

MEMORANDUM TO: Ogden College of Science and Engineering Curriculum Committee

Dr. Martin Stone
Dr. Doug Chelson
Dr. Phil Lienesch
Dr. Darwin Dahl
Dr. Huanjing Wang
Dr. Warren Campbell

Dr. Xingang Fan
Dr. Melanie Autin
Dr. Doug Harper
Dr. Andy Mienaltowski
Dr. Les Pesterfield

FROM: Kenneth Crawford, Chair

SUBJECT: Agenda for Thursday, September 29, 2016 4:00 p.m. in COHH 4123

A. OLD BUSINESS:

- I. Consideration of the minutes of the September 1, 2016 meeting.

B. NEW BUSINESS:

Information Items

- I. Proposal to Create a Temporary Course
 - a. BIOL 285, Introduction to Field Biology, 1-4 hrs.
 - b. BIOL 355, Ecology Lab, 1 hr.

Consent Items

- I. Proposal to Revise a Course Title
 - a. GISC 423, Location, Transport, GIS, 3 hrs.

Action Items

Department of Architectural and Manufacturing Sciences

- I. Proposal to Create a New Course
 - a. AMS 271 M1, Industrial Statistics Module One, 1 hr.
 - b. AMS 271 M2, Industrial Statistics Module Two, 1 hr.
 - c. AMS 271 M3, Industrial Statistics Module Three, 1 hr

Department of Geography & Geology

- I. Proposal to Revise a Program
 - a. Ref. 366, Minor in Geographic Information Systems, 23 hrs.
 - b. Ref. 576, Major in Geographic Information Science, 53 hrs.

C. OTHER BUSINESS

MEMBERS PRESENT:

Dr. Martin Stone	Dr. Xingang Fan
Dr. Doug Chelson	Dr. Melanie Autin
Dr. Scott Grubbs for Phil Lienesch	Dr. Doug Harper
Dr. Darwin Dahl	Dr. Andy Mienaltowski
Dr. Huanjing Wang	Dr. Les Pesterfield
Dr. Warren Campbell	

FROM: Ken Crawford, Chair

OLD BUSINESS:

Doug Chelson volunteered to represent Ogden on the UCC. Campbell/Stone moved for approval of the minutes of the May 5th meeting. Motion passed.

NEW BUSINESS:

Consent Agenda

Proposal to Revise Course Prerequisites: CHEM 304 was moved to the action agenda. Campbell/Stone moved to approve all remaining consent items. Motion passed.

Action Agenda

Department of Chemistry

Campbell/Stone moved to approve Proposal to Revise Course Prerequisites/Corequisites: CHEM 304. Motion passed with friendly amendment.

Department of Geography & Geology

Campbell/Stone moved to approve Proposal to Create a New Course: METR 460. Motion passed.

Campbell/Stone moved to approve Proposal to Revise a New Program: Ref. 675. Motion passed.

Department of Psychological Sciences

Stone/Campbell moved to approve Proposal to Create a New Course: PSYS 361. Motion passed.

Department of SKyTeach

Stone/Campbell moved to approve Proposal to Revise a Program: Ref. 734. Motion passed.

OTHER BUSINESS:

Question from Doug Chelson: What is the deadline to have proposal in for inclusion in the fall catalog?

Answer: Items due to Jennifer by March 27th.

Meeting adjourned.

Proposal Date: 5 September 2016

**Ogden College of Science and Engineering
Department of Biology
Proposal to Create a Temporary Course
(Information Item for First Offering)**

Contact Person: Scott Grubbs, scott.grubbs@wku.edu, 745-5048

1. Identification of proposed course:

- 1.1 Course prefix (subject area) and number: BIOL 285
- 1.2 Course title: Introduction to Field Biology
- 1.3 Abbreviated course title: Introduction to Field Biology
(maximum of 30 characters or spaces)
- 1.4 Credit hours: 1–4
- 1.5 Schedule type: C
- 1.6 Prerequisites/corequisites: None
- 1.7 Grade type: standard letter grade _____ pass/fail _____ in progress (IP)
- 1.8 Course description: An introductory field experience on a specific biological or ecological topic.

