Thanks to our judges for their generous time & expertise.

Architectural Engineering: ARE4600
Adam King, King Engineering
Ken Tobin, Tobin & Associates Architecture
Derek Swanson, Martin/Martin Consulting Engineers
Tyler Robison, Martin/Martin Consulting Engineers
Erika Leininger, The CE Group
Megin Rux, TDSi

Chemical Engineering
Cody McRady, DynoNobel, Cheyenne, WY
Professor David Bell, University of Wyoming
Professor John Oakey, University of Wyoming
Professor Joseph Holles, University of Wyoming

Civil Engineering/Environmental
Professor Michael Urynowicz, Ph.D., P. E., University of Wyoming
Lou Harmon, P.E., L.S., P.G., Western Research and Development, Cheyenne

Electrical and Computer Engineering
John McInroy, Ph.D., Head – UW Electrical & Computer Engineering
Jerry Cupal, Ph.D., Professor Emeritus – Electrical & Computer Engineering
Fred Benson, UW Alum, Chair - Department Advisory Committee,
Retired from Rockwell Collins
Walt Marshal, UW Alum, Retired from Aramco

Petroleum Engineering
Professor David Bagley, Ph.D. – UW Chemical and Petroleum Engineering
Professor Saman Aryana, Ph.D. – UW Chemical and Petroleum Engineering
Professor Sunde Yin, Ph.D. – UW Chemical and Petroleum Engineering
Professor Vladimir Alvarado, Ph.D. – UW Chemical and Petroleum Engineering
Professor Dario Grana, Ph.D. – UW School of Energy Resources

Senior Design Symposium
December 8, 2014

Wyoming Union
-sponsored by-
Rocky Mountain Power
and the Volpi Cupal Fund
Senior Design Symposium Schedule
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Presentations Times Vary by Department

Architectural Engineering: ARE4600, Dr. Anthony Denzer
Held on November 25, 2014

Chemical Engineering, Dr. John Myers
Wyoming Union, Yellowstone Center Ballroom, 8 AM - noon

Civil Engineering, Environmental, Dr. William Bellamy and Dr. Patricia Colberg, Wyoming Union, Yellowstone West Ballroom, 1-3 PM

Electrical & Computer Engineering, Dr. David Whitman
Posters, Wyoming Union, Yellowstone East, 8-9 AM
Presentations, Wyoming Union, Yellowstone East, 9 AM-3 PM

Petroleum Engineering, Dr. David Bagley
Wyoming Union, Family Room, 8:30 AM 5:30 PM

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12:00 pm
Judges and Advisors Luncheon
UW Union, Snowy Range Room (206)

Schedule at a glance:

<table>
<thead>
<tr>
<th>Time</th>
<th>Yellowstone East</th>
<th>Yellowstone Center</th>
<th>Yellowstone West</th>
<th>Family Room</th>
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<tbody>
<tr>
<td>9-10 AM</td>
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<td>4-5 PM</td>
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</table>

Notes:
Architectural Engineering: ARE 4600
Coordinator: Dr. Anthony Denzer
(conducted earlier)

Office tower for Canary Wharf, London

Team 1
Todd Anderson
Jacob Franke
Kyle Friel
Matthew Schneider

Team 2
Divantha Ekanayake
Rebecca Martin
Shane Miller

Team 3
Bryce Fiore
Josh Knutson
Matthew Moore

Team 4
Taylor Kofoed
Sabrene Rahiman
Kyle Walter

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1:00 Hydraulic Fracturing In SFE. #1, Waskom Field, Harrison County
Abdullah Fahad Alkhaldi, Yameng He, Abdoul Nasser, Delfina Paquissi
Advisors: Bagley, Yin, and Grana

1:30 A Simpler Solution to Wellbore Stability
Quentyn Guglielmo, Hugh Hannum, Bronson Ogden, Carson Pollat
Advisors: Bagley, Yin, and Grana

2:00 ESPY 1-22
Clayton Haworth, Mohammed Jaffal, Evan Jeannotte, Jeremiah Larson
Advisors: Bagley, Alvarado, and Grana

