

DR. MICHAEL G. WARD
DEAN

COLLEGE OF ENGINEERING, COMPUTER SCIENCE, AND CONSTRUCTION MANAGEMENT
CALIFORNIA STATE UNIVERSITY, CHICO 95929-0003
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EDUCATION

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|-------------|--|---------------------------------|--------|
| PH.D | MECHANICAL ENGINEERING | Stanford University | (1983) |
| | Dissertation: " <i>Attitude Dynamics of the Galileo Spacecraft.</i> "
Large motion dynamics of a flexible multi-body spacecraft and efficient techniques for developing equations of motion | | |
| M.S. | MECHANICAL ENGINEERING | University of California, Davis | (1975) |
| | Thesis: "Gas Dynamic Simulation of a Two Stroke Engine." | | |
| B.S. | MECHANICAL ENGINEERING | University of California, Davis | (1973) |

ADMINISTRATIVE EXPERIENCE

CALIFORNIA STATE UNIVERSITY, CHICO (1988-)

INTERIM DEAN, COLLEGE OF ENGINEERING, COMPUTER SCIENCE, AND CONSTRUCTION MANAGEMENT (2008- 2010)

Provide leadership and assume responsibility for curricular, fiscal and personnel management of the college including accreditation, program assessment, strategic planning, resource allocation, advancement and development, student recruitment, and facilities utilization for five academic departments housing eleven undergraduate programs, two graduate programs and MESA pre-college and retention programs.

- Worked to preserve integrity of academic and support programs while managing serious budgetary challenges
- Successfully lead development of College Strategic Plan aligned with University Strategic Plan and Academic Plan for Academic Affairs
- Secured critical one-time equipment funds related to ABET accreditation
- Successful lobbying for revised Academic Affairs fund distribution models based on national benchmarks

ASSOCIATE DEAN, COLLEGE OF ENGINEERING, COMPUTER SCIENCE, AND CONSTRUCTION MANAGEMENT (2001- 2008)

Assist the dean with curricular, fiscal and personnel management of the college including accreditation, program assessment, strategic planning, resource allocation, student recruitment and orientation programs, and facilities utilization for five academic

departments housing eleven undergraduate programs, two graduate programs and MESA pre-college and retention programs.

- Coordination of accreditation matters including implementation of ABET EC 2000 Criteria
- Coordination and implementation of college assessment programs
- Coordination of college / departmental scholarships
- Chair, College Curriculum Committee
- Chair, College Administrative Council
- Joint proposal with other CSU engineering deans for CSU *Engineering Academies*– 2 year seed funding to implement K-12 programs such as *Project Lead The Way*

CHAIR, DEPARTMENT OF MECHANICAL ENGINEERING AND MANUFACTURING (1994-2000)

Curricular, fiscal, and personnel management of the department including curriculum development, accreditation, laboratory maintenance, operating budgets, personnel matters, student advising, course scheduling, and teaching assignments. Responsible for three accredited baccalaureate programs: Mechanical Engineering, Mechatronic Engineering (ABET), and Manufacturing Technology (NAIT). Mechanical Engineering ABET self-study (1997)

- Facilitated the development of a new program in Mechatronic Engineering
- Manufacturing Technology Program Restructuring (1997-99)

CAMPUS WASC ACCREDITATION TEAM CHAIR (1994-96)

Self-Study Steering Committee Chair – University Re-accreditation for Western Association of Schools and Colleges (WASC). With Vice Provost for Academic Affairs organized campus-wide effort to assure favorable campus re-accreditation.

INTERIM DEAN, COLLEGE OF ENGINEERING, COMPUTER SCIENCE, & TECHNOLOGY (1992-94)

Curricular, fiscal and personnel management of the college, including external fund development, corporate relations, accreditation, strategic planning and facilities utilization for five academic departments housing eight undergraduate and three graduate programs.