2. Rationale

- 2.1 Reason for offering this course on a temporary basis: The Department of Biology offers Field Biology (BIOL 485) on a regular basis, yet this is occasionally inappropriate when the evaluatory assessment measures are more aligned with a lower-division course. Biology offers a field course each January for Gatton Academy students in Costa Rica under the BIOL 485 heading that would be more appropriately placed under a lower-division course. Because there is insufficient time to have a new course available prior to winter term registration, Biology is proposing this course on a temporary basis. A new, permanent course proposal for BIOL 285 is forthcoming.
- 2.2 Relationship of the proposed course to courses offered in other academic units: Geology and Geography offers several courses directed at specific geologic and hydrologic topics. Both the proposed temporary course and BIOL 485 are unique since the emphasis is on biological and ecological topics and questions.

3. Description of proposed course

- 3.1 Course content outline
 - Introduction to regional biodiversity
 - Local biodiversity
 - Local field trips
 - Ecotourism and conservation challenges
 - Student presentations
 - Final assessments
- 3.2 Tentative text(s): None

4. Second offering of a temporary course

4.1 Reason for offering this course a second time on a temporary basis: Because the Department of Biology did not anticipate another Field Biology course that would be more appropriately placed as a lower division offering in Winter 2017, we are again proposing this course on a temporary basis. A new, permanent course proposal for BIOL 285 for implementation for Fall 2017 will be submitted concurrently with this proposal.

4.2 Term course was first offered: Winter 2016

4.3 Enrollment in first offering: 16

5. Term of Implementation: Winter 2017

6. Dates of review/approvals:

Department of Biology

September 16, 2016

Dean, OCSE

Office of the Provost

Ogden College of Science and Engineering
Department of Biology
Proposal to Create a Temporary Course
(Information Item for First Offering)

Contact Person: Scott Grubbs, scott.grubbs@wku.edu, 745-5048

1. Identification of proposed course:

- 1.1 Course prefix (subject area) and number: BIOL 355
- 1.2 Course title: Ecology Lab
- 1.3 Abbreviated course title: Ecology Lab
- 1.4 Credit hours: 1
- 1.5 Schedule type: B
- 1.6 Prerequisites/corequisites: Prerequisites: BIOL 120 / BIOL 121 and BIOL 122 / BIOL 123 with grades of "C" or higher
- 1.7 Grade type: Standard letter grade
- 1.8 Course description: A field-oriented, science process course where students learn to perform research and gain experience in ecology.

2. Rationale

- 2.1 Reason for offering this course on a temporary basis: This lab was once a required part of BIOL 315 (Ecology) for decades but was recently eliminated, mainly in an effort to create separate lecture and lab components to allow for more scheduling flexibility for students. The Biology Department wishes to reintroduce a formal Ecology lab for fall 2017. A temporary course offering in spring 2017 will afford the opportunity to gauge interest from students prior to developing Ecology Lab as a permanent course.
- 2.2 Relationship of the proposed course to courses offered in other academic units: There are no similar science process-oriented courses offered at WKU where students study terrestrial and aquatic natural history in the field and perform ecological research

3. Description of proposed course

- 3.1 Course content outline
 - Scientific process
 - Searching and reading ecological literature
 - Scientific hypotheses
 - Experimental design
 - Initiating research
 - Managing notebooks and data
 - Data analysis
 - Synthesis
 - Writing scientific papers and developing presentations
- 3.2 Tentative text(s)
 - No text required. This course will rely heavily on scientific literature.

Proposal Date: 9/16/2016

**Ogden College of Science and Engineering
Department of Geography & Geology
Proposal to Revise Course Title
(Consent Item)**

Contact Person: **Jun Yan**, email: jun.yan@wku.edu, phone: **5-8952**

1. Identification of proposed course:

- 1.1 Course prefix (subject area) and number: GISC 423
- 1.2 Course title: Location, Transport, GIS
- 1.3 Credit Hours: 3

2. Proposed course title: Geoprocessing and GIS Applications

3. Proposed abbreviated course title: Geoprocessing and GIS Apps
(maximum of 30 characters/spaces)

4. Rationale for the revision of course title: The course covers how GIS can be used to solve a variety of real-world problems. Applications in transportation and location analysis are only a part of the course discussions. The current course title is too narrow and does not describe all the course content.

