2) | 3:00 | 22 |
| | ME | Academic Quad | 3:30 - 5:00 | 38 |
| Miles, Connie Jo | PP | ACB 2nd Floor, east | 3:00 - 5:00 | 14 |
| Miller, David | MCSME | GMH MPR (2) | 4:18 | 28 |
| Mohrman, Nancy | PP | ACB 2nd Floor, east | 3:00 - 5:00 | 14 |
| Moore, Cody | PP | ACB 2nd Floor, east | 3:00 - 5:00 | 28 |
| Morales, Fran | FPA | FA Lobby/111 | 3:45 - 4:30 | 29 |
| Moses, Luke | MCSME | GMH MPR (1) | 3:26 | 29 |
| Neebling, John T. | CTP | Academic Quad | 4:15 | 11 |
| Nesbit, Carl | PP | FA 214 | 3:15 | 15 |
| | PP | FA 214 | 3:45 | 29 |
| Nesbit, Stephanie | FPA | FA Lobby | 3:45 - 4:30 | 29 |
| Nichols, Laura | FPA | FA Lobby | 4:00 - 4:30 | 15 |
| | FPA | MPAC 139 | 3:30 | 30 |
| Ochoa, Jorge | CTP | Academic Quad | 4:00 | 32 |
| Ogden, Skyler | ME | Academic Quad | 3:00 - 5:00 | 36 |
| O'Rear, Jacob | SCI | ACB 111 | 3:30 | 30 |
| Ott, Apryl | FPA | MPAC 139 | 4:30 | 23 |
| Padilla, Cody | ME | Academic Quad | 3:00 - 5:00 | 38 |
| Parker, Marcia | CTP | ACB 217 | 4:30 | 34 |
| Pautsch, Daniel | MCSME | GMH MPR (1) | 4:05 | 30 |
| Peckham, Mike | LLSS | ACB 110 | 3:00 | 13 |
| Peterson, Zach | ME | Academic Quad | 3:00 - 5:00 | 36 |
| Pinney, Rosalie | CTP | ACB 217 | 4:30 | 34 |
| Pitts, Catherine D. | LLSS | ACB 110 | 3:45 | 31 |
| Powers, Brian | ME | Academic Quad | 3:00 - 5:00 | 36 |
| Preszler, Tyler | PP | ACB 2nd Floor, east | 3:00 - 5:00 | 17 |
| Raley, James | SCI | ACB 2nd Floor, west | 3:00 - 5:00 | 31 |
| Reed, Christina | LLSS | ACB 110 | 4:00 | 31 |
| Regimbal, Kelly | ME | Academic Quad | 3:00 - 5:00 | 39 |
| Ridgway, Tony | CTP | Academic Quad | 3:15 | 34 |
| Rockwell, Spencer | LLSS | ACB 110 | 3:00 | 13 |
| Rowley, Ashley | LLSS | ACB 110 | 3:45 | 31 |
| Rowley, Chris | ME | Academic Quad | 3:00 - 5:00 | 38 |
| Sanchez, April J. | LLSS | ACB 217 | 3:15 | 32 |
| Schmaing, Jerry | ME | Academic Quad | 3:00 - 5:00 | 36 |
| Sellers, Kyle D. | CTP | Academic Quad | 4:15 | 11 |
| Shaeffer, Michael | CTP | Academic Quad | 4:00 | 32 |
| Sharpe, Kris | ME | Academic Quad | 3:00 - 5:00 | 39 |
| Shepton(Castleberry) , Anastasia | LLSS | ACB 217 | 4:00 | 32 |
| Shigematsu, Keonimana | ME | Academic Quad | 3:00 - 5:00 | 37 |
| Silva, Sarai | PP | ACB 2nd Floor, east | 3:00 - 5:00 | 19 |
| Small, Sam | FPA | FA Lobby/111 | 3:45 - 4:30 | 33 |
| Stetzel, Kathleen | CTP | ACB 217 | 4:30 | 34 |
| Stone, Christopher | CTP | Academic Quad | 4:00 | 32 |
| Sullivan, Wade | CTP | Academic Quad | 3:30 | 16 |
| Summy, Shiloh | ME | Academic Quad | 3:00 - 5:00 | 39 |
| Sweatt, Marshall | MCSME | GMH MPR (1) | 3:39 | 33 |
| Taft, Franklyn Dylan | ME | Academic Quad | 3:00 - 5:00 | 36 |
| Tarr, David | FPA | MPAC 139 | 4:30 | 23 |

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|---|---|---|---|---|
| Taylor, Beau | SCI | ACB 2nd Floor, west | 3:30 - 5:00 | 21 |
| | SCI | ACB 111 | 3:15 | 33 |
| Thomas, Ash | MCSME | GMH MPR (2) | 3:00 | 22 |
| | ME | Academic Quad | 3:30 - 5:00 | 37 |
| Tombleson, Conrad | PP | ACB 2nd Floor, east | 3:00 - 5:00 | 17 |
| Traub, Shawn | MCSME | GMH MPR (1) | 4:05 | 30 |
| Tribble, Jacob | CTP | Academic Quad | 4:00 | 32 |
| Trump, Jessica | CTP | ACB 217 | 4:30 | 34 |
| Vorderberg, Weston | ME | Academic Quad | 3:00 - 5:00 | 39 |
| Warbritton, Donny | MCSME | GMH MPR (2) | 3:13 | 34 |
| Weitzel, Tyler | ME | Academic Quad | 3:00 - 5:00 | 36 |
| Wellman, Lyndi | CTP | Academic Quad | 3:15 | 34 |
| Whitesides, Bryan | PP | FA 214 | 4:15 | 20 |
| Williams, Katharine | SCI | ACB 111 | 3:00 | 35 |
| Winden, Nick | CTP | Academic Quad | 3:15 | 34 |
| Wood, Nathan | MCSME | GMH MPR (1) | 3:39 | 33 |
| | MCSME | GMH MPR (1) | 3:00 | 12 |
| Wynne, Bryce | PP | FA 214 | 3:30 | 35 |
| Yenchick, Sam | ME | Academic Quad | 3:00 - 5:00 | 36 |
| Yerbic, Lyndsay | PP | FA 214 | 3:15 | 15 |
| | PP | FA 214 | 3:00 | 35 |
| Zapata, Laura | MCSME | GMH MPR (2) | 3:00 | 22 |
| | ME | Academic Quad | 3:30 - 5:00 | 39 |

## Category Legend

Fine & Performing Arts ..... FPA
Sciences ..... SCI
Mathematics, Computer Science, & Mechanical Engineering ..... MCSME
Mechanical Engineering - First Year Design Expo ..... ME
Professional Programs ..... PP
Languages, Literature, & Social Sciences ..... LLSS
Career & Technical Programs ..... CTP

## Building Key

Academic Classroom Building ..... ACB
Fine Arts Building ..... FA
Grand Mesa Hall, multi-purpose room ..... GMH MPR
Moss Performing Arts Center ..... MPAC

Presenter(s): **Samantha Arbeiter**
Title: THE RHETORIC OF DEATH RITUAL DURING THE ROMAN REPUBLIC AND EARLY EMPIRE
Major(s): History
Department: Social and Behavioral Sciences
Faculty Mentor: Doug O'Roark

Abstract: The power of unspoken rhetoric is a ubiquitous undercurrent of all societies. Unspoken rhetoric, embedded within monuments or through the vehicle of ritual, is a constant reminder to the people of virtues that should be followed, beliefs that are common to the culture, and political statements of control. During the period of the late Roman Republic and early Roman Empire, the rhetoric of death was thick with commentary: commentary that was more often than not directed at the living rather than the dead. Funeral rituals were important for remembrance of the dead especially in connection to the state. For the living, the rituals presented a form of social commentary in how to live a dutiful, virtuous life in the eyes of the Republic and Empire. Funeral rhetoric also served as a vehicle for transmission of power and a tool to assert power and define where one stood in the social orders of society. Epigraphic evidence presented by Brent Shaw and Richard Saller offer interesting evidence for continuation of family name, wealth, and power being transferred within the rituals of funerals.

Presenter(s): **Robert W. Archer III**
Title: FEMALE PERPETRATORS OF THE HOLOCAUST: AN EXAMINATION OF GENDER, ENVIRONMENT, AND BRUTALITY
Major(s): History
Department: Social and Behavioral Sciences
Faculty Mentor: Elizabeth Propes

Abstract: Women – like men – were critical to the Nazi sanctioned pogrom aimed to exterminate the biologically undesirable enemies of the Third Reich. Even though women were critical to the process, much of the historical works aim specifically at actions of men, and in some ways overlook that women were also a critical part. By looking at female perpetrators throughout the different types of concentration camps, a better understanding of the actions of female perpetrators can be achieved. What is important to remember is that understanding something is not justifying it. In order to achieve this goal, the actions of these women need to come from a wide variety of sources including Holocaust victims, court proceedings after the war, and responses from the female guards themselves. Moreover, much of the sources indicate that women were more brutal than their male counter parts. These women were not acting within the norm of National Socialism; did they have something to prove? Were these women, and their actions, products of their environment, or was anti-Semitism imbedded in their lives before the cruel environment of the Holocaust?

Presenter(s): **Miriam Arnol-Martin**
Title: A PERFORMANCE OF VIVALDI/GIACOMELLI'S ARIA: SPOSPA SON DISPREZZATA
Major(s): Music Education
Department: Music
Faculty Mentor: Monte Atkinson

Abstract: In an increasingly technological age, there are less people experiencing live performances of high level music, especially those of masterpieces such as this jewel, *Sposa son disprezzata*, modified from an early work by Giacomelli, and then "borrowed" by Handel for his opera *Bajazet* in 1735. The presenter would like to make this lovely lyrical piece accessible to the public by performing it (approximately 9

minutes) accompanied by Doug Morrow on piano. It is a wonderful work with quite an interesting historical background: the original version of this work would have been sung by castrati, but the Vivaldi adaptation depicts a woman lamenting her husband's unfaithfulness, and now it is typically performed by a mezzo-soprano. The 18th century marked the age of the castrati, a time when thousands of young boys were castrated in the hopes that they would become a famous singer (for the male soprano voice was in great demand). Only 1 out of 10 of these boys would actually make it to the stage. After her performance of *Sposa son disprezzata*, the presenter would like to explain some of its history.

Presenter(s): **Britni Barnes, Jadie Andrus, Deborah Courtney, and Tiffany Martens**
Title: THERAPEUTIC HYPOTHERMIA: TREATMENT FOR POST MYOCARDIAL INFARCTION PATIENTS
Major(s): Nursing
Department: Health Sciences
Faculty Mentor: Alma Jackson

Abstract: This research focuses on the neurological function of a person 60 days post MI treated with Therapeutic Hypothermia (TH). In all instances of the literature reviewed during the research phase of this project, the benefit of induced hypothermia is irrefutable. The result of this research shows a myriad of benefits to patients suffering anoxic events, and statistically significantly improvement in outcomes (neurologically) to those receiving induced hypothermia. The researchers believe there will be statistical significance of neurologic improvement in the therapeutic hypothermia patients. The quasi-experimental post-test, longitudinal design that will analyze the patient outcome based on the dependent variable of neurological function measured with the Scripps Neurological Rating Scale (NRS).

Presenter(s): **Greg Batchelder**
Title: QUALITATIVE INTERVIEWS AT A THERAPEUTIC GROUP HOME
Major(s): Counseling Psychology
Department: Social and Behavioral Sciences
Faculty Mentor: Jessica Herrick

Abstract: The purpose of this study was to obtain qualitative information about the social functioning of youth presenting with Oppositional Defiant Disorder (ODD) in a Therapeutic Group Home (TGH). There have been some quantitative studies; however, there is little qualitative information about the experience of youth in these settings. This study examined the social functioning of these youth in their own words by employing semi-structured interviews. The most prominent theme was the absence of one or both parents. The majority of the participants mentioned the loss of friendships after being placed in TGH and problems in school before being placed in TGH. There was also a common thread of hopefulness in the interviewees. All participants had goals for the future and most believed that their living situation, relationships, and behaviors would improve after their time in placement. The participants have many difficulties to overcome, including absent parents, lost friendships, problems in school, multiple foster placements, and behavioral problems. The TGH they attend is a valuable resource for providing support and tools to help them realize their goals of improving their lives.

