

MEMORANDUM TO: Ogden College of Science and Engineering Curriculum Committee

Dr. Linda Brown	Dr. James Gary	Dr. Mike Carini
Dr. Martin Stone	Dr. Huanjing Wang	Dr. Doug Harper
Dr. Greg Arbuckle	Dr. Julie Ellis	Dr. Kelly Madole
Dr. Mark Revels	Dr. Warren Campbell	Dr. Steve Haggbloom
Dr. Bruce Schulte	Dr. David Keeling	Dr. Les Pesterfield
Dr. Phil Lienesch	Dr. Xingang Fan	
Dr. Stuart Burris	Dr. Bruce Kessler	
Dr. Darwin Dahl	Dr. Ngoc Nguyen	

FROM: Kenneth Crawford, Chair

SUBJECT: Agenda for Thursday, November 5, 4:00 p.m. in COHH 4123

A. OLD BUSINESS:

- I. Consideration of the minutes of the October 8, 2015 meeting.

B. NEW BUSINESS:

Consent Items

Department of Engineering

- I. Proposal to Revise Course Prerequisites/Corequisites
 - a. CE 342, Fluid Thermal Science, 3 hrs.
 - b. CE 461, Hydrology, 3 hrs.

Action Items

Department of Geography & Geology

- I. Proposal to Make Multiple Revisions to a Course
 - a. GEOL 308, Structural Geology, 3hrs.
 - b. GEOL 460, Sedimentation and Stratigraphy, 3 hrs.
- II. Proposal to Create a New Course
 - a. GEOL 315, Energy, Climate, and Carbon, 3 hrs.
- III. Proposal to Revise a Program
 - a. Ref. 676, Geology (A.B.), 32 hrs.
 - b. Ref. 577, Geology Extended (B.S.), 52 hrs.

Department of Physics

- I. Proposal to Create a New Course
 - a. PHYS 299, Research Experiences, 1-3 hrs.

Department of Psychological Sciences

- I. Proposal to Create a New Course

a. PSYS 380, Psychology and Science Fiction, 3 hrs.

II. Proposal to Revise a Program

a. Ref. 440, Minor in Psychological Science, 19 hrs.

C. OTHER BUSINESS

Ogden College Dean's Office

I. Curriculum Committee, OCSE, Standing Rules

MEMBERS PRESENT:

Dr. Linda Brown
Dr. Martin Stone
Dr. Bruce Schulte
Dr. Phil Lienesch
Dr. Darwin Dahl
Dr. James Gary
Dr. Warren Campbell
Dr. David Keeling
Dr. Xingang Fan
Dr. Ngoc Nguyen

Dr. Mike Carini
Dr. Doug Harper
Dr. Kelly Madole by proxy
Dr. Steve Haggbloom
Dr. Les Pesterfield
Dr. Raja Dakshinamurthy for Stuart Burris
Dr. Shane Palmquist, Guest

FROM: Ken Crawford, Chair

OLD BUSINESS:

Campbell/Carini moved for approval of the minutes of the September 3, 2015 meeting. Motion approved.

NEW BUSINESS:

Consent Agenda

Keeling/Campbell moved to approved consent items. Motion approved.

Action Agenda

Department of Engineering

Keeling/Campbell moved to approve proposal to revise course prerequisites/corequisites, CE 400, Civil Engineering Senior Design Seminar, 1 hr. Motion approved.

Ogden College Dean's Office

Keeling/Campbell moved to bundle and approve the proposals to create a new course BDAS 300 and BDAS 495. Motions approved.

Keeling/Campbell moved to approve the proposal to create a new certificate program, Brewing and Distilling Arts & Sciences, 12-15 hrs. Motion approved.

OTHER BUSINESS:

OCSE Standing Rules were reviewed a second time. Additional revisions are necessary. The revisions will be revisited at the next OCSE Curriculum Committee meeting.

Meeting adjourned at 4:37pm.

