

Lecture

Course Overview

EE 565: Position, Navigation and Timing

Lecture Notes Update on January 8, 2020

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In collaboration with
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1 Course Outline

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- Required Textbook: [Principles of GNSS, Inertial, and Multisensor Integrated Navigation Systems](#), Second Edition, Paul D. Groves, 2013.
- Recommended Software: MATLAB or Octave
- Lectures: Tues and Thu 12:30-13:45 Workman 117
- Instructor: Aly El-Osery and Kevin Wedeward

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2 Grading

Grading

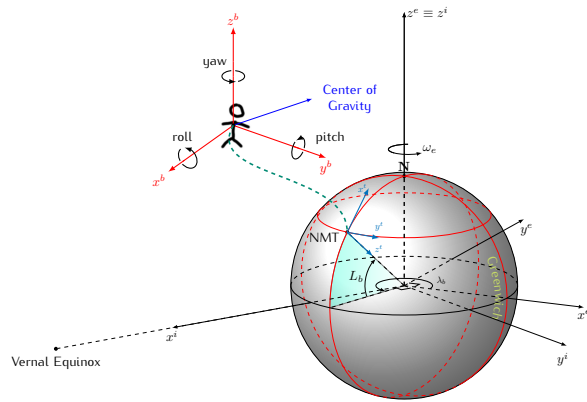
- Homework assignment: 30%
- Midterm: 20%
- Two mini-projects: 10% each
- Final project: 10%
- Presentation/Paper: 10%
- Class participation: 10%

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3 Course Description

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This course will cover the basics of terrestrial location and navigation with an emphasis on practical exposure to technology.



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Part I: Navigation Mathematics

- Introduction to navigation
 - Coordinate frames
 - Kinematics
 - Earth surface and gravity
 - Frame transformation
- } Ch. 2

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Part II: Navigation Sensors and INS Mechanization

- Accelerometers
 - Gyroscopes
 - Error Characteristics
 - Inertial navigation equations
- } Ch. 4 & 5

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Part III: INS/GPS Integration

- GPS
 - Kalman filtering
 - Integration architecture
 - System Model
 - Measurement model
- } Ch. 8
Ch. 3
Ch. 14-16

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