

Winter, 2012 SCHEDULE

ENGO	Sec #	Class ID #	Course Name	Lecture Time	Room
605	S01	117110	RESEARCH SEMINAR I	Fridays 1:00pm – 2:00pm	ENE 239
607	S01	117112	RESEARCH SEMINAR II		
609	S01	117114	RESEARCH SEMINAR III		

ENGO	Sec #	Class #	Course Name	Lecture Starts	Lecture Time	Room EN	Stream	Instructor
623	01	117121	Inertial Surveying & INS/GPS Integration	January 13, 2012	Fridays, 9:00am – 12:00pm	MS 205	2	N. El-Sheimy
ENGO 583/ ENEN 635	01	117106/160888	Environmental Modeling	January 11, 2012	Wednesdays, Fridays, 12:00pm – 1:00pm	TRB 102	1	Q. Hassan
667	01	117137	Advanced Topics in Photogrammetry	January 12, 2012	Thursdays, 2:00pm – 5:00pm	ENA 233	3	A. Habib
675	01	160887	Exploratory Spatial Data Analysis	January 12, 2012	Thursdays, 9:00am – 12:00pm	ENE 322	4	A. Hunter

ENGO 623 Inertial Surveying & INS/GPS Integration

(El-Sheimy)

Inertial sensors and their application in inertial navigation, existing inertial systems, new developments in strapdown technology. Practical aspects of inertial positioning definition of an operational inertial frame, inertial error models. Effect of inertial sensor errors on the derived navigation parameters, performance characteristics of inertial sensors, calibration of inertial sensors. Mechanization equations in different coordinate frames, step by step computation of the navigation parameters from the inertial sensor data introduction to Kalman filtering for optimal error estimation, modelling INS errors by linear state equations, practical issues for the implementation of update measurements (ZUPT, CUPT, Integrated systems), current research activities.

ENGO 583 / ENEN 635 Environmental Modeling

(Hassan)

Nature and purpose of environmental modeling; the top-down and the bottom-up approaches; typology of environmental models; definition of fundamental concepts; steps involved in designing and building a model; calibration, verification and validation of models; scale dependency; sensitivity analysis; characteristics, architecture and functioning of selected environmental models.

Prerequisite(s): Fourth year standing.

(Environmental Engineering 635)

ENGO 667 Advanced Topics in Photogrammetry

(Habib)

Overview of aerial triangulation procedures (strip triangulation, block adjustment of independent models, bundle block adjustment, automatic aerial triangulation, direct versus indirect orientation). Mapping from space (modelling the perspective geometry of line cameras, epipolar geometry for line cameras). Multi-sensor aerial triangulation (integrating aerial and satellite imagery with navigation data). Photogrammetric products (Digital Elevation Models, ortho-photos). The role of features in photogrammetric operations (utilizing road network captured by terrestrial navigation systems in various orientation procedures).

ENGO 675 Exploratory Spatial Data Analysis

(Hunter)

Spatial phenomena and spatial processes. Spatial data analysis and the importance of spatial data in scientific research. Methods will range from exploratory spatial data analysis through to recent developments such as nonparametric semivariogram modeling, generalized linear mixed models, estimation and modeling of nonstationary covariances, and spatio-temporal processes.