

**MEMORANDUM TO:** Ogden College of Science and Engineering Curriculum Committee

Dr. Martin Stone	Dr. Warren Campbell
Dr. Doug Chelson	Dr. Xingang Fan
Dr. Phil Lienesch	Dr. Nguyen Ngoc
Dr. Darwin Dahl	Dr. Doug Harper
Dr. Huanjing Wang	Dr. Andy Mienaltowski
Dr. Les Pesterfield	

**FROM:** Dr. Kenneth Crawford, Chair

**SUBJECT:** Agenda for Thursday, September 1, 2016, 4:00p.m. in COHH 4123

**A. OLD BUSINESS:**

- I. Consideration of the minutes of the May 5, 2016 Meeting

**B. NEW BUSINESS:**

Consent Items

Department of Chemistry

- I. Proposal to Revise Course Prerequisites
  - a. CHEM 304, Biochemistry for the Health Sciences, 4 hrs.

Department of Geography & Geology

- I. Proposal to Revise Course Prerequisites
  - a. GEOG 391, Spatial Data Analysis, 4 hrs.
  - b. GISC 316, Fundamentals of GIS, 4hrs.
  - c. WTTI 1715, Certificate in Drinking Water Operations, 24 hrs.

Action Items

Department of Geography & Geology

- I. Proposal to Create a New Course
  - a. METR 460, Climate Teleconnections, 3 hrs.
  
- II. Proposal to Revise a Program
  - a. Ref. 675, Geography and Environmental Studies, 52 hrs.
  - b.

Department of Psychological Sciences

- I. Proposal to Create a New Course
  - a. PSYS 361, Behavioral Neuroscience with Lab, 4 hrs.

SKyTeach

- I. Proposal to Revise a Program
  - a. Ref. 734, Middle School Science, 47 hrs.

Proposal Date: 05/11/16

**Ogden College of Science & Engineering  
Department of Chemistry  
Proposal to Revise Course Prerequisites/Corequisites  
(Consent Item)**

Contact Person: Dr. Jeremy B Maddox, [Jeremy.maddox@wku.edu](mailto:Jeremy.maddox@wku.edu), (270) 745-8725

**1. Identification of course:**

- 1.1 Course prefix (subject area) and number: CHEM 304
- 1.2 Course title: BIOCHEMISTRY FOR THE HEALTH SCIENCES

**2. Current prerequisites/corequisites/special requirements:**

Prerequisite: CHEM 109 or consent of the instructor.

**3. Proposed prerequisites/corequisites/special requirements:**

Prerequisite: CHEM 107 or CHEM 109.

**4. Rationale for the revision of prerequisites/corequisites/special requirements:**

The proposed revisions will allow nutrition and pre-dental hygiene students that take CHEM 107 to register for CHEM 304 without the need for a prerequisite override.

**5. Effect on completion of major/minor sequence:**

Not applicable

**6. Proposed term for implementation:**

Spring 2017

**7. Dates of prior committee approvals:**

Department of Chemistry

Ogden College Curriculum Committee

Undergraduate Curriculum Committee

University Senate

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May 11, 2016  
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\_\_\_\_\_

April 19, 2016

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

Contact Person: Kevin Cary, [kevin.cary@wku.edu](mailto:kevin.cary@wku.edu), 745-2981

1. **Identification of course:**
  - 1.1 Course prefix (subject area) and number: GEOG 391
  - 1.2 Course title: Spatial Data Analysis
  - 1.3 Credit hours: 4
2. **Current prerequisites requirements:** MATH 183 and GISC 316, or special permission by instructor.
3. **Proposed prerequisites requirements:** MATH 183 or MATH 136, and GISC 316; or special permission by instructor.
4. **Rationale for the revision of prerequisites:**

Students completing either MATH 183 (*Introductory Statistics*) OR MATH 136 (*Calculus I*) should have the necessary math skills needed to succeed in GEOG 391 (*Spatial Data Analysis*).
5. **Effect on completion of major/minor sequence:** No change. GEOG 391 is required for Geography, Meteorology, and GIScience majors. MATH 183 is required for Geography and GIScience majors. MATH 136 is required for Meteorology majors. GEOG 391 is an elective in the Geography minor and not required for the GIS minor.
6. **Proposed term for implementation:** Fall 2017
7. **Dates of prior committee approvals:**

Department/Division:

\_\_\_\_\_ May 6, 2016 \_\_\_\_\_

Ogden Curriculum Committee

Undergraduate Curriculum Committee

University Senate



Proposal Date: 3/4/2016

**Ogden College  
Department of Geography and Geology  
Proposal to Delete a Program  
(Consent Item)**

Contact Person: Jason Polk, [jason.polk@wku.edu](mailto:jason.polk@wku.edu), 270-745-5015

**1. Identification of program:**

- 1.1 Program reference number: 1715
- 1.2 Program title: Certificate in Drinking Water Operations
- 1.3 Credit hours: 24

**2. Rationale for the program deletion:** The WTI program was part of an NSF-funded grant that established an online A.S. degree for water operators. The grant ended and the program was deleted in Fall 2015. As part of that program's course sequence, the Drinking Water Operations certificate program relied upon courses that are no longer offered. Currently, we have no instructors on campus that teach the courses, with adjuncts serving as the primary instructors in the past. Enrollment in the courses is often 0-5 students; hence, the program is not sustainable, nor is the Department interested in maintaining this program within a baccalaureate-offering framework without the necessary resources to administer the program, or a demand for its need.