5. Proposed term for implementation: Fall 2017

6. Dates of prior committee approvals:

Department/ Unit: <u>Geography & Geology Department</u>	<u>9/16/2016</u>
<u>Ogden</u> College Curriculum Committee	_____
Undergraduate Curriculum Committee	_____
University Senate	_____

Proposal Date: September 2nd, 2016

**Ogden College of Science and Engineering
Architectural and Manufacturing Sciences
Proposal to Create a New Course
(Action Item)**

Contact Person: Dr. Daniel Jackson, dan.jackson@wku.edu, (270) 745-5955

1. Identification of proposed course:

- 1.1 Course prefix (subject area) and number: AMS 271 M1
- 1.2 Course title: Industrial Statistics Module One
- 1.3 Abbreviated course title: Ind Stats Mod 1
(maximum of 30 characters or spaces)
- 1.4 Credit hours: 1 Variable credit No
- 1.5 Grade type: Standard letter grades.
- 1.6 Prerequisites: Math 116 or equivalent.
- 1.7 Course description: Introduction to basic statistics used in industrial settings. Measurements, scales, data collection and organization, probability and discrete distributions, measures of central tendency, measures of dispersion, and continuous distributions.

2. Rationale:

- 2.1 Reason for developing the proposed course: The AMS department wishes to offer the existing AMS 271 within a three modular, competency-based sequence, offered off-load through distance learning. This three-module format will make AMS 271 similar to, and compatible with, other three-module competency-based courses already existing in the department. These modules are to be taken sequentially, and success in all three will be equivalent to the existing AMS 271. This course will be available to 2+2 students pursuing the Technology Management degree and students pursuing the Manufacturing Engineering Technology degree. AMS 271 M1 is the first of the three modules.
- 2.2 Projected enrollment in the proposed course: As this course is offered off-load, a maximum of 20 students will be allowed.
- 2.3 Relationship of the proposed course to courses now offered by the department: Content is approximately the same as the first third of AMS 271: Industrial Statistics.
- 2.4 Relationship of the proposed course to courses offered in other departments: There is some similarity with several statistics courses offered throughout the university's curriculum. However, this course concentrates on statistics found in an industrial setting and applies those statistics to industrial functions.
- 2.5 Relationship of the proposed course to courses offered in other institutions: Most universities offer basic statistics. Similar departments at other institutions typically cover this content, but few offer it using a competency-based, online format.

3. Discussion of proposed course:

- 3.1 Schedule type: L
- 3.2 Learning Outcomes: Upon completion, a student will be able to:
 - Use numbers as measures within appropriate scales.

- Identify types of data.
- Organize data into meaningful tables, charts, and graphs.
- Interpret information shown in statistical tables, charts, and graphs.
- Calculate simple probabilities.
- Calculate simple variable statistics.
- Use the standard normal distribution to determine areas under the distribution.

3.3 Content outline:

- Introduction
 - Categorization of numbers
 - Units of measure
 - Scales
- Sampling and organization of data
 - Sampling techniques: Randomness and bias
 - Non-grouped and grouped data
 - Tables, charts, and graphs
- Basic probability
 - Classical, relative, and subjective
 - Variations in probability
 - The discrete distribution
- Basic variable statistics
 - Measures of central tendency
 - Measures of dispersion
 - The empirical rule and the standard normal distribution
 - Calculation of z scores
 - Abnormally shaped distributions

3.4 Student expectations and requirements: Complete a prescribed series of tasks, assignments, and tests to satisfy the required level of competency with course material. Student must earn a B or better to pass the course.

3.5 Tentative texts and course materials:

- *Quality Improvement* (9th edition or latest) by Dale Besterfield, Prentice Hall, ISBN 10: 0132624419 and ISBN 13: 9780132624411; or
- *Statistics for Quality Control* (2015) by Daniel Jackson, Industrial Press, ISBN 9780831135171.

4. Resources:

- 4.1 Library resources: None required.
- 4.2 Computer resources: Standard PC or Mac with Word and Excel.

5. Budget implications:

- 5.1 Proposed method of staffing: No additional staff would be required.
- 5.2 Special equipment needed: None.
- 5.3 Expendable materials needed: None.
- 5.4 Laboratory materials needed: None.

