

CN 483 Fundamentals of GPS/INS Integration II
September 21, 2010, 1:30 pm-12:00 pm, CEU: 3.0
GNSS Solutions® Tutorials prior to ION GNSS 2010, September 20-21, 2010
Oregon Convention Center, Portland, Oregon, USA

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

Prerequisites: Knowledge of Kalman filtering and GPS/INS basics. CN 482 Fundamentals of GPS/INS Integration I is recommended.

Included Audience: This course is for engineers, scientists and managers. It will cover the basics of GPS/INS integration, and builds on material covered in CN 482.

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 discusses the integration of GPS and INS.

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

- Simplified Models for Strapdown System
- INS Error Models & Sensor Parameters
- INS Mechanization Equations
 - INS Error State Dynamic Equation
 - Full Error State Model
 - Augmented State Equation
- Tightly Coupled (4 States by Hand)
- 8 Error State Estimation with 4 Pseudorange and 4 Delta Pseudorange with MATLAB®
- Tightly Coupled (8, 11 States with MATLAB®)
- Tightly and Loosely Coupled (17 States with MATLAB®)
- Tightly and Loosely Coupled with DGPS (21 States with MATLAB®)

Course Outcomes: At the completion of the course, attendees should have a better understanding of complete GPS/INS integration of strapdown system with tightly and loosely coupled integration with MATLAB®.