2:30 RESERVOIR SIMULATION, FIELD DEVELOPMENT AND ECONOMICAL STUDY OF THE TENSLEEP FORMATION, TEAPOT DOME FIELD
Ruibo Guo, Yu Jiang, Ahmed Mohamed, Mohamed Mohamed
Advisors: Bagley, Alvarado, and Grana

3:00 DUAL PERMEABILITY MODEL, TEAPOT DOME FIELD
Matthew Covalt, Evan Fauber, Matthew Filla, Keroulus Samy
Advisors: Bagley, Alvarado, and Grana

3:30 RESERVOIR EVALUATION AND SIMULATION OF CO2 ENHANCED OIL RECOVERY IN THE SAND DUNES FIELD OF THE MUDDY FORMATION IN WYOMING
Corey Boyt, Alyssa Bradley, Josef Loris, Kenneth MacIntyre
Advisors: Bagley, Alvarado, and Grana

4:00 SCREENING FOR CHEMICAL ENHANCED OIL RECOVERY IN SELECTED WYOMING OIL FORMATIONS
Alan Alexeyev, Evan Lowry, Tyson Teichert, Jordan Willie
Advisors: Bagley, Alvarado, and Grana

4:30 DEVELOPMENT OF THE TEN SLEEP FORMATION: TEAPOT DOME
Derek Deis, Holden Fauber, Kyle Schriner, Nicholas Stille
Advisors: Bagley, Alvarado, and Grana

5:00 CO2 ENHANCED OIL RECOVERY: CO2 SCOPING
Shatha Alnaji, Madison Tenneson, Lihui Ye, Wei Zhang
Advisors: Bagley, Alvarado, and Grana
8:00 - 8:30 AM
Methane Oxidative Coupling
Team: M-oxy Coupling - Muhammad Ali, Don Dennert, Jesse Hinshaw, Spencer Moul
Mentor: Dr. Joseph Holles

8:30 - 9:00 AM
Liquified Natural Gas (LNG)
Team: supercooLNG - Dhari Alotaibi, Andrew Arambel, Bhagya Gunatileke, Chris Robinson, Sarah Scott
Mentor: Dr. John Myers

9:00 - 9:30 AM
Interstitial Fluid Sensing Continuous Glucose Monitor
Team: Intersense Monitoring - Wesley Hood, Juliet Kiyai
Mentor: Dr. John Oakey

9:30 - 10:00 AM
Two-step Ethanol to Butadiene
Team: Rubber Duckies - Murtada Al Aradi, A.J Beemer, LeAnne Hazard, Ben McFarland, Alex Thompson
Mentor: Professor Joseph Holles

10:00 - 10:30 AM
Biomass to Diesel via Furfural
Team: Maizeoline - Stephanie Callahan, Rebecca Paustian, Ryan Felde-Vassalo, Ross Warner
Mentor: Dr. John Myers

10:30 - 11:00 AM
Hydrogel Encapsulated Mesenchymal Stem Cell Therapy for the Treatment of Osteoarthritis
Team: Archainnova Biotechnologies Inc. - Aliyah Mikulski, Ben Noren
Mentor: Dr. John Oakey

11:00 - 11:30 AM
Natural Gas to BTX via Methanol
Team: OH Boys - Ali Almubarak, Rashed Alrashed, Weston Hubele, Ben Pelton, Shane Whipple
Mentor: Professor David Bell

11:30 - 12:00 AM
Solar Methanol
Team: CH3OH - Abdulmajed Alnahwae, Shelly Dollar, Sally Gordon, Ken O’Donnell, Kassi Powers
Mentor: Professor David Bell

