CN 414 Fundamentals of Space-Based Augmentation System (SBAS) Design
September 15, 2008, 8:30 am-12:00 pm, CEU: 3.0, prior to ION GNSS 2008
Marriott Savannah Riverfront, Savannah, GA

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

- Space Based Augmentation Systems (SBAS)
- Wide Area Augmentation System (WAAS)
- European Geostationary Navigation Overlay System (EGNOS)
- Ground Based Augmentation System (GBAS)
- GPS, GLONASS & GALILEO
- WAAS Overview
- Geo Uplink Subsystem (GUS) Overview
- Ionospheric Delay Estimation
- Geostationary Communication & Control Segment (GCCS)
- Iono & Range Kalman Filter at GUS
- Code & Frequency Control at GUS
- Code Noise and Multipath
- GEO & GPS Orbit Determination
- GEO Clock Steering
- SBAS Signal Integrity

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