



Taksha Institute (TI)

Seminar TRS122:

Introduction to Spacecraft Design and System Engineering



A 3-DAY, 18-HOUR Seminar

*Sponsored by the Institute for Atmospheric Optics and Remote Sensing (IFAORS),
a division of Taksha Institute (TI)*

Date: TBA

Location: TBA

INSTRUCTOR: DONALD EDBERG, PH.D. – Professor, IFAORS, Taksha Institute; Professor of Aerospace Engineering, California State Polytechnic University, Pomona; and former Boeing Technical Fellow, Boeing Information, Space, and Defense Systems, Huntington Beach, CA.



During his 24 years of experience in the aerospace industry and teaching, Dr. Edberg has worked on launch vehicle and on-orbit space environments, aerodynamic testing of launch vehicles at high angles of attack, experimental modal and dynamic analysis, launch vehicle load mitigation, reduction of on-orbit mechanical vibrations, and microgravity isolation systems, as well as the development of an electric-powered, back-packable UAV now in service as the FQM-151 Pointer. He holds 10 U.S. patents in aerospace and related fields, and was the inventor of and chief engineer for the patented McDonnell Douglas STABLE (Suppression of Transient Acceleration by Levitation Evaluation) vibration isolation system. Dr. Edberg is an Associate Fellow of the American Institute of Aeronautics and Astronautics (AIAA) and an active UAV pilot. He is currently the Director of Cal Poly Pomona's Spacecraft and Launch Vehicle Lab and Uninhabited Aerospace Vehicle Lab.

EVENT DESCRIPTION: This seminar series presents an overview of all the factors that affect the design and operation of satellites and spacecraft. It begins with an historical review of manned and unmanned spacecraft, including current designs and future concepts. All the design drivers, including launch, on-orbit environment and atmospheric entry, are covered. Launch vehicle engineering and its effect on the spacecraft design is discussed. Orbital mechanics is presented in a manner that provides an easy understanding of underlying principles, as well as such applications as maneuvering, transfers, rendezvous, and interplanetary transfers. Considerable time is spent defining the systems engineering aspects of spacecraft design, including the spacecraft bus components and the relationship to ground control. Design considerations, such as structures and mechanisms, attitude sensing and control, thermal effects and life support, propulsion systems, power generation, telecommunications, and command and data handling, are detailed. Practical aspects, such as fabrication, cost estimation, and testing, also are discussed. The seminar concludes with several examples of, and lessons learned from, spacecraft failures. **(A detailed outline is provided at www.taksha.org/event/TRS122.)**

WHO SHOULD ATTEND: This seminar is ideal for professional growth of engineers with a particular specialty and scientists or instrument specialists who need to acquire a solid background in the “big picture” of spacecraft design and how the pieces of the process must fit together. Managers who want to understand the many aspects of spacecraft design that affect their work, tasks, and scheduling also should benefit from this event.

A Certificate of Completion for 18 hours will be awarded to each student at the end of the seminar. Copies of the slide presentation will be provided onsite.

FEES AND REGISTRATION

COST: \$770 (**Early Registration:** TBA) Group discounts are also available.

DISCLAIMER: Attendance at this event is for personal growth, and entails no promise of employment.

Register online at:

www.taksha.org

[Taksha Institute is a non-profit research & educational institution founded in 1976.]