

Geographic Information Systems Certificate (GIS) Development

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Geographic Information Systems Certificate (GIS) Development

Community College Education Partners:

Camden County College

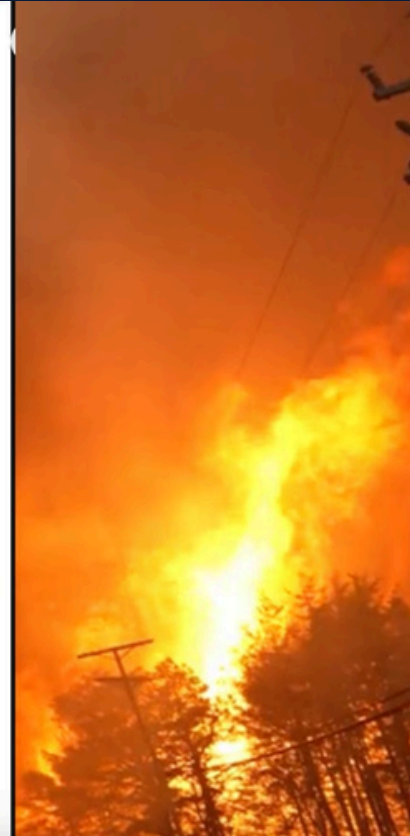
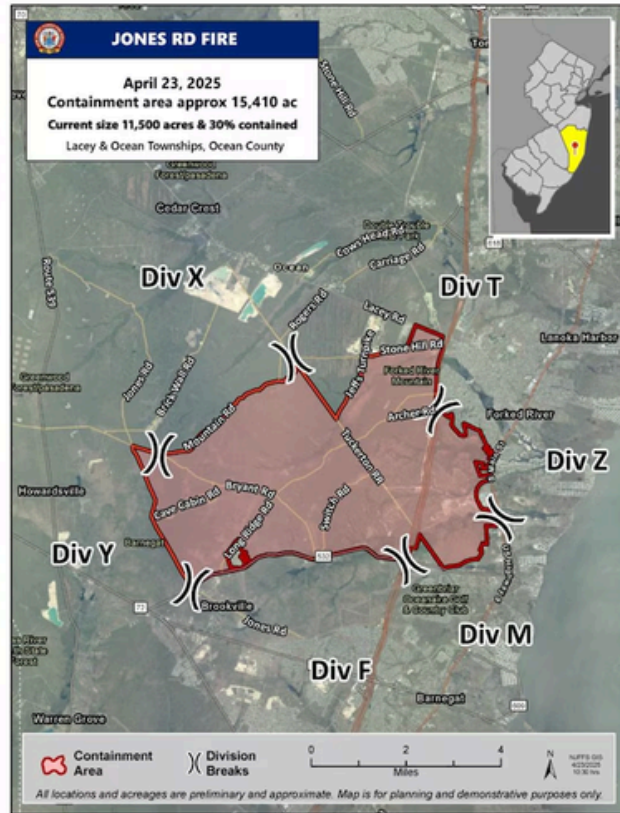
Hudson County Community College

Middlesex College

Sussex County Community College

The Geographic Information Systems (GIS) Development project is a statewide collaboration led by Camden County College, Hudson County Community College, Middlesex College, and Sussex County Community College. Together, these colleges are designing and implementing GIS certificate programs to meet the growing workforce demand for spatial data analysis and visualization professionals. The project is designed to serve adult learners, traditional college students, and high school students via dual enrollment, and includes connections to community-based organizations and industry.

What is GIS?



EDUCATION PARTNERS:

- Camden County College
- Middlesex County College
- Hudson County Community College
- Sussex County Community College
- Newton High School
- Sussex County Technology High School
- High Point Regional High School
- Wallkill Valley High School
- Project Sufficiency/NJ Youth Corp
- Civil Solutions (a subsidiary of ARH)

Geographic Information Systems Certificate (GIS) Development

The GIS certificates equip students with foundational and advanced skills in GIS technologies, preparing them for careers in fields such as environmental management, infrastructure planning, and business analytics.

Each partner college is developing either non-credit or credit-bearing certificates, embedding industry credentials, and aligning to employer needs.

