MICHIGAN STATE
UNIVERSITY

November 20, 2013

MEMORANDUM

TO: Dr. Douglas Estry, Associate Provost for Undergraduate Education and Dean of Undergraduate Studies

FROM: Dr. John Gaboury, Associate Provost for Academic Services

RE: Request for a Grade-Point Average Requirement in the Bachelor of Science Degree in Geographic Information Science

For Transmittal to the University Committee on Undergraduate Education (UCUE)

The request referenced above is being sent to the University Committee on Undergraduate Education (UCUE) in accordance with the *Bylaws for Academic Governance*, 4.4.

UCUE Response Requested:

Please ask the UCUE to consider the request referenced above and provide consultative commentary prior to the January 30, 2014 Full Committee, UCC meeting. Please mail the related materials referenced under the heading Attachments at the end of this memorandum to the UCUE members.

The academic program and course requests referenced above will be included on the agenda for the January 23, 2014 meeting of Subcommittee B, University Committee on Curriculum (UCC). Requests that are approved by Subcommittee B on January 23 will be before the Full Committee, UCC, for action on January 30, 2014. Requests that are approved by the Full Committee on January 30 will be included in the February 18, 2014, Report of the UCC to the Faculty Senate.

If you have any questions, please call Joy Speas, University Curriculum Administrator at 5-8420.

Thank you for your help.

Attachments:

1. Request for Changes in an Academic Program form dated October 10, 2013: Bachelor of Science Degree in Geographic Information Science and attachments.

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University Curriculum and Catalog

Hannah Admin. Building
426 Auditorium Road
Room 151
East Lansing, MI 48824

517-355-8420
Fax: 517-353-1935

View a Program

Main Menu

Stephanie Smith, RO	Thursday, 10/10/2013
Program Name: Geographic Information Science **Degree: BS Sequence Number: 2**	Program Request ID: 2226

Effective Dates: Fall 2013 - Open Status: Interim Initial Action: Change

Requested Date: 6/6/2012 1:44:57 PM

1. Department/School/College:

38366 .... Department of Geography

2. Name of Program:

Geographic Information Science

3. Name of Degree:

BS

4. Type of Program:

Major

5. Effective Start Semester:

Fall ~~2013~~ 2014

6. Target student audience for the program:

Students majoring in Geographic Information Science

7. Enrollment:

What is the expected enrollment per year: 35

What is the minimum enrollment acceptable: 5

8. Source of budget for the program:

To align academic planning and curricular change, ALL requests for NEW funds must be included in the College's annual planning letter. Provost approval of new funds and the effective date for the new program must align. If funding is not approved, then the program request will not be forwarded to Faculty Senate.

Internal reallocation

If new funds, was this request included in the College's annual planning letter? Indicate yes or no. If no, then this is a department or college fund reallocation (If the program is implemented, no additional resources are required.).

9. Projected Costs as compared to other programs in unit:

Same

10. Staff requirement:

How many additional staff will be required: 0

Who will provide the primary instruction. Describe any external linkages(industry, government, etc.):

11. Will additional equipment be required:

Approximate cost: 0

Source of funding:

12. Will additional library materials be required:

Approximate cost: 0

Source of funding: No funding needed

13. Will additional space be required:

Type:

Approximate amount:

14. If the program requirements contain a named concentration, do you wish for the concentration to be noted on the student's transcript?:

No

15. Detailed Description:

Rationale for program change:

The College of Social Science is changing its requirements for the bachelor's degree. The department is proposing revisions to bring the department's degree requirements and academic programs language into alignment with the College's new requirements.

Department will set the requirements for the BS in Geographic Information Science under the new College of Social Science requirements.

Department revising course requirements in conjunction with Academic Program Review.

Program Changes:

Change in language referencing University Mathematics requirement and the University Tier II writing requirement. (See 1, 2, & 3f)

Change in language referencing College requirements. (See 2)

Change from College requirement of 15 CNS credits (See 2) to major requirement of 10-12 credits of Math or Computer Science for the Bachelor of Science. (See 3a & 3b)

Revision of required courses in response to APR recommendations. (See 3c, 3d, 3e)

Detailed Description:

We are making curricular changes to the Major in Geographic Information Science. The major was first started in 2005. After review, we have been able to identify several adjustments that make the major more rigorous and more applicable to the applications that our graduates are finding in the workplace, and which reflect course changes that we are also implementing.