Presenter(s): **Taylor Bisbee**
Title: LITHOGRAPHY PRINTMAKING
Major(s): Studio Art
Department: Art
Faculty Mentor: Joshua Butler

Abstract: Fine art printing has a long and fluid history, and we explore a variety of methods in printing classes. However this demonstration will focus on the stone lithography printing process. The word lithography, which is derived from the Greek

language, actually means stone writing. This technique uses a limestone surface with an image on it, which is then etched, inked and finally printed. It was discovered in 1798 by a Bavarian playwright wishing to reproduce his plays and musical scores. The original process is still in use today, and it is relatively unchanged. This medium is based on the principles that grease and water do not mix, and that a stone can be sanded to a smooth flat planar surface, then drawn upon with greasy crayons, etched with acid, rolled with ink and finally reproduced on paper creating a fine art print. Works derived from this process and further details will be available at this demonstration so observers can gain a better understanding of stone lithography printing.

Presenter(s): **Taylor Bisbee**
Title: THROWN ASSEMBLAGE
Major(s): Studio Art
Department: Art
Faculty Mentor: Jake Allee

Abstract: Like the primitive and surrealist works, this piece is meant to convey a feeling of wild almost primitive abandon. This piece was loosely based off of Nolde's "Candle Dancers" and "Wild Dancing girls." The form is meant to convey a human familiarity, but on a primal level. So the form will consist of simple almost geometric forms assembled together. The use of ceramics as medium is very important to the idea because of the level of direct contact with the final product—manipulating the clay in the artist's hands, and placing that energy within the artist directly in the clay with each manipulation.

Presenter(s): **John P. Blake**
Title: VOLCANISM AND YELLOWSTONE NATIONAL PARK: EVIDENCE FOR A NEAR FUTURE ERUPTION?
Major(s): Geology
Department: Physical and Environmental Sciences
Faculty Mentor: Andres Aslan

Abstract: Since the 1970's scientists have been studying and monitoring the volcanically active area of Yellowstone National Park. This area has had 3 cycles of large eruptions, the first was approximately 2.1 million years ago, followed by 1.2 million years ago, and including the most recent was 640,000 years ago. Since studying and monitoring has begun, seismic activity, undulating topography, geysers and boiling thermal features show that the area is undoubtedly still active. Furthermore evidence of caldera forming eruptions suggests a violent eruption is not out of the question. To address this matter, an investigation into Yellowstone's violent past and an analysis of ongoing field data and scientific studies is being analyzed to evaluate the potential of a hazardous volcanic eruption in the relatively near future.

Presenter(s): **Kyle Brightman**
Title: THE GRANDEST INDIAN COUNCIL OF THE 19$^{TH}$ CENTURY: THE FORT LARAMIE TREATY OF 1851
Major(s): History/Secondary Education
Department: Social and Behavioral Sciences
Faculty Mentor: Steve Schulte

Abstract: The objective of this project is to detail the events of the first major treaty council between the central plains Native Americans and the United States Federal Government. The Fort Laramie Treaty of 1851 was made up of ten thousand Native Americans and government officials. It is unlike any treaty before its time in that it was the first to deal with the central plains tribes. It would become the example for every treaty conducted in the West after 1851. This treaty created the reservation system for central plains tribes and was the catalyst for dependency for such tribes as the Lakota, Dakota, Crow, Cheyenne, Snake and Arapahoe. The reservation system in the

West originated from this treaty and it is fundamental in understanding how and why reservations exist today. The events and negotiations at Fort Laramie were colorful, vibrant, and exciting, but behind this façade lay eventual Native American loss, heartbreak and dependency.


Presenter(s): **Jeremy Bro, Donald Cardin, John Neebling, and Kyle Sellers**
Title: SUSTAINABILITY
Major(s): Process Systems Technology
Department: Process Systems Technology, WCCC
Faculty Mentor: John Sluder



Abstract: It is now 2010 and people are starting to notice some problems in their long term use of electricity. Where will humans get electricity in the future when natural resources run out? How are they going to treat their water and how are they going to solve contaminated water issues? These are future problems this class is envisioning while creating ideas for a small water treatment plant using new solar technology to power our equipment. The use of solar panels in providing energy to power a small scale water treatment center, a stereo system, a T.V., and computers will be demonstrated. This application involves creating a process with the understanding of how a Process Flow Diagram is used to represent information found in the research of process technology equipment and systems. With these ideas a trailer will be utilized, equipped with the framing to support weight and solar panels, to accomplish this task, the panel will be attached to a rotating arm which tracks the suns position. After storing the Sun's DC energy, it will be converted to 60 cycles AC to power the load. The researchers will demonstrate how green technology can be used in a simple way to supplement the environment with scarce resources. With these examples, the researchers would like to help the next generation by teaching them how solar power and water treatment are necessary steps in correcting this future problem. As a result it is hoped that a new generation of active people who will get involved with solving these future problems will be encouraged.



Presenter (s): **Jacob Cady**
Title: CLOSED-WORLD REASONING APPLIED TO MATHEMATICAL PROOF
Major(s): Mathematics
Department: Computer Science, Mathematics and Statistics
Faculty Mentor: Ed Bonan-Hamada



Abstract: Many students have sat in the tutoring center working through problem after problem on their math homework wondering why they cannot solve them. It turns out that much of classical mathematical logic is quite different from the way humans reason. In fact, without a rigorous background in mathematical logic it is difficult for humans to reason according to the norms of formal mathematics. This project assumes Husserl's idea that people reason to an interpretation and from an interpretation and includes new insights into the way in which humans construct logical frameworks. Using Stenning and Van Lambalgen's theory that much of human reasoning is about process planning we will apply closed-world reasoning to the construction of mathematical proofs via logic programming. The resulting model will help explicate the problems student have in creating proofs.



Presenter(s): **Jacob Cady**
Title: NEMUS PROCUL PORTA O VICIS QUOD RUINA
Major(s): Physics
Department: Physical and Environmental Sciences
Faculty Mentor: Darrell Tousley



Abstract: *Nemus Procul Porta o Vicis Quod Ruina*, translated to 'the tree at the gate of time and destruction,' is a bronze sculpture inspired by the Angkor Wat temple of Cambodia. It consists of a ruined temple on which a large tree has overgrown. The message is that time is a conveyor of both entropy (disorder) and enthalpy (reorder). The input of usable energy into a system will result in an ordering of the chaos in

the system. Without the input of energy, the amount of disorder will increase. Here is a sculpture that displays the passage of time and how it relates to the building of the tree by the input of energy by the sun and the destruction of the temple simultaneously by the lack of input from mankind. This demonstrates humankind's need to be a force of order in the chaotic world lest we be the force of our own destruction.

Presenter(s): **Scott Cahoon, Kyle Cooper, Joey Côté, and Lane Heinz**
Title: ON THAT NOTE
Major(s): Theatre, Acting/Directing
Department: Music
Faculty Mentor: Monte Atkinson

For the student showcase, the barbershop quartet *On That Note*.... will be presenting two songs: "Come Fly With Me" and "Can You Feel The Love Tonight" in the traditional barbershop style. According to the Barbershop Harmony Society, "Barbershop music features songs with understandable lyrics and easily singable melodies, whose tones clearly define a tonal center and imply major and minor chords and barbershop (dominant and secondary dominant) seventh chords that resolve primarily around the circle of fifths, while making frequent use of other resolutions." What makes Barbershop music different from regular a cappella music and so special is the way it uses these Barbershop seventh chords so beautifully. The members of the quartet are: Lane Heinz singing tenor, Scot Cahoon singing lead, Joey Côté singing baritone, and Kyle Cooper singing bass. The quartet got together earlier this year out of their mutual affinity towards Barbershop music. Joey Côté sang in *The 505 Chorus* in Albuquerque, New Mexico. Scot Cahoon is a third-generation barbershop singer whose grandfather sang barbershop on the radio in Pennsylvania in the 1950s. Kyle Cooper started singing barbershop in high school and Lane Heinz is a new-comer to the hobby/obsession.

Presenter(s): **Ian Calegory**
Title: MANDELMANIA: A MANDELBROT FRACTAL ANIMATION VIDEO
Major (s): Computer Science
Department: Computer Science, Mathematics, and Statistics
Faculty Mentor: Warren MacEvoy

Abstract: This presentation is an animation video, accompanied by music, which shows a series of six sequences of zooming into the Mandelbrot set, each sequence starting from a point that shows the entire set. Making the final video required using skills acquired in the fields of art, music, and computer science. Programming and graphics skills were used to write algorithms that convert to and from the RGB (Red, Green, and Blue) and HSV (Hue, Saturation, and Value) color spaces to create a series of revolving colors that are aesthetically pleasing. Skills learned in the Computer Science Operating Systems class were used to separate the processing of different frames of the animation out onto different processors, to be simultaneously generated on multiple-processor machines.

Presenter(s): **Ian Calegory and Nathan Wood**
Title: STOMP: DEPARTMENT OF ENERGY MODEL FOR THE SIMULATION OF THE CLEANUP OF HAZARDOUS WASTE
Major(s): Computer Science
Department: Computer Science, Mathematics, and Statistics
Faculty Mentor: Warren MacEvoy

External Funding Source: Battelle Memorial Institute, Pacific Northwest Division

Abstract: This is a project to model the cleanup of hazardous waste on the massively parallel Nvidia CUDA architecture. Chemistry formulas are used to determine the parallel computations that are to be carried out. The project showcases the significant

improvements in parallel computations that can run on a Tesla-architecture system, as well as a video card implementation that implements the CUDA architecture.

Presenter(s): **Cheryl Capshaw, Mike Peckham, and Spencer Rockwell**
Title: COMPARING AMERICAN POETS OF THE MODERN AGE
Major(s): English Literature
Department: Language, Literature and Mass Communication
Faculty Mentor: Julie Barak

Abstract: Each presenter will read a poem from a different poet whose works were affected by the modern age such as T.S. Eliot, e.e. cummings, Wallace Stephens or Robert Frost, and then briefly discuss the unique form and/or style each of the poets used to express one or more of the five elements related to this time period: Multiplicity, Diversity, Complexity, Anarchy and Chaos.

Presenter(s): **Shane Chatfield**
Title: EXTREME VALUE THEORY ANALYSIS OF AIR POLLUTION LEVELS IN THE GRAND VALLEY
Major(s): Statistics
Department: Computer Science, Mathematics, and Statistics
Faculty Mentor: Rick Ott

Abstract: There has been a growing trend around the world in which poor air quality is becoming a finable offense. Governments are placing strict guidelines on cities whose air quality is reaching critical and potentially dangerous levels. A little closer to home, here in the Grand Valley, we may be heading in the same direction. Due to the Grand Valley's geographical location it is prone to the buildup of smog. Extreme value theory is an important tool for establishing limitation guidelines and determining probabilities for air pollution reaching dangerous levels. Using data obtained by the Mesa County Health Department in conjunction with extrapolations techniques described by extreme value theory we will examine how likely it is that the Grand Valley will encounter dangerous levels of air pollution in the next century.

Presenter(s): **Heidi Chynoweth**
Title: A STUDY OF THE MATHEMATICS BEHIND JPEG
Major(s): Mathematics
Department: Computer Science, Mathematics & Statistics
Faculty Mentor: Phil Gustafson

Abstract: The digital age has brought about changes in every area of life including how we record important events and memories through images. What was once a two step process, capturing an image and developing an image, has become more complicated from a mathematical point of view. From computers and their limited storage space have sprung certain problems concerning images. The first complication consisted of how an image could be displayed on a computer as a matrix of fixed values. Once an image is represented numerically, or digitally, another issue becomes how to minimize the data storage requirements while still preserving the integrity of the image. A common way to deal with these questions is the JPEG compression. This presentation will address the mathematical processes used in a JPEG compression to analyze a digitized image, determine what information is needed to preserve the image and what can be discarded, and finally how the image will look when the needed changes have been made. In conclusion, while the digital age may have simplified image capture and storage for the photographer, it has created a new opportunity of analysis for others.

Presenters: **Aaron Clymer**
Title: BRICK: A MUSIC VIDEO
Major(s): Mechanical Engineering
Department: Physical and Environmental Sciences
Faculty Mentor: Barry Laga

Abstract: The presenter's music video *Brick* demonstrates his creative response to a project assigned in Introduction to Film Studies which required the class to show off their awareness of basic film elements like mise-en-scene, cinematography, sound, and editing. There were specific techniques the assignment required the presenter to weave into the framework of the video, including, among many other elements, a well-composed shot, a tracking shot, stop-motion, pan, tilt, parallel editing, meaningful use of depth of field, setting, lighting, and sound. The presenter's awareness of film history, film theory, and genre also shaped the production of the video. As for the narrative itself, the video is a creative imagining of *Ben Folds Five's* song "Brick" which describes a struggling relationship between a couple. The presenter has tried to convey the emotional reality of the narrator through the choice of imagery and editing.

