Don Rabern, Ph.D., P.E.

DEAN, DEPARTMENT HEAD, PROFESSOR

2013-Present **Visiting Professor of Engineering– Department of Physics and Engineering, Fort Lewis College, Durango, CO**

Responsible for program improvement and accreditation activities. Director of the $1.75M Title III grant to expand undergraduate research, broaden services available to Native American students, and stand up the new Computer Engineering Program. Institutional projects have included: Degree feasibility studies, program review, teaching evaluation, faculty mentorship, capital projects, workload modeling, capital equipment, facilities planning, strategic planning task force, and ABET EAC/TAC program evaluation. Teaches an array of courses that include: Engineering Mechanics, Design, FEM, and CAD.

2001-2009 **Dean of Engineering and Professor of Aerospace Engineering Embry-Riddle Aeronautical University, Prescott, Arizona**

Led the College of Engineering, granting degrees in Aerospace, Electrical, Mechanical, Computer Engineering, and Computer Science. The Department of Aerospace Engineering is amongst the largest and highly rated in the country. The college consisted of approximately 800 students and 35 faculty/staff. Leading the college included line management, ABET accreditation, budget review and allocation, fund raising, strategic planning, research funding, faculty recruitment, diversity initiatives, facilities planning and implementation, tenure and promotion review/mentorship, and other tasks as assigned.

1997–2001 **Department Head and Professor: Civil Engineering and Engineering Mechanics. Montana State University, Bozeman, Montana**

Led the department and its associated institutes and centers with an undergraduate and graduate student base of approximately 750. The department grants seven separate degrees (B.S., M.S., and Ph.D.) with research grant activities of just over $6M/yr. Led curriculum development, interacted with industry and alumni, fund raising, and guided graduate research activities. Performed research in the areas of numerical modeling of materials, blast, and structural failure. Taught courses in Engineering Mechanics at the undergraduate and graduate levels. Provided leadership and direction for departmental teaching, research, and extension personnel.

1988–1997 **Adjunct Professor University of New Mexico–Los Alamos Center for Graduate Studies, Los Alamos, New Mexico**

Taught graduate and undergraduate courses in engineering mechanics.

RESEARCH AND PROFESSIONAL EXPERIENCE

2010-2013 **Research Engineer – Group W-14, Test Engineering, Los Alamos National Laboratory (LANS), Los Alamos, NM**

Led equation-of-state materials research, developing the high velocity long pulse duration shock facility. Mechanical lead for abnormal environments, conducting simulations and large scale experiments for mechanical impact and insult to nuclear weapons. Led verification and validation efforts for the B61 life extension program. Conducted research to characterize closed gun system gas expansion and momentum transfer for high velocity short pulse duration equation-of-state experiments.

1983–1997 **Los Alamos National Laboratory, University of California, Los Alamos, NM**
Engineering Sciences and Applications Division

1993–1997 **Group Leader: Engineering Analysis Group**
Led the Engineering Analysis Group at Los Alamos National Laboratory. This group consisted of approximately sixty researchers, visiting professors, post-docs, and graduate students primarily focused in Mechanical, Civil, and the Engineering Mechanics disciplines. Numerical simulations of structural, thermal, and fluid systems were conducted for the Department of Energy, Department of Defense, other federal agencies, and industrial partners. The group coupled high fidelity simulations with experiments to validate computations. My research areas included interior ballistics, terminal ballistics, blast, and nuclear weapons safety.

1990–1993 **Section Leader: Engineering Analysis**
As section leader, I was responsible for a team of twelve researchers performing numerical simulations and experiments on a variety of projects varying from satellites to accelerators. My specific research was centered in developing simulation methodologies for hypervelocity projectiles, graphite composite aircraft fan blades, and design and analysis to support two Space Shuttle experiments.

1983–1990 **Technical Staff Member: Engineering Mechanics**
As a technical staff member in the Engineering Mechanics Section, I performed research in: blast simulations, gun dynamics, interior ballistics, hypervelocity projectile performance, fluid-structure interaction, composites research, high strain rate behavior of materials, and blast containment within pressure vessels.

1979–1981 **Thiokol Corporation, Brigham City, Utah Structural Mechanics Division–Engineer**
Provided numerical, analytical, experimental, and design support in structural mechanics for solid rocket propellant motors needed by NASA and the DoD.

