Courses

Geomatics Tech (GEMT)

GEMT 2231 Survey Computations: 3 semester hours.
Units of measurement and conversions, check and adjustment of raw data, closure and adjustment of survey figures, calculations for missing elements of a figure, working coordinates and coordinate geometry (COGO), intersections of straight lines and circles, instrument specifications and introduction to adjustment theory. 

GEMT 3310 Boundary Surveying Law: 3 semester hours.
Concept of boundaries, ownership, transfer, boundary law principles, presumptions, easements and reversions, sequential and simultaneous conveyances, case studies, Riparian and littoral rights, state laws, rules for practicing surveying, ALTA survey. PREREQ: GEMT junior status or permission of instructor.

GEMT 3311 Advanced Surveying: 3 semester hours.
Discuss transverse mercator projection and state plane coordinates, spherical trigonometry and astronomical observation, and coordinate geometry calculations. Control surveys include triangulation, precise traverse, intersection and resection. Collect data using robotic station, digital level, and precise leveling. PREREQ: CET 0226 or permission of instructor.

GEMT 3312 Public Land Surveying: 3 semester hours.

GEMT 3313 Surveying Software Applications: 3 semester hours.
Civil/survey software. Topics include data download; batch file creation; editing and processing; COGO functions; field to finish functions; area and lot sizing; INs, DTM's and contours creation; calculation of volumes and basic road design and layout. PREREQ: CET 0226 or permission of instructor.

GEMT 3314 Research and Evidence in Surveying: 3 semester hours.
Survey of research sources and techniques including field, surveyors' offices, governmental agency, courtroom procedures and practices. Local government agency permit and approval procedures. Surveyor/attorney interaction and roles. Student will work on case studies and prepare a final report. PREREQ: CET 0226.

GEMT 3317 Subdivision Planning and Plating: 2 semester hours.
Land use planning; governmental regulations and permits as applied to subdivisions; subdivision planning, computations and preparation of subdivision plats. PREREQ: CET 0226. PRE-or-COREQ: GEMT 3313.

GEMT 3319 Writing Legal Descriptions: 1 semester hour.
Covers principles of interpretation, techniques, and forms for descriptions and preparation of land descriptions. Layout, content, and display of plats and descriptions will be covered. PREREQ: Permission of instructor.

GEMT 3341 Survey Adjustment I: 2 semester hours.
Introduction to matrices, non-linear equations and Taylor's theorem. Observations, errors and analysis, confidence interval, propagation of random errors in indirectly measured quantities for angles, distances, and traverse surveys. Weights of observations. PREREQ: MATH 1170, MATH 1153 and CET 0226.

GEMT 3342 Survey Adjustment II: 2 semester hours.
Principles of least squares, adjustment of level nuts, precision of indirectly determined quantities, adjustment of horizontal survey, trilateration and triangulation networks, coordinate transformation, error ellipses and blunder detection. PREREQ: GEMT 3341.

GEMT 4400 Essentials of Surveying: 2 semester hours.
Preparation for fundamentals of surveying exam. May not be used as a technical elective. May be repeated once for a total of 4 credits. PREREQ: Senior in Geomatics, graduate or Civil Engineering Technology, Civil Engineering, or industry experience. Graded S/U. F, S

GEMT 4411 Geodesy: 3 semester hours.
Introduces geometry of ellipsoid, reference coordinate systems, local geodetic coordinate system, reduction of observation to other geodetic values, precise leveling and orthometric height, direct and inverse geodetic position computation and gravity field of earth. PREREQ: GEMT 3311 or permission of instructor.

GEMT 4413 Land Information System: 3 semester hours.
Model of land information system, reference systems, data capture, structure, quality, and implementation of land information system. Student works on a case study and writes a final report. PREREQ: GEMT 2227 and MATH 1147 or permission of instructor.

GEMT 4415 Survey Office Practice: 3 semester hours.
Introduction to the broad skills required of a surveyor running a business. Topics covered include formulating a business plan, forms of business organizations, basic financial forms and accounting, concepts of pricing and bidding, personnel management, marketing, contracts and proposals, and project management. PREREQ: Senior standing or permission of instructor.

GEMT 4416 Surveying Project: 3 semester hours.
An independent study capstone course designed to further develop the skills required of a professional surveyor. Project is selected, designed, and performed under the guidance of a faculty member. A formal presentation and defense of the project to a faculty and peer committee is required. PREREQ: Senior standing or permission of instructor.