Presenter(s): **Amey Collazo, Amanda Holman, Connie Jo Miles, and Nancy Mohrman**
Title: SURVEY OF CONSUMER BRAND AWARENESS
Major(s): Business
Department: Business
Faculty Mentor: Deb Parman

Abstract: A group of four students designed, administered, and analyzed results of a consumer brand recognition survey. Teams were allowed to select any brand icons and ask relevant questions of the consuming public about those brands. The survey was set up to compare competing company icons. A diverse panel of sixteen products and services from eight product categories were included in the survey, ranging from convenience items, sports drinks, all the way up to major purchases, cars. Respondents were initially asked if they recognized the company logo. If yes, more in-depth questions were asked about the specific brand. The survey was administered to 55 respondents during the week of February 3, 2010. SPSS Statistical Software was used to analyze the data collected from the survey and to generate cross tabulations based on respondent demographics. Major conclusions gathered from the survey were 1) discretionary purchase items command high recognition, 2) mascots induce high recognition, and 3) recognition does not necessarily indicate use of a given product.

Presenter(s): **Fred A. "Andy" Cook**
Title: THE EVOLUTION OF THE BUILDING ENVELOPE FOR GREATER ENERGY EFFICIENCY AND A LIGHTER CARBON FOOTPRINT
Major(s): Environmental Science and Technology, Environmental Science
Department: Physical and Environmental Sciences
Faculty Mentor: Tamera Minnick

Abstract: In the United States, prior to the 1970s, a building "envelope" consisted of wood-clad exterior walls with single-pane windows and a roof. The primary concern was to keep rain, snow and wind outside as much as possible. When it was cold outside oversized heaters inside were stoked with cheap energy and thermostats were cranked up to high. During the 1970s people began to realize that energy might not always be cheap and that the best way to fight rising energy costs is to conserve energy as much as possible. Today humans know that energy is not cheap and that burning carbon-based fuels in furnaces adds to global warming. Modern building envelope design is focusing on "green" materials and methods with the ultimate goal being a comfortable indoor living environment with the smallest possible non-renewable energy budget. In this paper the evolution of residential envelope design factors in the Western United States from the mid-twentieth century to present is examined, focusing on improvements to energy efficiency and reductions in $CO_2$ output.

Presenter(s): **Natalie Corbet and Laura Nichols**
Title: ART HISTORY: NEW YORK TRIP
Major(s): Art History
Department: Art
Faculty Mentor: Steven Bradley

Abstract: This past January, 17 students and two professors made a journey to New York City. Their mission was to experience the wonders of New York City and to visit New York's iconic art museums. New York City is a major commercial center for the United States. With this renowned reputation, New York City is a hot spot for the fine arts, fashion, and the performing arts. This trip was the perfect capstone to an educational journey. While in New York the group visited several art museums which allowed them to see works of art in person. For the past four years the presenters have been studying works of art in the classroom which has limited their experience. Viewing these pieces first hand has had an impact in the group's educational development. The trip included site seeing and subway riding which added to the New York experience. For this presentation a slide show highlighting the New York filed trip will be shown, including images that express their experience of New York. The presentation will also include pictures of the museums visited, works of art viewed, and famous New York destinations.

Presenters: **Cally Cripps, Ed Cart, Carl Nesbit, and Lyndsay Yerbic**
Title: WEB SITE DEVELOPMENT FOR A LOCAL NON-PROFIT
Major(s): Computer Information Systems
Department: Business
Faculty Mentor: Johnny Snyder

Abstract: The objective was to develop a website and database for a local non-profit company. This is an important project because it gives students the ability to help the community while at the same time getting real world experience. The first phase involved analyzing the company's current system using system's analysis and design methodologies. The second phase involved designing a website and a database that can be easily used by administrators and visitors to the site. The third phase involved constructing the website and database. A user manual was created to allow future administrators easy access to updating and modifying the web site. The system is very well documented in order to prevent confusion for future users. The outcome of this project also will be presented at the Association for Information Technology Professionals National Collegiate Conference.

Presenter(s): **Tammie Lee Crossen and the 2008 Mesa State College GEOL480 Summer Field Camp students***
Title: GEOLOGY OF THE LIBERTY CAP AREA OF THE COLORADO NATIONAL MONUMENT, WESTERN COLORADO
Major(s): Geology
Department: Physical and Environmental Sciences
Faculty Mentor: Richard Livaccari

Abstract: The Liberty Cap area is located in the east-central part of the Colorado National Monument. A popular hiking trail goes through this area. The Liberty Cap area has been previously mapped at a scale of 1:24,000 by Scott and others (2001). The researches have produced a larger-scale (approximately 1:4,000) map of this area. Scott and others (2001) also drew a cross-section through the Liberty Cap area (B-B' of Scott and others, 2001). The team drew a cross-section along the same line based on its field mapping data. With the goal of improving the fine-scale resolution of the Laramide-age (70 to 50 Ma) geological structure of this area. The most obvious structural feature of this area is the large, NE-dipping flatiron composed of Wingate and Kayenta Formations. This flatiron dips about 44° NE. At the northeastern base of this flatiron the dip increases to 76° NE. This dip increase is inferred to be related the presence of a blind reverse fault found along the base of the flatiron. Along the upper parts of the flatiron, down-dip slickenlines are found in the Wingate Formation. Just above the outcrops of Wingate Formation, a small sliver of Chinle Formation is found.

Precambrian basement rocks are found above the Chinle Formation. The Redlands reverse fault is located just above the Chinle outcrop. Slickenline data suggest that this fault is a dip-slip structure with no strike-slip component.

The cross-section improves upon the Scott and others (2001) cross-section by:

1. Using the correct thickness of the Kayenta Formation. The thickness of the Kayenta Formation is shown as 160 ft in the B-B' cross-section of Scott and others (2001). The correct thickness is closer to half of that or about 80 ft.
2. Placing a blind reverse fault at the base of the Wingate-Kayenta flatiron based on the increase of dip from 44° to 76° NE at the base of the flatiron.
3. Correctly showing the dip of the flatiron as about 44° NE. Scott and others (2001) showed the dip of the flatiron increasing upward to about 75° NE. Dips this steep are not recognized in the upper part of the flatiron.
4. Showing the thin sliver of Chinle Formation located just beneath the Redlands reverse fault and a second strand of the Redlands reverse fault that must occur at the base of this Chinle Formation sliver.
5. Recognition of perhaps a third strand of the Redlands reverse fault by the presence of highly deformed Wingate Formation found below the sliver of Chinle Formation.

* *Prescott Bell, Whitney Bonner, Laura Buffington, Dustin Czapla, Patrick Ealey, Courtney Groff, Ericka Harper, Bill Hall, Stanley Klassert, Zach Logan, Ty Long, Jeromy McChesney, Carl McIntyre, Jamie Newlon, Jacob O'Rear, and student assistant Gary Plemons.*

Presenter(s): **Stephanie Dickey**
Title: NOTHING HAS CHANGED: INCREASED UNEMPLOYMENT AND THE GENDERED DIVISION OF HOUSEWORK
Major(s): Sociology
Department: Social and Behavioral Sciences
Faculty Mentor: Abigail Richardson

Abstract: Although there have been a multitude of strategies generated to deal with the second shift, what gets done and by whom continues to be determined by gender. Women remain to be the key employees of the second shift as the gap in pay in the public sphere persists. What happens when something outside of either partner's control alters the second shift into being the only shift the male bread-winner can get? The goal of this study was to see how the distress of the economic downturn had affected people as it relates to layoffs and the second shift. The data collection focused on Mesa County, located in the far west desert of Colorado. In the summer of 2009, 350 people were surveyed, approximately 5% of the county's unemployed, and used a convenience sampling method with the county's workforce center as the central location. Despite the fact that the majority of the sample was male, the researcher's preliminary analysis indicates that though men's available time had become more abundant it was not transferred into the second shift. This quantitative research further contributes to an understanding of the entrenchment of gender dynamics in household labor.

Presenter(s): **Cy Dinnel, Garrett Jenson, Don Latner, and Wade Sullivan**
Title: LOCKDOWN ALERT NETWORK (LAN)
Major(s): Technical Integration, Process Technology, Machining & Manufacturing Technology
Department: Manufacturing Technology, Technology Integration, WCCC
Faculty Mentor: Bill McCracken

External Funding Source: National Science Foundation

Abstract: Problem Statement: The rise of school violence and security issues has facilitated the need for security measures in schools. Colorado has seen an explosive rise in the number of violent crimes and school related threats. This project aims at creating an effective tool to combat these threats. Motivation: An alert system

in schools will have the potential to save the lives of students, teachers and faculty members. The quick response nature of this project will give those in classrooms the edge necessary to deal with security issues. Approach: Computer based alarm trigger over a packet-switched network; Audible alarms with LED strobes. Demonstration: The ability to hit a button on a computer to activate an alarm system that will rapidly notify all students and staff of potential security threats. This will allow a campus to enter a lockdown mode rapidly to seal off any internal or external threat. Results: Work in Progress. Conclusion: Change the way we school security is approached.

Presenter(s): **Darryl Divinny, Justin Craig, and Jay Glenn**
Title: STIRLING ENGINE GENERATOR
Major(s): Technology Integration, Machining & Manufacturing Technoology
Department: Manufacturing Technology, Technology Integration, WCCC
Faculty Mentors: Bill McCracken, John Sluder

External Funding Source: National Science Foundation

Abstract: The presenters have chosen to demonstrate a small Stirling Engine used to produce electricity from heat. The significance of the project is to show possibilities for renewable and alternative energy solutions. When working properly, a Stirling Engine should be able to create energy from a temperature differential. This project will incorporate all aspects of STEM, from the science of expanding gases, the technology of electricity, and the engineering and mathematics of machining.

Presenter(s): **Meghan Donohue, Holly Malone, Tyler Preszler, and Conrad Tombleson**
Title: FAMILY PERCEPTIONS OF HOSPICE NURSING CARE IN AN INPATIENT FACILITY
Major(s): Nursing
Department: Health Sciences
Faculty Mentor: Alma Jackson

Abstract: Quality care at the end of life is the right of all human beings. There have been many studies regarding families and end-of-life care, but none that focus on nursing interventions during that care. This study examines the perceptions of family members regarding end-of-life care and interventions provided by nurses in inpatient hospice facilities. The purpose of the study is to ascertain ways the nursing staff in inpatient hospice facilities can improve their interventions to enhance the quality of family focused end-of-life care. The goal is to understand the family's experience of hospice care. Therefore, this research proposal is based on qualitative phenomenological research design. Purposive sampling will be used to ensure that both the positive and negative aspects of the sample are represented. The sample will be representative of the inpatient hospice beds in Grand Junction, Colorado. A total of ten individuals will be selected and interviewed. It is hoped that the rich descriptions of the lived experience of the families will bring to light areas of opportunity for training of nurses in inpatient hospice facilities.

Presenter(s): **Tyler A. Downing**
Title: A MATHEMATICAL MODEL OF SALINITY IN THE COLORADO RIVER
Major(s): Mathematics
Department: Computer Science, Mathematics and Statistics
Faculty Mentor: Dan Schultz-Ela

Abstract: The Colorado River's upper river basin reaches from its source near Grand Lake to slightly south of Lake Powell. The United States Government is very concerned with the amount of salinity the river collects in the upper basin, and has developed a large geological project to reduce this level. The researcher is modeling a segment of the Colorado River at Glenwood Springs, Colorado. The researcher's area of interest is where the Roaring Fork River joins the Colorado. In this area of study, the Yampah Hot Springs, which is has high levels of salinity, outputs into the river. There is also

a wastewater plant that drains into the river in that area. The researcher is using differential equations to model the rate of change of salinity in the river over time. This includes developing mathematical systems for modeling the mean flow rate and salinity rates. The researcher will be forecasting salinity levels and comparing them to existing statistical models developed by the US Geological Survey. This important issue is on the forefront of many scientific projects in the state and is extremely necessary for all downstream river users.


Presenter(s): **Kristina Drawbridge**

Title: A COMPARISON STUDY OF THE CENTER MASS OF THE MECHANICS OF TWO INBOUND SOCCER THROWS
Major(s): Physics
Department: Kinesiology
Faculty Mentor: William Sands


Abstract: Introduction: Two common types of inbounds soccer throws are the step-throw and the standing-throw. In both cases, both feet must remain on the ground as the ball is brought overhead in a forward motion. Purpose: The goal of this hypothesis generating study was to determine which method may be more effective in a trained female soccer athlete. Methods: A Vicon™ Motion Analysis(V1.4.116) system was used to investigate two trials of each throw-type performed by one female subject (Height=158.5cm, Mass=55.45kg, Age=21). The anatomical marker set included 43 reflective markers (CAD Plug-in Gait Model) for center of mass calculations. Data were collected in three dimensions using 10 high-speed infrared cameras (200Hz). Data were then exported for further analyses. Means of the two trials for each throw-type (ball launch velocity and trajectory) were calculated. Results: Greater release velocity in the step-throw (Trial 1 = 7.4 $m.s^{-1}$, 19.8 deg; Trial 2 = 10.0 $m.s^{-1}$, 39.6 deg) as opposed to the standing throw (Trial 1 = 8.4 $m.s^{-1}$, 36.4 deg; Trial 2 = 8.8 $m.s^{-1}$ 35.0 deg) was observed. The step-throw showed a better performance release velocity with greater variability. Conclusion: The step-throw appears to be the superior technique; thus, future research should investigate this promising technique.



