MEMORANDUM

TO:        Edward Montgomery, Dean
            College of Behavioral and Social Sciences

FROM:      Victor Korenman
            Associate Provost for Academic Planning and Programs

SUBJECT: Proposal to Convert the Existing Citation in Geographic Information Science to a Minor in Geographic Information Science (PCC Log Number 04008)

At its meeting on September 10, 2004, the Senate Committee on Programs, Curricula, and Courses approved your proposal to convert the existing citation in Geographic Information Science to a Minor in Geographic Information Science. A copy of the approved proposal is enclosed.

During Committee deliberations, PCC members remarked that the proposed minor seemed less rigorous than it might be, especially given the expertise and reputation of the University in the GIS field. One member collected curricula for GIS minor programs at eleven other institutions, copy enclosed, many of which seem to be more comprehensive than the one proposed here. There was also concern expressed that the mathematics prerequisite for the minor courses was only MATH 110, suggesting that the courses would be constrained from providing the rigor and depth of knowledge that might be expected of graduates of this Department. While the minor was approved as proposed, the committee recommends that the Department consider developing a much strengthened version.

This approval is effective immediately. No student may be allowed to begin the discontinued Citation program after this time, but students who have already taken or who are taking a course towards the Citation must be permitted to complete it if they so choose. All advisors should be notified and the College should ensure that the approved guidelines are followed.

Enclosures

Cc:        Sylvester J. Gates, Chair, University Senate
            PCC
            Katherine Beardsley, College of Behavioral and Social Sciences
            Mary Giles, University Senate
            Barbara Hope, Data Administration
            Phyllis Peres, Office of Undergraduate Studies
            John Townsend, Department of Geography
            Anne Turkos, Archives
            Linda Yokoi, Records & Registrations
Geographic Information Systems: Minors and Certificates

University of Georgia
Minor: 15/16 hours plus 12 hours of prerequisites
  Prereq: elem calculus (math dept), elem programming (CS dept),
  elem. stat (GEOG 2300, or equiv), cartography (GEOG 3510)
Core (9 hr): Intro to GIS, Use/Interpret of Aerial Photo, Cartographic Visualization
Electives, 6 hr (one with a lab): Remote Sensing, GIS (several), Engin Design
NOTE: Required 3.0 GPA average in core and elective courses in this program

University of Arizona (Tucson)
Minor: 21 credits plus math (our MATH 113)
  Basic course (3 cr) GIS for Natural Resources 2 hr lecture/3 hr. lab
  Required (12): Remote Sensing, Computer Cartography, GIS, Statistical Techniques

Michigan State University
“Specialization” (for any academic major): 21 credits
  Required (6 cr): Intro to GIS; either GIS independent study or geography internship
  Electives (15): (most are 4 credits): Remote Sensing, GIS in Natural Resource Mgmt,
  Map Design, Advanced Remote Sensing, GIS, Thematic Cartography, Digital Terrain
  Analysis, Quantitative Methods, Spatial Data Analysis (3 cr), Remote Sensing Field
  Techniques (2 cr).

George Mason University
Minor: 18/19 credits plus basic introductory course
  Basic course(3 cr): Physical Geography or Human Geography
  Required (12): Mapping, Quantitative Methods, GIS I and II
  Electives (6/7): Digital Cartography, Adv. Digital Cartography, Aerial Cartography,
  Satellite Imaging

Towson University
Minor: 21 credits
  Required (12 cr): Interpretation of Maps, Cartography or Computer Mapping,
  Quantitative Methods, Intro to GIS
  Electives (9): Aerial Photog., GIS Applications, Remote Sensing, other GIS, Internship,
  Reading/Independent Study in GIS

Kansas State University
Certificate: 18 credits (Distinct from a minor in geography)
  Cartography, Computer Mapping/Visualization, Remote Sensing, GIS I and II,
  Elective at least 50% GIS content
THE UNIVERSITY OF MARYLAND, COLLEGE PARK
PROGRAM/CURRICULUM PROPOSAL

DIRECTIONS: Provide one form with original approval signatures in lines 1 - 4 for each proposed action. Keep this form to one-page in length. Forms and appropriate attachments should be submitted to the Office of Academic Affairs, who will assign a Log Number to each proposal. Additional copies may be required at a later time.

DATE SUBMITTED 6/23/04
COLLEGE/SCHOOL _BSOS

DEPARTMENT/PROGRAM Geography Department

PROPOSED ACTION (A separate form for each) ADD X DELETE CHANGE

DESCRIPTION (Provide a succinct account of the proposed action. Additional detail may be provided in an attachment. Provide old and new sample programs for curriculum changes.)