**3. Effect on current students or other departments, if known:**

There should be no effect on other departments or degree programs and there are no students enrolled in this program.

**4. Proposed term for implementation:** Fall 2016

**5. Dates of prior committee approvals:**

Department of Geography and Geology	<u>2/26/2016</u>
Ogden College Curriculum Committee	_____
University Curriculum Committee	_____
University Senate	_____

Proposal Date: 3/17/16

**Ogden College of Science and Engineering  
Department of Geography and Geology  
Proposal to Create a New Course  
(Action Item)**

Contact Person: Greg Goodrich, [gregory.goodrich@wku.edu](mailto:gregory.goodrich@wku.edu), 5-5986

**1. Identification of proposed course:**

- 1.1 Course prefix (subject area) and number: METR 460
- 1.2 Course title: Climate Teleconnections
- 1.3 Abbreviated course title: Climate Teleconnections
- 1.4 Credit hours: 3 Variable credit (no)
- 1.5 Grade type: Standard letter grade
- 1.6 Prerequisites: METR 322 OR METR 324 OR permission of instructor
- 1.7 Course description: Analysis of the climate impacts and physical mechanisms of atmospheric and oceanic teleconnections that commonly affect weather patterns in the northern hemisphere.

**2. Rationale:**

- 2.1 Reason for developing the proposed course: Climate teleconnections, which include the well-known El Niño – Southern Oscillation, represent low-frequency variability in the atmosphere and oceans. They can have periods ranging from several weeks to several decades and can affect temperature, precipitation, storm tracks, severe weather, and drought, primarily in the northern hemisphere. Extreme weather is often influenced by teleconnection patterns that cause persistent weather in various locations and recent evidence suggests that many of these teleconnections will be influenced by climate change. Since nearly all long-range forecasting of weather and climate uses teleconnections, there is growing recognition that students in meteorology, geography, climatology, and other disciplines that use climate data need a strong background in climate teleconnections. A GEOG 475/GEOS 510 research course titled “Climate Teleconnections” was offered on a one-time basis in Spring 2015. The demand (13 undergrad/2 graduate) was strong enough to encourage the creation of a permanent course offered once every two years.
- 2.2 Projected enrollment in the proposed course: 10-15 junior/senior-level students offered once every two years with an occasional graduate student.
- 2.3 Relationship of the proposed course to courses now offered by the department: METR 322 – “Global Climate Systems”, which will serve as a prerequisite for the class, is a broad climatology course that spends only a couple of lectures introducing how teleconnections are part of the global climate system. METR 422 – “Physical Climatology” covers key processes governing the energy balance of the atmospheric boundary layer. Neither course provides the in-depth analysis of the climate impacts and physical mechanisms behind the climate teleconnections that control northern hemisphere climate.

- 2.4 Relationship of the proposed course to courses offered in other departments: No other department offers a course similar to this subject.
- 2.5 Relationship of the proposed course to courses offered in other institutions: The University of Florida offers a 400-level course titled “Atmospheric Teleconnections” that served as a model for the proposed course. Several institutions, including the University of Washington and Colorado State University offer graduate seminars on the subject.

**3. Discussion of proposed course:**

3.1 Schedule type: L - Lecture

3.2 Learning Outcomes: Students will demonstrate the ability to:

- 1) Explain the history of how each teleconnection was discovered.
- 2) Explain how the index of each teleconnection is derived.
- 3) Discuss the climate impacts and timescales associated with each teleconnection.
- 4) Describe the physical mechanisms that force each teleconnection.

3.3 Content outline:

**Tentative course outline**

- Winter forecasts – example of how teleconnections are used
- Overview of atmospheric circulation
- Statistics review/correlation/linear regression/principal components analysis
- History of teleconnections
- Oceanic teleconnections
  - El Niño – Southern Oscillation (ENSO)
  - Pacific Decadal Oscillation (PDO)
  - Atlantic Multi-decadal Oscillation (AMO)
- What can paleoclimatology tell us about teleconnections?
- Atmospheric teleconnections
  - North Atlantic Oscillation (NAO)
  - Arctic Oscillation (AO)/Northern Annular Mode
  - Pacific/North American pattern (PNA)
  - Madden-Julian Oscillation (MJO)
  - Antarctic Oscillation (AAO)/Southern Annular Mode
  - Quasi-Biennial Oscillation (QBO) and other lesser known teleconnection
    - East Atlantic Jet (EA)
    - West Pacific Jet (WP)
    - Tropical/Northern Hemisphere pattern (TNH)
    - Eurasian patterns (SCAND, POL, EATL/WRUS)
    - East Pacific Oscillation (EPO)
- Snow cover as a teleconnection
- Long range forecasting techniques
- How will teleconnections change in a warming world?