Presenter(s): **Janine Dyke**

Title: THE STRESS RESPONSE OF TUB BATHING ON PRETERM INFANTS
Major(s): Nursing
Department: Health Sciences
Faculty Mentor: Alma Jackson


Abstract: In the past thirty years, advances in technology for study of brain function and sensory systems of the fetus, neonate, and infant provided extensive knowledge regarding neurosensory development (Graven, S.N. & Browne, J.V., 2008). Anatomy of the sensory receptors, such as eyes, ears and nose develops early in gestation. However, myelinization development of the central nerve pathways is delayed in infants under the gestational age of 37 weeks. The stress and environment in the Neonatal Intensive Care Unit (NICU) exposes infants to many stimuli which plays a major role in the altered neurodevelopment in preterm infants. The proposed research examines that the effects of daily routine caregiver activities such as tub bathing can impact preterm infant's physiological and behavioral responses as evidenced by vagal tone and heart rate responses. This study constitutes a convenience sample that will be randomly assigned to a control and experimental group. The researchers hypothesize that there will be no significant difference in stress responses among NICU infants receiving minimal bathing techniques versus those that do not. Many factors can affect the growth and development of preterm infants. The design of the study will focus on the preterm infants' vagal tone responses before, during, and after tub bathing procedure. Data collected will help evaluate stress and behavioral response on growth and development of preterm infants.

Presenter(s): **Tom Echtermeyer**
Title: ORIGIN OF UPHEAVAL DOME: SALT DOME OR IMPACT STRUCTURE
Major(s): Geology
Department: Physical and Environmental Sciences
Faculty Mentor: Andres Aslan

Abstract: The origin of Upheaval Dome has been a long standing controversy. Upheaval Dome is located in Canyonlands National Park in Utah. Geologists have been studying this structure for over 75 years trying to figure out what created it. The ideas range from a crypto volcanic origin to a pinched off salt diaper to a meteorite impact. It is now believed that a pinched off salt diapir or a meteorite origin is most likely. Shocked quartz was found by Buchner and Kenkmann (2007) and there has been no evidence of salt found in the area of the crater core to prove that it is a salt diapir. These shocked quartz grains are a very strong indicator that this structure was created by a meteorite impact. The researcher's ongoing field work will focus on deformation features in the crater so that he can relate their appearance to other research that has been done. He will also be looking for planar deformation features which could provide additional support for a meteorite impact.

Presenter(s): **Cassinda Fergeson**
Title: ALEXANDER MUG
Major(s): Studio Art
Department: Art
Faculty Mentor: Jake Allee

Abstract: Alexander Mug is an expression of 2D art on a 3D surface. Comics are a passion of the artist's, but the standard format of 2D drawings has been overdone. Comics in a 3D form is a new way to reinvent something in an over stimulated world. More than anything that artist wants to share her passion with others in a way that hasn't been done yet. This mug is just a stepping stone in this endeavor.

Presenter(s): **April Flowers, Kathryn Grice, and Sarai Silva**
Title: NURSING THE LANGUAGE BARRIER
Major(s): Nursing
Department: Health Sciences
Faculty Mentor: Alma Jackson

Abstract: This research proposal studies the effects of providing Spanish speaking only patients with Spanish speaking nurses, versus providing Spanish speaking patients with nurse-patient translation. The literature indicates that non-English speaking patients are at a greater risk for medical errors, unnecessary diagnostics, multiple hospital admissions and longer hospital stays. This quantitative quasi-experimental study will examine patient perceived nurse-patient communication and patient perceived post surgical outcomes. It is the belief of the researchers that a significant statistical difference between the control and quasi-experimental groups will demonstrate that Spanish speaking only individuals receiving care from a Spanish speaking nurse will report improved communication at discharge and better outcomes at one month, three months and six months after discharge, than the control group. Effective communication has not only been identified as important to the nurse-patient relationship but is also seen as crucial to the attainment of good health care. Based on this knowledge and the growing Spanish speaking only population this research seeks to address methods to facilitate more effective communication between Spanish speaking only patients and their nurses.

Presenter(s): **Jason L. Franklin**
Title: SHOTGUN BLUES
Major(s): English
Department: Languages, Literature and Mass Communication
Faculty Mentor: Barry Laga

Abstract: *Shotgun Blues* is a 13 minute short film. Braden, a typical 7-year old, spends the day playing in the backyard trying to stay out of trouble with his mother. Everything is going well until Jack Snake strolls into town. Can Sheriff Braden save the day? This film is family friendly and a tribute to a child's imagination.

Presenter(s): **Ellen Garcia and Nate Keck**
Title: EFFECTIVE WARM UP TECHNIQUES RESULTING IN FASTER STANDARD BAT SWINGS
Major(s): Biology
Department: Kinesiology
Faculty Mentor: William Sands

Abstract: Many baseball studies have been done analyzing the effects of single condition light vs. heavy bat warm up swings on subsequent bat swing speeds. The purpose of this study was to compare three combinations of heavy(H), light(L), and regulation(R), weight bats on R bat swing speed. Thirteen male varsity baseball athletes performed three randomly assigned condition combinations of bat weights in warm up swings during three sessions separated by at least six hours: HLR, LHR, RRR. Each condition consisted of five trials of each bat weight with two minutes rest between weight conditions. Bat velocity was determined by computer video digitizing (Photron Fastcam Viewer 2.2.5.0) from high-speed video (1000Hz) of the marked end of the bat over a meter stick. Analysis consisted of trials reliability (Cronbach's Alpha), descriptive statistics and oneway repeated measures ANOVA. The results showed excellent reliability, all $\alpha>0.90$, and group means±SD: HLR=35.2±3.5 $m.s^{-1}$, LHR=35.3±3.7 $m.s^{-1}$, 35.0±3.9 $m.s^{-1}$ which showed no statistical difference between groups all $p>0.05$. The experiment demonstrated that swinging different combinations of heavy and light bats had no influence on regulation bat swing speed.

Presenter(s): **Richard Geng, Nate Keck, and Bryan Whitesides**
Title: COMPARISON OF THE PELVIC CONTROL BETWEEN SHOD VERSUS BAREFOOT RUNNING
Major(s): Kinesiology, Exercise Science
Department: Kinesiology
Faculty Mentor: William Sands (Non-Faculty Mentor: Bryan Whitesides and Nate Keck)

Abstract: A common observation among runners with low back or hip pain was unilateral pelvic instability in the frontal plane. The purpose of this study was to compare pelvic instability in the frontal plane between shod and barefoot running, maximum strength and endurance of the hip abductors. Three men (39±5.89yr, 173.27±2.52cm, 81.97±5.12kg) and seven women (25.71±11.08yr, 168.41±4.82cm, 65.44±7.67kg) were assessed. The test consisted of a warm-up run, from one to three minutes on a Fitnex™ treadmill, followed by a shod run and bare foot run, ranging from 30 seconds to two minutes each. Each run was videotaped using a Photron™ (FASTCAM 1280) high-speed (250 Hz) camera. Frontal plane pelvic stability (angle change of the posterior superior iliac spines) was determined using Photron FastCam™ software. Subsequently, strength and endurance tests of the hip abductors were performed using a Nicholas Manual Muscle Tester™ (3 trials bilaterally, maximum strength) and 4.55kg ankle weight lifting repetitions *(endurance)*. Results: There was a statistically significant increase in pelvic stability when running bare foot compared to shod running. Future research should attempt an increased sample size and include electromyography of the hip abductor.

Presenter(s): **Richard Giglio, Eric Gore, and Rob Kowalsky**
Title: CONTRACT MANAGEMENT SOFTWARE
Major(s): Computer Science
Department: Computer Science Mathematics and Statistics
Faculty Mentor: Arun Ektare

Abstract: The researchers intend to present a contract management program created for the Guild of Design. This is a class project in a software engineering course. Since this is a project that involves working with an outside company, this provides valuable real life work experience as well as providing innovation to the way the company functions. The program and how it functions for people to view will be shown.

Presenters: **Mark Gorenc and Beau Taylor**
Title: ANALYSIS OF SUBSURFACE DATA TO CORRELATE SAND BODIES OF THE WILLIAMS FORK FORMATION WESTERN COLORADO
Major(s): Geology
Department: Physical and Environmental Sciences
Faculty Mentor: Rex Cole

Abstract: The Cretaceous Williams Fork Formation of western Colorado and eastern Utah represents a series of river sediments that fed from the Sevier Mountain Range into the Western Interior Seaway. This geologic formation is significant in Colorado and Utah for its rich supply of petroleum products. In order to gain a better understanding of the Williams Fork Formation petroleum industry well logs were used to correlate rock type intervals throughout this formation. The data used begins in Palisade, Colorado and ends near Rangely, Colorado. The cross sectional view of this formation provides a better understanding of its economic significance. From this study we obtain knowledge that will lead to the more efficient extraction of oil and gas products from this and other similar geologic formations.

Presenter(s): **Mark Gorenc**
Title: ANALYSIS OF ANOMALOUS DRAINAGES IN THE PARK AND GORE RANGES IN NORTHERN COLORADO
Department: Physical and Environmental Sciences
Major(s): Geology
Faculty Mentor: Andres Aslan

Abstract: The Park and Gore Ranges of northern Colorado have undergone a significant amount of transformation since their initial uplift during the Laramide Orogenic event. Since Laramide time, barbed drainages formed. These features indicate some type of post-Laramide, perhaps Miocene, structural uplift that shifted the former divide west. This uplift caused migration of ancient Colorado River tributaries. These newly formed drainages as a result of stream capture changed the flow of tributaries from eastward to southwestward. The sequence of uplift and stream capture provides a preliminary explanation to the evolution of anomalous patterns of drainages in the Park and Gore Range.

Presenter(s): **Josh Graham, Timothy Ball, Richard Giglio, and Molly McGrath**
Title: BEAU TUBE PRODUCTIONS
Major(s): Graphic Design (Animation), Computer Science
Department: Art
Faculty Mentor: Carolyn Quinn-Hensley

Abstract: Beau Tube is a collection of short animations that include characters, environments and situations that are specific to Mesa State College. The purpose of these animations is to create a sense of comfort and understanding of the college experience for incoming freshman. We will be presenting the creation process utilized in the development of characters and episodes for the Beau Tube animations. It is beneficial to show the amount of work, research, development, and understanding

necessary to create a coherent animation accurately directed towards its intended audience. The message we intend to portray to the public is the excitement, initiative, and the work ethic that is required by the animators and designers to create an astounding animation.

Presenter(s): **Justin Grant, Kelsi Middleton, Ash Thomas, and Laura Zapata**
Title: CFD AND PARTICLE IMAGE VELOCIMETRY IN DESIGN OPTIMIZATION
Major(s): Mechanical Engineering
Department: Physical and Environment Sciences
Faculty Mentor: Tim Brower

External Funding Source: National Science Foundation

Abstract: Design optimization is a common practice in industry. Mechanical Engineering (ME) students and ultimately their employers will benefit from learning the design optimization process early in their careers. In fluid mechanics engineering, product development cycles begin with a design. This initial design is then optimized using both Computational Fluid Dynamics (CFD) and prototype testing. Once the CFD analysis is performed the potential design is prototype tested. Available technology allows an undergraduate ME Design Team to inexpensively conduct a CFD analysis, manufacture a prototype and conduct a subscale test using Particle Image Velocimetry (PIV) in a real-world fluid engineering project. The ME Design Team transfers designs into a CAD format to be analyzed with the CFD tool and utilizes a 3D printer to fabricate a flow insert for the ePIV. CFD and ePIV video results are then used to educate students about the value of technology aided tools in the design process. Our demonstration will show the ePIV machine and all of its components. Testing of various prototypes will take place in real time and displayed for everyone to learn how the process works. Videos and software will also be available for viewing.