6. Proposed term for implementation: January 2017.

7. Dates of prior committee approvals:

OCSE Curriculum Committee

Professional Education Council (if applicable)

General Education Committee (if applicable)

Undergraduate Curriculum Committee

University Senate

Proposal Date: September 2nd, 2016

**Ogden College of Science and Engineering
Architectural and Manufacturing Sciences
Proposal to Create a New Course
(Action Item)**

Contact Person: Dr. Daniel Jackson, dan.jackson@wku.edu, (270) 745-5955

1. Identification of proposed course:

- 1.1 Course prefix (subject area) and number: AMS 271 M2
- 1.2 Course title: Industrial Statistics Module Two
- 1.3 Abbreviated course title: Ind Stats Mod 2
(maximum of 30 characters or spaces)
- 1.4 Credit hours: 1 Variable credit No
- 1.5 Grade type: Standard letter grades.
- 1.6 Prerequisites: AMS 271 M1 with a grade of B or better.
- 1.7 Course description: Statistical Process Control (SPC) for both variable and attribute data. Xbar, R, S, p, np, c, and u charts, and variable subgroup data applications. Process analysis and capability. Individuals charts.

2. Rationale:

- 2.1 Reason for developing the proposed course: The AMS department wishes to offer the existing AMS 271 within a three modular, competency-based sequence, offered off-load through distance learning. This three-module format will make AMS 271 similar to, and compatible with, other three-module competency-based courses already existing in the department. These modules are to be taken sequentially, and success in all three will be equivalent to the existing AMS 271. This course will be available to 2+2 students pursuing the Technology Management degree and students pursuing the Manufacturing Engineering Technology degree. AMS 271 M2 is the second of the three modules.
- 2.2 Projected enrollment in the proposed course: As this course is offered off-load, a maximum of 20 students will be allowed.
- 2.3 Relationship of the proposed course to courses now offered by the department: Content is approximately the same as the middle third of AMS 271: Industrial Statistics.
- 2.4 Relationship of the proposed course to courses offered in other departments: There is some similarity with several statistics courses offered throughout the university's curriculum. However, this course concentrates on statistics found in an industrial setting and applies those statistics to industrial functions.
- 2.5 Relationship of the proposed course to courses offered in other institutions: Most universities offer basic statistics. Similar departments at other institutions typically cover this content, but few offer it using a competency-based, online format.

3. Discussion of proposed course:

- 3.1 Schedule type: L
- 3.2 Learning Outcomes: Upon completion, a student will be able to:
 - Create variable process control charts including Xbar, R, and sigma.
 - Create attribute process control charts including p, np, c, and u.

- Use variable subgroup sizes.
- Calculate process capability and capability index.
- Interpret trends and patterns in control charts.
- Create an individuals chart.

3.3 Content outline:

- SPC control charts
 - Variable control charts: Xbar and R charts, Sigma charts
 - Attribute control charts: p, np, c, and u charts
 - Variable subgroups
- SPC analysis
 - Calculate process capability
 - Calculate capability index
 - Cases of process capability
 - Trends and patterns
- Individual charts

3.4 Student expectations and requirements: Complete a prescribed series of tasks, assignments, and tests to satisfy the required level of competency with course material. Students must earn a B or better to pass the course.

3.5 Tentative texts and course materials:

- *Quality Improvement* (9th edition or latest) by Dale Besterfield, Prentice Hall, ISBN 10: 0132624419 and ISBN 13: 9780132624411; or
- *Statistics for Quality Control* (2015) by Daniel Jackson, Industrial Press, ISBN 9780831135171.

4. Resources:

- 4.1 Library resources: None required.
- 4.2 Computer resources: Standard PC or Mac with Word and Excel.

5. Budget implications:

- 5.1 Proposed method of staffing: No additional staff required.
- 5.2 Special equipment needed: None.
- 5.3 Expendable materials needed: None.
- 5.4 Laboratory materials needed: None.

6. Proposed term for implementation: January 2017.

7. Dates of prior committee approvals:

AMS Department

9/2/2016

OCSE Curriculum Committee

Professional Education Council (if applicable)

General Education Committee (if applicable)

Undergraduate Curriculum Committee

University Senate

Proposal Date: September 2nd, 2016

**Ogden College of Science and Engineering
Architectural and Manufacturing Sciences
Proposal to Create a New Course
(Action Item)**

Contact Person: Dr. Daniel Jackson, dan.jackson@wku.edu, (270) 745-5955

1. Identification of proposed course:

- 1.1 Course prefix (subject area) and number: AMS 271 M3
- 1.2 Course title: Industrial Statistics Module Three
- 1.3 Abbreviated course title: Ind Stats Mod 3
(maximum of 30 characters or spaces)
- 1.4 Credit hours: 1 Variable credit No
- 1.5 Grade type: Standard letter grades.
- 1.6 Prerequisites: AMS 271 M2 with a grade of B or better.
- 1.7 Course description: Acceptance sampling plans and corresponding OC curves. Consumer/producer relationship. Introductory inferential statistics including confidence intervals, hypothesis, z tests, t-tests, and ANOVA. Awards, certification, and quality management.

