SYLLABUS

DATE OF LAST REVIEW: 3/9/2026

CIP CODE: 15.1301

SEMESTER: Departmental Syllabus

COURSE TITLE: GIS for Homeland Security

COURSE NUMBER: ENGR0196

CREDIT HOURS: 3

INSTRUCTOR: Departmental Syllabus

OFFICE LOCATION: Departmental Syllabus

OFFICE HOURS: Departmental Syllabus

TELEPHONE: Departmental Syllabus

EMAIL: KCKCC-issued email accounts are the official means for electronically communicating with our students.

PREREQUISITES: None

REQUIRED TEXT: Please check with the KCKCC bookstore, http://www.kckccbookstore.com for the required text for your particular class.

COURSE DESCRIPTION: In the wake of September 11, Hurricane Katrina, and Hurricane Ike, much attention has been focused on how to provide our communities and agencies with the most effective tools and solutions to prepare for, protect against, recover from, and respond to threats to our national security. GIS for Homeland Security will provide students with a hands-on, broad-based approach to learning GIS (Geographic Information System Technology) with emphasis in homeland security planning and operations. This course includes a series of exercises that will integrate the best practices of GIS and public safety in times of deliberate attacks and natural disasters. Students will utilize ESRI ArcView software to manipulate and analyze data and scenarios developed by the U.S. Department of Homeland Security. Students will apply geospatial analysis to enhance situational awareness, disseminate information, protect infrastructure and help communities recover from destructive and devastating events.

METHOD OF INSTRUCTION: A variety of instructional methods may be used depending on content area. These include but are not limited to: lecture, multimedia, cooperative/collaborative learning, labs and demonstrations, projects and presentations, speeches, debates, and panels, conferencing, performances, and learning experiences outside the classroom. Methodology will be selected to best meet student needs.

COURSE OUTLINE:

I . Introduction to GIS and homeland security planning and operations.
- A What is GIS.
- B Digital geospatial data infrastructure.
- C. Unique capabilities of GIS.

D. Introduction to GIS components.
E. The Arc-GIS user interface.

II. Visualizing data for homeland security planning and operations.
A. Map navigation and viewing tools.
B. Applying basic tools to point, poly-line, and polygon layers.
C. Viewing links between attribute tables and maps.
D. Using attributes to select, identify, and find features.

III. Compiling data for homeland security planning and operations.
A. Identifying minimum essential data sets.
B. Introduction to ArcMap document management and data formats.
C. Manipulating and querying spatial data using geo-processing tools.
D. Exploring data frame and layer projection properties.
E. Downloading and integrating geospatial data.
F. Exploring the Geo-database model.

IV. Designing map layouts for homeland security planning operations.
A. Preparing a scenario map.
B. Preparing a warning report.
C. Building a warning map layout.
D. Out-putting GIS layouts.

V. Analyzing data for homeland security planning and operations for protection purposes.
A. Preparing a protection scenario map.
B. Locating critical infrastructure.
C. Protecting critical infrastructure with a buffer.
D. Securing ingress and egress.
E. Locating a disaster impacted population.
F. Protecting a disaster impacted population.

VI. Analyzing data for homeland security planning and operations for response purposes.
A. Preparing a response scenario map.
B. Using an address locator to geo-code missing persons.
1. Finding address coordinates with latitude and longitude.
2. Adding a missing person's data-base.
3. Batch geo-coding a missing person's data-base.
4. Creating a missing persons status map.
C. Performing a response suitability analysis.
D. Using model-builder to create a suitability model.

VII. Analyzing data for homeland security planning and recover operations.
A. Preparing a recover scenario map.
B. Adding USGS data to the recover map.
C. Locating areas of greatest hazard potential.
D. Identifying critical infrastructure lifelines in hardest hit areas.
E. Locating utility outages.
F. Identifying circuit loss to parcels.
G. Tracing an outage to a portion of a circuit.