3.4 Student expectations and requirements:

Two mid-term quizzes (50%), one research project (30%), and two in-class discussions (20%) will comprise the grade for this course.

- 3.5 Tentative texts and course materials:  
Glantz, M. H., R. W. Katz, and N. Nicholls (eds.), 2009: *Teleconnections linking worldwide climate anomalies*. Cambridge University Press, Cambridge, UK, 548 pages

Bridgman, H. A., and J. E. Oliver (eds.), 2014: *The global climate system: Patterns, processes, and teleconnections*. Cambridge University Press, Cambridge, UK, 358 pages

Most of the course content will come from a 100-article annotated bibliography on the subject of climate teleconnections I recently submitted for publication.

**4. Resources:**

- 4.1 Library resources: See attached  
4.2 Computer resources: None

**5. Budget implications:**

- 5.1 Proposed method of staffing: Existing faculty  
5.2 Special equipment needed: None  
5.3 Expendable materials needed: None  
5.4 Laboratory materials needed: None

**6. Proposed term for implementation: Spring 2017**

**7. Dates of prior committee approvals:**

Department of Geography and Geology

March 25, 2016

Ogden College Curriculum Committee

University Curriculum Committee

University Senate

Proposal Date: August 17, 2016

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

Contact Person: David Keeling, [david.keeling@wku.edu](mailto:david.keeling@wku.edu), 5-4555

- 1. **Identification of program:**
  - 1.1 Current program reference number: 675
  - 1.2 Current program title: Geography and Environmental Studies
  - 1.3 Credit hours: 52
  
- 2. **Identification of the proposed program changes:**
  - 2.1 Add **MATH 115** as an option to required supporting courses.

3. **Detailed program description:**

Karst and Water Resources Concentration	Karst and Water Resources Concentration
Common Core Requirements (26 hours):	Common Core Requirements (26 hours):
GEOG or GEOL 103 Our Dynamic Earth 3	GEOG or GEOL 103 Our Dynamic Earth 3
GEOG 110 World Regional Geography 3	GEOG 110 World Regional Geography 3
GEOG 300 Writing in the Geosciences 3	GEOG 300 Writing in the Geosciences 3
GISC 316 Fundamentals of GIS 4	GISC 316 Fundamentals of GIS 4
GISC 317 GIS 4	GISC 317 GIS 4
GEOG 391 Spatial Data Analysis 4	GEOG 391 Spatial Data Analysis 4
GEOG 495 Research Practicum/Internship	GEOG 495 Research Practicum/Internship
OR	OR
GEOG 452 Applied Geo Field Experiences	GEOG 452 Applied Geo Field Experiences
OR	OR
GEOG 475 Selected Topics in Geography 4	GEOG 475 Selected Topics in Geography 4
GEOG 499 Professional Development 1	GEOG 499 Professional Development 1
Required Concentration Courses: (13 hours):	Required Concentration Courses: (13 hours):
GEOG 280 Environmental Science and Sustainability 4	GEOG 280 Environmental Science and Sustainability 4
GEOG or GEOL 310 Global Hydrology 3	GEOG or GEOL 310 Global Hydrology 3
GEOG 461 Karst Environments 3	GEOG 461 Karst Environments 3
GEOG 475 Mammoth Cave Field Course 3	GEOG 475 Mammoth Cave Field Course 3
Elective Courses: (13 hours):	Elective Courses: (13 hours):
Select from any appropriate GEOG, GISC, GEOL, or METR 2xx-4xx course with your advisor (examples include 226, 322, 328 344, 414, 459, 471, 474, 487, etc.) to meet the 52	Select from any appropriate GEOG, GISC, GEOL, or METR 2xx-4xx course with your advisor (examples include 226, 322, 328 344, 414, 459, 471, 474, 487, etc.) to meet the 52