Below is the suggested catalog language for the major in Geographic Information Science. The primary curriculum changes are as follows:

-addition of GEO 333 as an option for the listing of Introductory GEO courses

-an additional required course in GISci, at the introductory level: GEO 221L - this is a new course

-clear recognition of GEO 425 as the capstone course for this major

-reduction from 8 to 5 in the listing of optional, upper-level courses in GISci

MARKED UP OLD LANGUAGE: [language to be deleted struck through; language to be added underlined]

Requirements for the Bachelor of Science Degree in Geographic Information Science - suggested catalog language

1.The University requirements for bachelor's degrees as described in the *Undergraduate Education* section of this catalog; 120 credits, including general elective credits, are required for the Bachelor of Science degree in Geographic Information Science.

~~2.The University's Mathematics requirement for the Bachelor of Science degree in Geograhic Information Science is met by completing one of Mathematics 124, 132, or 152H~~

The University's Tier II writing requirement for the Geographic Information Science major is met by completing Geography 425 ~~or 480~~. ~~Those courses are~~That course isreferenced in item 3.f. below.

2.The requirements of College of Social Science as described in the College section of this catalog.

~~The College's NATURAL SCIENCE REQUIREMENT for the Geographic Information Science major is met by completing 15 additional credits in courses offered by a department or program in the College of Natural Science, chosen from the following: Biochemistry and Molecular Biology, Biological Science, Chemistry, Entomology, Geological Sciences, Lyman Briggs, Mathematics, Microbiology and Molecular Genetics, Physics and Astronomy, Plant Biology, Plant Pathology, Physiology, Statistics and Probability, and Zoology. Students should see their academic advisor to obtain a list of approved courses which will meet this requirement~~.

3.~~4.~~The following required major courses (~~30 to 32~~ 40-44credits) with a minimum 2.0 grade point average:

a. One of the following courses (3 or 4 credits)
MTH 126 Survey of Calculus II 3
MTH 133 Calculus II 4
LB 118 Calculus II 4

b. Two of the following courses (7 or 8 credits)
CSE 131 Technical Computing and Problem Solving 3
CSE 231 Introduction to Programming I 4
CSE 232 Introduction to Programming II 4

c.~~a.~~One of the following courses (3 ~~or 4~~ credits)
GEO 113 Introduction to Economic Geography 3
GEO 151 Cultural Geography 3
GEO 206 Physical Geography 3

~~GEO 206L Physical Geography Laboratory 1~~
~~Students who choose Geography 206 must also enroll in Geography 206L.~~
GEO 333 Geography of Michigan and the Great Lakes Region 3

d. ~~b.~~ All of the following courses (~~16~~ 18credits)
GEO 221 Introduction to Geographic Information
GEO 221L Introduction to Geographic Information Lab 3
GEO 324 Remote Sensing of the Environment 4
GEO 325 Geographic Information Systems 3
~~GEO 425 Problems in Geographic Information Science (W) 3~~
GEO ~~463~~ 363 Introduction to Quantitative Methods for Geographers ~~and Planners~~ 3
GEO 424 Advanced Remote Sensing 4

e. ~~c. A minimum of 11 credits selected~~ Two courses from the following (6 to 8 credits)
~~GEO 419 Applications of Geographic Information Systems to Natural Resource Management 4~~
GEO 423 Cartographic Design and Production 4
~~GEO 424 Advanced Remote Sensing 4~~
GEO 426 Thematic Cartography 4
GEO 428 Digital Terrain Analysis 4
GEO 453 Metropolitan Environments: Urban Forms and Land Uses 3
~~GEO 480 Senior Seminar (W) 3~~
GEO 498 Internship in Geography 3

f. GEO425 Problems in Geographic Information Science (W) 3

16. Are there admissions requirements for this program?:

Grade or grade-point average requirements and if so in which course(s), portfolio requirement, audition, essay, etc. If there are not admission requirements other than those required by the University policy indicate "none".

none

17. Type(s) of change(s):

See #15 above.

