



Idaho Engineering design expo 2002

May 3, 2002

Student Union Building

College of Engineering

College of Mines and Earth Resources



**University
of Idaho**



American Nuclear Society





University of Idaho College of Engineering

David Thompson, Dean

With an engineering complex that encompasses three colleges, eight buildings and approximately 150,000 square feet of classroom and laboratory space, the University of Idaho has one of the largest engineering education centers in the Northwest. As much as our facilities, alumni networking and innovative curriculum contribute to our success, it is our world-class faculty and our outstanding students that set the University of Idaho apart from engineering programs at other universities.



University of Idaho College of Mines and Earth Resources

Earl Bennett, Dean

The School of Mines was established at the University of Idaho in 1917 to serve the needs of the Gem State's important mining industry. The college is housed in the Mines Building and the state-of-the-art McClure Hall, which was dedicated in 1995. A separate state agency, the Idaho Geological Survey, is an affiliated program.



Welcome to the 2002 Engineering Design Expo!

Thank you for joining us in celebrating another generation of innovative University of Idaho student projects in engineering and related disciplines.

Whether you are a pre-college student, a college student, an alumnus, an industry representative, or a member of the local community, you will find many exciting displays of new technology, informative presentations, and tours of our state-of-the-art facilities.

We encourage you to ask our students and instructional staff associated with our diverse program options about the educational experience behind these projects. Within these stories from our diverse disciplinary options are the real strength and uniqueness of our engineering programs.

Finally, you will meet many industry sponsors who have generously provided mentoring and financial support for our student projects. Join me in thanking them for their commitment to quality design education.

Sincerely,

A handwritten signature in cursive script that reads "Robert A. Hoover".

Robert A. Hoover
President

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**Idaho
Engineering
design
expo
2002**

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NIATT

National Institute for Advanced Transportation Technology

Our mission is to work with industry, government and research institutions to develop, evaluate and market technologies that will improve the design and operation of transportation vehicles and systems.

ENGINEERING DESIGN AT IDAHO

Our annual Engineering Design Expo illustrates why the University of Idaho is "the design experience of choice" in the Pacific Northwest. We are proud of the level of industry interaction, the broad spectrum of undergraduate student involvement in all phases of product realization and the unique opportunities that exist here for graduate student mentoring.

As an attendee at Expo 2002, I encourage you to appreciate the scope and diversity of engineering challenges addressed by our programs. They represent the broadest spectrum of engineering and technical programs available anywhere in Idaho.

Programs offered through the University of Idaho include: Agricultural Engineering, Biological Systems Engineering, Chemical Engineering, Civil Engineering, Computer Engineering, Computer Science, Electrical Engineering, Environmental Engineering, Environmental Science, Geological Engineering, Materials Engineering, Mechanical Engineering, Metallurgical Engineering and Mining Engineering.

I want to assure all in attendance that, as the University continues to expand its research mission, we are looking to build on our strength in design education and to expand our collaboration with industry partners. Over the next ten years I expect this synergy to produce a wide variety of success stories such as the major NSF grant recently obtained by design faculty within the College of Engineering to construct, study and disseminate the best practices related to "creative learning environments." If you want to learn more about our innovation in this area I encourage you to attend the afternoon design forum and to take advantage of the various facility tours throughout the day.

Enjoy your day and come back to visit throughout the next academic year as another generation of students embarks on their senior capstone design adventure at the University of Idaho.

Dave Thompson, Dean
College of Engineering



American Nuclear Society

Dedicated to the advancement of science, engineering and education pertaining to peaceful uses of nuclear science and technology in an environmentally sound manner.

<http://local.ans.org/idaho>

Idaho TECH: Mars Rover Challenge

Take some time to visit the ASUI Kibbie Dome today in order to view fifth and sixth graders from across the state of Idaho, Northern Utah and Eastern Washington participate in the sixth annual Idaho TECH: Mars Rover Challenge!

Sponsored by the NASA Idaho Space Grant Consortium, Idaho TECH is a science and technology competition that enables student teams to design and construct

Mars Rover models that they test in preliminary design competitions. These were held in Idaho Falls on April 20 and Boise on April 27. The Moscow competition is being held today in the ASUI Kibbie

Dome. An all-state competition later in the day provides the opportunity for selected participants to meet and speak with a special guest from NASA.



Each Idaho TECH engineering team is required to develop a Mars Rover from provided Lego kits. The teams then bring their Rover and supporting documentation for competition in seven areas: (1) Speed; (2) Rock Collection; (3) Blind Driving; (4) Hill Climbing; (5) Weight; (6) Presentation;

and (7) Lab Notebook. Rovers are driven on a mock Martian landscapes developed by students in the UI College of Engineering.