unduplicated hours required.	unduplicated hours required.
Additional Program Requirements (not included in the 52-hour program) (13-14 hours):	Additional Program Requirements (not included in the 52-hour program) (13-14 hours):
•MATH 136 Calculus 1 4	•MATH 136 Calculus 1 4
•MATH 183 (Prerequisite for GEOG 391) 3	•MATH 183 (Prerequisite for GEOG 391) 3
•PHYS 201 College Physics I 4	•PHYS 201 College Physics I 4
or BIOL 122 Biological Concepts 3	or BIOL 122 Biological Concepts 3
•CHEM 120 College Chemistry I 3	•CHEM 120 College Chemistry I 3
Climate Systems Concentration	Climate Systems Concentration
Common Core Requirements (26 hours):	Common Core Requirements (26 hours):
GEOG or GEOL 103 Our Dynamic Earth 3	GEOG or GEOL 103 Our Dynamic Earth 3
GEOG 110 World Regional Geography 3	GEOG 110 World Regional Geography 3
GEOG 300 Writing in the Geosciences 3	GEOG 300 Writing in the Geosciences 3
GISC 316 Fundamentals of GIS 4	GISC 316 Fundamentals of GIS 4
GISC 317 GIS 4	GISC 317 GIS 4
GEOG 391 Spatial Data Analysis 4	GEOG 391 Spatial Data Analysis 4
GEOG 495 Research Practicum/Internship OR	GEOG 495 Research Practicum/Internship OR
GEOG 452 Applied Geo Field Experiences OR	GEOG 452 Applied Geo Field Experiences OR
Advisor Approved Field-based GEOG 475 4	Advisor Approved Field-based GEOG 475 4
GEOG 499 Professional Development 1	GEOG 499 Professional Development 1
Required Concentration Courses (10 hours):	Required Concentration Courses (10 hours):
METR 121 Meteorology 3	METR 121 Meteorology 3
METR 322 Global Climate Systems 4	METR 322 Global Climate Systems 4
GEOG 455 Global Climate Change 3	GEOG 455 Global Climate Change 3
Elective Courses (16 hours):	Elective Courses (16 hours):
Select from any appropriate GEOG, <b>GISC</b> , or METR 2xx-4xx course with your advisor (examples include 121, 226, 322, 328, 344, 414, 459, 471, 474, 487, etc.) to meet the 52 unduplicated hours required.	Select from any appropriate GEOG, <b>GISC</b> , or METR 2xx-4xx course with your advisor (examples include 121, 226, 322, 328, 344, 414, 459, 471, 474, 487, etc.) to meet the 52 unduplicated hours required.
At least 26 hours in the program must be at the upper division level.	At least 26 hours in the program must be at the upper division level.
Additional Program Requirements (not included in the 52-hour program) (6 hours):	Additional Program Requirements (not included in the 52-hour program) (6 hours):

<ul style="list-style-type: none"> <li>• MATH 116 Algebra 3</li> <li>• MATH 183 Statistics 3</li> </ul>	<ul style="list-style-type: none"> <li>• <b>MATH 115 OR 116 Algebra</b> 3</li> <li>• MATH 183 Statistics 3</li> </ul>
<p><b>Tourism and Development Concentration</b></p> <p>Common Core Requirements (26 hours):</p> <p>GEOG or GEOL 103 Our Dynamic Earth 3</p> <p>GEOG 110 World Regional Geography 3</p> <p>GEOG 300 Writing in the Geosciences 3</p> <p>GISC 316 Fundamentals of GIS 4</p> <p>GISC 317 GIS 4</p> <p>GEOG 391 Spatial Data Analysis 4</p> <p>GEOG 495 Research Practicum/Internship OR</p> <p>GEOG 452 Applied Geo Field Experiences OR</p> <p>GEOG 475 Selected Topics in Geography 4</p> <p>GEOG 499 Professional Development 1</p> <p>Required Concentration Courses: (6 hours):</p> <p>GEOG 330 Intro to Cultural Geography 3</p> <p>GEOG 481 Tourism Geography 3</p> <p>Elective Courses (20 hours):</p> <p>Select from any appropriate GEOG, GISC, or METR 2xx-4xx course with your advisor (examples include 200, 210, 226, 280, 344, 350, 352, 385, 471, 474, 487, etc.) to meet the 52 unduplicated hours required.</p> <p>Additional Program Requirements (not included in the 52-hour program) (6 hours):</p> <ul style="list-style-type: none"> <li>• MATH 116 Algebra 3</li> <li>• MATH 183 Statistics 3</li> </ul>	<p><b>Tourism and Development Concentration</b></p> <p>Common Core Requirements (26 hours):</p> <p>GEOG or GEOL 103 Our Dynamic Earth 3</p> <p>GEOG 110 World Regional Geography 3</p> <p>GEOG 300 Writing in the Geosciences 3</p> <p>GISC 316 Fundamentals of GIS 4</p> <p>GISC 317 GIS 4</p> <p>GEOG 391 Spatial Data Analysis 4</p> <p>GEOG 495 Research Practicum/Internship OR</p> <p>GEOG 452 Applied Geo Field Experiences OR</p> <p>GEOG 475 Selected Topics in Geography 4</p> <p>GEOG 499 Professional Development 1</p> <p>Required Concentration Courses: (6 hours):</p> <p>GEOG 330 Intro to Cultural Geography 3</p> <p>GEOG 481 Tourism Geography 3</p> <p>Elective Courses (20 hours):</p> <p>Select from any appropriate GEOG, GISC, or METR 2xx-4xx course with your advisor (examples include 200, 210, 226, 280, 344, 350, 352, 385, 471, 474, 487, etc.) to meet the 52 unduplicated hours required.</p> <p>Additional Program Requirements (not included in the 52-hour program) (6 hours):</p> <ul style="list-style-type: none"> <li>• <b>MATH 115 OR 116 Algebra</b> 3</li> <li>• MATH 183 Statistics 3</li> </ul>
<p><b>Geography Concentration</b></p> <p>Common Core Requirements (26 hours):</p> <p>GEOG or GEOL 103 Our Dynamic Earth 3</p> <p>GEOG 110 World Regional Geography 3</p> <p>GEOG 300 Writing in the Geosciences 3</p> <p>GISC 316 Fundamentals of GIS 4</p> <p>GISC 317 GIS 4</p> <p>GEOG 391 Spatial Data Analysis 4</p> <p>GEOG 495 Research Practicum/Internship OR</p>	<p><b>Geography Concentration</b></p> <p>Common Core Requirements (26 hours):</p> <p>GEOG or GEOL 103 Our Dynamic Earth 3</p> <p>GEOG 110 World Regional Geography 3</p> <p>GEOG 300 Writing in the Geosciences 3</p> <p>GISC 316 Fundamentals of GIS 4</p> <p>GISC 317 GIS 4</p> <p>GEOG 391 Spatial Data Analysis 4</p> <p>GEOG 495 Research Practicum/Internship OR</p>