18. Students who will be affected by the proposed changes:

Future GISci majors at MSU. Current majors would have the option of completing the requirements in place at the time they began the major or switching to the new requirements, per College policy.

19. Will the proposed change(s) have a negative impact on students? If so, which ones?:

No
Describe impact and explain what accommodations will be made:

20. Reason(s) for change(s):

Increased curricular rigor and curricular flexibility. The new course structure places more emphasis on courses that we view as necessary, useful and valuable, while eliminating some that have not been as useful to our students, as judged by the faculty and as gleaned from a recent survey of our GISci graduates. The GISci major has been in effect for seven years and is due for re-evaluation. Proposed changes in the requirements of the College of Social Sciences for all their majors provide an excellent framework in which to review

current requirements of the major and update it as necessary to meet current expectations for practitioners in the field.

DEPARTMENT LEVEL APPROVAL STATUS

Approved: Department of Geography
9/12/2013 4:07:18 PM by Judy Reginek for Alan F. Arbogast, Chairperson

SIGNOFFS STATUS

Signed Off: College of Natural Science
9/24/2013 4:57:39 PM by Teri Roache for Gerard Mark Voit, Associate Dean

Signed Off: Lyman Briggs College
9/12/2013 4:39:02 PM by Mark Largent for Elizabeth H. Simmons, Dean

Comments: Under section 3, LB 118: Calculus I should instead be LB 119: Calculus II (4 credits)

Signed Off: Department of Computer Science and Engineering
9/18/2013 9:34:41 AM by Abdol Esfahanian for Matt W. Mutka, Acting Chairperson

Signed Off: Lyman Briggs College
9/12/2013 4:39:02 PM by Mark Largent for Elizabeth H. Simmons, Dean

Comments: Under section 3, LB 118: Calculus I should instead be LB 119: Calculus II (4 credits)

Signed Off: Department of Mathematics
9/13/2013 10:47:41 AM by Casim Abbas for Yang Wang, Chairperson

COLLEGE LEVEL APPROVAL STATUS

Approved: College of Social Science
10/9/2013 3:08:34 PM by Jeanne Kalin for Ethan Segal, Associate Dean

COLLEGE OF SOCIAL SCIENCE

1. Request to change the requirements for the **Bachelor of Science** degree in **Geographic Information Science** in the Department of Geography. The University Committee on Undergraduate Education (UCUE) will consider this request.

   a. Under the heading **Requirements for the Bachelor of Science Degree in Geographic Information Science** make the following changes:

      (1) In item 1., replace paragraph two with the following:

      The University's Tier II writing requirement for the Geographic Information Science major is met by completing Geography 425. That course is referenced in item 3. below.

      (2) In item 2., delete paragraph two.

      (3) Replace item 3. with the following:

      The following required major courses with a minimum of 2.0 grade-point average (3 credits):

a.	One of the following courses (3 or 4 credits):			
	LB	119	Calculus II	4
	MTH	126	Survey of Calculus II	3
	MTH	133	Calculus II	4
b.	Two of the following courses (7 or 8 credits):			
	CSE	131	Technical Computing and Problem Solving	3
	CSE	231	Introduction to Programming I	4
	CSE	232	Introduction to Programming II	4
c.	One of the following courses (3 credits):			
	GEO	113	Introduction to Economic Geography	3
	GEO	151	Introduction to Human Geography	3
	GEO	206	Physical Geography	3
	GEO	333	Geography of Michigan and the Great Lakes Region	3
d.	All of the following courses (18 credits):			
	GEO	221	Introduction to Geographic Information	3
	GEO	221L	Introduction to Geographic Information Laboratory	1
	GEO	324	Remote Sensing of the Environment	4
	GEO	325	Geographic Information Systems	3
	GEO	363	Introduction to Quantitative Methods for Geographers	3
	GEO	424	Advanced Remote Sensing	4
e.	Two of the following courses (6 to 8 credits):			
	GEO	423	Cartographic Design and Production	4
	GEO	426	Thematic Cartography	4
	GEO	428	Digital Terrain Analysis	4
	GEO	453	Metropolitan Environments: Urban Forms and Land Uses	3
	GEO	498	Internship in Geography	3
f.	The following capstone course (3 credits):			
	GEO	425	Problems in Geographic Information Science (W)	3

Effective Fall 2014.

