BOROUGH OF MANHATTAN COMMUNITY COLLEGE
The City University of New York

LETTER OF INTENT

Attach a copy of the Letter of Intent to this sheet as well as any new course or course revisions required as part of this new curriculum.

1. Name of Department: Computer Information Systems, Social Sciences
2. Name of new curriculum: Geographic Information Science
3. Degree to be granted: A.S
4. Estimated enrollment in curriculum (number of students estimated to begin this curriculum per academic year): 80
5. Will this curriculum require special materials, equipment, or space?

   _____ Yes ✓ No If yes, attach an explanation.
6. Are any old curricula being dropped? _____ Yes ✓ No. If yes, please list.

Signatures

1. Toby Ginsberg Emily Anderson — Department Chairperson or Program Director — Date 4/26/10
2. Jane Gray — Dean of Academic Affairs (Received Copy) — Date 4/27/10
3. _____ — Chairperson of Curriculum Committee — Date _____

Borough of Manhattan Community College
Letter of Intent for AS in Geographic Information Science

Program Identification

Academic Department(s):	**Computer Information Systems, Social Sciences and Human Services**
Program Title:	**Geographic Information Science**
Degree Awarded:	**Associate of Science**
Effective Date:	**Fall 2011**

1. Purpose and Goals

Geographic Information Science (GISc) is the theory behind the development, use, and application of Geographic Information Systems (GIS). GIS is a powerful program designed to gather, store, retrieve, and analyze geospatial data. The results can then be displayed on a map, allowing non-users of GIS to see the patterns and distribution of the data for application to their particular needs. GISc is a rapidly expanding field with growing career opportunities and GIS professionals are highly demanded in many industry and government fields. GIS is central to many occupations. Government agencies use GIS to help in planning and organizing their geographic data, such as properties and public works roads. Emergency planners apply GIS to calculate emergency response times in the event of a natural disaster. GIS has already become the primary technology in Homeland Security. In environmental management, GIS can be used to find wetlands and that need protection from pollution. Another innovative application is to use GIS to map the optimum locations for wind farms and promote investment in "green" energy source[1]. In healthcare, professionals apply GIS to track the spread of disease and wellness information. Communication technology companies use GIS in planning of their utility expansions. In real estate, agents and bankers employ GIS to track properties, property values, and tax information.

The Computer Information Systems and Social Sciences and Human Sciences Departments of Borough of Manhattan Community College (BMCC) jointly propose to offer an Associate in Science (A.S.) degree in Geographic Information Science. The purpose of the new degree is to prepare BMCC graduates to begin an entry level employment in this new developing field. The curriculum will also enable students to transfer to upper division bachelor degree programs in GISc or GIS oriented Geography programs. Students completing the A.S. in GISc will have opportunity to transfer to the bachelor degree program in Geography with a concentration in GISc at Hunter College.

[1] http://vector1media.com/spatialsustain/gis-is-green-technology-e-book.html

Students seeking admission to the Geographic Information Science program must satisfy the general admission requirements for entry to BMCC: completion of either high school diploma or a New York State Equivalency Diploma. Upon acceptance, students must take CUNY placement Examinations, which measure proficiency in reading, writing, and mathematics. Each of the courses in the Geographic Information Science curriculum has a predetermined set of competencies which must be satisfied before enrollment in a course is granted. The definition of these levels appears in the college bulletin under the heading Basic Skills Guide.

As it is discussed in the previous section **Need for the Curriculum**, the demands for positions with GIS skills are higher than the number of College and University graduates with a GIS major. Because of that, some positions in the GIS industry have employees who need to improve their knowledge and skills of GIS and get an appropriate educational degree. This contingency will initially be a great part of students' enrollment. For example, at Burlington County College in New Jersey, most students in the GIS major are already employees in the GIS industry.

At BMCC, enrollments in the Liberal Arts, Computer Science, and Computer Information Systems programs are approximately 7,700, 280 and 270 respectively[4]. These students are identified as good candidates for this proposed program. If 1% of the Liberal Art students are interested in this growing field and migrate to this new program, they can easily add 77 students to it. For those who are seeking the Liberal Arts major, they can just include the Computer Science and GIS training to complete the GISc program. Similarly, for the Computer Science and Computer Information Systems applicants, they can simply study the area of Geography and GIS in addition to information technologies to complete the GISc program.

The program will target not fewer than 30 students each semester for participation in the program. At the table below there is given a projected number of the student enrollment for the first five years that corresponds to four semester's education in GIS major in **Curriculum** section of this document. The attrition and graduation rate in percents may be about 30.

There is no community college found in CUNY that provides a GISc program. BMCC will be the first community college that initiates a GISc program.

The following figure is based on new students and students who transfer from other existing programs, such as Liberal Arts. The percentages of students migrating from other programs for the first five years are expected to be: 75% for the first year, 50 % for the second year, 25% for the third year, 10 % for the fourth year and 0 % for the fifth year.

[4] http://www.bmcc.cuny.edu/iresearch/upload/Spring2009FactSheet.pdf

The new courses in this curriculum are GIS 201-Introduction to Geographic Methods, GIS 261-Introduction to Geographic Information Science, GIS 361-Advanced Geographic Information Science, GEO 226-Environmental Conservation, GEOG 241-Population Geography, and CED325- GIS Internship.

GIS 201-Introduction to Geographic Methods covers various methods for interpreting and analyzing spatial data including Spatial Statistics, Cartography, Geographic Information Systems, Remote Sensing, Global Position System, and Survey Research. Special emphasis will be given to the mapping science that introduces how to use maps to obtain information and how to create maps to display and analyze quantitative and qualitative data.

