

**CCJS 498M: Crime Mapping**  
**Spring 2019**  
**Course Syllabus**

**Class Time:**  
M 2:00-4:30 p.m.  
Building 3 - 2215

**Instructor:**  
Marcus A. Boyd  
Research Faculty  
[boydma@umd.edu](mailto:boydma@umd.edu)

Office Hours: by appt

**Pre-Requisites:** None

**Course Objective:** This course provides an introduction to Geographic Information Systems – a set of hardware, software, and methods for the capture, storage, manipulation, analysis, and display of geographic information, used to solve complex spatial planning problems. Our specific focus will be on how to utilize GIS software to spatially analyze crime. The course will provide an overview of demography, spatial statistics, and resource allocation with particular emphasis placed on how these relate to mapping crime. Industry standard GIS tools are used to apply these methods. There will be a lecture and lab component to each class meeting.

**Course Structure:** This class is designed for undergraduate students with an understanding of criminology and criminal justice; knowledge of statistics will be helpful, but is not required. In this course, you will begin to understand the complexities of GIS software and tools and learn how to use GIS software and apply its methods to better understand criminal activity and patterns of criminality.

This is a lecture and computer lab course. Lectures provide theories, concepts, and methods from environmental criminology and spatial statistics for crime analysis. The lectures also provide theories, concepts, and methods for cartography (map design) and GIS. Computer labs have you carry out step-by-step tutorials. End-of-the-chapter assignments in *GIS Tutorial for Crime Analysis* are individual work and are graded. End-of-the-chapter assignments have you integrate material from an entire chapter. These assignments are challenging, making you find relevant concepts and tutorial steps, interpret them, and use them in a new context.

**Text/Course Materials:**

- *GIS Tutorial for Crime Analysis* (2<sup>nd</sup> Edition) by Gorr, Kurland, and Dodson. ESRI Press.
- *ESRI Press* Data folder – downloaded using instructions from *GIS Tutorial for Crime Analysis*
- Thumb Drive (recommend at least 32GB) or other backup device – needed to copy GIS data to and from computer lab

**Expectations:** This is an upper-division undergraduate course, and as such I expect preparation and participation at every class. Your work should show **attention to detail**, with the expectation that the experience provide the basis for potential employers to consider your skills. Attendance is critical - you are expected to be at all classes and to make productive use of class time.

**Evaluation:** Students will be graded in the following manner:

HW Assignments	50 %	Final Project	20 %
Midterm	20 %	Class Participation	10 %

Grades generally follow 90/80/70/60 with plus/minus being within 3 percent of the cutoffs. I reserve the right to alter the exact boundaries at the end of the semester. **Labs are due at the beginning of class.** Late assignments will be marked off 10 % per weekday they are late, starting at the beginning of class on the day they are due.

**University Expectations:** The Dean for Undergraduate Studies has created a new [website](http://www.ugst.umd.edu/courserelatedpolicies.html) with a summary of important course related policies. Please visit this link to review the official policies on the following topics: academic integrity, student conduct, sexual misconduct, discrimination and other concerns for students.

<http://www.ugst.umd.edu/courserelatedpolicies.html>

**Class Policies:**

**Student Conduct and Academic Integrity:** Students are expected to adhere to the University of Maryland's Code of Student Conduct and to treat each other with respect. Disruptive behavior of any kind will not be tolerated. Students who are unable to demonstrate civility with one another or with the instructor or teaching assistants, will be subject to referral to the Office of Student Conduct or to the Campus Police. The Code of Student Conduct is available online: <http://www.president.umd.edu/policies/docs/v100b.pdf>.

Students are also expected to adhere to the University of Maryland's Code of Academic Integrity and to refrain from acts of academic dishonesty. All students must write the Student Honor Pledge on all assignments:

I pledge on my honor that I have not given or received any unauthorized assistance on this examination.

Any student committing an apparent act of academic dishonesty will be subject to referral to the Student Honor Council. The Code of Academic Integrity is available online: <http://www.president.umd.edu/policies/docs/III100A.pdf>.

**Attendance:** Regular attendance and participation in this class is the best way to grasp the concepts and principles being discussed. However, in the event that a class must be missed due to an illness or another valid reason<sup>1</sup>, please email me as soon as possible to let me know.

**Class Cancellation and Changes:** This course follows the university policies on closures. If the University is closed, class will not convene. Make-up classes will be scheduled, if feasible, through consensus within the students in the course. If students are not able to attend a make-up class time due to other class commitments, they will be allowed to complete an assignment in order to earn the participation points, and gain exposure to the course materials.

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<sup>1</sup> A valid excuse for missing any class/due date includes illness, observance of a religious/holy day, university sponsored travel, or an emergency or death in the family.