<p>GEOG 452 Applied Geo Field Experiences OR GEOG 475 Selected Topics in Geography 4 GEOG 499 Professional Development 1</p> <p>Required Concentration Courses: (6 hours): GEOG 330 Intro to Cultural Geography 3 GEOG 430 Topics in Cultural Geography 3</p> <p>Elective Courses (20 hours): Select from any appropriate GEOG, GIS, or METR 2xx-4xx course with your advisor (examples include 200, 210, 226, 280, 344, 350, 352, 385, 471, 474, 487, etc.) to meet the 52 unduplicated hours required.</p> <p>Additional Program Requirements (not included in the 52-hour program) (6 hours): • MATH 116 Algebra 3 • MATH 183 Statistics 3</p>	<p>GEOG 452 Applied Geo Field Experiences OR GEOG 475 Selected Topics in Geography 4 GEOG 499 Professional Development 1</p> <p>Required Concentration Courses: (6 hours): GEOG 330 Intro to Cultural Geography 3 GEOG 430 Topics in Cultural Geography 3</p> <p>Elective Courses (20 hours): Select from any appropriate GEOG, GIS, or METR 2xx-4xx course with your advisor (examples include 200, 210, 226, 280, 344, 350, 352, 385, 471, 474, 487, etc.) to meet the 52 unduplicated hours required.</p> <p>Additional Program Requirements (not included in the 52-hour program) (6 hours): • <b>MATH 115 OR 116 Algebra</b> 3 • MATH 183 Statistics 3</p>
<p>Environment and Sustainability Concentration</p> <p>Common Core Requirements (26 hours): GEOG or GEOL 103 Our Dynamic Earth 3 GEOG 110 World Regional Geography 3 GEOG 300 Writing in the Geosciences 3 GIS 316 Fundamentals of GIS 4 GIS 317 GIS 4 GEOG 391 Spatial Data Analysis 4 GEOG 495 Research Practicum/Intern OR GEOG 452 Applied Geo Field Experiences OR GEOG 475 Selected Topics in Geography 4 GEOG 499 Professional Development 1</p> <p>Required Concentration Courses (10 hrs): GEOG 210 Env and Ecological Policy 3 GEOG 280 Env Sci and Sustainability 4 GEOG 380 Global Sustainability 3</p> <p>Elective Courses (16 hours): Select from any appropriate GEOG, GIS, or METR 2xx-4xx course with your advisor (examples include 121, 226, 322, 328 344, 414, 459, 471, 474, 487, etc.) to meet the 52</p>	<p>Environment and Sustainability Concentration</p> <p>Common Core Requirements (26 hours): GEOG or GEOL 103 Our Dynamic Earth 3 GEOG 110 World Regional Geography 3 GEOG 300 Writing in the Geosciences 3 GIS 316 Fundamentals of GIS 4 GIS 317 GIS 4 GEOG 391 Spatial Data Analysis 4 GEOG 495 Research Practicum/Intern OR GEOG 452 Applied Geo Field Experiences OR GEOG 475 Selected Topics in Geography 4 GEOG 499 Professional Development 1</p> <p>Required Concentration Courses (10 hrs): GEOG 210 Env and Ecological Policy 3 GEOG 280 Env Sci and Sustainability 4 GEOG 380 Global Sustainability 3</p> <p>Elective Courses (16 hours): Select from any appropriate GEOG, GIS, or METR 2xx-4xx course with your advisor (examples include 121, 226, 322, 328 344, 414, 459, 471, 474, 487, etc.) to meet the 52</p>

unduplicated hours required. At least 26 hours in the program must be at the upper division level.	unduplicated hours required. At least 26 hours in the program must be at the upper division level.
Additional Program Requirements (not included in the 52-hour program) (6 hours):	Additional Program Requirements (not included in the 52-hour program) (6 hours):
• MATH 116 Algebra 3	• <b>MATH 115 OR 116 Algebra</b> 3
• MATH 183 Statistics 3	• MATH 183 Statistics 3

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

MATH 115 is a new algebra course developed for students who do not need to go on to MATH 117 TRIG. The MATH Department has requested that this course be offered as an alternative to MATH 116.