PATHWAY CONNECTIONS:

Connection to High School (Non-Credit)

Connection to High School (Dual Enrollment)

Community College (Non Credit)

Community College (Credit)

Apprenticeship Development

PLA for Apprenticeship RTI

PLA

Connection between Community Colleges (1+1)

Experiential Learning

Connection to CBOs

Adult Learners

Adult Literacy

Connection to 4-Yr College/University

Professional Development

Pilot

Geographic Information Systems Certificate (GIS) Development

Pathway Connection Progress:

Camden County College finalized a 34-credit GIS certificate, including 4 new courses:

- **Introduction to GIS**
- **Mapping & Cartography**
- **Remote Sensing**
- **Capstone course**

Middlesex College developed a 30-credit certificate with aligned outcomes:

- **Ongoing internal discussions to embed GIS into:**
 - **AAS in Computer and Information Systems**
 - **Computer Programming Certificate**
- **Presentation of new GIS courses (GIS-101, GIS-210, GIS-280) scheduled for September departmental meeting.**

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Certificate Requirements:

First Semester

ENG-101 English Composition I

3

DSC-101 Data Science I

3

CAD-101 Computer Aided

Engineering Graphics

4

GEO-101 Cultural Geography

3

GIS-101 Introduction to Geographic
Information Systems

3

16

Second Semester

CSC-171 Introductory Python
Programming

3

GIS-201 Mapping and Cartography

3

GIS-210 Remote Sensing

3

CAD-205 Architectural CADD Using Revit

3

CAD-208 Autocad Civil 3D Level 1

3

15

Third Semester

GIS-280 Geospatial Solutions: Project
Design & Professional Applications

3

34

Prerequisites

ENG-013 AND ENG-023 OR ENG-046

ENG-013 AND ENG-023 OR ENG-046
AND MTH-100

ENG-013 AND ENG-023 OR ENG-046

ENG-013 AND ENG-023 OR ENG-046
AND MTH-029/035 OR Proper Placement Exam Scores

GIS-101

GIS-101

CAD-101

CAD-101

GIS-201 AND GIS-210

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Comparison Table: CCC GIS.CT 34 credits vs MC 30 credits

First Semester:			
Middlesex College	Credits		Camden County College
ENG 121	3	English Composition	ENG 101
MEC 123	3	Technical Graphics/CAD I	CAD 101
CSC 106	3	Intermediate PC Appl w/Prog	
DSA 110 *	3	Intro Data Science & Analytic	DSC-101
GIS- 101 (new)	4	Introduction to GIS	GIS 101
Second Semester			
CSC -135	4	Intro. to Programming Python	CSC-171
GLS-131	3	World Geography	GEO - 101
GIS- 210 (new)	3	Remote Sensing	GIS 210
CIT-126	3	Advanced Civil Drawing/CAD-II	CAD-208
Third Semester (summer)			
GIS-280 (new)	4	Geospatial Solutions: Project Design & Professional Applications	GIS-280
*CSC 106 Must be taken either prior to or at the same time as this course			

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Challenges:

- Mapping existing courses and ensuring academic alignment.
- Aligning existing courses and avoiding student barriers.

Solutions:

- Developed stackable credit pathways into associate degrees.
- Identified support courses across departments.
- Strong collaboration between faculty and academic coordinators.

Ancillary Activities:

- Potential for students to pursue technical or BS degree after certificate completion, or lateral movement into the Technical Studies AAS degree.
- Exploration of internship and hybrid/online delivery formats.

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Pathway Connection Progress:

Sussex County Community College is continuing development of 30-credit GIS certificate program.

Challenges:

Aligning current course inventory with GIS competencies.

Solutions:

Collaboration across departments to identify course overlaps.

Ancillary Activities:

Enables students in computer/software degrees to pursue lateral moves into GIS.

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Introduction to GIS Certificate

Hudson County Community College designed a non-credit Introduction to GIS Certificate focused on the construction industry. The certificate provides a thorough understanding of GIS encompassing key concepts, applications, and software platforms.

Pathway Connection Progress:

- Conducted extensive research and developed curriculum focused on spatial data analysis for construction.
- Current employment trends were analyzed, and the role and impact of small businesses in this sector.
- Industry advisory board established and marketing initiated via the college website.
- Programming scheduled to begin Summer 2025.

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Topics Covered:

- **Spatial Data Acquisition and Management.**
- **Spatial Analysis Fundamentals.**
- **Environmental Applications of GIS.**
- **Human Geography and Urban Planning.**
- **3D City Modeling and LIDAR Data Processing.**
- **Infrastructure Analysis, Environmental Sustainability, Community Analyst, and Business Analyst.**