Presenter(s): **Courtney Groff**
Title: COLORADO PLATEAU UPLIFT: VESICULAR BASALT PALEOALTIMETRY COMPARED WITH RIVER INCISION HISTORY OF THE CENOZOIC
Major(s): Geology
Department: Physical and Environmental Sciences
Faculty Mentor: Andres Aslan

Abstract: The new method of determining paleoelevation from vesicular basalts is creating a more accurate interpretation of the uplift timing of the Colorado Plateau. The Colorado Plateau stretches around the corners of Colorado, New Mexico, Arizona and Utah also known as the Four Corners area and has an average elevation of about 2.2km. The Colorado River is the main drainage of the plateau with the southwest corner being comprised of the Grand Canyon which the Colorado flows through. Controversy over the exact timing of the Cenozoic uplift of the plateau has lead to contrasting beliefs of "early" and "recent" uplift episodes. Basalt vesicles form in direct response to atmospheric pressure. Therefore, measuring basalt vesicles can determine paleoelevation at the time of lava emplacement, and when compared with the modern elevation of the basalts, the amount of uplift since emplacement is determined. The researcher will be calculating incision rates of the Colorado and Gunnison rivers in the vicinity of Grand Mesa basalt samples where paleoelevation has been determined, as well as a few other locations in New Mexico, Arizona and possibly Utah. If the measured amount of river incision is proportional to the amount of uplift it suggests the incision was driven by the uplift of the Colorado Plateau.

Presenter(s): **Maro Hager and Jessica Geddes**
Title: THE FABRIC OF LIFE – A FIBERS SHOWCASE
Major(s): Art, K-12 Teaching Licensure
Department: Art
Faculty Mentor: Deborah Snider

Abstract: Artists working in fibers and fabrics around the world are stretching the boundaries of creativity through non-traditional applications and embellishments. The Fibers program in Mesa State's Art Department offers four semesters of Fibers Workshops. The first semester (ARTS 231) gives students a broad sampler of how to work with fibers and fabrics including Duck Tape™ wearables that include an old or contemporary master's style of art; functional and tapestry weavings; batik, tie-dye, and discharge applications/removal of color; felt collage and needle felting; and fabric collage and art quilting. Subsequent courses allow students to work at intermediate and advanced levels on projects of their own choosing, by contract. This presentation will feature work from numerous students in all levels of this spring's class. Students will be demonstrating their techniques and processes.

Presenter(s): **Dustin Hoppe, Christian Bassett, and Jon Lusk**
Title: DESIGNING AND DEVELOPING A COMPUTER INVENTORY SYSTEM FOR THE WINDOWS PLATFORM
Major(s): Computer Science
Department: Computer Science, Mathematics, and Statistics
Faculty Mentor: Arun Ektare

Abstract: The main objective of this software engineering research is to develop a project for a local business and take the project through the entire software development lifecycle. Therefore, the researchers decided to design and develop a computer inventory program for Focus Technology Group. As a local medical software support company, Focus often performs software installs on computer networks in which they know very little about the network topology. The goal was to provide a computer program that could be run on a single computer and build a dataset containing information regarding all the computers on the network. The biggest challenge of the project is to build a complete and correct list of computers on the network without actually knowing how many computers are on the network. Once a list of computers is built, each computer will be queried for a set of information and the information will be saved for later use. A second aspect of the project is to design a website for reporting in which the data from the computer can be uploaded and analyzed. Ideally, this website will provide in interface to understanding why software installs are successful or unsuccessful and help Focus recognize trends in their data.

Presenter(s): **Daniel Hurshman, Lauren Atkinson, Jack Chipchase, Morgan Gagliardi, Apryl Ott, and David Tarr**
Title: TOCCATA
Major(s): Music Performance, Music-Elective Studies in Business, History
Department: Music
Faculty Mentor: Darin Kamstra

Abstract: Carlos Chavez is said to be the father of percussion composers. He was a successful young pianist who found a niche for composing. One of his most famous ensemble pieces, *Toccata*, was among the first percussion ensemble pieces written, and is still one of the most highly played. He wrote this piece at the time he was conducting the Chicago Symphony Orchestra at the request of his personal friend John Cage. Program notes highlighting the historical significance of this work will be provided to the audience during its performance by the presenters, all of whom are members of the MSC percussion ensemble.

Presenter(s): **Douglas Jacob**
Title: PASSWORD ANALYSIS USING PROBABILITY AND INFORMATION THEORIES
Major(s): Mathematics
Department: Computer Science, Mathematics, and Statistics
Faculty Mentor: Warren MacEvoy

Abstract: All of us use passwords every day to secure our information, and even our money, but how secure are our passwords? In an age where a stolen or cracked password is all an identity thief needs to steal your identity, choosing good passwords and protecting them is crucial. In this presentation, the presenter will explore password security using probability and Information Theory. The more information we know about an individual, the easier we can crack his or her passwords. How, then, can we determine what information is important and what is not? Information Theory gives us some of the tools we need for such a task. Probability Theory does as well: by analyzing text produced by the individual, such as a Facebook page, we can generate frequency counts of letters and words. Using a combination of the information gathered from both of these methods, we can potentially generate a list of possible (perhaps highly probable) passwords. By understanding one way in which passwords can be broken, the presenter hopes to provide awareness and possibly a solution to protect the average computer user.

Presenter(s): **Douglas Jacob, Rebecca Arisawa, and Melinda Golden**
Title: FRAMING ORDER CALCULATION SOFTWARE AND CUSTOMER DATABASE DESIGNED FOR BUDGET FRAMER
Major(s): Computer Science
Department: Computer Science, Mathematics, and Statistics
Faculty Mentor: Arun Ektare

Abstract: The presenters will demonstrate the Framing Order Calculation Software and Customer Database, which was designed for Budget Framer, a local shop that designs custom framing for artwork. The Estimate Calculator streamlines the ordering process for employees of the shop, allowing them to enter measurements for the work to be framed and the frame(s) selected by the customer. The software then quickly and accurately produces an estimate for the order. The software also helps the shop maintain a list of customers with their orders and contact information. This facilitates communication between the shop and its customers. The project was designed following the principles of Software Engineering, specifically the Waterfall and Rapid Prototype models for software development. Lines of communication between the Client and the development team were maintained throughout the development cycle, and careful consideration was given to user requirements. Following these models and implementing our software in Java, a highly popular programming language, provided excellent experience and insight into the current software industry.

Presenter(s): **Jeffrey Johnson**
Title: THE EASE OF WORKING FROM GREY
Major(s): Studio Art
Department: Art
Faculty Mentor: Joshua Butler

Abstract: This presentation will demonstrate a drawing technique that has greatly impacted the artist's style and success in drawing, painting, and other media. The artist will be actively illustrating the advantage of being able to draw with either a pencil or an eraser from the beginning of a project. The artist will be showing this process exactly as it occurs in the studios here at Mesa.

Presenter(s): **Kristina King, Sheri Brittingham, Brittany L. Combs, James Caddy, Krista Davis, Cassinda Fergeson, and Jacob Franck**
Title: LINE BLEND AND TRIAXLE EXPERIMENT
Major(s): Art
Department: Art
Faculty Mentor: Jake Allee

Abstract: Mesa State students under the instruction of their professor Jake Allee learned the basics for formulating a ceramic glaze. Students learned about the three basic elements of a ceramic glaze through the use of line blends and triaxle blends on ceramic test tiles. Line blends were used by students to experiment with two glaze forming materials. The two ingredients were mixed and applied to a series of eleven tiles to create a spectrum of possible glaze combinations in increments of ten percent. The two pure materials are arranged at each end of the line blend and the nine varying amounts of the two materials connect the blend. Students were also shown the use of triaxle blends where students were able to combine three glaze forming materials in varying degrees. Triaxle blends are a triangular arrangement of tiles instead of a line, used to exhibit the characteristics of the percentages of three materials in which the corners of the triangle are the pure forms of the three glaze formers. Line blends and triaxle blends allow for quick experimentation in glaze calculation. Ingredients can be isolated and their functions within a glaze can be better understood and utilized in the creation of new glazes.

Presenter(s): **Lynnsey Lambrecht**
Title: THE STRUCTURE AND INSPIRATION OF *JOURNEY THROUGH DREAMS*
Major(s): Music Education
Department: Music
Faculty Mentor: Darin Kamstra

Abstract: The presenter will discuss an original music composition entitled *Journey Through Dreams* that was composed for four-mallet vibraphone. Using visual aids, the presenter will lead the audience through the compositional process and structural form of the composition. This piece has four main sections that follow the path of a dream that a person might experience. The tonality and motives change throughout the four sections of the piece, which represent the changing of moods that occur in a dream. The middle section includes a musical quote from Johannes Brahms' *Lullaby* to contribute to the ambiance of a dream. Near the end of *Journey Through Dreams*, the dream takes a fast and exciting tempo to achieve a climatic point. The piece ends with the vibraphone playing an alarm clock sound that wakes up the dreaming person. The presenter will conclude by playing a recording of the composition to allow the audience to hear it after learning of the different affects represented throughout the piece.

Presenter(s): **Tor Larson**
Title: SIMULATED INK AND STONE
Major(s): Environmental Science and Technology, Environmental Science
Department: Art
Faculty Mentor: Jake Allee

Abstract: The artist has a love for black humor, and finds that a lot of ideas for his artwork have some sort of slightly disturbing undertones. Many years ago the artist found that he enjoyed working with clay due to the endless possibilities it provides as an artistic medium. Everything is possible with fire and clay. Recently the artist has been experimenting with decoration over glazes and has found that it is a perfect canvas to simulate ink drawings by using oxides as colorants. Throughout the process the artist has found that his loose illustrations have shadowed one of his favorite illustrators, Ralph Steadman. The artist has tried to make the images interact with the use of the form so that the comedy comes through when the object is used for what it is intended. The artist wants all of the objects to be usable artwork, and hopes they will be showcased in everyday life.

Presenter(s): **Zachary Logan**
Title: CREATING A GIS DATASET FOR GODDARD CREEK/COLUMBINE PASS, WESTERN COLORADO
Major(s): Geology
Department: Physical and Environmental Sciences
Faculty Mentor: Andres Aslan

Abstract: Existence of well-rounded river gravels, and widespread angular basalt boulders is a topic of concern along the southern Uncompahgre Plateau. These river gravel packages are at elevations of over 9000 ft, and composition of their clasts does not resemble the geology of the immediate surrounding area. In an effort to learn more about the ancestral rivers in this region, U.S. Forest Service-funded excavation projects helped to collect in-situ clasts from three main areas: Columbine Pass Gravel Pit, Goddard Creek, and Grays Cow Camp. In an effort to build upon existing studies in the region, geologic maps for the entire southwestern corner of Colorado were reviewed. The idea was to find one or more origins for the existing river gravels and basalt clasts, then try to explain a method of deposition. Key suspected source areas are the West Elk Mountains, and the San Juan Mountains; with river gravels associated with the ancestral Gunnison and/or Uncompahgre Rivers. Although these regions could possibly explain the basalts in question as well, the method of deposition of these basalt boulders remains in question. In an effort to revise, existing interpretations, as well as create new interpretations, a GIS database is being constructed using a compilation of current data. Such a dataset is crucial in the organization of future fieldwork efforts, as well as for further insight into the late Cenozoic drainage development, structure, and depositional environments, of the Colorado Rockies. Understanding these ancient river deposits is also important to the U.S. Forest Service because the gravel is used for maintaining Forest Service roads.

Presenter(s): **Michael Shamus Mahon**
Title: THE HISTORY OF PIRACY AND HOW IT SHAPED THE MODERN WORLD
Major(s): Psychology-Counseling Psychology
Department: Social and Behavioral Sciences
Faculty Mentor: Luis Lopez

Abstract: Research will be presented on the history of piracy from that of ancient times through the present. The presenter will detail three main eras: Ancient- including piracy in the Mediterranean and Aegean seas, Middle Ages- including the piracy of the Vikings and Muslims, and finally, piracy in the age of discovery also known as "the golden age of Piracy". The presenter will then briefly touch on piracy in the modern era. If time permits, the presenter will highlight some brief biographies of the world's most famous pirates, somewhat of a pirate's top ten.

Presenter(s): **Ashley Mates**
Title: PRESENTING THE OTHER: A LOOK INTO THE PRESIDENTIAL RHETORIC BETWEEN "US" AND "THEM"
Major(s): Political Science
Department: Social and Behavioral Sciences
Faculty Mentor: Justin Gollob

Abstract: This paper examines the political rhetoric surrounding the labels of terrorist states. By comparing President Bush's speeches to Iranian President Ahmadinejad, the presenter explores the relationship between the "Us and "the Other." While most of the literature focuses on why nations build "the Us" and "the Other," little attention has focused on the proclaimed "Other's" response. By using Atlas/TI, a in-depth qualitative analysis software program, a better explanation of this phenomenon is achieved through this research.