EDUCATION

1988 **Ph.D. Engineering Mechanics,** Minor–Mechanical Engineering
The University of Arizona: Civil Engineering and Engineering Mechanics, Tucson, Arizona
Dissertation: Axially Accelerated Saboted Rods Subjected to Lateral Forces

1983 **M.S. Engineering Mechanics,** Minor–Civil Engineering
The University of Arizona: Civil Engineering and Engineering Mechanics, Tucson, Arizona
Thesis: Stress, Strain, and Force Distributions in Gusset Plate Connections

1979 **B.S. Civil Engineering**
The University of Utah, Civil Engineering, Salt Lake City, Utah

PROFESSIONAL ORGANIZATIONS

ABET EAC/TAC, Program Evaluator (2010-present)
State Commissioner to the Arizona Aerospace and Defense Commission 2004-2008
Registered Professional Engineer: New Mexico, Montana, Arizona
American Institute of Aeronautics and Astronautics (2002-present)
American Society of Civil Engineers (1988-2010)
American Society of Engineering Educators (1996-2010)

A SUBSET OF COMMITTEES

Embry-Riddle Aeronautical University
Chair search Committees for the Chancellor, Dean of Admissions, and two Provosts
Campus Financial Viability Special Planning Group
Chair, University Committee for Workload

University Committees for partnerships in Chili, Singapore, and Qatar
University Committees for Faculty Compensation and Market Equity
Chair, Campus Faculty Diversity Plan
Campus Committee for Facilities Master Planning
Chair, University Committee for the Planning and Construction of the Aerospace Labs Complex
University Committee for the Planning of Academic Complex I
Chair, Campus Faculty Research Awards
Vision 2010 University Strategic Planning Committee
Vision 2015 University Strategic Planning Committee
Academic Council
University Dean's Council
Campus Council
Mentor to the McNair Scholar's Program

Montana State University
Chair, College of Engineering Task Force on Ph.D. Reform
Chair, College of Engineering ABET EC2000 Plan Development and Implementation Task Force
Chair, College of Engineering Workload Model Development Task Force
Chair, Department of Electrical and Computer Engineering Department Head Search Committee
Chair, College of Engineering Freshman Retention Task Force
Chair, College of Engineering Dean Search Committee
Multiple Ph.D. Graduate College Representative Committees
Board of Governors – Western Transportation Institute, 1996-2001

ACCREDITATION AND NEW PROGRAMS
ABET Engineering Accreditation Commission Program Evaluator (multiple visits)
Feasibility study and associated proposals to create Computer Engineering at Fort Lewis College
ABET Visit for the initial review of the Fort Lewis College Bachelors of Science in Engineering (2013)
Startup of the Embry-Riddle Aeronautical University Mechanical Engineering Program (2007)
ABET Visit for Aerospace, Electrical and Computer Engineering (2004)
ABET Program Inception Accreditation Visit for Computer Engineering (2003)
Startup of the Embry-Riddle Aeronautical University Computer Engineering Program (2001)
Southern Association of Colleges visit to Embry-Riddle Aeronautical University (2002)
Northwest Commission on College and Universities NWCCU visit to Montana State University (1998)
ABET Accreditation Visit for Civil Engineering (1998)
ABET Accreditation Visit for Construction Engineering Technology (1997)

TEACHING AND SERVICE AWARDS
Outstanding Teacher Award, College of Engineering, Montana State University (1998)
Service Excellence Award, Embry-Riddle Aeronautical University (2004, 2006, 2007, 2008)

TEACHING
Courses Taught at Fort Lewis College
ENGR317 Mechanics of Materials
ENGR315 Engineering Design and Practice
ENGR215 Engineering Fundamentals III
ENGR103 Engineering Fundamentals I
ENGR454 Finite Element Analysis

Courses Taught at Embry-Riddle Aeronautical University
ES202 Solid Mechanics
AE304 Aerospace Structures I
EGR101 Introduction to Engineering
ME300L Machine Design Laboratory
ES204 Dynamics
AE404 Aerospace Structures II
ES207 Fundamentals of Mechanics

Courses Taught at Montana State University
EM215 Strength of Materials
EM335 Mechanics of Fluids
EM253 Mechanics of Materials
EM415 Advanced Mechanics of Solids

EM565 Finite Element Methods in Solid Mechanics
CE202 Applied Analysis
CE401 Professional Practice and Ethics

Courses Taught at the University of New Mexico
CE302 Mechanics of Materials
CE401 Advanced Mechanics of Materials

Courses Taught at the University of Arizona
CE201 Statics
CE380 Materials Laboratory
CE217 Strength of Materials

TENURE AND PROMOTION
Hired at the Rank of Tenured Professor at Embry-Riddle Aeronautical University in 2001
Hired at the Rank of Professor at Montana State University in 1996
Reviewed for Tenure in 1998 and Granted tenure in 1999 at Montana State University.

A SUBSET OF REPORTS, PROCEEDINGS, AND PUBLICATIONS

Rabern, D.A., Lam, K., and Rigg, P., "Interior Ballistic and Hydrodynamic Modeling for Prediction of Powder Gun Momentum and Confinement System Pressure Loads", JOWOG 32 HDI Conference on Confinement and Containment Vessels, Los Alamos, NM 2013.