GIS 261-Introduction to Geographic Information Science will introduce the basic principles and operation of geographic information systems; computerized systems for the capture, storage, management, analysis and display of geographically referenced data and their attributes. Laboratory exercises will provide extensive hands-on experience with a professional Geographic Information Systems software package.

GIS 361-Advanced Geographic Information Science reviews the topics covered in Introduction to Geographic Information Science and provides in-depth understanding of the theoretical and practical concepts of Geographic Information Systems including the basic geo-processing and programming concepts. Laboratory exercises will provide extensive hands-on experience for these advanced topics.

GEO 226-Environmental Conservation: Resource Management provides an overview of the different resources available for conservation of the environment in relation to different populations. By looking at the history of conservation efforts it will examine changes in the policies and current practices used in the development of natural resources. It will pay particular attention at the energy crisis and look at the obstacles and possibilities of these resources in the future.

GEOG 241-Population Geography covers geographic aspects including interpretation and analysis techniques of fertility, mortality and migration. It focuses on population growth in relation to resource bases. Processes and impacts of immigration and urban ethnicity are also discussed.

CED 325-GIS Internships will provide students with internship positions giving them valuable experiences in the field of Geographic Information Science in a variety of governmental and industry settings.

The proposed Geographic Information Science program is aligned with the similar programs offered at Hunter College and Lehman College. Discussions with Hunter College, which offers a Bachelor's Degree in Geography, have led to an agreement in principle to articulate the two programs. A formal letter of articulation will be forthcoming shortly, if BMCC receives approval to develop a proposal for the program.

Students who enroll in BMCC's proposed Associate program in Geographic Information Science would be able to complete the curriculum requirements in two years provided all remediation and/or prerequisites are satisfied prior to beginning the program. The following is a sample of the general and program curriculum requirements outlined over four semesters for two years.

First Semester – Year One		Credits
ENG 101	English Composition I	3
CSC 110	Computer Programming I	4
GEO 100	Human Geography	3
MAT 206	Mathematics Foundations for Calculus	4
	Subtotal	**14**

Second Semester – Year One		Credits
CSC 210	Computer Programming II	4
CIS 395	Database System I	4
GIS 201	Introduction to Geographic Methods	4
MAT 209	Statistics	4
	Subtotal	**16**

Third Semester – Year Two		Credits
ENG 201	English Composition II	3
GIS 261	Introduction to Geographic Information Science	3
GLY 210	Geology I	4
GEO 226	Environmental Conservation - Resource Management	3
XXX xxx	ART/MUS Elective	2
	Subtotal	**15**

Fourth Semester – Year Two		Credits
GIS 361	Advanced Geographic Information Science	3
SPE 100	Speech	3
XXX xxx	Social Science elective	3
XXX xxx	Elective (Any CIS, CSC, MMP 300 and above level, or Social Sciences and Human Services 200 level)	3
XXX xxx	CED 325-GIS Internship or GEO 241-Population Geography	3
	Subtotal	**15**

Budget Table					
	Year 1	Year 2	Year 3	Year 4	Year 5
Expenditures:					
Personnel:	3,500	17,500	28,000	59,500	73,500
Other Than Personnel Service:					
1-New library acquisitions	500	1,000	1,500	2,000	2,000
2-Supplies	4,000	12,000	16,000	20,000	24,000
Total expenditures:	**8,000**	**30,500**	**45,500**	**81,500**	**99,500**

The projected tuition revenue related to the proposed A.S. Science for Geographic Information Science program is as follows:

Revenues	1st year Academic Year	2nd year Academic Year	3rd year Academic Year	4th year Academic Year	5th year Academic year
Tuition Revenue*	75% of the students from other programs	50% of the students from other programs	25% of the students from other programs	10% of the students from other programs	0% of the students from other programs
1. From Existing Sources	52,800	88,000	66,700	35,900	0
2. From New Sources	17,600	88,000	200,300	323,100	436,000
3. Total	70,400	176,000	267,000	359,000	436,000
State Revenue**					
4. From Existing Sources	90,900	151,500	114,887.5	61,610	0
5. From New Sources	30,300	151,500	344,662.5	554,490	747,400
6. Total	121,200	303,000	459,550	616,100	747,400
Other Revenue	0	0	0	0	0
7. From Existing Sources	0	0	0	0	0
8. From New Sources	0	0	0	0	0
9. Total	0	0	0	0	0
Grand Total	0	0	0	0	0
10. From Existing Sources	143,700	239,500	181,587.5	97,510	0
11. From New Sources	47,900	239,500	544,962.5	877,590	1,183,400
TOTAL	191,600	479,000	726,550	975,100	1,183,400

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COURSE REVISION

Attach a copy of the proposed course revision to this form.

1. Name of Department: Computer Information Systems
2. Name and number of course: CSC 210: Computer programming II.
3. ____ This course is being withdrawn. (Go to #5)
4. ____ Course revised. Check appropriate items below.

____ Change course number from _____ to _____.

____ Change course title from _____

to _____

Course Abbreviation (max. 19 spaces): _____

____ Change course hours from _____ to _____.

____ Change course credit from _____ to _____.

V Change basic skills requirements from C-MAT 012/051

to C-MAT 056

____ Change prerequisites from _____

to _____

____ Change corequisites from _____

to _____

____ Change course description. Attach a copy of old and new description.

____ Other (Specify):

5 Reason(s) for changes(s):

6. Date effective: Fall 2011

Signatures

1.	Toby Dunsky Department Chairperson or Program Director	5/10/10 Date
2	[illegible] Scheduling Office (Advised as to Course Code)	5/10/10 Date
3.	[illegible] Dean of Academic Affairs (Advised as to Format)	5/10/10 Date
4.	_____ Chairperson of Curriculum Committee	_____ Date