Proposal Date: 10/2/2015

**Ogden College
Engineering
Proposal to Revise Course Prerequisites/Corequisites
(Consent Item)**

Contact Person: Warren Campbell, warren.campbell@wku.edu, 5-8988

1. **Identification of course:**
 - 1.1 Course prefix (subject area) and number: CE 342
 - 1.2 Course title: Fluid Thermal Science
2. **Current prerequisites/special requirements:** MATH 137, and EM 221 or EM 222
3. **Proposed prerequisites/special requirements:** MATH 237, EM 221 or EM 222, and Civil Engineering major status
4. **Rationale for the revision of prerequisites/special requirements:** Course involves use of vector analysis including gradient and curl. Students without multivariable calculus are at a disadvantage.
5. **Effect on completion of major/minor sequence:** No effect.
6. **Proposed term for implementation:** Fall 2016
7. **Dates of prior committee approvals:**

Engineering Department

October 22, 2015

Ogden College Curriculum Committee

Undergraduate Curriculum Committee

University Senate

Proposal Date: 10/2/2015

**Ogden College
Engineering
Proposal to Revise Course Prerequisites/Corequisites
(Consent Item)**

Contact Person: Warren Campbell, warren.campbell@wku.edu, 5-8988

- 1. Identification of course:**
 - 1.1 Course prefix (subject area) and number: CE 461
 - 1.2 Course title: Hydrology

- 2. Current prerequisites/special requirements:** MATH 331, STAT 301, CE 160, and CE 341 or 342

- 3. Proposed prerequisites/special requirements:** MATH 331, CE 160, CE 305 or STAT 301, and CE 341 or 342

- 4. Rationale for the revision of prerequisites/corequisites/special requirements:** CE 305 Risk Assessment is closely aligned with the statistical and risk management aspects required for success in CE 461 Hydrology.

- 5. Effect on completion of major/minor sequence:** No effect.

- 6. Proposed term for implementation:** Fall 2016

- 7. Dates of prior committee approvals:**

Engineering Department

October 22, 2015

Ogden College Curriculum Committee

Undergraduate Curriculum Committee

University Senate

**Ogden College of Science and Engineering
Department of Geography and Geology
Proposal to Make Multiple Revisions to a Course
(Action Item)**

Contact Person: Nahid Gani, nahid.gani@wku.edu, 5-2813

1. Identification of course:

- 1.1 Current course prefix (subject area) and number: GEOL 308
- 1.2 Course title: Structural Geology

2. Revise course number:

- 3.1 Current course number: GEOL 308
- 3.2 Proposed course number: GEOL 408
- 3.3 Rationale for revision of course number: The change in course number is needed to place Structural Geology above the 300 level courses that constitute the core of the Geology program. While none of the 300-level geology courses are pre-requisites for Structural Geology, students are advised to take the 300-level core curriculum prior to their Structural Geology studies. Experience has shown that a solid foundation of 300-level geology courses leads to greater comprehension of content in Structural Geology and greater student success.

3. Revise course prerequisites:

- 3.1 Current prerequisites: GEOL 111 and 113, and MATH 116 or higher
- 3.2 Proposed prerequisites/corequisites: Prerequisites of GEOL 111 and 113, and a prerequisite or corequisite of MATH 117 or higher.
- 3.3 Rationale for revision of course prerequisites/corequisites: Students need to have completed or at least be taking a trigonometry course (Math 117) to understand and successfully complete laboratory assignments in Structural Geology. Experience has shown that exposure to trigonometric concepts and procedures are of great benefit to students.
- 3.4 Effect on completion of major/minor sequence: none

4. Proposed term for implementation: 201630

5. Dates of prior committee approvals:

Department of Geography and Geology
Ogden College Curriculum Committee
Undergraduate Curriculum Committee
University Senate

10/30/2015

**Ogden College of Science and Engineering
Department of Geography and Geology
Proposal to Make Multiple Revisions to a Course
(Action Item)**

