

# EE 570: Location and Navigation

## Course Overview

Stephen Bruder<sup>1</sup>   Aly El-Osery<sup>2</sup>

<sup>1</sup>Electrical and Computer Engineering Department, Embry-Riddle Aeronautical University  
Prescott, Arizona, USA

<sup>2</sup>Electrical Engineering Department, New Mexico Tech  
Socorro, New Mexico, USA

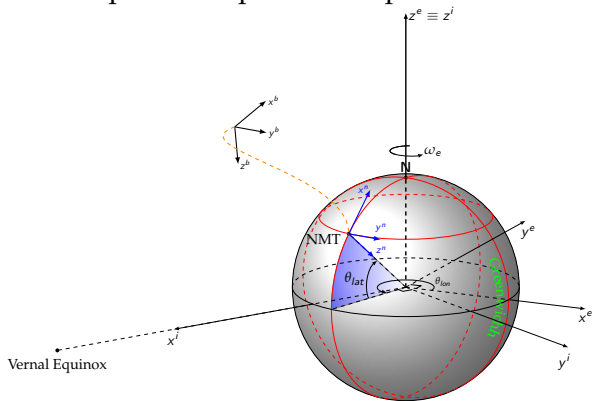
January 18, 2014

- 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 116
- Instructor: Aly El-Osery

This course has been initiated, developed and previously co-taught by Dr. Stephen Bruder and myself. Due to scheduling conflict we were not able to co-teach the course this semester. Because of Stephen's dedication and attention to details, my life is a lot easier covering a good portion of the course.

- Homework assignment: 30%
- Two mini-projects: 10% each
- Final project: 30%
- Final report: 10%
- Class participation: 10%

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



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

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

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