Presenter(s): **Britney McKelvey**
Title: THE IMMATURE STAGES AND LIFE HISTORY OF *OLERIA SOLIDA* (LEPIDOPTERA: NYMPHALIDAE) IN NORTHEASTERN ECUADOR
Major(s): Biology
Department: Biological Sciences
Faculty Mentor: Tom Walla

Abstract: The research team investigated the life history and immature stages of *Oleria solida* (Lepidoptera: Nymphalidae) in northeastern Ecuador. Adult females oviposited on *Solanum evolvulifolium* (Solanaceae) and larvae were reared exclusively on this species. Extensive collection showed no other host species at the study site. Eggs were laid singly on the bottom sides of leaves, or on epiphytic moss or lichen close to the host plant. The researchers described 5 larval instars and measure development time from oviposition to adult as 53 days. Life history characteristics and behavior are discussed in relation to the other members of the Ithomiini tribe.

Presenter(s): **Laverne Lenita Megee**
Title: RADIOCARBON DATING: HISTORY, METHODS, USES, AND RELATIONSHIP TO OTHER RADIOMETRIC DATING METHODS
Major(s): Geology
Department: Physical and Environmental Sciences
Faculty Mentor: Andres Aslan

Abstract: Radiocarbon dating has limited use. Which limits are justified is addressed. What assumptions, recommendations, and significant errors are made in radiometric dating? The published half-life of the isotope, $^{14}$C, has been modified and numerous other ages of the half-life found before using the current age. The calculated half-life of $^{14}$C may need to be adjusted again. My research includes history, methods, appropriate use, and relationship of radiocarbon dating to other radiometric dating methods. Anomalous dates regarding radioactive carbon in fossils and diamonds are addressed. An attempt is made to answer why some dates in disagreement with other age dating methods. There appears to be something wrong with $^{14}$C radiometric dating methods and its assumptions. Variations in magnitude of cosmic rays could easily have affected the rate of $^{14}$C being produced in the outer atmosphere, such that concentrations of $^{14}$C consumed by living creatures would have changed. Radioactive half-life decay rates may not be constant. Induced radioactivity and evidence of accelerated decay exist. Many of these observations are applicable to other types of radiometric dating. Changes may need to be made in the theory, mathematical formulas and/or use of radiometric dating as a whole.

Presenter(s): **Larisa Merrell**
Title: FINITE GROUPS UNRAVELED
Major(s): Mathematics
Department: Mathematics, Computer Science and Statistics
Faculty Mentor: Phil Kavanagh

Abstract: Finite groups are structures that are relevant in many areas of study outside of mathematics, such as physics and chemistry. Yet there are many finite groups that are still not fully understood and still more that have not even been identified. Representation Theory and Character Theory are branches of mathematics that were created to study the properties of finite groups using another area of mathematics that is already well understood, Linear Algebra. A representation of a group is a homomorphic mapping from the given group to a general linear group, GL(V), where V is a vector space and the character of a group is the sum of elements in the diagonal of the matrix created by the associated representation. These primary definitions will start our journey through some basic properties of finite groups and we will conclude our journey with Burnside's Two Prime Theorem. This theorem is simple but essential for the study of finite groups and is only the beginning of what Representation Theory and Character Theory can unravel when it comes to the mysteries of Finite Group Theory.

Presenter(s): **Daniel Messano**
Title: STARTING A SOFTWARE DEVELOPMENT COMPANY
Major: Computer Science
Department: Computer Science, Mathematics and Statistics
Faculty Sponsor: Warren MacEvoy

Abstract: The transition from a student developing software for professors to a businessman successfully selling popular software is a rough one. This presentation will highlight the rough road and offer some pointers to creating a good software company. All the tips and insight were obtained through the Independent Study and Mobile Computing classes taken at Mesa State College. Lastly, the presenter will cover the programs that Microsoft is offering to startup companies. These programs can provide free and legal software.

Presenter(s): **David Miller**
Title: STICKS AND STATISTICS
Major(s): Mathematics, Statistics
Department: Computer Science, Mathematics and Statistics
Faculty Mentor: Rick Ott

Abstract: "What is the probability that X happens?" This is a fundamental question that is asked often in statistics and in everyday life. Whether the question is if a business decision is likely to turn out well or what the odds of a favorite team winning a game are going to be, these types of questions are asked often. The probabilities of these examples have many variables and usually they are quite complicated to compute. But, some probabilities are interesting and fun to ponder. The presenter will answer the question: "If you break a stick twice, what is the probability that you can make a triangle by putting the pieces end-to-end?"

Presenter(s): **Cody Moore**
Title: CHRONIC ILIOTIBIAL BAND TENDONITIS SECONDARY TO GLUTEUS MEDIUS WEAKNESS AND LATERAL PELVIS ROTATION DURING THE STANCE PHASE OF RUNNING
Major(s): Athletic Training
Department: Kinesiology
Faculty Mentor: Robert Ryan

Abstract: Background: A 23 year old female track athlete experienced right knee pain while running distances. Initial evaluation revealed point tenderness over the distal illotibial (IT) band, negative Ober's test and a positive Noble's Compression test. Evaluation by an orthopedic surgeon and diagnostic testing revealed inflammation of the distal IT band. Biomechanical assessment of the running gait using high speed videography at 250 frames per second revealed a sudden short-term left lateral rotation of the pelvis (Trendelenburg's sign) while the right leg was in midstance. Differential Diagnosis: Chronic IT band tendinitis secondary to gluteus medius weakness. Treatment: A hip abductor strengthening protocol was initiated. After 3 weeks of rehabilitation the athlete was able to run 30 minutes without the return of symptoms. High speed videography revealed no lateral pelvis rotation while the right leg was in midstance. Uniqueness: This case exhibits the benefit of using technology during an examination. In this case, the lateral pelvic rotation was occurring and being corrected by the body at a speed that could not be observed by the naked eye. Conclusions: The use of high speed videography can reveal biomechanical dysfunction that may not be evident to the examiner.

Presenter(s): **Fran Morales**
Title: UNTITLED EXHIBIT
Major(s): Liberal Arts, Humanities
Department: Art
Faculty Mentor: Jake Allee

Abstract: The artist's work is a personal expression of who she is. The piece expresses growth, change and movement in organic way. The artist has been influenced by the post Impressionist movement and the artist Van Gogh, Gauguin and Monet. The artist's goal is to have her art enjoyed by the viewers and for them to find something that they can identify with.

Presenter(s): **Luke Moses and Jonathan Mellor**
Title: SIMPLE WALKING ROBOTS
Major(s): Computer Science
Department: Computer Science, Mathematics, and Statistics
Faculty Mentor: Warren MacEvoy

External Funding Source: Colorado Space Grant Consortium

Abstract: Autonomous robots are the way of the future. They already largely influence research done throughout the solar system. However they are all very large, expensive, and difficult to maintain. It would be great to replace these with smaller more disposable robots which can perform the same basic tasks. These small robots use minimal parts to reduce costs and simplicity. Instead of using a rolling chassis, these walking robots use legs and feet to move. Theoretically they can go everywhere a larger rolling chassis can. They are designed to find a small canister in an environment much like Mars. They would provide NASA the basic concept for a next generation research and retrieval robots on other planets. To successfully complete the project; technology, engineering, and mathematics, all had to be combined. These robots will be demonstrated to the audience. The robots are based on a walker design originally prototyped by Professor Castleton.

Presenter(s): **Carl Nesbit**
Title: CLOUD TOPOLOGY: AN EMERGING NEED FOR STANDARDS
Major(s): Computer Information Systems
Department: Business
Faculty Mentor: Johnny Snyder

Abstract: In today's fast paced world of IT, everyone is looking for the next big thing. Some believe that the next big thing is cloud computing. However, the lack of standards to regulate it makes this concept less likely to succeed. Almost all the recent, major technological breakthroughs have had sets of standards to regulate them. Cloud computing is just like the other recent, major technological breakthroughs and must have some standards. These would be to allow clouds to extend from beyond themselves and be able to communicate with each other. If such standards were put into place, then companies would be able to have employees working effectively in their own homes everywhere the internet can reach.

Presenter(s): **Stephanie Nesbit**
Title: A SIMPLE SCULPTURE
Major(s): Business
Department: Art
Faculty Mentor: Darrell Tousley

Abstract: This sculpture was completed for a beginning art class. It simply represents the fun of trying something new. For the artist, sculpting this piece was just that. It is dedicated to the artist's loving family, as thanks for their unending support of everything she has done.

Presenter(s): **Laura Nichols**
Title: KEYS
Major(s): Art, Art History
Department: Art
Faculty Mentor: Jake Allee

Abstract: The artist makes art because it is somewhat relaxing and most of all so she can decorate her home so that it is transformed into her own and not from a store. The art is based out of clay from both high and low fire clay. Most of the art is made to show as a tool of reflection within water and certain lighting atmospheres and also to have the viewer reflect on the piece as well. The artist likes to create pieces that can be used with another object so that the object compliments the piece and the objects use each other in a harmonious way.

Presenter(s): **Jacob O'Rear**
Title: THE FORMATION OF THE MOON
Major(s): Geology
Department: Physical and Environmental Sciences
Faculty Mentor: Andres Aslan

Abstract: The moon is the Earth's satellite and has been the source of much discussion, with a focused topic being the origin of the moon. The most generally accepted theories are: Binary Planet, Fission, Capture, Sediment Ring, Co-formation, and Giant Impact. The Binary Planet theory suggests that the moon and earth grew together with separate nucleoids. In the Capture hypothesis, the moon grew at a separate point from the Earth and joined with the Earth at a later time. The Sediment Ring hypothesis states that the moon was clumped together by expanding rings, and the Fission theory suggests that the moon separated from a molten earth. Co-formation states that the Earth and the Moon formed together at the same time and place from the primordial accretion disk. Finally, the Giant Impact theory states that the Earth-Moon system resulted from a giant impact. All of these theories have facts and ideas that prove them, but only the Giant Impact theory accounts for the high angular momentum of the system. Ongoing research on the evidence supporting and refuting this theory will be used to further advocate the currently popular Giant Impact theory.

Presenter(s): **Daniel Pautsch, Joseph Blehm, and Shawn Traub**
Title: EMPLOYEE ROUTINE TEST RECORD MANAGEMENT
Major(s): Computer Science
Department: Computer Science, Mathematics, and Statistics
Faculty Mentor: Arun Ektare

Abstract: This program is for the manager of a McDonald's: A simple php web page and database to better manage the test scores and test. This is to replace the current system that cannot effectively create, read, update, or delete data. This program is designed to manage and record test scores that the manager of a McDonald's hands out as the dates for the tests come around, or if that person has had a string of mishaps that warrant attention. The test are not of our own, the company makes them and is derived from the safety tests by the company that makes the cookie equipment. So we are talking about manuals, and ideas from experienced users of said equipment. There may be other things that are included that make up the tests, but that is not our department. Simple numbers are recorded. Only instead of getting the most points for correct answers, our employer wants to record the points MISSED. So the lower the score the better. I think he said something about missing 3 things in one test warrants an F and needs to be taken again. The time for which the test is retaken is not our department. The software used: a browser - whichever one the user wants. Hopefully the PHP and HTML is compliant for all current browsers.

Presenter(s): **Catherine Pitts and Ashley Rowley**
Title: EASING THE EFFECTS OF ACCULTURATIVE STRESS ON MIGRANT FARM WORKERS: AN ANALYSIS OF THE RELATIONSHIP BETWEEN DEMOGRAPHIC AND SOCIAL PREDICTORS AND ACCULTURATIVE STRESS
Major(s): Psychology
Department: Social and Behavioral Sciences
Faculty Mentor: Brian Parry

Abstract: This study examined predictor variables of acculturative stress among migrant farm workers. Participants included 117 migrant farm workers who completed a questionnaire containing demographics and mental health outcome scales. The researchers discovered that certain factors such as social support and level of education can alleriate the effects of acculturative stress on migrant farm-workers.

Presenter(s): **James Raley**
Title: MAPPING AND ANALYSIS OF FAIRY RINGS IN NORTHWEST COLORADO
Major(s): Geographic Information Systems
Department: Physical and Environmental Sciences
Faculty Mentor: Verner Johnson

Abstract: Geographic Information Systems or GIS is a powerful tool to create and manipulate data based on location. Through the use of GIS software a geodatabase was able to be created for the study of fungal colonies collectively known as Fairy Rings. These rings are formed from a fungus growing under the soil that causes the grass surrounding them to die in an ever-growing circular pattern. Very little is known about control of these rings, and there is a great deal of mythology surrounding their appearance. An area located in Northwest Colorado of nearly 200 acres contained a large variety of these colonies, and little was known about their relative location or spread. Through use of a GPS receiver, and GIS software a pattern of spread was able to be detected and reproduced as a digital map. This digitally reproduced map is able to be stored, compared and shared. A variety of representations for study can be created such as printed maps, video and dynamic sharing via the internet. Through the use of GIS, GPS and the internet, phenomena such as Fairy Rings are able to be better understood and managed.