**5. Proposed term for implementation: Spring 2017**

**6. Dates of prior committee approvals:**

Department of Geography and Geology

08/17/2016

Ogden College Curriculum Committee

University Curriculum Committee

University Senate



psychology in connection with PSYS 210, Research Methods. The proposed course will focus entirely on research questions related to methods in Behavioral Neuroscience and provides greater depth to students in this sub-discipline. PSYS 360, Behavioral Neuroscience, is a lecture-based course that provides students with a foundation in the neurological processes and psychological constructs associated with the processes. The proposed course will extend this foundation, by providing a fundamentally different learning experience through integrative in-class lab activities that demonstrate methods used to advance the field of behavioral neuroscience. The activities will include in-class data collection and analysis. The proposed course will provide an important new opportunity for students who wish to enter medical, neuroscience and behavioral research areas at WKU or following graduation.

4. Relationship of the proposed course to courses offered in other departments: PSY 210 and PSY 211, offered by the Department of Psychology, are equivalent to PSYS 210 and 211. Please see the above description for the relationship between PSYS 361 and PSY 210/211. The Department of Biology offers BIOL 335, Neurobiology. BIOL 335 differs from the proposed course in that the proposed course concentrates on the relationship between neuroscience methods and approaches to psychological questions. Although the proposed course does not concentrate exclusively on humans, there is a greater emphasis on humans than non-human animals.
5. Relationship of the proposed course to courses offered in other institutions: A number of our benchmark institutions as well as other institutions in Kentucky offer a laboratory in areas related to behavioral neuroscience.

University	Course Number	Name	Credits	Notes
Eastern Kentucky University	PSY 315L	Sensation and Perception with Lab	4	PSY 315 is same course without lab component and is 3 credits
Eastern Kentucky University	PSY 317L	Cognitive Psychology with Lab	4	PSY 317 is same course without lab component and is 3 credits
Northern Kentucky University	PSY 338L	Cognitive Processes Laboratory	2	Offered in conjunction with PSY 338 Cognitive Processes
Northern Kentucky University	PSY 309L	Psychology of Perception Lab	2	Offered in conjunction with PSY 309 Psychology of Perception
University of Kentucky	PSY 456	Behavioral Neuroscience	4	Three hours of lecture and two hours of lab in the neural basis of behavior
Appalachian State University	PSY 4216	Biological Psychology Lab	1	Offered in conjunction with PSY 3216 Biological Psychology

Appalachian State University	PSY 4217	Cognitive Psychology Laboratory	1	Offered in conjunction with PSY 3217 Cognitive Processes
Bowling Green State University	PSYC 3280	Psychophysiology	4	Four lecture hours, laboratory by arrangement.
Florida Atlantic University	PSB 4004L	Laboratory in Psychobiology	3	Lecture and supervised laboratory methods and report writing in psychobiology
James Madison University	PSYC 493	Laboratory in Psychology	3	Lab course with topic defined by faculty member teaching the course
Middle Tennessee State University	PSY 4150	Laboratory in Psychology	1	Lab course in behavioral neuroscience offered as co-requisite with lecture course
Northern Illinois University	PSYC 431	Neuropsychology	4	Lecture course with embedded labs
University of North Carolina Greensboro	PSY 435L	Brain and Psychological Processes with Laboratory	4	Lecture and lab course completed after statistics course

### 3. Discussion of proposed course:

1. Schedule type: C – Lecture/Lab
2. Learning Outcomes:
  - Identify research approaches to address research questions within behavioral neuroscience
  - Understand the core neuroscience ideas and concepts (e.g., neuron function, physiological systems, sensory coding)
  - Understand how typical neurophysiological systems are related to behavior
  - Understand how physiological systems can become impaired and how behavior is changed by the impairment
  - Demonstrate proficiency in neuroscience terminology and methods through hands-on lab activities
3. Content outline:
  - Neuron structures and function
  - Gross Brain structures
  - Sensory and Perceptual systems
    - Visual System
    - Auditory System
    - Chemo-sensory Systems
    - Other Perceptual Systems
  - Hormones and Reproductive Behavioral Systems
  - Learning & Memory

- Communication
  - Disorders
4. Student expectations and requirements:  
Students will complete in-class and/or homework assignments related to the lab activities. Students understanding of course content will be assessed through quizzes and/or exams. Students will be expected to already have at least a rudimentary understanding of neuroscience and of behavioral research methods.
  5. Tentative texts and course materials:  
American Psychological Association. (2009). *Publication Manual of the American Psychological Association, 6<sup>th</sup> ed.* Washington, DC: APA.  
American Psychological Association. (2010). *Concise Rules of Style, 6<sup>th</sup> ed.* Washington, DC: APA.  
Carlson, N. R. (2014). *Foundations of Behavioral Neuroscience, 9th ed.* Boston, MA: Allyn and Bacon.  
Kolb, B., & Wishaw, I. Q. (2015). *Fundamentals of Human Neuropsychology, 7<sup>th</sup> Ed.*, New York, NY: Worth.  
Diamond, M. C. & Scheibel, A. B. (1985) *The Human Brain Coloring Book*, New York, NY: Collins Reference  
Pinel, P. J. (2013) *Biopsychology, 9<sup>th</sup> ed.* New York, NY: Pearson