- Administered budget cuts as a consequence of significant state funding reductions, coordinating departmental mergers, facility sharing, course sharing, and restructuring the Industrial Technology Program.
- Coordinated accreditation self-studies and visit for five engineering programs (1994)
- Facilitated the formation of the Center for Manufacturing Excellence (1993)

CHAIR, DEPARTMENT OF MECHANICAL ENGINEERING (1990-92)

Curricular, fiscal, and personnel management of the department

TEACHING EXPERIENCE

CALIFORNIA STATE UNIVERSITY, CHICO (1988-):

PROFESSOR, MECHANICAL ENGINEERING (1990-)

- Tenure and Promotion to Professor 1990
- Associate Professor, Mechanical Engineering (1988-90)
- Mechanical Engineering Graduate Coordinator (1989-90)
- Assisted in the formation of a graduate program in mechanical engineering.
- Undergraduate Courses: Dynamics, Thermodynamics, Mechanical Engineering Design, Engineering Mechanics, Control Systems Engineering
- Graduate Courses: Applied Mechanics, Control Systems Engineering

UNIVERSITY OF THE PACIFIC (1982-88):

ASSOCIATE PROFESSOR, MECHANICAL ENGINEERING (1985-88)

- Interim Department Chair (1988)
- Tenured 1988
- Assistant Professor, Mechanical Engineering (1982-85)
- Development of a new mechanical engineering program at the University of the Pacific - ABET accredited 1985. Authored ABET self-study (1988)
- Development of curriculum and laboratories from program inception in 1982

SAN JOSE STATE UNIVERSITY (1981)

ADJUNCT PROFESSOR, MECHANICAL ENGINEERING (1981)

FELLOWSHIP

NASA/ASEE SUMMER FACULTY FELLOWSHIP

Guidance and Control Section, NASA's Jet Propulsion Laboratory (1990) Flexible spacecraft dynamic model formulation with equation simplification for real-time hardware-in-the-loop simulation of multi-body spacecraft and robots – Cassini Spacecraft methods development.

INDUSTRIAL EXPERIENCE

SENIOR RESEARCH ENGINEER - LOCKHEED MISSILES AND SPACE COMPANY, SPACE SYSTEMS DIVISION, SUNNYVALE, CA (1978-82)

Dynamic analysis and simulation of spacecraft mechanisms and separation systems for shuttle/spacecraft and booster/spacecraft deployments

ENGINEER - GENERAL ELECTRIC, NUCLEAR ENERGY DIVISION, SAN JOSE, CA (1975-78)

Development of analytical thermal-hydraulic models of nuclear reactor components and containment systems for reactor safety simulations

SELECTED RESEARCH AND SPONSORED PROJECTS

LAWRENCE LIVERMORE NATIONAL LABORATORY - P.I. \$300K Project
“Hazardous Area Inspection Robot” (2008-09) Development of small scale tethered prototype robot capable of video surveillance and radiation detection in hostile environments.

LAWRENCE LIVERMORE NATIONAL LABORATORY - P.I. \$500K Project
“Multi-purpose Remote Controlled Robot” (2007-08) Development of large scale remote control prototype robot capable of multiple surveillance and detection missions in hostile environments.

LAWRENCE LIVERMORE NATIONAL LABORATORY - P.I. \$500K Project
“Road Clearing Robot” (2006-07) Development of a large scale remote control prototype robot capable of clearing roads in front of military convoys in hostile environments.

LAWRENCE LIVERMORE NATIONAL LABORATORY - P.I. \$25K Project
“Advanced Controllable Robot” (2005-06) Development of a tethered prototype spiral tube robot with a unique auger-like propulsion system for military surveillance applications.

LAWRENCE LIVERMORE NATIONAL LABORATORY - P.I. \$70K Project
“Tethered Scout Robot” (2005-06) Development of a 2nd generation prototype tethered surveillance robot for military surveillance applications.

LAWRENCE LIVERMORE NATIONAL LABORATORY - P.I. \$115K Project
“Design of a Prototype Spiral Tube Robot” (2005-06) Development of a prototype spiral tube robot with a unique auger-like propulsion system for military surveillance applications.

LAWRENCE LIVERMORE NATIONAL LABORATORY - Co-P.I. \$100K Project
"Air Valve Truck Stopping Device" (2004-05) Development of assistive device to allow highway patrol to disable hijacked trucks carrying fuel or hazardous chemicals.

H2O SAFETY INTERNATIONAL, Napa, CA (1997) "Performance Parameters for Water-Filled Impact Barriers." Analytical study of the performance of water filled impact bumpers on vehicles.

BATTELLE PACIFIC NORTHWEST LABORATORIES, Richland, WA (1996) Study of "Control Limitations of a Hydraulically Actuated Multi-Body Structure with Flexibility." A study to determine the feasibility of adapting automatic control methods to control flexible robots used in DOE's efforts to clean up toxic nuclear waste at the Hanford, WA nuclear storage facilities.

