

Joseph Frederick Cullen, Jr.

Department of Mechanical Engineering
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Teaching Experience

- 1992-Present: Senior Instructor in Mechanical Engineering
University of Colorado at Denver
- 1985-1992: Instructor in Mechanical Engineering
University of Colorado at Denver
- 1981-1985: Graduate Teaching Assistant in Mechanical Engineering
University of Colorado at Denver
- 1976-1981: Graduate Teaching Assistant in Civil Engineering
University of Colorado at Denver

Have taught undergraduate engineering courses in analytical mechanics, fluid mechanics, first and second semester thermodynamics, heat transfer, air conditioning, systems engineering, control systems, vibration analysis, solid mechanics, structural design, mechanisms, numerical analysis, computer-aided engineering, wind turbine design, vehicle dynamics, mechanical systems design, and thermal systems design. Developed and taught laboratory fluid mechanics courses for both mechanical engineering and civil engineering undergraduates. Have taught review courses in engineering thermodynamics, fluid mechanics, and engineering mechanics for engineers preparing to take their professional examinations.

Have taught graduate engineering courses in dynamics, numerical analysis, fluid dynamics, low-speed aerodynamics, wind turbine design, and vehicle dynamics.

Named an outstanding instructor in civil engineering for 1986 and 1987, and an outstanding instructor in mechanical engineering for 1988, 1989, 1990, 1991, 1993, 1994, 1995, 1996, and 1998. Received the University's Excellence in Teaching award in 1996. Conducted courses and laboratory demonstrations designed to attract women and minorities to engineering. Have served as faculty advisor for the student chapters of the Society of Women Engineers, Tau Beta Pi, and SAE (Society of Automotive Engineers).

Technical Interests

Interested in theoretical, computational, and experimental aeronautics; especially lift generation and drag reduction for both aircraft and ground vehicles. Also interested in road vehicle dynamics, thermodynamics, energy conversion, and system dynamics.

Education

M.S., Applied Mathematics, University of Colorado, 2002

M.S., Mechanical Engineering, University of Colorado, 1985

M.S., Aeronautics and Astronautics, University of Washington, 1973

B.S., Aerospace Engineering Sciences, University of Colorado, 1969

Studied numerical analysis, computational mechanics, and the mathematics of science and engineering while working towards the M.S. in Applied Mathematics. Studies also included graduate mathematics and engineering courses in system dynamics, nonlinear dynamics, computational compressible flow, continuum mechanics, and the theoretical and numerical analysis of airfoils and wings.

While working towards the M.S. in Mechanical Engineering, took virtually every graduate course in the department as well as many courses in applied mathematics and civil engineering. Studied theoretical and computational fluid mechanics, thermodynamics, heat transfer, dynamics, vibration analysis, and solid mechanics from the Department of Mechanical Engineering. Studied fluid mechanics and hydraulics, solid mechanics, and vibration analysis as a graduate student in civil engineering.

Studied theoretical, computational, and experimental aerodynamics while working towards the M.S. in Aeronautics and Astronautics. Studies also included courses in atmospheric flight mechanics, propulsion, structural analysis, structural dynamics, space flight dynamics, and numerical analysis.

Undergraduate experience included electives in fluid mechanics, space flight dynamics, structural design, and aircraft design. Participated in student government as an officer in Tau Beta Pi, the national engineering honor society, and tutored freshmen and sophomores in a program administered by Tau Beta Pi. Served as an editor and contributor for *Colorado Engineer*, the magazine of the Associated Engineering Students.

Professional Experience

1969-1971: Aeronautical Engineer, Commercial Airplane Division
The Boeing Company, Seattle, Washington

Worked as an aerodynamicist predicting and measuring the changes in aircraft performance caused by configuration changes to Boeing's 727 jet transport. Redesigned the 727's high-lift system for use on the 727-200 Advanced. Used a high-speed wind tunnel to calibrate flight-test booms used to determine jet aircraft performance. Maintained computer programs used to analyze jet aircraft performance. Did some of the preliminary design performance analysis for the aircraft now known as the 757 and 767.