**4. Resources:**

1. Library resources: Existing resources are adequate.

**5. Budget implications:**

1. Proposed method of staffing: The course will be taught by current faculty. A number of faculty have neuroscience expertise within the Department of Psychological Sciences.
2. Special equipment needed: Electrophysiological measurement equipment and brain models will be purchased using funds already committed by Academic Affairs. A portion of a course fee associated with this course will be used to periodically replace this equipment.
3. Expendable materials needed: Dissection materials and electrodes will be purchased using funds already committed by Academic Affairs. A portion of a course fee associated with this course will be used to purchase the expendable materials each year.

**6. Proposed term for implementation: Spring 2017**

**7. Dates of prior committee approvals:**

Department of Psychological Sciences	8/18/2016
OCSE Curriculum Committee	_____
Undergraduate Curriculum Committee	_____
University Senate	_____

**Ogden College of Science and Engineering  
Office of the Dean  
Proposal to Revise A Program  
(Action Item)**

Contact Person: Les Pesterfield, [lester.pestterfield@wku.edu](mailto:lester.pestterfield@wku.edu), 745-3603

**1. Identification of program:**

- 1.1 Current program reference number: 734
- 1.2 Current program title: Middle School Science (“MSS”)
- 1.3 Credit hours: 47

**2. Identification of the proposed program changes:**

- 2.1 Decrease the number of hours in the major from 47 to 30

**3. Detailed program descriptions:**

**Current program**

**Proposed program**

<p>General:</p> <ul style="list-style-type: none"> <li>1. <del>23</del> hours of introductory science core courses are required.</li> <li>2. A science research methods course, SMED 360, is required.</li> <li>3. <del>24</del> hours of upper level science courses are required including a required course in <del>each</del> of the five disciplines and <del>two from a list of restricted electives</del>.</li> <li>4. Completion of MATH 117 or 136 or 142 as a support course is required.</li> <li>5. All courses must be completed with a grade of C or better. All science courses must be completed with an average GPA of 2.75 or better.</li> <li>6. Students must also complete the SMED major.</li> </ul>	<p>General:</p> <ul style="list-style-type: none"> <li>1. <b>15</b> hours of introductory science core courses are required.</li> <li>2. A science research methods course, SMED 360, is required.</li> <li>3. <b>12 hours</b> of upper level science courses are required including a required course in <b>three</b> of the five disciplines and <b>one from a list of restricted electives</b>.</li> <li>4. Completion of MATH 117 or 136 or 142, <b>BIOL 120/121 and CHEM 105/106 or 120/121</b> as support courses is required.</li> <li>5. All courses must be completed with a grade of C or better. All science courses must be completed with an average GPA of 2.75 or better.</li> <li>6. Students must also complete the SMED major.</li> </ul>
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<p>Required introductory science courses (<b>23hrs</b>)</p> <p>ASTR 104      Astronomy of the                          Solar System (3) or ASTR 106    Astronomy of                          Stellar Systems (3)</p>	<p>Required introductory science courses (<b>15 hours</b>)</p> <p>ASTR 104      Astronomy of the                          Solar System (3) or ASTR 106    Astronomy of                          Stellar Systems (3)</p>
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<p>BIOL 120/121—Biological Concepts:  ————Cells, Metabolism, and Genetics (4)</p> <p>BIOL 122/123 Biological Concepts:  Evolution, Diversity &amp; Ecology (4)</p> <p>CHEM 105/106 Fund. of Gen. Chemistry (4)  —or CHEM 120/121 College Chemistry I (5)</p> <p>GEOL 111/113 The Earth (4)  OR GEOL 112/114 Earth History (4)</p> <p>PHYS 201 College Physics I (4)  or PHYS 231/232 College Physics  and Biophysics I (4)</p>	<p>BIOL 122/123 Biological Concepts:  Evolution, Diversity &amp; Ecology (4)</p> <p>GEOL 111/113 The Earth (4)  OR GEOL 112/114 Earth History (4)</p> <p>PHYS 201 College Physics I (4)  or PHYS 231/232 College Physics  and Biophysics I (4)</p>
<p>Science research course:  SMED 360 Research Methods for  Mathematics and Science Teachers (3)</p>	<p>Science research course:  SMED 360 Research Methods for  Mathematics and Science Teachers (3)</p>
<p>Upper level science courses (24 hours):</p> <p>All of following courses (15 hours):</p> <p>ASTR 405 Astronomy for Teachers (3)</p> <p>BIOL 303 Life Sciences for Middle  Grades Teachers (3)</p> <p>CHEM 470 Chemistry/Middle School (3)</p> <p>GEOL 305 Earth Systems Science for  Teachers (3)</p> <p>PHYS 410 Physics for Teachers (3)</p> <p>Two restricted elective (min. 6 hours) from:</p> <p>BIOL 319/322 Molecular and Cell Biology (4)</p> <p>BIOL 325 Insect Biodiversity (3)</p> <p>BIOL 326 Ornithology (3)</p> <p>BIOL 327 Genetics (4)</p> <p>BIOL 334 Animal Behavior (3)</p> <p>BIOL 348 Plant Taxonomy (3)</p> <p>GEOG 471 Natural Resource Mgt. (3)</p> <p>GEOL 308 Structural Geology (4)</p> <p>GEOL 310 Global Hydrology (3)</p> <p>GEOL 311 Oceanography (3)</p> <p>GEOL 325 Intro Minerals and Rocks (3)</p> <p>GEOL 380 Intro Field Techniques (3)</p> <p>GEOL 405 Paleontology (4)</p> <p>SMED 300 Middle Grade Science Skills (3)</p>	<p>Upper level science courses (12 hours):</p> <p><b>Three of the five following courses (9 hours):</b></p> <p>ASTR 405 Astronomy for Teachers (3)</p> <p>BIOL 303 Life Sciences for Middle Grades  Teachers (3)</p> <p>CHEM 470 Chemistry/Middle School (3)</p> <p>GEOL 305 Earth Systems Science for  Teachers (3)</p> <p>PHYS 410 Physics for Teachers (3)</p> <p><b>One restricted elective (min. 3 hours) from:</b></p> <p>BIOL 319/322 Molecular and Cell Biology (4)</p> <p>BIOL 325 Insect Biodiversity (3)</p> <p>BIOL 326 Ornithology (3)</p> <p>BIOL 327 Genetics (4)</p> <p>BIOL 334 Animal Behavior (3)</p> <p>BIOL 348 Plant Taxonomy (3)</p> <p>GEOG 471 Natural Resource Mgt. (3)</p> <p>GEOL 308 Structural Geology (4)</p> <p>GEOL 310 Global Hydrology (3)</p> <p>GEOL 311 Oceanography (3)</p> <p>GEOL 325 Intro Minerals and Rocks (3)</p> <p>GEOL 380 Intro Field Techniques (3)</p> <p>GEOL 405 Paleontology (4)</p> <p>SMED 300 Middle Grade Science Skills (3)</p>