Founded in 1991 through a NSAA initiative, the NASA Idaho Space Grant Consortium (ISGC) is one of 52 national consortia. It focuses on providing NASA research and educational opportunities across the state of Idaho. The ISGC is comprised of Idaho's nine colleges and universities, as well as the Idaho National Engineering and Environmental Laboratory, the Idaho Academy of Science, the Idaho Museum of Natural History, the Discovery Center of Idaho, the Idaho Science and Space Center, Craters of the Moon National Monument, Bruneau Sand Dunes, the Idaho State Division of Aeronautics and the Palouse Discovery Science Center. The UI's College of Engineering coordinates the program in cooperation with the UI's College of Education.

TOURS*

Campus Tour (9:30 & 1:30)

Get a glimpse of campus life at the University of Idaho on this lively, informative tour of our attractive campus. A student guide will show you our outstanding facilities and explain unique features of our community.

Wind Tunnel Tour (9:30, 10:30)

Have a close up look at the large, "user-friendly" wind tunnel that has been developed to support lower-division design and experimental projects.

Micro-Hydroelectric Generation Tour (10:30)

Come see how team Hydro Innovations has simulated Randall Creek in the hydraulics lab and examine their custom designed michell turbine and generator.

Variable Impedance Fault Controller (11:00)

Join Chris Harris, Jack Tappe and Eric Zuber as they demonstrate their senior design project in the power system protection laboratory.

Alternative Energy/Chassis

Dynamometer Tour (1:00)

Ride the university's new biodiesel powered trolley over to Martin Laboratory where this fuel is produced and where demonstration vehicles are tested on the recently installed chassis dynamometer.

Beowulf Supercomputer Tour (2:00 & 2:30)

Come see what a supercomputer looks like and learn how it works. This facility was designed for simulating evolutionary changes in DNA sequences. It is part of an Initiative for Bioinformatics and Evolutionary Studies that involves mathematicians, computer scientists and biologists.

Design Suite/Small Engine Lab Tour (3:00)

Experience the physical environment that has been created in mechanical engineering to support capstone design and experimental projects.

*** All tours begin at the Expo 2002 registration table on the first floor of the SUB.**

With over 25 years of experience, Engineering Outreach provides complete off-campus graduate degrees in 11 disciplines. Coursework for personal and professional advancement, short courses and certificates are also available at a distance. Courses are delivered using a variety of technologies including: videotape, CD, DVD, the Internet, and print material.

EO Engineering Outreach
www.uidaho.edu/evo

Judging Criteria

Awards will be presented to the exhibits, posters and technical sessions that address selected criteria that are important in engineering accreditation. Exhibits will be judged based on interviews with team members. Specific criteria include thoughtful use of design methodology, knowledge of appropriate engineering standards and constraints, awareness of potential project impact on society, and development of life-long learning skills in the course of the project. Posters and technical sessions will be judged on the ability to communicate concepts to a technical audience. Specific criteria include clear statement of purpose, organization of supporting content, appropriate style/format of presentation and use of visual aids.

One People's Choice Award will be presented. This award is based on votes cast by all Expo registrants (including exhibitors) and has no specific criteria.

Design Expo Awards

Booth Awards

Three awards given \$100

Poster Awards

Three awards given \$100

Technical Session Awards

Three awards given \$100

People's Choice Award

\$100

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Booth Exhibits (Ballroom)

ACL Graft Tensioning Device (1)

Exhibitors: Kenneth Benjamin, Jacob Hixson,
Dee Rammell

Sponsor: Stryker Endoscopy

UI Advisors: Edwin Odom, Karl Rink

Acoustic Evoked Potential (2)

Exhibitors: Holly C. Ashkannejhad, Ryan Daniel,
Matthew Lee

Sponsor: David Egolf

UI Advisor: Boris Bracio

Bluetooth Demonstration Console (3)

Exhibitors: Eric Becker, Jacob Bingham,
Timothy Meyer

Sponsor: Advanced Input Devices

UI Advisor: Boris Bracio

Boeing Adjustable Joggle Die (4)

Exhibitors: John Colwell, Forrest French,
Zach Mothershed

Sponsor: Boeing Company

UI Advisors: Edwin Odom, Karl Rink

BRASH (Biomass Radiant Automatic System Heating) (5)

Exhibitors: Ed Cimbalik, McCloud Ford,
Jason Stedman

Sponsor: Chemical Engineering

UI Advisor: David Drown

Cane Enable (6)

Exhibitors: Nicholas Cunningham, Benjamin Shores

Sponsor: Tom Hess

UI Advisors: Edwin Odom, Karl Rink

Controller Interface Device (7)

Exhibitors: Eugene Bordenkircher, Troy Cuff,
Matt Lee, Zhen Li

Sponsor: National Institute for Advanced
Transportation Technology

UI Advisors: Brian Johnson, Michael Kyte

Distributed Model Heating Ventilation and Air Conditioning System (8)

Exhibitors: EE404 Class, Mrinal Kochar

Sponsor: EE404 Class Design Project

UI Advisor: Richard W. Wall

GPS Enhancement of Center Pivot End Gun Actuation (9)

