

Montgomery County Community College  
 GEO 230  
 GIS Applications  
 3-2-2

**COURSE DESCRIPTION:**

This workshop teaches advanced geographic analysis with Geographic Information Systems. Students will learn each of the advanced data import skills, standard symbol systems, specialized geographic analysis and pseudo-3d displays specific to their discipline, and be exposed to problems in other disciplines. Specific tracks are available for emergency management/criminal justice, business & marketing, social sciences & human services, and environmental science.

**PREREQUISITE(S):**

Students must have successfully completed or tested out of:  
 GEO 210 - Introduction to Geographic Information Systems or  
 GEO 220 - Map Design in Geographic Information Systems

**CO-REQUISITE(S):**

None

LEARNING OUTCOMES Upon successful completion of this course, the student will be able to:	LEARNING ACTIVITIES	EVALUATION METHODS
1. Identify standard symbols used in their discipline.	Assigned Readings AV/Multimedia Materials Case Study	Map Design & Production Student Presentation Written Examination
2. Perform GIS geocoding as used in their discipline.	Assigned Readings AV/Multimedia Materials Demonstration and Practice Lecture/Discussion Student Presentations	Map Design & Production Student Presentation Written Examination
3. Perform cluster analysis in GIS.	Assigned Readings AV/Multimedia Materials Case Study Demonstration and Practice Lecture/Discussion Student Presentations	Map Design & Production Student Presentation

LEARNING OUTCOMES	LEARNING ACTIVITIES	EVALUATION METHODS
4. Determine travel time distances with GIS.	Assigned Readings AV/Multimedia Materials Case Study Demonstration and Practice Lecture/Discussion Student Presentations	Map Design & Production Student Presentation
5. Predict local risks and resources with GIS.	Assigned Readings AV/Multimedia Materials Case Study Demonstration and Practice Lecture/Discussion Student Presentations	Map Design & Production Student Presentation
6. Integrate imagery in a GIS.	Assigned Readings AV/Multimedia Materials Case Study Demonstration and Practice Lecture/Discussion Student Presentations	Map Design & Production Student Presentation
7. Produce map and textual reports.	AV/Multimedia Materials Case Study Demonstration and Practice Lecture/Discussion Student Presentations	Map Design & Production Student Presentation Written Examination
8. Present their work to specialist and non-specialist audiences.	AV/Multimedia Materials Case Study Demonstration and Practice Lecture/Discussion Student Presentations	Map Design & Production Student Presentation Written Examination

At the conclusion of each semester/session, assessment of the learning outcomes will be completed by course faculty using the listed evaluation method(s). Aggregated results will be submitted to the Associate Vice President of Academic Affairs. The benchmark for each learning outcome is that *70% of students will meet or exceed outcome criteria*.

SEQUENCE OF TOPICS: Each student will select one of the following tracks:

- A. "Emergency Management"
1. course introduction
  2. address identification
  3. GPS integration
  4. crime mapping and analysis

5. emergency routing
  6. floodplain prediction
  7. resource location
  8. infra-red imagery
- B. "Environmental Science"
1. course introduction
  2. raster analysis
  3. slope analysis
  4. incorporating satellite imagery
  5. habitat prediction
  6. advanced surface interpolation
  7. stream and air flow mapping
  8. pseudo-3d displays
- C. "Social Sciences"
1. course introduction
  2. census resources
  3. demographics
  4. segmentation
  5. market analysis
  6. epidemiology and public health mapping
  7. mapping change through time
  8. incorporating historical maps
- D. "Business & Marketing"
1. course introduction
  2. census resources
  3. demographics
  4. segmentation
  5. market analysis
  6. market area determination – gravity models
  7. market area determination – geocoded drive times
  8. market share surfaces

#### LEARNING MATERIALS:

Students will select a textbook on GIS applications specific to their field of study from ESRI's publication library

Lab Exercises provided by the instructor.

Other learning materials may be required and made available directly to the student and/or via the College's Libraries and/or course management system.

## COURSE APPROVAL:

Prepared by: Samuel Clay Wallace Date: 2/21/2009  
VPAA/Provost Compliance Verification: Dr. John C. Flynn, Jr. Date: 6/3/2009

Revised by: Samuel Clay Wallace Date: 2/26/2013  
VPAA/Provost or designee Compliance Verification: Victoria L. Bastecki-Perez, Ed.D. Date: 4/8/2013

Revised by: Samuel Clay Wallace Date: 5/25/2017  
VPAA/Provost or designee Compliance Verification: Date: 12/1/2017



*This course is consistent with Montgomery County Community College's mission. It was developed, approved and will be delivered in full compliance with the policies and procedures established by the College.*