2. Rationale:

- 2.1 Reason for developing the proposed course: The AMS department wishes to offer the existing AMS 271 within a three modular, competency-based sequence, offered off-load through distance learning. This three-module format will make AMS 271 similar to, and compatible with, other three-module competency-based courses already existing in the department. These modules are to be taken sequentially, and success in all three will be equivalent to the existing AMS 271. This course will be available to 2+2 students pursuing the Technology Management degree and students pursuing the Manufacturing Engineering Technology degree. AMS 271 M3 is the third of the three modules.
- 2.2 Projected enrollment in the proposed course: As this course is offered off-load, a maximum of 20 students will be allowed.
- 2.3 Relationship of the proposed course to courses now offered by the department: Content is approximately the same as the final third of AMS 271: Industrial Statistics.
- 2.4 Relationship of the proposed course to courses offered in other departments: There is some similarity with several statistics courses offered throughout the university's curriculum. However, this course concentrates on statistics found in an industrial setting and applies those statistics to industrial functions.
- 2.5 Relationship of the proposed course to courses offered in other institutions: Most universities offer basic statistics. Similar departments at other institutions typically cover this content, but few offer it using a competency-based, online format.

3. Discussion of proposed course:

- 3.1 Schedule type: L
- 3.2 Learning Outcomes: Upon completion, a student will be able to:
 - Create an acceptance sampling plan.

- Create an Operational Characteristic Curve (OC Curve) for a single sampling plan.
 - Calculate and interpret a confidence interval.
 - Formulate statistical hypotheses.
 - Perform and interpret a z-test.
 - Perform and interpret a t-test.
 - Perform and interpret a one-way simple ANOVA.
 - Become familiar with other uses of statistics in industry.
 - Become familiar with quality standards and other industrial practices.
- 3.3 Content outline:
- Acceptance sampling
 - Single sampling plans
 - OC Curves
 - Inferential statistics
 - Confidence intervals
 - Hypothesis tests: z-tests, t-tests, ANOVA
 - Other statistics used in industry
 - Standards and quality management
- 3.4 Student expectations and requirements: Complete a prescribed series of tasks, assignments, and tests to satisfy the required level of competency with course material. Students must earn a B or better to pass the course.
- 3.5 Tentative texts and course materials:
- *Quality Improvement* (9th edition or latest) by Dale Besterfield, Prentice Hall, ISBN 10: 0132624419 and ISBN 13: 9780132624411; or
 - *Statistics for Quality Control* (2015) by Daniel Jackson, Industrial Press, ISBN 9780831135171.

4. Resources:

- 4.1 Library resources: None required.
- 4.2 Computer resources: Standard PC or Mac with Word and Excel.

5. Budget implications:

- 5.1 Proposed method of staffing: No additional staff required
- 5.2 Special equipment needed: None.
- 5.3 Expendable materials needed: None.
- 5.4 Laboratory materials needed: None.

6. Proposed term for implementation: January 2017.

7. Dates of prior committee approvals:

AMS Department	9/2/2016
OCSE Curriculum Committee	_____
Professional Education Council (if applicable)	_____
General Education Committee (if applicable)	_____
Undergraduate Curriculum Committee	_____
University Senate	_____

**Ogden College of Science and Engineering
Department of Geography and Geology
Proposal to Revise a Program
(Action Item)**

Contact Person: **Jun Yan, Ph.D.** e-mail: jun.yan@wku.edu Phone: **5-8952**

1. Identification of program:

- 1.1 Current program reference number: 366
- 1.2 Current program title: Minor in Geographic Information Systems
- 1.3 Credit hours: 23

2. Identification of the proposed program changes:

- Increase program credit hours from 23 to 26.
- Adding METR 121 as an elective to GEOG/GEOL 103 and GEOL 111 in the Foundation Requirements.