Rabern, D., A., Lam, K., "CFD Simulations to predict PAI Vessel Loading", W-14-SE0037U, LACP-13-01138, 2013, Los Alamos National Laboratory

Rabern, D., A., Scarbrough, J., "WX-9 Popgun Ballistic Simulations", W-14-TR-0083U, 2012, Los Alamos National Laboratory

Rabern, D., A. "Large Bore Powder Gun Characterization for Down Hole EOS Experiments", W-14-TR-0065U/LA-UR-12-20173, 2012, Los Alamos National Laboratory

Rabern, D., A., "Verification and Validation Methodologies for the B61-Life Extension Program", Los Alamos National Laboratory, 2012.

Rabern, D., A., "Mechanical Insult and Abnormal Environments Test Matrix for the B61-LEP", Los Alamos National Laboratory 2012.

Cundy, V., D. Gibson, and D. A. Rabern, "A Model to Assess and Balance Faculty Workload", ASEE Annual Meeting and Symposium, (2000).

Whelan, M. L., P. Knoll, D. Jost, and D. Rabern, "Outcome Assessment of Construction Engineering Technology Program Using the Constructor Qualification Examination Level I., ASEE Regional Conference, Bozeman, MT, February, 2000.

McKittrick, L., Hicks, J., Stephens, J., VanLuchene, D., Rabern, D., "Performance of Steep Pipe Pile-to-Concrete Bent Cap Connections Subject to Seismic or High Transverse Loading. Phase I: Preliminary Investigations, submitted to the Montana Department of Transportation, Research and Development, and Technology Transfer Program, March 1998.

Parker, R., D. Rabern, and J. Bolstad. "Terminal Ballistic Performance of the M829A1 and CKE Projectile Against Semi-Infinite RHA and Range Target TG12A." Third Ballistics Symposium on Classified and Controlled Topics sponsored by the Ballistics Division of the American Defense Preparedness Association, John Hopkins University, Baltimore, Maryland (Nov. 95).

Dunn, P., D. Rabern, and R. Parker. "Ballistic Performance of 1/3 Scale Uranium-Tungsten Composite Penetrators Versus RHA, Ceramic, and Reactive Targets." Third Ballistics Symposium on Classified and Controlled Topics sponsored by the Ballistics Division of the American Defense Preparedness Association, John Hopkins University, Baltimore, Maryland (Nov. 95).

Mandell, D. A., R. B. Parker, and D. A. Rabern. "Penetration of Long Rods into Steel: Experimental and Computational Study," in the Proceedings of the Society of Engineering Science Symposium (1994).

Rabern, D., T. Butler, and J. Benner. "Response of the M825A1 Projectile to Oscillatory Liquid Propellant Pressures." Los Alamos National Laboratory Report ESA13-94-399, Los Alamos, New Mexico (1994).

Rabern, D. A., and R. B. Parker. "Launch Behavior of 60-mm Pushed and Traction Driven Saboted Launch Packages." *International Journal of Impact Engineering,* Vol. 14, No. 1 (1994).

Parker, R., D. Rabern, and J. Bolstad. "Terminal Ballistic Performance of the M829A1 and CKE Projectile Against Semi-Infinite RHA and Range Target TG12A." Los Alamos National Laboratory Report MEE13-93-S-002, Los Alamos, New Mexico (1993).

Butler, T., and D. Rabern. "Response of the M864 Projectile to Oscillatory Liquid Propellant Pressures." Los Alamos National Laboratory Report MEE13-93-672, Los Alamos, New Mexico (1993).

Butler, T., K. Cone, and D. Rabern. "Digital Signal Analysis of Data from Solid and Liquid Propellant Tests." Los Alamos National Laboratory Report MEE13-93-476, Los Alamos, New Mexico (1993).

Parker, R., and D. Rabern. "Terminal Ballistic Performance of the M829A1 Projectile Against Semi-Infinite RHA and Range Target TG12A." Los Alamos National Laboratory Report MEE13-93-C-001, Los Alamos, New Mexico (1993).

Rabern, D. A. "Numerical Simulations of Gun-Launched Kinetic Energy Projectiles Subjected to Asymmetric Base Pressure." *International Journal of Impact Engineering,* Vol. 12, No. 3 (1992).

Rabern, D. A., and M. W. Lewis. "Two- and Three-Dimensional Simulations of Moving Pressure Fronts in Gun Tubes." *Journal of Pressure Vessel Technology,* Vol. 13, No. 3 (1992).

Rabern, D. A. "Axial and Lateral Impulsive Loading of Kinetic Energy Projectiles During Launch Part I: Experimental Investigations." *International Journal of Impact Engineering,* Vol. 12, No. 1 (1992).

