CN 414 Fundamentals of Space-Based Augmentation System (SBAS) Design
ION GNSS 2007, September 25, 2006, 8:30 am-12:00 pm, CEU: 3.0

Instructor: Dr. Mohinder S. Grewal, Professor of Electrical and Computer Engineering, California State University, Fullerton, CA.

Prerequisites: Knowledge of mathematics, GPS basics will be useful.

Included Audience: This course is for engineers, scientists and managers. It will cover the fundamentals of SBAS, with special emphasis on GEO uplink subsystems.

Notes provided: Slides presented will be professionally spiral bound, with clear plastic cover, including color to add clarity where needed.

Reference list: A reference list will be provided as part of the note package for completeness and to allow the interested attendee to obtain additional information.

Course Overview: This course emphasizes the Space-Based Augmentation System design with descriptions of corrections and verification processor algorithms, GEO uplink subsystem algorithms, and integrity design. It provides application examples.

Course Content: The main topics to be covered in the course are

- Description of Space-Based Augmentation System
- GNSS data errors
- L_1/L_2 (L_1/L_5) bias and ionospheric estimation
- Multipath estimation and mitigation
- GPS and GEO orbit determination
- SBAS and GEO signal integrity design
- Description of GEO Uplink Subsystem (GUS)
- GUS clock steering description and algorithms
- Examples from WAAS
- Demos with MATLAB®

Course Outcome: At the completion of the course, attendees should understand the fundamentals and architecture of the Space Based Augmentation System.