Exhibitors: Alan Jackson, Ryan Madsen

Sponsor: Brad King, Aberdeen Research and
Extension Center

UI Advisors: Charles Peterson, Tom Hess

Idaho Engineering Works (10)

Exhibitor: Idaho Engineering Works

Sponsor: Mechanical Engineering

UI Advisors: Edwin Odom, Steve Beyerlein, Karl Rink

Impact of Developments on Traffic and Roadways (11)

Exhibitors: Philip Rust, Christina Ryan

Infant Monitoring Device (12)

Exhibitors: Cody Tews, Eugene Bordenkircher, James
Brawley, Robert Fisher

Sponsor: David Egolf

UI Advisors: Boris Bracio

Laser Print Cartridge Torque Dynamometer (13)

Exhibitors: Sean Boston, William Dalling, Joe Frankel,
Kody Rathe

Sponsor: Hewlett-Packard

UI Advisors: Edwin Odom, Karl Rink

Leight Pressure (14)

Exhibitors: James Angell, Keith Purvis, Steven Terrell,
Cody Tews, Jennifer Westberg

Sponsor: Howard Leight Industries

UI Advisors: Boris Bracio, Edwin Odom, Karl Rink

Booth Exhibits (Patio)

Mission 235 (15)

Exhibitors: Beth Milligan, John Weidler, Michael Zerba
Sponsor: Argonne National Laboratory - West
UI Advisors: Edwin Odom, Karl Rink

Potlatch Train Depot (16)

Exhibitors: Aaron Jarnagin, Kipp Richter,
Ryan Sherman, Eric Walton
Sponsor: Washington, Idaho and Montana Historic
Preservation Group
UI Advisor: Ed Schmeckpeper

Product Design Concepts (17)

Exhibitor: ME323 Class
Sponsor: Mechanical Engineering
UI Advisor: Donald Elger

Real-Time Processing of FT-IR Spectrometer Data (18)

Exhibitors: Mike Gross, Jeremiah Remus
Sponsor: Manning Applied Technology
UI Advisor: Boris Bracio

Sleep Apnea Headgear Innovation (19)

Exhibitors: Jama Bowers, Andrew Hayes,
Brandy Wiegers
Sponsor: John Grauke, Gritman Sleep Center; Janat
O'Donnell, Idaho Pulmonary Associates, Boise, ID;
Lawrence Garges, Tri-State Allergy and Asthma,
Clarkston, WA; Northwest Center for Oral and
Maxillofacial Surgery, Spokane, WA
UI Advisor: Charles Peterson

Ultrasonic Waves in Engineering Materials (20)

Exhibitors: Haskell Gray, Doug Welling
Sponsor: Mechanical Engineering
UI Advisors: Michael Anderson, Tim Hanshaw

Advanced Data Acquisition for the 2002 Future Truck (25)

Exhibitors: Erik Cegnar, Sean DeLacy, Jason Hill
Sponsor: Future Truck
UI Advisor: Boris Bracio

ASCE Steel Bridge (26)

Exhibitors: Frank Desroches, Sean Lecoultré, Pat
Severance, Seth Stapleton, Amy Stillman, Keith
Tarkleson, William Webb
Sponsor: American Institute of Steel Construction
UI Advisor: Ed Schmeckpeper

ASV RC-30 Autonomous Log Skidder (27)

Exhibitors: Stacey Page, Jon Stolte, Jeff Halbrook
Sponsor: U.S. Department of Agriculture,
U.S. Forest Service
UI Advisors: Dean Edwards, Michael Anderson,
Richard Wall, Harry Lee

Concrete Canoe (28)

Exhibitors: Brenda Forbush, Russell Hephner,
Brandon Hesser, Kipp Richter,
Christina Ryan, Ryan Sherman, Cindy Simpson
Sponsor: American Society of Civil Engineers
UI Advisor: Fritz Fiedler

Drop-N-Glow (29)

Exhibitors: Mark Chin, Kristy Stevens, David Tucker
Sponsor: Argonne National Laboratory - West
UI Advisors: Edwin Odom, Karl Rink

Environmental Test Chamber (30)

Exhibitors: Sean Gray, John S. Ma, Dale Rittenbach
Sponsor: National Institute for Advanced
Transportation Technology
UI Advisors: Edwin Odom, Karl Rink