Presenter(s): **Christina Reed**
Title: GENDER DIFFERENCES AND PREFERENCES IN EDUCATION
Major(s): Mathematics, Secondary Education Licensure
Department: Teacher Education
Faculty Mentor: Madeline Becker

Abstract: This presentation addresses gender issues in today's schools where students are seen as either boys or girls. The presenter states gender is more complicated than just one or the other, that there is more to gender than the "norms" that the media and society put on people. Details on different mental and physical development on the average boy and girl including transgendered students are discussed. The speaker urges that recognition needs to be made about what is happening with gender specifics that make it "taboo." The presentation addresses this as an area where students often feel that they can't talk about it. The presentation also discuss if learning is being affected because of this gender confusion and uncertainty a student has facing these developments alone. The audience is asked to consider, "Who is there to talk to these students and give them advice?" The presentation brings awareness to the matter of gender issues in the classroom. The presenter urges the audience to raise their level of consciousness-understanding, that this a real issue in the classroom that needs to be considered.

Presenter(s): **April J. Sanchez**
Title: THE WILL TO WIN
Major(s): History
Department: Social and Behavioral Sciences
Faculty Mentor: Steve Schulte

Abstract: Today, American sports often appear to embrace the idea that success is determined through the completion of one act, winning. It is not uncommon to see steroid scandals cover the sports section in newspapers, which serves as evidence that more athletes succumb to the pressure of winning, and decide to win at all costs. Perhaps the quote by legendary NFL head coach, Vince Lombond, "Winning isn't everything; it's the only thing," reveals the sport mentality being accepted by twenty-first century American adults, which is then taught to their children. Even though this quote is attributed to one of the most beloved and respected football coaches in American history, Vince Lombardi, it fails to represent and to teach his true philosophy behind winning. By examining Lombardi's life through written biographies, personal statements, and reflections from his own colleagues, coaching staff, and players, the personal characteristics and convictions that Lombardi believes are essential for winning become evident. Vince Lombardi's life and coaching career not only reemphasize the true concept behind winning, but serves as evidence to American athletes that success in sports and life can be accomplished through integrity.

Presenter(s): **Michael Shaeffer, Tyler Aksztulewicz, Dylan Dobbins, Jorge Ochoa, Christopher Stone, and Jacob Tribble**
Title: 8' X 10' STORAGE SHED
Major(s): Construction Technology, Construction Crafts
Department: Construction Technology, WCCC
Faculty Mentor: Glenn Hoff

Abstract: Humanity has always needed shelter and as people have evolved shelter for our tools and toys is also necessary. This 8'x10' shed is an example of such a shelter. In order to build this, the presenters need to know how to read a tape measure to a 32$^{nd}$ of an inch. The presenters need to level, square, and plumb most everything they do. In order to know what materials to order, it is necessary to have knowledge to figure out how many board feet of wood is needed. When figuring the angles of the roof that will be built, the Pythagorean Theorem is used. While figuring the length of the rafters for the roof the presenters need to figure the rise of the roof and the run of the building. When ordering paint and roofing shingles, the presenters needed to know how to determine the area to be covered. When the building is nailed together, State codes must be followed, including the proper spacing of the nails and the size and length of the nails. These are the basics in order to build a small shed.

Presenter(s): **Anastasia V. Shepton (Castleberry)**
Title: BETTER OR WORSE: THE REALITY OF SOVIET RUSSIA DURING THE 1960s.
Major(s): History
Department: Social and Behavioral Sciences
Faculty Mentor: Elizabeth Propes

Abstract: The early decades of the twentieth century, Russia began a process of reforming itself into a Marxist, soviet state. Under the leadership of Vladimir Lenin in the 1920s, Russia strived to become a socialist state and to stray away from corrupt and cruel capitalists. The New Economic Plan (NEP) was a policy to work with capitalism and communism in order to progress the economy and the work force. In the 1930s, Stalin rose to power and created the Five-Year-Plan that would further execute capitalism and advance the creation of the communist Russia. The Russian population worked under these different economic plans, as well as many social transitions – to achieve social and economic equality among each other and superiority to the entire world. Throughout the 1920s and 30s it was a continual strive towards the success of

communist ideologies to progress the common worker, however, the majority of what was being exerted for was not following what the ideologies had promised. In the 1960s, Russians within the Soviet Union felt that they had made great progress since the 1920s and 30s, but in reality they were hindered directly because of their rejection of Western capitalist influences and damaged their workers.


Presenter(s): **Sam Small**
Title: THE WILD
Major(s): Nursing
Department: Art
Faculty Mentor: Darrell Tousley



Abstract: This piece is a study in symmetry, motion and proportion bringing together two subject matters in a harmonious way to give an illusion of seamlessness. It's a classical image, meant to convey the spirit in all things that earns for freedom. The artist hopes that the feeling of wild restlessness, beauty, and motion overtakes the observer.



Presenter(s): **Marshall Sweatt and Nathan Wood**
Title: NAVIGATING MARS-LIKE TERRAIN WITH AN AUTONOMOUS ROVER
Major(s): Computer Science, Mathematics
Department: Computer Science, Mathematics, and Statistics
Faculty Mentor: Warren MacEvoy



External Funding Source: Colorado Space Grant Consortium



Abstract: The presenters have been working since fall 2009 on a four wheel rover that will be able to autonomously navigate to a given position, while avoiding objects, from a starting point. The rover will then use a six servo arm to pick up a canister and drive back to the starting position. The presenters will discuss the components of the rover, which include: a motorized chassis, a vision system, collision detection, and a motorized arm. It is an original design that uses RoboRealm, Arduino, and Microsoft Visual Studio 2008 software.



Presenter(s): **Beau Taylor**
Title: PALEOALTIMETRY: METHODS AND INTERPRETATIONS
Major(s): Geology
Department: Physical and Environmental Sciences
Faculty Mentor: Andres Aslan



Abstract: Several methods and interpretations of paleoaltimetry are examined, past and present. Methods include examination of fossil plants (Gregory et al., 1992), cosmogenic (super 21) Ne in quartz (Chase et al., 1996), basalt vesicle distributions (Sahagian et al., 2002), paleoelevation reconstruction using pedogenic carbonates (Quade et al., 2007). There are two main regions outside of the United States where research into the subject has been, and is currently being carried out: the Andes of South America and the Himalayas in southern Asia. Within the United States, there has been research in Hawaii and the Rocky Mountains. The information gained is integral to the understanding of past and present topography of the Earth. New understanding of paleoaltimetry may be used in our local region of the Rocky Mountains to help us gain insight into current topography and answer questions such as the possibility of late Cenozoic and even contemporary uplift.

Presenter(s): **Jessica Trump, Jennifer Bowden, Christina Bruch, Shana Conger, Christina DeMers, Candace Ebersohl, Amber Malone, Marcia Parker, Rosalie Pinney, and Kathleen Stetzel**
Title: CROSS SABER GUNSMITHING
Major(s): Administrative Office Technology
Department: Administrative Office Technology, WCCC
Faculty Mentor: Alane Wooster

Abstract: The skills developed throughout the enrollment in the Administrative Office Technology Program will allow the presenters to assist a local Grand Junction resident to start his own small business. The methodology will include practical applications from the following software: Microsoft Word, Excel, QuickBooks, Access Database, Desk Top Publisher and PowerPoint. The presenters will utilize the legal emphasis of the Administrative Office Technology Program to help the client determine the best type of business license to secure as well as tax permits, business permits, any other Mesa County business requirements as well as establishing that the company logo does not violate any copy infringement laws. The presenters will utilize the office bookkeeping area of the Administrative Office Technology Program to not only help the client establish and set up his bookkeeping system along with professional invoices, but also to establish which principle of accounting to use either a cash or an accrual based system that will best suit his needs. The presenters will design a web page as well as a comprehensive stationary packet including a professional logo incorporated onto business cards, letterhead, and any marketing fliers or banners that the client would use in marketing and the daily operations of his business.

Presenter(s): **Donny Warbritton and Jon Lusk**
Title: AN ANALYSIS OF THE STRENGTH OF USER CHOSEN PASSWORDS AND METHODS OF GUESSING THEM
Major(s): Computer Science
Department: Computer Science, Mathematics and Statistics
Faculty Mentor: Warren MacEvoy

Abstract: An overview of methods used to determine the strength of user chosen passwords will be given while trying to demonstrate specific patterns in passwords that create an avenue for guessing them. The presenters will also show common methods of password cracking, and possible methods of personalizing these types of attacks to determine a user's password based on personal information about that user. The presenters will also discuss the power of parallel computing in implementing these attacks and the specific benefits it provides users.

Presenter(s): **Lyndi Wellman, Andy Fitzgerald, Brittni Haberkorn, Jon Eric Hart, John Heideman, Tony Ridgway, and Nick Winden**
Title: EXCELLING IN CULINARY COMPETITON
Major(s): Culinary Arts
Department: Culinary Arts, WCCC
Faculty Mentor: Jon St. Peter

Abstract: Through culinary competition students have been introduced to the required fundametal principles and technical skills essential to engage the realm of culinary competition and to find success in the food service industry. These students have dedicated themselves to precision in the areas of knife skills, mise en place, recipe development and execution of culinary techinique. These are the skills that will make our team members leaders in the future kitchens of the global hospitality services. Through their efforts at the regional level our students are also exposed to theories and principles of cold food show platters, elementary glazing techniques, and the in-depth organizational processes necessary to compete at exceptionally high levels. As a result, students have attained tremendous growth in the areas of leadership, self discipline, tenacity, dedication, teamwork, performance under pressure and attention to detail. As a bonus they have begun to develop the skills of networking with peers and superiors, the pursuit of new and creative ideas and have learned the social importance of giving back to the community and passing on knowledge in order to craft the next generation.

Display items: Pictures, posters and recipes from the 2009 Colorodo championships. Actions stations: sweet corn flan with warm creamed shrimp and roasted peppers; sliced ahi tuna with micro greens and fried shallots, chive infused olive oil and sambal chili. Demos: Glazing cold food actioin station; Cold food platter display.

Presenter(s): **Katharine Williams**
Title: LARVAL DEVELOPMENT AND OVIPOSITION BEHAVIOR OF THE TROPICAL BUTTERFLY LEPTOPHOBIA ELEONE; PIERIDAE
Major(s): Biology
Department: Biological Sciences
Faculty Mentor: Thomas Walla

Abstract: As part of a large scale investigation of trophic interactions in the Eastern Andes, the researcher investigated the immature stages and oviposition behavior of the tropical butterfly Leptophobia eleone (Pieridae) in Eastern Ecuador. Oviposition was observed on Cardamine (Brassicaceae) and larvae were reared to adult in the field. Eggs were laid singly on host leaves and larvae were solitary. Rearings showed that Leptophobia eleone has five larval stadia, and matured in 37 to 53 days from oviposition to adult. Morphology and behavior of larvae are described in relation to other species in the Pieridae family. The results are interpreted in the context of tropical community diversity and species interactions.

Presenter(s): **Bryce Wynne, Eric Ballard, Brittani DeRuiter, and Adam Golesh**
Title: CONSUMER BRAND RECOGNITION
Major(s): Business Administration, Entrepreneurship, Elementary Education, and Marketing
Department: Business
Faculty Mentor: Deb Parman

Abstract: "A brand for a company is like a reputation for a person." This quote was made famous by Jeff Bezos, founder, president, CEO, and chairman of the board of Amazon. This just proves how important the actual brand, including the name and logo, is to consumers. A brand is what consumers are going to remember a company by or try to persuade others not to buy if they have a bad experience with it. To find out the power of brands, we surveyed 50 people to see what brands were most recognizable as well as their attitudes towards specific brands. When determining the selection of logos and brands for the survey, the researchers realized some of the logos resembled each other. Seeing this, the researchers constructed two separate surveys. The first survey (Survey 1) had similar logos on the same page right by each other. The second survey (Survey 2) separated similar logos onto different pages. The researchers handed out 25 of each survey to see if brand recognition was better with similar products and logos put together or not.

Presenter(s): **Lyndsay Yerbic**
Title: TEACHING HOW TO LEARN: LITERACY IN THE INFORMATION AGE
Major(s): Computer Information Systems
Department: Business
Faculty Mentor: Johnny Snyder

Abstract: This paper examines the current environment of information literacy in the Information Age. With the rapid growth of information technologies and abundant resources, well-defined information literacy skills among students and professionals are essential for success in decision-making and critical thinking. Information technology professionals and educators must be aware of the importance of information literacy as a learnable skill, as well as methods for aiding in the development and growth of an information literate public. Included in this paper are external studies of the current information literacy among students. This paper analyzes the current environment of information literacy, and supports an argument for information literacy curriculum within educational institutions, taking cost, information literacy measurement, and benefits into account.

