**Syllabus for ASTE583**

* Navigating the solar system: an overview.
* Required mathematical background; an overview of probability and statistics.
* The orbit determination problem.
* Error sources included in statistical analyses.
* The (weighted) least squares solution; minimum variance and maximum likelihood solutions.
* Computational algorithms for batch, sequential (Kalman), and extended Kalman processing; state noise compensation; smoothing.
* Elementary illustrative examples.
* Square-root filter algorithms.

## Consider covariance analyses.

## Online ephemeris generation/3-dimensional visualization for Potentially Hazardous Asteroids.

* Launch considerations; rocket payloads and optimal staging; launch vehicles and sites.
* Space Navigation: The Practice

or Meeting the Challenges of Space Navigation: Guidance, Navigation and Control (GN&C)