PACIFIC GAS AND ELECTRIC COMPANY, Northern Area Hydro Division, Chico, CA, (1992) Comparative analysis of hydro-electric power plant forced outages on the Pitt and Feather rivers, and recommendations for changes in operating procedures to improve reliability.

LOCKHEED MISSILES AND SPACE COMPANY, Space Systems Division, Sunnyvale, CA, (1982-88). Development of special purpose, proprietary computer programs to predict dynamic behavior of flexible multi-body spacecraft. Developed analytical models and computer simulations including

- MABEL* - Attitude and pointing dynamics of a flexible multi-body spacecraft
- FOLD* - Retraction dynamics of a prototypical flat-folding, flexible solar array, for NASA's Solar Array Flight Experiment (Prototype for International Space Station)
- FLEXCLAM* - Separation dynamics of large, flexible clamshell fairings
- SEPSTY 6* - Spacecraft/booster separation with flexible roller/rail guides

PROFESSIONAL REGISTRATION

Registered Professional Engineer, Mechanical Engineering, California (No. 18391)

PROFESSIONAL AFFILIATION

ACCREDITATION BOARD FOR ENGINEERING AND TECHNOLOGY (ABET)
Engineering Accreditation Commission – Mechanical Engineering Program Evaluator
(2003-)

AMERICAN SOCIETY FOR ENGINEERING EDUCATION (ASEE)

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)
ABET Evaluator for BSME Programs (2003-)

HONORS AND AWARDS

Member, Tau Beta Pi, Engineering Honor Society
Member, Phi Kappa Phi

INVITED PRESENTATIONS, SEMINARS AND WORKSHOPS

"Academic Year Assessment Schedule," Poster Session, Annual Conference of the *Center for Excellence in Learning and Teaching*, CSU, Chico, October 2006.

"Elements of an Effective Assessment Program," Annual Conference of the *Center for Excellence in Learning and Teaching*, CSU, Chico, October 2005.

"Accreditation Visit Preparation," Workshop for ABET Related Assessment, College of Engineering, San Jose State University, March 2005.

"Guidelines for Effective Program Assessment," Engineering Faculty Assessment Workshop, CSU, Chico, August 2003.

"Accreditation for 2000 and Beyond," Computer Science Faculty Workshop, CSU, Chico, April 2002.

"Retraction Dynamics of NASA's Solar Array Flight Experiment," Design, Dynamic Systems and Control Seminar, Mechanical and Aeronautical Engineering Department, UC Davis, Jan. 1991.

"The Role of Linearization in Flexible Multi-body Dynamics," NASA's Jet Propulsion Laboratory, California Institute of Technology, August 15, 1990.

"Attitude Dynamics of Large Complex Spacecraft - A Galileo Case Study," NASA's Jet Propulsion Laboratory, October 1983.

THESIS SUPERVISION

Susana Carranza, "Control of an Inverted Pendulum Using Fuzzy Logic," MS in Interdisciplinary Studies: Applied Mechanical Engineering, CSU Chico, May 1998

Paul Smedhammer, "Task-Related Strength Capacities of The Human Upper Body," MS in Interdisciplinary Studies: Applied Mechanical Engineering, CSU Chico, May 1993

Jon Smalley, "Control of An Inverted Flexible Pendulum with Experimental Verification," MS in Interdisciplinary Studies: Applied Mechanical Engineering, CSU Chico, May 1992

SELECTED UNIVERSITY & COMMUNITY SERVICE

Member, Butte County Air Pollution Control District Hearing Board (1993-)

CALIFORNIA STATE UNIVERSITY, CHICO:

- Student Fee Advisory Committee (2008-10)
- Academic Assessment Council (including AURA) (2004-09)
- University Scholarship Committee (2002-08)
- WASC Accreditation Team Leader (1994-96)
- Academic Planning and Budget Committee (1991-93)
- Academic Standards Committee (1990-92, 1994 - 2000)
- Graduate Coordinator, Mechanical Engineering (1989-90)
- Graduate Council (1989-90)

UNIVERSITY OF THE PACIFIC:

Chair, University Academic Affairs Committee (1987-88)

SELECTED PUBLICATIONS

Ward, M., "Implementing EC2000 – Perspectives from Both Sides of the Assessment Trench" Proceedings of the ASEE Annual Conference, 2007 (Honolulu, HI, June 25-27).