GEMT 4425 Principles of Cartography: 3 semester hours.
Studies history of cartography; theory and practice of cartography including map reading, scales, spatial reference systems, projections, data acquisition, thematic mapping, map simplification, generalization and map design, and computer mapping. PREREQ: GEMT junior status or higher or permission of instructor.

GEMT 4430 GPS Principles and Applications: 3 semester hours.
Introduction to theory and use of GPS for mapping and survey application. Basic principles of GPS positioning, GPS differential techniques, types of GPS receivers, static, kinematic and RTK procedures, vector processing and adjustment, coordinate creation and output, and export of result. PREREQ: CET 0226 or permission of instructor.

GEMT 4432 Principles of Photogrammetry: 3 semester hours.
Introduction to vertical photo geometry and its scale, relief and tilt displacement, stereoscopic viewing, parallax measurement, mosaics, orientations, development of planimetric and topographic maps, flight planning, softcopy photogrammetry and introduction to aerial triangulation. PREREQ: CET 0226 or permission of instructor.

GEMT 4440 Essentials of Surveying: 2 semester hours.
Preparation for fundamentals of surveying exam. May not be used as a technical elective. May be repeated once for a total of 4 credits. PREREQ: Senior in Geomatics, graduate or Civil Engineering Technology, Civil Engineering, or industry experience. Graded S/U. F, S

GEMT 4441 Geodesy: 3 semester hours.
Introduces geometry of ellipsoid, reference coordinate systems, local geodetic coordinate system, reduction of observation to other geodetic values, precise leveling and orthometric height, direct and inverse geodetic position computation and gravity field of earth. PREREQ: GEMT 3311 or permission of instructor.

GEMT 4443 Land Information System: 3 semester hours.
Model of land information system, reference systems, data capture, structure, quality, and implementation of land information system. Student works on a case study and writes a final report. PREREQ: GEMT 2227 and MATH 1147 or permission of instructor.

GEMT 4445 Survey Office Practice: 3 semester hours.
Introduction to the broad skills required of a surveyor running a business. Topics covered include formulating a business plan, forms of business organizations, basic financial forms and accounting, concepts of pricing and bidding, personnel management, marketing, contracts and proposals, and project management. PREREQ: Senior standing or permission of instructor.

GEMT 4446 Surveying Project: 3 semester hours.
An independent study capstone course designed to further develop the skills required of a professional surveyor. Project is selected, designed, and performed under the guidance of a faculty member. A formal presentation and defense of the project to a faculty and peer committee is required. PREREQ: Senior standing or permission of instructor.

GEMT 4450 GPS Principles and Applications: 3 semester hours.
Introduction to theory and use of GPS for mapping and survey application. Basic principles of GPS positioning, GPS differential techniques, types of GPS receivers, static, kinematic and RTK procedures, vector processing and adjustment, coordinate creation and output, and export of result. PREREQ: CET 0226 or permission of instructor.

GEMT 4452 Principles of Cartography: 3 semester hours.
Studies history of cartography; theory and practice of cartography including map reading, scales, spatial reference systems, projections, data acquisition, thematic mapping, map simplification, classification, generalization and map design, and computer mapping. PREREQ: GEMT junior status or higher or permission of instructor.

GEMT 4453 Land Information System: 3 semester hours.
Model of land information system, reference systems, data capture, structure, quality, and implementation of land information system. Student works on a case study and writes a final report. PREREQ: GEMT 2227 and MATH 1147 or permission of instructor.

GEMT 4455 Survey Office Practice: 3 semester hours.
Introduction to the broad skills required of a surveyor running a business. Topics covered include formulating a business plan, forms of business organizations, basic financial forms and accounting, concepts of pricing and bidding, personnel management, marketing, contracts and proposals, and project management. PREREQ: Senior standing or permission of instructor.
**GEMT 4496 Independent Study: 1-8 semester hours.**
Designed for creative problem solving and for integrating techniques into geomatics. Topics chosen depend upon student's interest or specific need of individuals in the area of surveying, mapping, geodetic surveying, boundary surveying, geodesy, remote sensing, cartography, and photogrammetry.
PREREQ: Permission of instructor. D

**GEMT 4498 Special Topics: 1-3 semester hours.**
Designed for creative problem solving and for integrating techniques into geomatics. Topics chosen depend upon student's interest or specific need of individuals in the area of surveying, mapping, geodetic surveying, boundary surveying, geodesy, remote sensing, cartography, and photogrammetry.
PREREQ: Permission of instructor. D