**Religious Observations:** The University System of Maryland policy on religious observances provides that students should not be penalized because of observances of their religious beliefs; students shall be given an opportunity, whenever feasible, to make up within a reasonable time any academic assignment that is missed due to individual participation in religious observances. Students must submit a written request to make up a class meeting, assignment, or due date for the purposes of religious observance by the end of the second week of classes. Please note that accommodations will not be made for travel to and from the site of religious observances. Additional information on religious observance policy is available online: <http://www.englpw.umd.edu/PoliciesandProcedures/GeneralPolicies/ReligiousObservances.htm>.

**Disability Support Services:** Any student requesting special accommodations must be registered with the University of Maryland's Disability Support Service (DSS) Office and must provide a DSS Accommodation Form updated for the current semester by the end of the second week of classes. Students who fail to meet this deadline will not receive special accommodations. Additional information on disability support services is available online: <http://www.counseling.umd.edu/DSS>.

*Course Schedule:*

Week 1 (1/28): Introduction to the Class and Topic

- Introductions, Syllabus and expectations, a bit about crime mapping and analysis

Week 2 (2/4): Introduction to Crime Analysis

- Environmental Criminology and police operations management system
- Readings: *Crime Analysis*, chapter 1
- Homework: Assignment 2-1 (pg. 37): Critique Montgomery County's OpenData Portal

Week 3 (2/11): Introduction to Geographic Information Systems

- Geographic Information Systems, ArcGIS Desktop
- Lab: Tutorials 2-1, 2-2, 2-3, 2-4
- Reading: *Crime Analysis*, chapter 2
- Homework: Assignment 2-2 (pg. 38)

Week 4 (2/18): Using a Crime Mapping System

- Map user requirements, thinking about users/readers
- Lab: Tutorials 3-1, 3-2, 3-3
- Reading: *Crime Analysis*, chapter 3
- Homework: Assignment 3-1 (pg. 76)

Week 5 (2/25): Crime Mapping Design and Construction

- Cartographic principles, good and bad maps, lying with maps, building map templates
- Lab: Tutorials 4-1, 4-2, 4-3
- Reading: *Crime Analysis*, chapter 4
- Homework: Assignment 4-1 and 4-2 (pg. 121)

Week 6 (3/4): Querying Crime Maps for Crime Analysis

- Attribute and Spatial Queries
- Lab: Tutorials 5-1 and 5-2
- Reading: *Crime Analysis*, chapter 5
- Homework: Assignment 5-1 and 5-2 (pg. 148)

Week 7 (3/11): Midterm – in class

Week 8 (3/18): SPRING BREAK

Week 9 (3/25): Downloading and Assembling Jurisdiction Basemaps

- Digital Map Infrastructure, TIGER/LINE, Census Data
- Lab: Tutorials 6-1, 6-2, 6-3, 6-4, 6-5
- Reading: *Crime Analysis*, chapter 6
- Homework: Assignment 6-2 (pg. 204)

Week 10 (4/1): Geocoding Incident Data

- Data processing, geocoding, crime data aggregation
- Lab: Tutorials 7-1, 7-2, 7-4, 7-5
- Reading: *Crime Analysis*, chapter 7
- Homework: Assignment 7-1 (pg. 256)

Week 11 (4/8): Automating Crime Mapping

- ModelBuilder, ArcToolbox, Building Macros
- Lab: Tutorials 8-1 and 8-2
- Reading: *Crime Analysis*, chapter 8
- Homework: Assignment 8-1 (pg. 294)

Week 12 (4/15): Ethics and Introduction to Spatial Statistics

- Ethical Implications and Spatial Statistics
- No Lab
- No Reading
- No Homework

Week 13 (4/22): Predictive Policing, part 1

- Raster GIS and kernel density analysis
- Lab: Tutorials 9-1 and 9-2
- Reading: *Crime Analysis*, chapter 9
- Homework: Kernel Density Analysis Lab (on Elms)

Week 14 (4/29): Predictive Policing, part 2

- Emerging Hotspot Analysis
- Lab: Tutorial 9-3
- Reading: *Crime Analysis*, chapter 9
- Homework: Emerging Hotspot Analysis Lab (on Elms)

Week 15 (5/6): Advanced Spatial Statistics

- Colocation Quotient and Spatial Autocorrelation
- Lab: CLQ Exercise (On Elms)

- Reading: Wang, Hu, and Li. (2017). "Local Indicator of Colocation Quotient with a Statistical Significance Test: Examining Spatial Association of Crime and Facilities," *The Professional Geographer* 69,1 22-31 (On Elms)
- Homework: CLQ of car and home burglaries

Week 16 (5/13): Final Project Due