

Fundamentals of Navigation I

Instructor: Dr. Chris G. Bartone, Assistant Professor, Ohio University
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Prerequisite: Some knowledge of navigation, mathematics, and computer science will be useful.

Text:

1. Misra, P., Enge, P., "GLOBAL POSITIONING SYSTEMS, Signals, Measurements, and Performance", Ganga-Jamuna Press, ISBN: 0-9709544-0-9, (include in course cost)
2. Navstar GPS Space Segment/Navigation User Interface, ICD-GPS-200, available for download via we: <http://www.navcen.uscg.gov/pubs/gps/icd200/default.htm>

Course Content:

GPS:

1. Positioning vs Navigation
2. Types of Navigation Systems – Overview
3. The GPS User Segment (Overview)
4. The GPS and other Coordinate Frames
5. The GPS Signal Structure and Receiver Overview
6. The GPS Navigation Message
7. Calculating User Position, Velocity, and Time – Error Free Case
8. Dilution of Precision (DOP) and Related Parameters
9. Error Sources and Analysis including Multipath
10. Atmospheric Corrections for Satellite Navigation
11. Fault Tolerance and Receiver Autonomous Integrity Monitoring (RAIM)
12. GPS Translators – How they work.
13. GPS Augmentation
14. Differential GPS (DGPS)

Time: July 28, 29, 30 (1/2 day), 2003. 8:00-16:00 (will break for lunch).

Host Responsibilities:

Facilities: Room, Restrooms, seats, chairs, etc, Cape Canaveral, FL
Refreshments access or provided (coffee, soda, snacks, etc.)
Scheduling of students and fund coordination
LCD projector, overhead projector, and white/chalkboard

Format: The course will be offered in a two and one-half day format. The maximum class size is 30.

Handouts: A Handout Package of PowerPoint slides will be provided for material presented. This information will be copyrighted by the authors and cannot be reproduced without the written permission of the authors. One Handout package will be provided per student.

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