DRAFT

GEOGRAPHIC INFORMATION SCIENCE

The Bachelor of Science Degree in Geographic Information Science provides a rigorous, in-depth program for students interested in the application of information technology to the spatial dimensions of the Earth's human and physical systems. It is an ideal program for those pursuing a career in the spatial technology sector, or for those considering graduate study in geography and related disciplines. Students attain substantial general quantitative and technical skills, as well as practical experience in the application of skills to solving problems drawn from local, regional, and global settings.

Requirements for the Bachelor of Science Degree in Geographic Information Science

1. The University requirements for bachelor's degrees as described in the *Undergraduate Education* section of this catalog; 120 credits, including general elective credits, are required for the Bachelor of Science degree in Geographic Information Science.
   The University's Tier II writing requirement for the Geographic Information Science major is met by completing Geography 425 ~~or 480~~. ~~Those~~ That courses are referenced in item 3. below.
2. The requirements of the College of Social Science for the Bachelor of Science degree.
   ~~The College's NATURAL SCIENCE REQUIREMENT for the Geographic Information Science major is met by completing 15 additional credits in courses offered by a department or program in the College of Natural Science, chosen from the following: Biochemistry and Molecular Biology, Biological Science, Chemistry, Entomology, Geological Sciences, Lyman Briggs, Mathematics, Microbiology and Molecular Genetics, Physics and Astronomy, Plant Biology, Plant Pathology, Physiology, Statistics and Probability, and Zoology. Students should see their academic advicer to obtain a list of approved courses which will meet this requirement.~~ with a minimum 2.0 grade-point average

3. The following required major courses: ~~30 to 32~~ 40 to 44 Insert (1)

				CREDITS
c. ~~a.~~	One of the following courses (3 ~~or 4~~ credits):			
	GEO	113	Introduction to Economic Geography	3
	GEO	151	~~Cultural~~ Geography ... Introduction to Human	3
	GEO	206	Physical Geography	3
	~~GEO~~	~~206L~~	~~Physical Geography Laboratory~~	~~1~~ 1
	~~Students who choose Geography 206 must also enroll in Geography 206L.~~			
d. ~~b.~~	All of the following courses (~~10~~ 18 credits):			
	GEO	221	Introduction to Geographic Information	3
	GEO	324	Remote Sensing of the Environment	4
	GEO	325	Geographic Information Systems	3
	~~GEO~~	~~425~~	~~Problems in Geographic Information Science (W)~~	~~3~~
363	GEO	~~463~~	Introduction to Quantitative Methods for Geographers ~~and Planners~~	3
e. ~~c.~~	~~A minimum of 11 credits selected from~~ the following:			Two of
	~~GEO~~	~~419~~	~~Applications of Geographic Information Systems to Natural Resource Management~~	~~4~~
	GEO	423	~~Carto~~graphic Design and Production	4
	~~GEO~~	~~424~~	~~Advanced Remote Sensing~~	~~4~~
	GEO	426	Thematic Cartography	4
	GEO	428	Digital Terrain Analysis	4
	GEO	453	Metropolitan Environments: Urban Forms and Land Uses	3
	~~GEO~~	~~480~~	~~Senior Seminar (W)~~	~~3~~
	GEO	498	Internship in Geography	3

GEO 333 Geography of Michigan and the Great Lakes Region 3

GEO 221L Introduction to Geographic Information Laboratory 1

GEO 424 Advanced Remote Sensing 4

(6 to 8 credits)

f. The following capstone course (3 credits):
GEO 425 Problems in Geographic Information Science (W) 3

Insert (1)

a.	One of the following courses (3 or 4 credits):			
	LB	119	Calculus II	4
	MTH	126	Survey of Calculus II	3
	MTH	133	Calculus II	4
b.	Two of the following courses (7 or 8 credits):			
	CSE	131	Technical Computing and Problem Solving	3
	CSE	231	Introduction to Programming I	4
	CSE	232	Introduction to Programming II	4