Emerson, T. and Ward. "Students Are Leaving Engineering Curriculums; Can Our Education Approach Stop This?" Proceedings of the ASEE Annual Conference, 2005 (Portland, OR, June 12-15).

Carranza, S. and Ward M. "Control of an Inverted Pendulum Using Fuzzy Logic," IASTED Conference on Control and Applications, 1998 (Honolulu, HI, August 12-14).

Smalley, J. and Ward, M. "Simulation and Verification of an Inverted Flexible Pendulum", Proceedings of the SCS Summer Computer Simulation Conference, 1992 (Reno, NV, July 27-30).

Ward, M. "MATLAB: Interactive Simulation for Control System Design", Simulation in Engineering Education, Proceedings of the SCS Western Multi-conference, 1990 (San Diego, CA, Jan. 17-19).

Ward, M. "Simulation Exercises in Component Sizing," Proceedings of the 1989 ASEE Annual Conference, (Lincoln, NB, June 1989). Published in the CoED Journal, Computers in Engineering Education Division of ASEE, Vol X, No. 2, April-June 1990.

Ward, M. "Feedback Control Parametric Studies Using TUTSIM", Simulation in Engineering Education, Proceedings of the SCS Western Multi-Conference, 1989 (San Diego, CA, Jan. 4-6).

Ward, M. "Dynamic Systems Simulation Using Tutsim", Proceedings of the 1988 ASEE Annual Conference, (Portland, OR, June 88). Published in the CoED Journal, Computers in Education Division of ASEE, Vol IX, No. 3, July-September 1989.

Ward, M. 1986. "MABEL Users Manual - Version 15." Internal Report. Space Systems Division, Lockheed Missiles and Space Company. Consulting contract LC90C-7220F.

Ward, M. 1985. "MABEL Development Manual." Internal Report. Space Systems Division, Lockheed Missiles and Space Co. Consulting contract LC90C-7220F.

Ward, M. 1983. "Flexible Fairing Hinge Load Model." Technical Report SSM-1025. Space Systems Division, Lockheed Missiles and Space Co. Consulting contract LC90C-7220F.

Ward, M. 1983. "Flat Folding Solar Array Retraction Dynamics Model Simulations." Technical Report SSM-995. Consulting agreement LC90C-7220F.

Ward, M. 1982. "Flat Folding Solar Array Retraction Dynamics Model." Technical Report SS-1630-6262. Space Systems Division, Lockheed Missiles and Space Co.

Ward, M. 1982. "ST Hinge Drive Assembly Test Data Analysis." Technical Report S and M 343. Space Systems Division, Lockheed Missiles and Space Co.

Ward, M. 1982. "Flexible Solar Array Retraction Study." Technical Report SS-1626-6262. Space Systems Division, Lockheed Missiles and Space Co.

Moody, F., Ward, M. and Wheeler, A. 1979. "The Role of Various Parameters on Safety Relief Valve Pipe Forces," Safety Relief Valves, PVP-33, The Pressure Vessel and Piping Division, ASME.

Ward, M., et al. 1978. "Safety-Relief Valve System Analytical Models." Technical Report NEDE-21679. Nuclear Energy Division, General Electric Co.

Ward, M., et al. 1977. "Chinshan Nuclear Power Station Control Systems Design Report." Technical Report GEZ-6415.

Ward, M., et al. 1977. "Mark I Containment Program Preliminary Load Evaluation Report." Technical Report NEDM-21688.

Ernst, R. and Ward, M. 1976. "Mark II Pressure Suppression Containment Systems: An Analytical Model of the Pool Swell Phenomenon." Technical Report NEDO-21544.

Ward, M., et al. 1976. "Mark I Containment Evaluation Short Term Program Final Report - Loads and Their Application for Torus Support System Evaluation." Technical Report NEDC-20989.

Dwyer, H., Allen, R., Ward, M., and Karnopp, D. 1974. "Shock Capturing Finite Difference Methods for Unsteady Gas Transfer," Proceedings of the AIAA Fluid and Plasma Dynamics Conference. AIAA paper 74-521. (Palo Alto, CA, June 17-19)