Continued on page 14

DESIGN EXPO 2002 SCHEDULE OF EVENTS

	BALLROOM	REGISTRATION DESK	BORAH THEATER	SILVER ROOM
8:00	Opening Ceremonies 8:00-8:15			
8:30	Exhibits Open			
9:00	Exhibit & Poster Judging 9:00-12:00			ECE, ME, & MMME Presentations
9:30		Campus Tour 9:30 Wind Tunnel Tour 9:30, 10:30		9:00-11:00
10:00	Booth Exhibits (1-20) SUB Ballroom			
10:30		Micro-Hydro Tour 10:30	Chemical Engineering Presentations 10:30-12:30	
11:00	Booth Exhibits (25-35) SUB Patio	Variable Impedance Fault Controller Tour 11:00		BAE Presentations 11:00-12:30
11:30				
12:00	Environmental Science Posters (Southeast Wall)			
12:30				
1:00	CHE, CE, ME & BAE Posters (Northeast Wall)	Alternative Energy/Chassis Dynamometer Tour 1:00		
1:30				Design Forum 1:30-2:30
2:00	Computer Science Posters (West Wall)	Campus Tour 1:30 Beowulf Supercomputer Tour 2:00, 2:30		
2:30				
3:00	College of Mines Posters (South Wall)	Design Suite/Engine Lab Tour 3:00		
3:30				
4:00				
4:30	Awards Reception 4:30-6:00			
5:00				
6:00				

DM

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GOLD ROOM

CHIEFS ROOM

KIBBIE DOME

Hospitality Suite
7:30-10:30

Judge's Forum
8:30-8:45

North Idaho Mars Rover
Competition 9:00-3:00

Idaho Mobile Space Station
Viewing 9:00-3:00

Bus service between SUB and
Kibbie Dome every 40 minutes
from 9:00-3:00

Mechanical Engineering
Luncheon 12:00-1:00

Golden I Alumni Dessert
with the Deans 1:30-2:30

Mars Rover
Final Competition 4:00

8:00

8:30

9:00

9:30

10:00

10:30

11:00

11:30

12:00

12:30

1:00

1:30

2:00

2:30

3:00

3:30

4:00

4:30

5:00

Continued from page 11

Future Truck Heating Ventilation and Air Conditioning (31)

Exhibitors: Mike Daley, Andrew DuBuisson, Chris Fischer, Devin Johnson

Sponsor: National Institute for Advanced Transportation Technology

UI Advisors: Edwin Odom, Karl Rink

Future Truck 2002 (32)

Exhibitors: Nik Aleksich, Scott Anderson, Jeremy Boles, Nicholas Cunningham, Jeremy Forbes, Jason Georgiades, Nate Larson, Kristy Stevens, Chris Vair, Doug Welling

Sponsor: National Institute for Advanced Transportation Technology

UI Advisor: Frank Albrecht

Harpers Drawer Cycle Tester (33)

Exhibitors: Jennifer Dawson, Robert Fisher, Keith Huber, Matthew Kundrat, Nathan Terry

Sponsor: Harpers Incorporated

UI Advisors: Edwin Odom, Karl Rink

Lean Mandrel Handling (34)

Exhibitors: Dan McNab, Dallan Pope, Tyler Valiquette, Jeff Williams

Sponsor: Boeing Company

UI Advisors: Edwin Odom, Karl Rink

UI Clean Snowmobile Challenge (35)

Exhibitors: Phil Auth, Nathan Bradbury, Mark Chin, Chris Dux, Patrick Hess, Jeremy Hunter, Carl Kerttu, Dan McNab, Jon Pentzer, Dana Wenstrom, John Wiedler

Sponsor: National Institute for Advanced Transportation Technology

UI Advisor: Karen Den Braven

Poster Exhibits

Biological & Agricultural Engineering (100)

Corridor, Migratory and Human Habitat in Urban Greenways (100)

Exhibitor: Edgar I. Newstadt

UI Advisor: Stephen Drown

Degradation of Emissions from Potlatch Corporation Using a Biofiltration System (101)

Exhibitors: Trish Gardner, Krista Kinsey, Michael C. Koelsch, Robert Stedtfeld

Sponsor: Potlatch Corporation and Bioreaction Industries, Inc.

UI Advisors: Charles Peterson, Tom Hess

TECH::HELP

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TechHelp is a not-for-profit organization, uniquely positioned to help Idaho manufacturers become more competitive. The TechHelp web site gives manufacturers quick access to a wide variety of business and technical resources that will help their business.

<http://www.techhelp.org/>

Chemical Engineering (200)

Removal of Uranium from Drinking Water (200)

Exhibitors: Elizabeth Herbst, Jessica High, Gerald Keller

Sponsor: Chemical Engineering, Environmental Biotechnology Institute

Advisor: David Drown

Removal of Vitrified Nuclear Waste from Probes (201)

Exhibitors: Ryan Carlson, Josh Johnson

Sponsor: Chemical Engineering, Environmental Biotechnology Institute

UI Advisors: David Drown, Wudneh Admaussu

Soil Remediation (202)

Exhibitors: Jay Hoover, Mica Hutchison, Jeff Mohr

Sponsor: Chemical Engineering, Environmental Biotechnology Institute

UI Advisor: David Drown

Civil Engineering (300)

A River Runs Through It (300)

