

**CN465 MEMS Sensors for Navigation**  
**ION GNSS 2007, September 25, 2007, 8:30 am-12:00 pm, CEU: 3.0**

**Instructor:** Steve Becka, Engineering Fellow, Honeywell International

**Prerequisite:** Some knowledge of mathematics and physics will be useful.

**Intended Audience:** Engineers, scientists, and managers interested in the area of Micro-Electro-Mechanical Systems (MEMS) sensors used for navigation.

**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 will present an overview of current MEMS inertial technology, with a focus on navigation applications. It will include material on sensing concepts related to navigation, MEMS manufacturing concepts, inertial sensor operating principles, and an overview of current MEMS inertial sensor characteristics.

**Course Content:** The main topics to be covered by this course are:

- Overview of Inertial Sensing Concepts and Application
- MEMS Navigation Applications and Requirements
- MEMS Processing Technology Concepts and Capabilities
  - Manufacturing Tools
- Theory and Design Concepts - MEMS Accelerometers
  - Displacement/Rebalance MEMS Accelerometers
  - Resonant MEMS Accelerometers
- Current MEMS Accelerometers And Performance
- Theory and Design Concepts – MEMS Gyroscopes
  - Vibratory MEMS Gyroscopes
  - MEMS Multi-Sensors (Gyro/Accel)
- Current MEMS Gyroscopes and Performance
- Future Direction of MEMS Inertial Technology

**Course Outcomes:** At the completion of the course, the student should understand MEMS technology in the application area for navigation sensors, as well as, and understanding of MEMS manufacturing and sensor operating characteristics.