EXPECTED LEARNER OUTCOMES:

A. The student will be able to define GIS and its components.

B. The student will be able to visualize data as needed for homeland security planning and operations.
C. The student will be able to interpret and compile data for homeland security planning and operations.
D. The student will be able to design map layouts for homeland security planning and operations.
E. The student will be able to analyze data for homeland security planning protection purposes.
F. The student will be able to analyze data for homeland security planning response purposes.
G. The student will be able to analyze data for homeland security planning recover operations.

COURSE COMPETENCIES:

The student will be able to define GIS and its components.

1. The student will be able to define the term GIS.
2. The student will be able to identify the components of the Arc-GIS user interface.
3. The student will be able to manipulate the components of the Arc-GIS user interface.

The student will be able to visualize data as needed for homeland security planning and operations.

4. The student will be able to manipulate map viewing tools.
5. The student will be able to identify attribute table viewing links.
6. The student will be able to interpret data to select, identify, and find features in a GIS.

The student will be able to interpret and compile data for homeland security planning and operations.

7. The student will be able to interpret data frame properties.
8. The student will be able to interpret data and query spatial data using geo-processing tools.
9. The student will be able to download and integrate geospatial data for homeland security planning and operations.

The student will be able to design map layouts for homeland security planning and operations.

10. The student will be able to interpret data and prepare a scenario map.
11. The student will be able to interpret data and prepare a warning report.
12. The student will be able to interpret data and create a warning map layout.

The student will be able to analyze data for homeland security planning protection purposes.

13. The student will be able to interpret data and prepare a protection scenario map.
14. The student will be able to interpret data and locate critical infrastructure.
15. The student will be able to interpret data and prepare an impacted population map.
16. The student will be able to interpret data and prepare a protection plan for disaster impacted population.

The student will be able to analyze data for homeland security planning response purposes.

17. The student will be able to interpret data to create a missing persons status map.
18. The student will be able to interpret data to prepare a response suitability analysis.

The student will be able to analyze data for homeland security planning recover operations.

19. The student will be able to interpret data to prepare a recover scenario map.
20. The student will be able to interpret data to locate areas of greatest hazard potential.
21. The student will be able to interpret data to identify critical infrastructure lifelines in hardest hit areas.

ASSESSMENT OF LEARNER OUTCOMES:
Assessment methods may include, but are not limited to, the following: Homework, Assignments, Quizzes, Class Participation, Chapter Tests, and Final Exam. The grading scale and the process for calculating the course grades are to be determined by the individual instructors. This information will be included in each instructor's syllabus.

SPECIAL NOTES:
This syllabus is subject to change at the discretion of the instructor. Material included is intended to provide an outline of the course and rules that the instructor will adhere to in evaluating the student's progress. However, this syllabus is not intended to be a legal contract. Questions regarding the syllabus are welcome any time.

Kansas City Kansas Community College is committed to an appreciation of diversity with respect for the differences among the diverse groups comprising our students, faculty, and staff that is free of bigotry and discrimination. Kansas City Kansas Community College is committed to providing a multicultural education and environment that reflects and respects diversity and that seeks to increase understanding.

Kansas City Kansas Community College offers equal educational opportunity to all students as well as serving as an equal opportunity employer for all personnel. Various laws, including Title IX of the Educational Amendments of 1972, require the college's policy on non-discrimination be administered without regard to race, color, age, sex, religion, national origin, physical handicap, or veteran status and that such policy be made known.

Kansas City Kansas Community College complies with the Americans with Disabilities Act. If you need accommodations due to a documented disability, please contact the Director of the Academic Resource Center, in Rm. 3354 or call at: 288-7670.

All enrolled students at Kansas City Kansas Community College are subject to follow all rules, conditions, policies and procedures as described in both the Student Code of Conduct as well as the Student Handbook. All Students are expected to review both of these documents and to understand their responsibilities with regard to academic conduct and policies. The Student Code of Conduct and the Student Handbook can be found on the KCKCC website.