Exhibitors: Rabi Beura, Mike Conn, Larry Mallo

Sponsor: Civil Engineering

UI Advisor: Fritz Fiedler

Computer Science (400)

AKL Chore Management System (400)

Exhibitor: Jason Luttrell

Sponsor: Alpha Kappa Lambda Fraternity

UI Advisor: Karen Van Houten

API Documentation Tool Upgrade (401)

Exhibitors: Justin Mack, Patrick O'Connell, Heather Purington, Bruce Scallorn

Sponsor: Troy Pearse, Hewlett-Packard, Boise, ID

UI Advisor: Bill Junk

Automated Advising Program (402)

Exhibitor: Stephen Warner

Sponsor: Robert Heckendorn, Computer Science

UI Advisor: John Munson

Availability Monitoring Service (403)

Exhibitor: Ian Hamilton

Sponsor: Kenneth Fingerlos, Information Technology Services

UI Advisor: Karen Van Houten

Beowulf Demo (404)

Exhibitor: John Cavalieri

Sponsor: James Foster, Computer Science

UI Advisor: John Munson



Beowulf Power Management System (405)

Exhibitor: Adam Thorsen

Sponsor: Robert Heckendorn,

Computer Science

UI Advisor: John Munson

Campus Christian Center Database Project (406)

Exhibitor: Joel Gibler

Sponsor: Sharon Kehoe, Director,

Campus Christian Center

UI Advisor: Karen Van Houten

Control Panel / Interface for CS Department Scripts Management (407)

Exhibitor: Kris Weed

Sponsor: Bruce Williams, Computer Science

UI Advisor: Karen Van Houten

Data Structure Algorithm Animations (408)

Exhibitor: Christopher Neisen

Sponsor: Bruce Bolden, Computer Science

UI Advisor: John Munson

E-SnailMail (409)

Exhibitor: Marc Laude

Sponsor: Kristin Olson

UI Advisor: Karen Van Houten

Extended C Metric Analyzer (410)

Exhibitor: Nathan Rosenblum

Sponsor: Allen Nikora, Jet Propulsion Laboratory

UI Advisor: John Munson

Graphics Converter (411)

Exhibitor: Nick Orr

Sponsor: Robert Rinker, Computer Science

UI Advisor: Karen Van Houten

Hummer Enhancements (412)

Exhibitors: Jon DeShirley, Mitch McFarland,

Michael Mink, David Parry, Stephen Warner

Sponsor: Elizabeth Wilhite, Center for Secure & Dependable Systems

UI Advisor: Bill Junk

Hummer Visualization (413)

Exhibitor: Stephen Haler

Sponsor: Elizabeth Wilhite, Center for Secure & Dependable Systems

UI Advisor: Karen Van Houten

Illuminate - A 3D Protein Molecular Modeling Program (414)

Exhibitor: Armand Bankhead

Sponsor: Douglas Cole, Microbiology

UI Advisor: Karen Van Houten

Interactive Campus Guide for Palm OS (415)

Exhibitor: Antone Kom

Sponsor: John Dickinson, Computer Science

UI Advisor: Karen Van Houten

Inventory Management Database (416)

Exhibitor: Mitch McFarland

Sponsor: Kelly Sale, Computer Science

UI Advisor: Karen Van Houten

ITS Host Services Database (417)

Exhibitor: Jon DeShirley

Sponsor: Huba Leidenfrost, Information Technology Services

UI Advisor: Karen Van Houten

Linux Kernel Statistical Analyzer (418)

Exhibitor: Patrick Simpson

Sponsor: Rob Morris, Computer Science

UI Advisor: Karen Van Houten

Lookup Table Generator (419)

Exhibitors: Corey Arnold, Robert Bieze, Stephanie Myers, Li-Phing Pung, Peter Wang
Sponsor: Bob Rinker, Computer Science
UI Advisor: Bill Junk

Memory Rule Checker (420)

Exhibitors: Robert Anderson, Jason Brooks, Bradley Georgeson, Jason Luttrell, Adam Thorsen
Sponsor: Troy Pearse, Hewlett-Packard Co, Boise, ID
UI Advisor: Bill Junk

Online Multi-User Expert System (421)

Exhibitor: Joshua Burt
Sponsor: Terry Soule, Computer Science
UI Advisor: Karen Van Houten

Palm Conference Scheduler (422)

Exhibitor: Michael Mink
Sponsor: John Dickinson, Computer Science
UI Advisor: Karen Van Houten

Palm Programming: Today @ Idaho (423)

Exhibitor: David Parry
Sponsor: John Dickinson, Computer Science
UI Advisor: Karen Van Houten

PDF Report Generator (424)

Exhibitor: Keith Howe
Sponsor: John Coddington, Anatek Labs, Inc.
UI Advisor: John Munson

PIN Integration and Billing Software (425)

Exhibitor: Marcus Sipe
Sponsor: Rose Graham, Photocopy Center,
UI Library
UI Advisor: Karen Van Houten