3. Detailed program description:

Current Program	Proposed Program
Minor in Geographic Information Systems	Minor in Geographic Information Systems
This minor program provides a foundation in Geographic Information Systems (GIS). The minor is appropriate for students interested in careers utilizing GIS as a tool in areas such as geography, geology, biology, political science, business, journalism and broadcasting, engineering, and public health, or for students pursuing GIS as a profession in a related discipline such as Computer Science or Computer Information Systems. A minimum of 23 hours is required, including 6 foundation hours, 14, technique hours, and at least 3 elective hours.	This minor program provides a foundation in Geographic Information Systems (GIS). The minor is appropriate for students interested in careers utilizing GIS as a tool in areas such as geography, geology, biology, political science, business, journalism and broadcasting, engineering, and public health, or for students pursuing GIS as a profession in a related discipline such as Computer Science or Computer Information Systems. A minimum of 26 hours is required, including 6 foundation hours, 14 technique hours, and at least 6 elective hours.
<u>Foundation Courses:</u> (6 hours)	<u>Foundation Courses:</u> (6 hours)
GEOG/L 103 Dynamic Earth or GEOL 111 The Earth 3	GEOG/L 103 Dynamic Earth or GEOL 111 The Earth or METR 121
GEOG 110 World Regional Geography 3	Meteorology 3 GEOG 110 World Regional Geography 3
<u>Technique Requirements:</u> (14 hours)	<u>Technique Requirements:</u> (14 hours)
GISC 316 Foundations of GIS 4	GISC 316 Foundations of GIS 4
GISC 317 GIS 4	GISC 317 GIS 4

GISC 417 GIS Analysis	3	GISC 417 GIS Analysis	3
GISC 419 GIS Programming	3	GISC 419 GIS Programming	3
<u>Elective Courses:</u>	<u>(3-hours)</u>	<u>Elective Courses:</u>	<u>(6 hours)</u>
GISC 414 Remote Sensing	4	GISC 414 Remote Sensing	4
GISC 418 Internet GIS	3	GISC 418 Internet GIS	3
GISC 423 Transport, Location, GIS	3	GISC 423 Transport, Location, GIS	3
GISC 443 GIS Databases	3	GISC 443 GIS Databases	3
GEOG 477 GIS Special Topics	3	GEOG 477 GIS Special Topics	3
GEOG 492 Advanced Spatial Analysis	3	GEOG 492 Advanced Spatial Analysis	3
PROGRAM TOTAL:	23 Hours	PROGRAM TOTAL:	26 Hours

4. Rationale for the proposed program change:

- Increased competition in the GIS job market requires our students to receive broader training in different geospatial technologies. Adding one more required elective course from our advanced GIS courses will prepare our students more effectively and make them more marketable and competitive. In addition, it will make the minor clearly different from the 14-hour GIS certificate program.
- METR 121 introduces the elements of the atmosphere, severe storms, atmospheric environmental issues, the interdependence between human life and the atmosphere, and rudimentary forecasting of basic weather systems. This course addresses the same physical spatial aspects as GEOG/GEOL 103 and GEOL 111. GEOG/GEOL 103 introduces the spatial dimension of Earth's dynamic systems, including the atmosphere, hydrosphere, and lithosphere, and how they affect people. GEOL 111 studies the Earth, including rocks, mineral resources, energy, soils, surface geologic processes, earthquakes and Earth's interior, global tectonics, hydrology, and environmental geology. All three courses are similar enough in content to provide the necessary foundational material for advanced work in GIS.

5. Proposed term for implementation: Fall 2017

6. Dates of prior committee approvals:

Department of Geography and Geology

May 6, 2016

Ogden College Curriculum Committee

9/29/2016

Undergraduate Curriculum Committee

University Senate

Proposal Date: April 15, 2016

**Ogden College of Science and Engineering
Department of Geography and Geology
Proposal to Revise Program
(Action Item)**

Contact Person: **Kevin B. Cary, M.Sc., GISP** e-mail: kevin.cary@wku.edu Phone: **5-2981**

- 1. Identification of program:**
 - 1.1 Current program reference number: **576**
 - 1.2 Current program title: **Major in Geographic Information Science**
 - 1.3 Credit hours: **53**

- 2. Identification of the proposed program changes:**
 - Adding METR 121 as an alternative to GEOG/GEOL 103 and GEOL 111 in the Foundation Requirements.
 - Change CS 180 to CS 180 or CS 270.