Proposal for a minor in Geographic Information Science (GIS) to be offered by the Department of Geography. See attached description.

JUSTIFICATION/REASONS/RESOURCES (Explain the reason for the proposed action. Identify the source of new resources that may be required. Attach additional material if needed.)

This is a proposal to convert an existing citation program into a minor with two changes. The minor will offer the students a choice of either Geog 201/211 (4 hours) or Geog 202 (3 hours) reflecting their general area of interest. In addition, Geog. 306, An Introduction to Quantitative Methods for Geographic and Environmental Sciences also been added as a requirement. Geog. 306 is currently being offered as Geog 398Q pending until course approval is finalized. The transcript will designate the minor as Geography: Geographic Information Science. All courses listed are currently being offered. There will be no new resources required. Oversight for this minor will be through the Undergraduate Advising Office of the Geography Department. The Department’s Undergraduate Director will be responsible for ensuring that students are properly advised and that records are appropriately kept.

APPROVAL SIGNATURES

1. Department Committee Chair
   
   [Signature]

2. Department Chair
   
   [Signature]

3. College/School PCC Chair
   
   [Signature]

4. Dean
   
   [Signature]

5. Dean of the Graduate School (if required)
   
   [Signature]

6. Chair, Senate PCC
   
   [Signature]

7. Chair of Senate
   
   [Signature]

8. Vice President for Academic Affairs & Provost
   
   [Signature]

DATE

8/12/04
8/13/04
9/10/04
9/10/04

VPAAP Rev. 2/2/98

BS5 04-5
Department of Geography  
University of Maryland, College Park  

Minor in Geographic Information Science

The Minor in Geographic Information Science is designed to give students the technical skills needed to acquire, manage, and analyze geographic data. Almost everything we do involves geographic information: deciding where to live and travel, environmental monitoring, law enforcement, public health, and urban planning. Influenced by computer technology, the academic disciplines of geographic information science such as remote sensing, spatial analysis, and geospatial visualization have evolved dramatically in the past few decades. The fields of remote sensing, the acquisition of geographic information from aircraft and satellites, and GIS, the management and analysis of different forms of digital geographic data, have been growing at an extraordinary rate. Computer cartography has revolutionized traditional cartography to vastly improve map making and visualization of geographic data in a multimedia environment. Students taking a minor in GIScience will receive extensive training in digital processing of remote sensing observations, learn about the wide range of geographic data for both natural and social science applications and how they can be combined, analyzed and finally be displayed to effectively inform decision makers in all walks of life.

These skills are in great demand locally, nationally, and globally.

The Curriculum: 15/16 Credits

Choose One: (3 or 4 cr.)

GEOG 201/211 Geography of Environmental Systems. A systematic introduction to the processes and associated forms of the atmosphere and earth’s surfaces emphasizing the interaction between climatology, hydrology, and geomorphology. (3 cr.)

GEOG 202 The World in Cultural Perspective.
The imprint of cultural traits on the earth’s landscape. The transformation of the earth’s surface as a result of cultural diversity, settlement patterns, political organization, cultural evolution, and population growth. (3 cr.)

Required: (12 hours)

GEOG 306 Geographic Methods. An introduction to quantitative methods for geographic and environmental sciences including handling and analysis of spatial and other data on statistical analyses including significance tests, analysis of variance, and univariate and multiple regression, and will include matrix methods, principal component analysis, and the use of statistical software (R/S-plus). Programming element using S+ and basic UNIX. (3 cr.)

GEOG 371 Digital Cartography. Principles of cartographic database, earth-map relations, map design, symbolization and color usage. Practical skills of making different thematic maps using a GIS. (3 cr.)

GEOG 372 Remote Sensing. Principles of remote sensing in relation to photographic, thermal infra-red and radar imaging. Methods of obtaining quantitative information from remotely sensed images emphasizing the study of spatial and environmental relationships. (3 cr.)

GEOG 373 Geographic Information Systems. This hands-on course teaches you how to use the most common GIS software and provides you with the necessary background to understand how these software packages work. (3 cr.)

Admission to the Minor:
There are no special requirements for this minor. GIScience methods are applicable to many diverse fields, such as agriculture, marketing, and archaeology. The Department of Geography welcomes students from every area of study. However, students should have basic computing skills. All credits for the minor must be taken in the Department of Geography at the University of Maryland, College Park. No course with an earned grade below “C” may count towards the minor degree. No more than six credits are to be included in the student’s minor and major, supporting courses, and college requirements.

Application form attached, return to Advising Office, LeFrak 2108.

Computer Facilities:
The Department of Geography has state of the art computing facilities that are open to all students enrolled in the GIScience minor.