Presentation Drawing Tool (426)

Exhibitors: Richard Hensley, Keith Howe, Antone Kom, Christopher Neisen, Nathan Rosenblum
Sponsor: Bob Rinker, Computer Science
UI Advisor: Bill Junk

Project and Hours Management System (427)

Exhibitor: Jason Brooks
Sponsor: Erik Miller, Digital Entryway
UI Advisor: John Munson

Resource Parser for Windows Programs (428)

Exhibitors: John Cavalieri, Ian Hamilton, Michael Hickok, Marc Laude
Sponsor: Don Moreaux, Hewlett-Packard, Boise, ID
UI Advisor: Bill Junk

Risk Assessment Knowledge Database (RAKD) (429)

Exhibitor: Pranesh Narayanaswami
Sponsor: Bill Junk, Computer Science
UI Advisor: Karen Van Houten

Secure Wireless Access Project (430)

Exhibitor: Ben Baker
Sponsor: Don Tobin, Center for Secure & Dependable Systems
UI Advisor: Karen Van Houten

Server Hardware Inventory System (431)

Exhibitor: Michael Hickok
Sponsor: Tony Opheim, Information Technology Services
UI Advisor: Karen Van Houten

Student Athlete Progress Reporting System (432)

Exhibitor: Bradley Georgeson
Sponsor: Wendy Gunter, Athletics Academic Coordinator
UI Advisor: John Munson

Tardus (433)

Exhibitor: Josh Mattoon
Sponsor: Bruce Bolden, Computer Science
UI Advisor: Karen Van Houten

Tutor Program Software Enhancement (434)

Exhibitor: Micah Delfino

Sponsor: Frankie Yockey, Teaching and Academic Assistance Center

UI Advisor: Karen Van Houten

U-Build Cheatsheet (435)

Exhibitor: Husan Smith

Sponsor: Steve McWhorter, Altentus, Phoenix, AZ

UI Advisor: Karen Van Houten

Visi-Hours Student Effort Monitoring System (VHSEMS) (436)

Exhibitor: Robert Anderson

Sponsor: Karen Van Houten, Computer Science

UI Advisor: John Munson

Environmental Science Program (500)

Alternative Energy Planning Workshop (500)

Exhibitor: David O'Dell

UI Advisor: Frank Albrecht

Anatomy of a Conservation Easement (501)

Exhibitor: Kevin Turner

UI Advisor: Stephen Hollenhorst

Aquatic sediments, plant and nutrient relationship in the middle Snake River, Hagerman Reach, Idaho (502)

Exhibitor: Nathan Johnson

UI Advisor: C.M. Falter

Assessment Hawaii's

Endangered Species Management (503)

Exhibitor: Eldon Oyadomari

Sponsor: Environmental Science Program

UI Advisor: J. Michael Scott

Constructed Wetlands: Modeling for Hydraulic Retention Guidelines (504)

Exhibitor: Ian Bordenave

UI Advisor: Fritz Fiedler

Elk Use Impacts Upon

Winter Range Riparian Areas (505)

Exhibitor: Matthew Rajala

Sponsor: Environmental Science Program

UI Advisor: James Kingery

Environmental Education:

GPS Investigations (506)

Exhibitor: Shawn Mulrooney

UI Advisor: Michael Odell

ESA and CWA Implementation for Spring/Summer Chinook Salmon Habitat and Species Recovery (507)

Exhibitor: Lanspery Katherine

UI Advisor: William Whelan, Boise Extension Center

Establishing Bioregion Boundaries (508)

Exhibitor: Deborah McCormick

UI Advisor: Patrick Wilson

GIS Applications in

Tussock Moth Infestation Detection (509)

Exhibitor: Amanda Hess

UI Advisor: Karen Humes

Identifying Best Management Practices for the Canyon County Area of Nitrate Concern (510)

Exhibitor: Jonathan Suk

UI Advisor: Robert Mahler

Mineralogy of Contaminated Soils (511)

Exhibitor: Lindsay Obray

UI Advisor: Dan Strawn

Nitrate Source Assessment in the Mud Lake Area of Concern (512)

Exhibitor: Edward Jolly

UI Advisor: Robert Mahler

Overview of the Structure of American Indian Fresh Water Rights (513)

Exhibitor: Michael Rodman
UI Advisor: Douglas Lind

Paradise Creek Health Assessment (514)

Exhibitor: Kip Shields
UI Advisor: Leland Mink

Redefining the Parameters of the Grande Ronde Aquifer (515)

Exhibitor: Justin Nawrocki
UI Advisor: Jim Osiensky

Selenium Sorption (516)

Exhibitor: Rachel Henson
UI Advisor: Don Crawford

The Detection of the Natural Background Level of B. Anthracis from Dust (517)

Exhibitor: Kihwan Kim
UI Advisors: Don Crawford

The Idaho Potato; What They're Not Famous For (518)

