LEHMAN COLLEGE
OF THE
CITY UNIVERSITY OF NEW YORK

DEPARTMENT OF EARTH, ENVIRONMETAL, AND GEOSPATIAL SCIENCES

CURRICULUM CHANGE

1. **Type of change:** New Course

2.

Department(s)	Earth, Environmental, and Geospatial Sciences
Career	[X] Undergraduate [ ] Graduate
Academic Level	[X] Regular [ ] Compensatory [ ] Developmental [ ] Remedial
Subject Area	GEP
Course Prefix & Number	GEP 362
Course Title	Introduction to Programming for GISc
Description	Programming and scripting for Geographic Information Science (GISc) with a focus on applying programming methods to answer geographic questions. Students will learn how to use programming to automate geoprocessing tasks and develop new analytical tools.
Pre/ Co Requisites	GEP 205 or departmental permission.
Credits	3
Hours	4 (2 lecture; 2 lab)
Liberal Arts	[X] Yes [ ] No
Course Attribute (e.g. Writing Intensive, WAC, etc)	

General Education Component	__X_ Not Applicable
	____ Required
	    ____ English Composition
	    ____ Mathematics
	    ____ Science
	
	____ Flexible
	    ____ World Cultures
	    ____ US Experience in its Diversity
	    ____ Creative Expression
	    ____ Individual and Society
	    ____ Scientific World

3. **<u>Rationale</u>:**
The graduate course Introduction to Programming for GISc already exists and has been taught. An undergraduate course is needed to offer it to our majors. This course will serve as an elective in the undergraduate GISc program (GISc certificate, GISc minor) and Geography (BA) and support other EEGS Department coursework. Applying programming logic and developing program applications to answer geographic and environmental questions and increase productivity is essential for GISc students and a highly demanded skill in the job market.

4. **<u>Learning Outcomes (By the end of the course students will be expected to)</u>:**
   - Explain and define fundamental programming concepts
   - Automate geoprocessing tasks in GIS using Python scripts
   - Develop new analytical tools for GIS
   - Customize GIS software interface to integrate new tools
   - Describe and apply programming methods to GISc projects and data management

5. **<u>Date of Departmental Approval</u>:** January 25, 2024

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Department(s)	Earth, Environmental, and Geospatial Sciences
Career	[X] Undergraduate [ ] Graduate
Academic Level	[X] Regular [ ] Compensatory [ ] Developmental [ ] Remedial
Subject Area	GEP
Course Prefix & Number	GEP 364
Course Title	Spatial Database Management
Description	Managing spatial data within a relational database in a Geographic Information System.
Pre/ Co Requisites	GEP 205 or departmental permission.
Credits	3
Hours	4(2 lecture; 2 lab)
Liberal Arts	[X] Yes [ ] No
Course Attribute (e.g. Writing Intensive, WAC, etc)	

General Education Component	__X_ Not Applicable
	____ Required
	    ____ English Composition
	    ____ Mathematics
	    ____ Science
	
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3. **Rationale:**

A Spatial Database Management graduate course already exists. A corresponding undergraduate course is needed to offer it to our majors.

This course will serve as an elective in the undergraduate GISc program (GISc certificate, GISc minor) and Geography (BA) and support other EEGS Department coursework. Applying relational database concepts, executing SQL (Structured Query Language), and managing spatial databases are important skills for GISc majors

4. **Learning Outcomes (By the end of the course students will be expected to):**
• Explain and define fundamental relational database concepts
• Execute SQL (Structured Query Language) and spatial SQL queries
• Manage a spatial database using database management software (PostgreSQL & PostGIS)
• Model relationships and manage data integrity within a spatial database
• Prepare, process, and load data into a database
• Perform spatial analysis in a spatial database and in conjunction with GIS software and applications

5. **Date of Departmental Approval:** January 25, 2024