- 3. Detailed program description:**

Current Program	Proposed Program
B.Sc. Geographic Information Science	B.Sc. Geographic Information Science
The major in geographic information science (reference number 576) focuses on the concepts and principles of GISystems, along with its four components: (1) input, corrections, and collection of geospatial data; (2) storage and retrieval of geospatial data; (3) manipulation and analysis of geospatial data; and (4) maps and other forms of presentation of geospatial data. The major in geographic information science (reference number 576) requires a minimum of 53 semester hours of GIS courses.	The major in geographic information science (reference number 576) focuses on the concepts and principles of GISystems, along with its four components: (1) input, corrections, and collection of geospatial data; (2) storage and retrieval of geospatial data; (3) manipulation and analysis of geospatial data; and (4) maps and other forms of presentation of geospatial data. The major in geographic information science (reference number 576) requires a minimum of 53 semester hours of GIS courses.
<u>Foundation Requirements (10 hours):</u> GEOG or GEOL 103 Our Dynamic Planet or GEOL 111 The Earth 3	<u>Foundation Requirements (10 hours):</u> GEOG or GEOL 103 Our Dynamic Planet or GEOL 111 The Earth or METR 121 Meteorology 3
GEOG 110 World Regional 3	GEOG 110 World Regional 3
CS 170 Prob Solve & Programming 3	CS 170 Prob Solve & Programming 3
GEOG 499 Prof. Development 1	GEOG 499 Prof. Development 1

<u>Technique Requirements (15 hours):</u>		<u>Technique Requirements (15 hours):</u>	
GEOG 300 Writing Geosciences	3	GEOG 300 Writing Geosciences	3
GISC 316 Foundations of GIS	4	GISC 316 Foundations of GIS	4
GISC 317 GIS	4	GISC 317 GIS	4
GEOG 391 Spatial Data Analysis	4	GEOG 391 Spatial Data Analysis	4
<u>Professional Requirements (28 hours):</u>		<u>Professional Requirements (28 hours):</u>	
GISC 414 Remote Sensing	4	GISC 414 Remote Sensing	4
GISC 417 GIS Analysis	3	GISC 417 GIS Analysis	3
GISC 418 Internet GIS	3	GISC 418 Internet GIS	3
GISC 419 GIS Programming	3	GISC 419 GIS Programming	3
GISC 443 GIS Databases	3	GISC 443 GIS Databases	3
GISC 477 GIS Special Topics or GISC 423 Urban GIS	3	GISC 477 GIS Special Topics or GISC 423 Urban GIS	3
GEOG 492 Advanced Spatial GIS	3	GEOG 492 Advanced Spatial GIS	3
GEOG 475 or 495 (Practicum and/or Internship)	6	GEOG 475 or 495 (Practicum and/or Internship)	6
<u>PROGRAM TOTAL</u>	<u>53</u>	<u>PROGRAM TOTAL</u>	<u>53</u>
<u>Required Support Courses (17)</u>		<u>Required Support Courses (16 –17)</u>	
(not part of the major program hours):		(not part of the major program hours):	
CE 160/161 Surveying	4	CE 160/161 Surveying	4
CS 180 Computer Science I	4	CS 180 Computer Science I	3 – 4
		OR CS 270 Intro to Web Prog.	
MATH 116 Algebra	3	MATH 116 Algebra	3
MATH 117 Trig.	3	MATH 117 Trig.	3
MATH 183 Intro to Statistics	3	MATH 183 Intro to Statistics	3

4. **Rationale for the proposed program change:**

- **METR 121** introduces the elements of the atmosphere, severe storms, atmospheric environmental issues, the interdependence between human life and the atmosphere, and rudimentary forecasting of basic weather systems. This course addresses similar physical spatial aspects as GEOG/GEOL 103 and GEOL 111. GEOG/GEOL 103 introduces the spatial dimension of Earth's dynamic systems and how they affect people. These include the atmosphere, hydrosphere, and lithosphere. GEOL 111 studies Earth including rocks, mineral resources, energy, soils, surface geologic processes, earthquakes and Earth's interior, global tectonics, hydrology, and environmental geology.
- **CS 270** (Introduction to Web Programming) **introduces web programming** using HTML, CSS, PHP, MySQL and JavaScript. Web map applications are in high demand and skills to customize these web map applications are highly desirable in the GIS profession.

5. Proposed term for implementation and special provisions (if applicable):

- **Term:** Fall 2017

6. Dates of prior committee approvals:

Department of Geography and Geology

_May 6, 2016_____

Ogden College Curriculum Committee

_____9/29/2016_____

University Curriculum Committee

University Senate