# First-Year Mechanical Engineering Design Expo

Presenter(s): **Isaac Brown, Eliot Berg, Britton Humphrey, and Skyler Ogden**
Title: THE STIRLING ENGINE
Major(s): Mechanical Engineering
Department: Physical and Environmental Sciences
Faculty Mentor: Max McFarland

Abstract: For this project the team will be demonstrating how a Stirling engine works and how it could be used to be helpful to the environment. This engine runs off of the expansion and contraction of heat, and it has a cold piston and a hot piston.

Presenter(s): **Jesse Coquoz, Stephen Buckingham, Rebecca Howe, Franklyn Dylan Taft, and Tyler Weitzel**
Title: GREY WATER SYSTEMS
Major(s): Mechanical Engineering
Department: Physical and Environmental Sciences
Faculty Mentor: Max McFarland

Abstract: The purpose of this system is to reuse household water for flushing the toilet. Water from the bathroom sink, shower and the laundry will be sent to this to this system rather than going directly to the sewer system. The water will pass through a series of filters including carbon, sand and polyester fiber and then move on to a holding tank. From the holding tank the water will be pumped to the toilet by an on demand pump each time the toilet is flushed. This system can be used in motor homes or in areas where water is very expensive. For an average household this system has the potential to reduce water use by 25-40%.

Presenter(s): **Orin Crouse, Brian Cook, Maureen Foster, Brian Powers, and Sam Yenchick**
Title: HELICOPTER DEMONSTRATION
Major(s): Mechanical Engineering
Department: Physical and Environmental Sciences
Faculty Mentor: Max McFarland

Abstract: The team will present a scaled helicopter demonstration.

Presenter(s): **Alexandria Davis, Jerry Schmaing, Zach Peterson, Steven Geary, and Marcie Cline**
Title: RAINWATER COLLECTION AND RECYCLING
Major(s): Mechanical Engineering
Department: Physical and Environmental Sciences
Faculty Mentor: Peter Rekemeyer

Abstract: The project that was made for the ENGR 140 class demonstrates the process of rain water harvesting, filtering, and reusing. The team's design is based off of RainXchange's Aquablox water matrix. In the design a series of filters are used to clean water, combined with pumps to keep the water flowing and reusable. The idea of an aquablox matrix focuses on keeping captured rainwater constantly moving to help prevent bacteria build up while still allowing for visually appealing storage. The ultimate goal is to recycle and reuse rain water. The process is simple, collect the water, filter the water, and pump the water through a system of filters within a pond.

Presenter(s): **Cody Gardner, Eric Flemming, Daniel Gatt, and Keonimana Shigematsu**
Title: FREE ENERGY HYDROGEN GENERATION
Major(s): Mechanical Engineering
Department: Physical and Environmental Sciences
Faculty Mentor: Max McFarland

Abstract: This project is based around generating an alternative fuel source but doing so with minimal energy input. The idea is to build a free energy motor, basically a motor run by batteries, and build a hydrogen generator that uses the energy put out by the free energy motor. There are many different design ideas for free energy motors but they must be built very precise. Designing and building the motor will take a lot of work and precision but it is possible. Hydrogen generators are built mostly using a positive lead and a negative lead placed in water. When the circuit is completed with an energy source, the energy is added to the water and the hydrogen oxygen bond is broken resulting in pure oxygen and hydrogen. Designs are simple and fairly easy to build. Using the free energy motor and hydrogen generator, the team will generate an alternative fuel source that costs a fraction of the main energy sources used today.

Presenter(s): **Brandon Gerding, Matthew Busker, Clancy Garoutte, Robert Lueck, and Ash Thomas**
Title: HYDROELECTRIC POWER GENERATOR
Major(s): Mechanical Engineering
Department: Physical and Environmental Sciences
Faculty Mentor: Max McFarland

Abstract: Team Alpha is creating a model hydroelectric generator. The design consists of two reservoirs, a turbine which has a runner and wicket gates, and a generator. Water from the top reservoir flows out into the turbine and spins the runner. As the runner spins, the shaft, connected to the runner, will spin the generator to produce electricity, though it will only produce a small amount. After the water flows through the turbine it exits out the bottom onto a river which directs the water to the bottom reservoir. A small water pump, powered by a powerful battery, will pump the water from the bottom reservoir to the top to continue the process of producing power.

Presenter(s): **Logan Gillespie, Daniell Garcia, Ryan Gardner, Andres Hernandez, and Kyle Luke**
Title: LA TORTUGA: ROBOTIC AMPHIBIOUS COOLER
Major(s): Mechanical Engineering
Department: Physical and Environmental Sciences
Faculty Mentor: Max McFarland

Abstract: Team Equipo Uno has chosen to design and build a robotic amphibious cooler. The robotic cooler will be designed and built in accordance with the rules and standards set in the team's ENGR 140 class. They will research robotics and remote controls to explore what will be needed. The current plan is to put a cooler on tracks and use motors from drills to power the tracks. It is hoped that this project will teach the team about robotics and expand their engineering knowledge. The cooler will be built and tested to maintain rigidity, longevity, and convenience for the user.

Presenter(s): **Brandon Howell, Jesse Brewer, Baron Fillpot, Kelsi Middleton, and Cody Padilla**
Title: RUBE GOLDBERG MACHINE TO TURN ON A RADIO
Major(s): Mechanical Engineering
Department: Physical and Environmental Sciences
Faculty Mentor: Peter Rekemeyer

Abstract: The team has designed and constructed a Rube Goldberg device. The purpose of their device is to power a radio without plugging it into the wall. The project uses different types of renewable energy such as gravity, wind, water, and solar. Within the different steps of their Rube Goldberg device, they will demonstrate these different forms of renewable energy. The first main step is water runs down a pipe and turns a water wheel. The second main step is gravity lifts a lever using a pulley. The third main step is wind turns a wind turbine that pulls a blind off of a solar panel. The fourth main step is that the solar panel powers a radio. The project uses different forms of renewable energy, and the team would like to introduce people to these different forms of energy and demonstrate, on a small scale, how they are used. The project is also environmentally friendly. They are using new cleaner forms of energy, and many of the parts we used to build the Rube Goldberg are recycled materials. During the Student Showcase, they plan to demonstrate renewable energy with the Rube Goldberg device.

Presenter(s): **Isaac Hudson, Christian Holcomb, Jason Logsdon, Oscar Madrid, and Chris Rowley**
Title: OFEP RUBE GOLDBERG
Major: Mechanical Engineering
Department: Physical and Environmental Sciences
Faculty Mentor: Max McFarland

Abstract: For this Rube Goldberg project the objective will be to open a fridge, dispense a beverage, have the beverage delivered, and have a bag of snacks launched to the presenter seated on a couch. The presenters will use a mouse trap for the transportation of the beverage. The bag of snacks will be launched by a bowling ball that will be triggered by a chain of events.

Presenter(s): **Ian McGowan, Jose Betancourt, Clinton Cribari, Kevin Hilken, Micah Hoogeveen, and Paul Linn**
Title: AUTOMATIC WHITE BOARD ERASER
Major(s): Mechanical Engineering
Department: Physical and Environmental Sciences
Faculty Mentor: Max McFarland

Abstract: The topic for this presentation is a white board that automatically erases itself. The project was proposed by the group after discussing ways of increasing instructor efficiency in the classroom. This presentation will include a demonstration of the idea (using a model) and reasoning for such a product. This information will include the products marketability as well as student and teacher feedback.

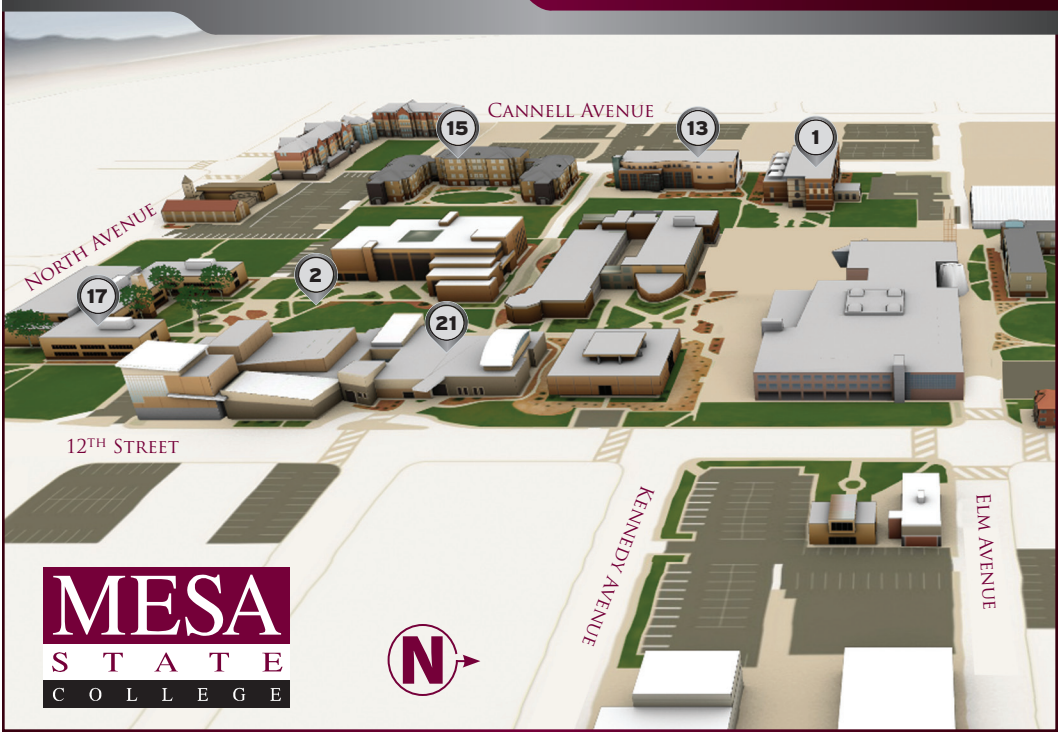
Presenter(s): **Kelly Regimbal, Craig Freeborn, Derrell Lindsey, Timothy Johnson, and Zachary MacIntosh**
Title: RECIPROCATING LAWN MOWER
Major(s): Mechanical Engineering
Department: Physical and Environmental Sciences
Faculty Mentor: Peter Rekemeyer

Abstract: The lawn mower created by the presenters was an innovative design that was based off the traditional motorless mowers. The team decided to capitalize on the rotational motion of the wheels by using gearing to create a reciprocating blade. In order to maximize the motion of the blade, they used a transmission, which directly connects to spindle which has an offset pin located on the end. This is used to drive the blade back and forth as the spindle turns. They are demonstrating a new way to cut grass through blade reciprocation rather than rotation. Also, since they are not using any form of motor, this project is energy efficient. The lawn mower is powered by the user pushing it. This demonstrates a different way to cut grass without the use of fossil fuels. By using a transmission to increase rotational motion, the project shows how gears can be used to optimize a design.

Presenter(s): **Shiloh Summy, Matthew Lidberg, Kris Sharpe, Weston Vorderberg, and Laura Zapata**
Title: RUBE GOLDBERG RECYCLING MACHINE
Major(s): Mechanical Engineering
Department: Physical and Environmental Sciences
Faculty Mentor: Peter Rekemeyer

Abstract: The purpose of this Rube Goldberg machine is to crush a soda can using a series of steps that activate each other. After the can has been crushed it will be recycled. The machine is approximately 8 ft. by 13 ft. The team used conservation of energy and momentum to make it work. The machine is also very load. There is a balloon that is popped, a rolling bowling ball, and swinging 25 lb. weight.

# Main Campus




## Map Legend

Student Showcase presentations, exhibits, and demonstrations will take place at the following locations across Mesa State's main campus:



In the event of poor weather, events scheduled in the Academic Quad will be moved to Houston Hall.

## Locations

**Academic Classroom Building**
- Sciences Posters
- Sciences Oral Presentations
- Professional Program Posters
- Languages, Literature, & Social Sciences Oral Presentations

**Academic Quad**
- Career & Technical Programs Demonstration & Oral Presentations
- Mechanical Engineering - First Year Design Expo

**Fine Arts Building**
- Art Exhibits & Demonstrations
- Professional Program Oral Presentations

**Grand Mesa Hall, multi-purpose room**
- Mathematics, Computer Science & Mechanical Engineering Demonstrations & Oral Presentations

**Moss Performing Arts Center**
- Film Presentations
- Music Presentations & Performances
- Art Oral Presentations


ACADEMIC AFFAIRS

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