Rabern, D. A. "Axial and Lateral Impulsive Loading of Kinetic Energy Projectiles During Launch Part II: Numerical Simulations." *International Journal of Impact Engineering,* Vol. 12, No. 1 (1992).

Lewis, M., D. Rabern, and R. Meier. "Electromagnetic Structural, and Thermal Numerical Modeling for Solid Armature Projectiles and Railguns." Los Alamos National Laboratory Report MEE13-92-352, Los Alamos, New Mexico (1992).

Rabern, D., R. Parker, and R. London. "7-in. Bore Double Travel Experimental Gun Setup and Powder Curves." Los Alamos National Laboratory Report MEE13-92-404, Los Alamos, New Mexico (1992).

Rabern, D. A. "Numerical Simulations of Gun-Launched Kinetic Energy Projectiles Subjected to Asymmetric Base Pressure," in the Proceedings of the Ballistic '92 13th International Symposium, Stockholm, Sweden, June 1992.

Burkett, M. W., and D. A. Rabern. "Stress Fields Generated by Kinetic Energy Projectile Interaction with Ceramic Targets," in the Proceedings Topical Conference on Shock Compression of Condensed Matter, Williamsburg, Virginia, June 1991.

Bannister, K. A., S. A. Wilkerson, and D. A. Rabern. "Finite Element Solution of Transient In-Bore Response Problems," in the Proceedings U.S. Army Ninth Army Conference on Applied Mathematics and Computing, University of Minnesota (1991).

Rabern, D. A., and J. R. Neal. "Numerical Simulations of Gun Launched Kinetic Energy Projectiles Subjected to Asymmetric Base Pressure." Los Alamos National Laboratory Report MEE13-91-445, Los Alamos, New Mexico (1991).

Rabern, D. A. and R. B. Parker. "Heavy Metal Penetrator System Design, Analysis, and Evaluation for Enhanced Tungsten Alloys." Los Alamos National Laboratory Report MEE4-C-91-106, Los Alamos, New Mexico (1991).

Holder, M., J. McAfee, G. Miranda, R. Parker, and D. Rabern. "Microwave-Interferometric Measurement of In-bore Projectile Rotation," in Proceedings U.S. Army Test Technology Symposium No.3, John Hopkins University, Baltimore, Maryland (1990).

Rabern, D. A., and K. A. Bannister. "Finite Element Models to Predict the Structural Response of 120-mm Sabot/Rods During Launch," in Proceedings of Sixth U.S. Army Symposium on Gun Dynamics, Tamient, Pennsylvania (1990).

Bannister, K. A., and D. A. Rabern. "Simulated Firings of 120-mm Tank Guns," in Proceedings of 1990 Multiconference EMC '90, Nashville, Tennessee (1990).

Rabern, D. A., and M. W. Lewis. "Projectile and Gun Tube Simulations with a Moving Pressure Front in Two- and Three-Dimensions." Los Alamos National Laboratory Report MEE4-90-451, Los Alamos, New Mexico (1990).

Rabern, D. A., R. B. Parker, and J. M. McAffe. "A Numerical and Experimental Evaluation of the XM900E1 Sabot/Rod System During Launch." Los Alamos National Laboratory Report LA-11866-MS, Los Alamos, New Mexico (1990).

Rabern, D. A. "In-bore Structural Behavior of 120-mm Saboted Long Rods Subjected to Axial and Lateral Accelerations," in Proceedings of the 11th International Symposium on Ballistics, Brussels, Belgium (1989).

Rabern, D. A. "Axially Accelerated Saboted Rods Subjected to Lateral Forces," in Proceedings of the 1989 Flash Radiography Topical, Welches, Oregon (1989).

Davidson, R. F., W. A. Cook, D. A. Rabern, and N. M. Schnurr. "Predicting Bore Deformations and Launcher Stresses in Railguns," in Proceedings of the Third Symposium on Electromagnetic Launch Technology, Austin, Texas (1986).

Rabern, D. A. "Comparison of Flyer Plate Experiments with Flyer Plate Analyses Performed Using DYNA2D and SOIL2D Computer Codes." Los Alamos National Laboratory Report LA-PR-85, Los Alamos, New Mexico (1985).

Rabern, D. A. "Summary of Analytical and Test Results for the URA Mass Simulator Assembly." Los Alamos National Laboratory Report WX-4-6144, Los Alamos, New Mexico (1984).

Rabern, D. A. and W. D. Birchler. "Analysis of Lethality Test System Gas Gun Slip Joint." Los Alamos National Laboratory Report WX-4-8883, Los Alamos, New Mexico (1984).

Richard, R. M., D. A. Rabern, D. E. Hormby, and G. C. Williams. "Analytical Models for Steel Connections," in Proceedings of the W. H. Munse Symposium ASCE, Chicago, Illinois (1983).