Notes:
**Electrical & Computer Engineering**  
**Presentations – Union, Yellowstone East**  
**Coordinator: Dr. David Whitman**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>8:00 am</td>
<td>Poster Session</td>
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<td>9:00 am</td>
<td>Penmanship Trainer*</td>
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<td>Shane Binkerd &amp; Tanner Locke</td>
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<td>9:30 am</td>
<td>Theremin Design</td>
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<td>Alex Ponamarchuk</td>
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<td>10:00 am</td>
<td>Secret Knock Unlocking Box</td>
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<td>Connor Long</td>
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<td>10:30 am</td>
<td>Display Board</td>
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<td>Christine de Juan</td>
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<td>11:00 am</td>
<td>Voice Integrated Clock</td>
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<td>Kevin Gutknecht</td>
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<td>11:30 am</td>
<td>Horse Watering System</td>
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<td>Jonathan Olsen</td>
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<td>12:00 noon</td>
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<td>Color Scanner</td>
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<td>Ethan Dirks</td>
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<td>School Bus Safety Camera</td>
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<td>Matthew Albrecht &amp; Nathan Davenport</td>
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<td>2:00 pm</td>
<td>Laser Tag System</td>
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<td>Jacob Cornia</td>
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Electrical and Computer Engineering projects sponsored by the Volpi Cupal Fund

**Project sponsored by the National Science Foundation Biomedical Engineering Program and Research to Aid Persons with Disabilities Program (BME/RAPD) Grant 0962380**
Petroleum Engineering
Wyoming Union, Family Room, 8:30 AM – 5:30 PM
Coordinator: Dr. David Bagley

8:30  Wertz Field Production and Mapping
Brandon Noble, Matthew D. Gudac, John V. Schmidt, Scott W. Austin
Advisors: Bagley, Aryana, Yin, and Alvarado

9:00  Hydraulic Fracking and In Situ Stress
Martin Harders, Charles Schendzielos, Rhett Warner, Austin Woodward
Advisors: Bagley, Aryana, Yin, and Alvarado

9:30  Wellbore Stability in Olmos Formation
Tyson Foianini, Wenlin Han, Patrick Rudd, Trey Sylte
Advisors: Bagley, Aryana, Yin, and Alvarado

10:00 Hydraulic Fracturing Treatment for an Oil Well in Kuparuk River Unit, West Sak Oil Pool
Abdulaziz Al Umairy, Abdulrahman Alkandari, Abdulrahman Ben Zayed, Pradyumn Singh
Advisors: Bagley, Aryana, Yin, and Alvarado

10:30 Wetz Field Flood Pattern Optimization and Recommendations to Improve Hydrocarbon Recovery from CO2 Flood of the Tensleep Formation
Danielle Cifrese, Cora Craig, Erik Hendrickson, Thomas Smith
Advisors: Bagley, Aryana, Yin, and Alvarado

11:00 Wertz Tensleep: Flood Pattern Performance Analysis
Yousef Alkandari, Huijun Cui, Sheng Xie, Lu Yang
Advisors: Bagley, Aryana, Yin, and Alvarado

11:30 Tensleep Injection Analysis at Wertz Field
Cameron Carreau, Inderpreet Dhillon, Dan Larson, Jordan Reid
Advisors: Aryana, Yin, Alvarado, and Grana

12:00 Lunch Break

Civil Engineering, Environmental
Wyoming Union, Yellowstone West Ballroom, 1-3 PM

Coordinators: Dr. William D. Bellamy, Ph.D., P.E. and Dr. Patricia Colberg, Ph.D., P.E.

1:00 – 1:30 PM
Wastewater Solutions for the Torrington Wastewater Treatment Plant

Team: “HCH Engineering”
Benjamin Collamer, Saratoga, WY
Britton Elaine Hammit, Prescott, AZ
Joshua J. Harkins, Lancaster, CA

1:30 – 2:00 PM
Recommendation for Improvements to the Torrington Wastewater Treatment Facility

Team: “PinPoint Engineering and Consulting”
Jordan Adkins, Torrington, WY
Jake Bates, Jackson, WY
Linda Dobkins, Cheyenne, WY
Wassaf Nassar, Jeddah, Saudia Arabia

2:00 – 2:30 PM
Torrington, WY Wastewater Treatment Facility: Design Alternatives and Recommendations

Team: “N2E Acheron Styx”
Eric W. Rice, Casper, WY
Nicholas Berling, Wilson, WY
Ethan Rhodes, Cody, WY