Exhibitor: Alyssa Douglass
UI Advisor: Jim Osiensky

Mechanical Engineering (600)

Characterization of Friction and Drag (600)

Exhibitors: Tom Koelsch, David Tucker
Sponsor: Edwin Odom
UI Advisors: Michael Anderson

Efficiency Test of a Centrifugal Fan (601)

Exhibitors: James Broncheau, Mark Moore
Sponsor: Michael Anderson
UI Advisor: Michael Anderson

Flow Resistivity through Porous Media (602)

Exhibitors: Scott Anderson, Jeremy Olberding
Sponsor: ME430
UI Advisor: Michael Anderson

Flow through a Microchannel (603)

Exhibitors: Jacob Hixson, John Weidler
Sponsor: Tony Anderson
UI Advisor: Michael Anderson

Formula SAE (604)

Exhibitors: Sean Boston, William Dalling, Bob Drew, Sean Gray, Matthew Kundrat, John Ma, John Millet, Nathan Terry, David Tucker
Sponsor: College of Engineering
UI Advisor: Tony Anderson

Heat Exchanger Corrosion (605)

Exhibitors: Megan Cummings, Kristy Stevens
Sponsor: ME430
UI Advisor: Michael Anderson

Nozzle Performance Measurement (606)

Exhibitors: Michael Daley, Chris Fischer
Sponsor: ME430
UI Advisor: Michael Anderson

Robotic Trail Vision (607)

Exhibitors: James Angell, Ramon Burin
Sponsor: Dean Edwards, Charles Kinney
UI Advisor: Michael Anderson

Sound Impedance of Fiberglass (608)

Exhibitors: Phil Ozmun, Tim J. Paulitz
Sponsor: ME430
UI Advisor: Michael Anderson

Stirling Engine Performance (609)

Exhibitors: Brian Goedde, Devin Johnson, Nik Jones
Sponsor: Ralph Budwig
UI Advisor: Michael Anderson

Water Pump Power Consumption (610)

Exhibitors: Myles Brown, Nicholas Cunningham
Sponsor: Advanced Vehicles Concept Team
UI Advisor: Michael Anderson

Materials, Metallurgical,
Mining & Geological Engineering (700)

**Densification of LSGM based solid electrolytes
for applications in Fuel Cells (700)**

Exhibitor: Sai V. Kesapragada
Sponsor: US Department of Energy
UI Advisor: Sarit Bhaduri

Design of Dental Implants (701)

Exhibitor: Muralithran Kutty
Sponsor: National Science Foundation
UI Advisor: Sarit Bhaduri

Earth Dam Design (702)

Exhibitors: Andy Abrams, Robert Barker,
Kevin Brooks
Sponsor: Geological Engineering
UI Advisors: Mike Nicholl, Stan Miller

**Landslide Analysis and Engineering
Remediation Options (703)**

Exhibitors: Edwin Apel, Chris Comstock
UI Advisor: Stan Miller

**Liquid Phase Sintering of SiC and Steel:
Brazing Material (704)**

Exhibitor: Dan Falk
Sponsor: Met414 Process Design Class
UI Advisor: Keith Prsbrey

Mechanochemical Processing of Titanium (705)

Exhibitor: Michael Morris
Sponsor: Met414 Process Design Class
UI Advisor: Keith Prsbrey

Online Particle Size Analyzer (706)

Exhibitor: Aaron Finch
Sponsor: Keith Prsbrey
UI Advisor: Keith Prsbrey

**Physical and Mechanical Properties of
Microwave Sintered Nanocrystalline HA (707)**

Exhibitor: Rajesh Badri
Sponsor: Rajesh Badri
UI Advisor: Sarit Bhaduri

**Sic/Steel Low: A Melting
Temperature Steel Alloy (708)**

Exhibitor: Cameron Draney, Dan Falk
Sponsor: Materials, Metallurgical, Mining &
Geological Engineering
UI Advisor: Keith Prsbrey

**The Effect of a Magnetic
Influence on Sputtering Rates (709)**

Exhibitor: Dustin Erickson, Matthew Mottern
Sponsor: The Magnetic and Electronic Materials
Research Lab
UI Advisor: Keith Prsbrey

**The Effects of Plasma Nitriding
on the Wear Resistance of Tool Steel (710)**

Exhibitor: Brent Duelm, Jaret Frafjord
Sponsor: Western Sintering
UI Advisor: Keith Prsbrey

Technical Sessions

Electrical & Computer Engineering
Mechanical Engineering
Materials, Metallurgical, and Mining Engineering

Silver Room 9:00 - 11:00

Session Chair: Eric Bennett

9:00

Bluetooth Demonstration Console

Presenters: Eric Becker, Jacob Bingham,
Timothy Meyer
Sponsor: Advanced Input Devices
UI Advisor: Boris Bracio