SMED 400 Applying Middle Grade Science Across Disciplines (3)	SMED 400 Applying Middle Grade Science Across Disciplines (3)
Support courses MATH 117 Trigonometry (3) or MATH 136 Calculus I (4) or MATH 142 Calculus with Applications for Life Sciences (5)	Support courses MATH 117 Trigonometry (3) or MATH 136 Calculus I (4) or  <b>BIOL 120/121 Biological Concepts: Cells, Metabolism, and Genetics (4)</b>  <b>CHEM 105/106 Fund. of Gen. Chemistry (4) or CHEM 120/121 College Chemistry I (5)</b>

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

The primary reason for the proposed change is to bring the number of required hours into alignment with other middle school science certification programs across the region.

Institution	Science content hours	Upper-division hours	Support course hours	Total hours
WKU current	47	24	3	50
proposed	30	15	11	41
University of Louisville	32	6	14	46
Morehead State University <sup>3</sup>	33	9	6	39
Indiana State <sup>1</sup>	40	8	4	44
Middle Tennessee State <sup>1</sup>	28	4	12	40
University of Kentucky <sup>2</sup>	27	0	6	33
Northern Kentucky University <sup>2</sup>	23	0	6	29
Appalachian State <sup>1,2</sup>	26	0	4	30

<sup>1</sup> benchmark institution, <sup>2</sup> dual certification program with math, <sup>3</sup> UTeach replication site

Middle school science education is unique in that middle school science (MSS) educators are not specialist in a single discipline but generalist across multiple content areas. The *Disciplinary Core Ideas* (DCI) as identified in the *Next Generation Science Standards* (NGSS) for middle school science instruction fall under three categories: Physical Sciences, Life Sciences, and Earth and Space Science. Given the wide range of topics found in the DCI's of MSS, a breadth of knowledge across the content areas of astronomy, biology, chemistry, geology and physics is necessary. As a result, middle

school science preparation programs are front-end loaded with a higher number of lower-division coursework hours than might be anticipated.

Additionally, even though the current MSS 734 major requires 47 hours, it is not a standalone major. All MSS majors must also declare a Science and Math Education Major (SMED) 774. The SMED major currently requires 34 hours (31 of which are unduplicated).

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

Fall semester 2017

**6. Dates of prior committee approvals:**

SKyTeach Faculty

08/17/2016

Ogden Dean's Office

08/17/2016

Ogden College Curriculum Committee

Professional Education Council

Undergraduate Curriculum Committee

University Senate