Materials, Metallurgical,
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Electrodeposition of Copper Thin Films from Ammoniacal Solutions

Presenter: Darko Grujicic

Sponsor: US Navy, Office of Naval Research

UI Advisor: Batric Pesic

9:40

ACL Graft Tensioning Device

Presenters: Kenneth Benjamin, Jacob Hixson,

Dee Rammell

Sponsor: Stryker Endoscopy

UI Advisors: Edwin Odom, Karl Rink

10:00

Lean Mandrel Handling

Presenters: Dan McNab, Dallan Pope,

Tyler Valiquette, Jeff Williams

Sponsor: Boeing Company

UI Advisors: Edwin Odom, Karl Rink

10:20

The Modified Parameter Space Investigation Method for Optimizing Mechanical Design

Presenter: Dan Gerbus

Sponsor: National Institute for Advanced

Transportation Technology

UI Advisor: Edwin Odom

Chemical Engineering

Borah Theater 10:30 - 12:30

Session Chair: David Drown

10:30

Hydroxyapatite-Coated Titanium Dental Implants via Microwave Processing

Presenters: Phik Wei Low, William Prsbrey,

James Wood

Sponsor: Nanomaterials and Advanced Ceramics Laboratory

UI Advisor: David Drown

10:50

Biodiesel from Soy Oil Plant Design

Presenters: Patrick Lamb, Lester Patterson,

Dennis Schmillen

Sponsor: Otto Feeds and Chemical Engineering

UI Advisor: David Drown

11:10

BRASH (Biomass Radiant Automatic System Heating)

Presenters: Ed Cimbalik, McCloud Ford,

Jason Stedman

Sponsor: Chemical Engineering

UI Advisor: David Drown

11:30

Removal of Vitrified Nuclear Waste from Probes

Presenters: Ryan Carlson, Josh Johnson

Sponsor: Chemical Engineering, Environmental Biotechnology Institute

UI Advisors: David Drown, Wudneh Admaussu

11:50

Soil Remediation

Presenters: Jay Hoover, Mica Hutchison, Jeff Mohr

Sponsor: Chemical Engineering, Environmental Biotechnology Institute

UI Advisor: David Drown

12:10

Removal of Uranium from Drinking Water

Presenter: Elizabeth Herbst, Jessica High,

Gerald Keller

Sponsor: Chemical Engineering, Environmental Biotechnology Institute

UI Advisor: David Drown

Biological & Agricultural Engineering

Silver Room 11:00 - 12:00

Session Chair: Barbara Smith

11:00

Sleep Apnea Headgear Innovation

Presenters: Jama Bowers, Andrew Hayes,
Brandy Wiegers

Sponsors: John Grauke, Gritman Sleep Center; Janat
O'Donnell, Idaho Pulmonary Associates, Boise, ID;
Lawrence Garges, Tri-State Allergy and Asthma,
Clarkston, WA; Northwest Center for Oral and
Maxillofacial Surgery, Spokane, WA; Dr. Patrick
UI Advisor: Charles Peterson

11:20

GPS Enhancement of Center Pivot End Gun Actuation

Presenters: Alan Jackson, Ryan Madsen
Sponsor: Brad King, Aberdeen Research and
Extension Center
UI Advisors: Charles Peterson, Tom Hess

11:40

Degradation of Emissions from Potlatch Corporation Using a Biofiltration System

Presenters: Trish Gardner, Krista Kinsey, Michael
Koelsch, Robert Stedtfeld
Sponsor: Potlatch Corporation and Bioreaction
Industries, Inc.
UI Advisors: Charles Peterson, Tom Hess

Design Forum

Silver Room 1:30 - 2:30

Session Chair: Don Elger

1:30

Improving the Professional Skills of Engineering Graduate Students through Capstone Project Mentoring in Idaho Engineering Works

Presenters: Dan Cordon, Robert Drew, Dan Gerbus,
Matt Walker
Sponsors: National Institute for Advanced
Transportation Technology, Idaho Engineering Works,
Mechanical Engineering

1:50

University of Idaho Stirling Engine-A Student Manufacturing Project

Presenter: Nathaniel Allen
Sponsor: Idaho Engineering Works, Mechanical
Engineering

2:10

State of the Art in Capstone Design Assessment: A National Study

Presenter: Larry McKenzie
Sponsor: Transferable Integrated Design Engineering
Education (TIDEE)

Expo 2002 Awards Reception Student Union Building - Ballroom

4:30 pm

Social

5:15 pm

Awards

- Special Recognitions • Exhibit Awards • Poster Awards
- Technical Session Awards • People's Choice Award



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Expo 2002 Chairperson
Pam Becwar, Environmental Science
Eric Bennett, College of Mines
Boris Bracio, Electrical & Computer Engineering
April Christenson, Idaho Space Grant Consortium
David Drown, Chemical Engineering
Tom Hess, Biological & Agricultural Engineering
Bill Junk, Computer Science
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