Contact Person: Fred Siewers, fred.siewers@wku.edu, 5-5988

- 1. Identification of course:**
 - 1.1 Current course prefix (subject area) and number: GEOL 460
 - 1.2 Course title: Sedimentation and Stratigraphy

- 2. Revise course title:**
 - 2.1 Current course title: Sedimentation and Stratigraphy
 - 2.2 Proposed course title: Sedimentology and Stratigraphy
 - 2.3 Proposed abbreviated title: Sedimentology and Stratigraphy
 - 2.4 Rationale for revision of course title: The word "Sedimentology" is more all encompassing than the term "Sedimentation". The title change more accurately reflects the true content of the course.

- 3. Revise course number:**
 - 3.1 Current course number: GEOL 460
 - 3.2 Proposed course number: GEOL 360
 - 3.3 Rationale for revision of course number: The course number change is needed to more accurately identify Sedimentology and Stratigraphy as a core geology course, taken by all majors regardless of specific geology programmatic track. The majority of the core geology courses occur at the 300 level.

- 4. Revise course prerequisites:**
 - 4.1 Current prerequisites: GEOL 380
 - 4.2 Proposed prerequisites: GEOL 112/114
 - 4.3 Rationale for revision of course prerequisites: The field experience obtained in GEOL 380 is no longer necessary for Sedimentology and Stratigraphy because a designated field and laboratory experience is being added to the course (see 6. Revise course credit hours below). A pre-requisite of GEOL 112/114 is necessary to ensure adequate student preparation.
 - 4.4 Effect on completion of major/minor sequence: none

- 5. Revise course credit hours:**
 - 5.1 Current course credit hours: 3
 - 5.2 Proposed course credit hours: 4
 - 5.3 Rationale for revision of course credit hours: Changing the course credit from 3 hours to 4 hours is necessary to increase instructor supervision of field and laboratory experiences. Field and laboratory experiences already occur in Sedimentology and Stratigraphy; however those experiences occur during out-of-class time. The addition of one credit hour - which equates to a weekly two-hour lab - will allow students to receive more supervised instruction.

6. **Proposed term for implementation: 201630**

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

Department of Geography and Geology

10/30/2015

Ogden College Curriculum Committee

Undergraduate Curriculum Committee

University Senate

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

Contact Person: Fred Siewers, fred.siewers@wku.edu; 745-5988

1. Identification of proposed course:

- 1.1 Course prefix (subject area) and number: GEOL 315
- 1.2 Course title: Energy, Climate, and Carbon
- 1.3 Abbreviated course title: Energy, Climate, and Carbon
- 1.4 Credit hours: 3
- 1.5 Schedule type: Lecture
- 1.6 Prerequisites: GEOL 111 or GEOL 112 or GEOL 103 or GEOG 103
- 1.7 Grade type: □ standard letter grade
- 1.8 Course description: Energy, Climate, and Carbon investigates our current reliance upon carbon-based sources of energy, the effect of fossil-fuel emissions on the environment and climate at local-to-global scales, and current efforts to limit fossil-fuel emissions and global climate change. The course is particularly focused on carbon-capture technologies, geological carbon sequestration and renewable energy resources.

2. Rationale:

- 2.1 Reason for developing the proposed course: The proposed course will help students make connections between energy production - in particular, the combustion of fossil fuels - and changes seen in the local environment and global climate. Students will study the carbon cycle, society's carbon-based economy and energy infrastructure, and efforts to mitigate rising atmospheric CO₂ through carbon capture and geological CO₂ sequestration. Students will also learn about alternatives to fossil fuels, such as nuclear energy and renewable energy resources.
- 2.2 Projected enrollment in the proposed course: up to 40 students
- 2.3 Relationship of the proposed course to courses now offered by the department: The course compliments the Department's offering of Geol. 415 (Environmental Geology), Geol. 485 (Geology of Fossil Fuels), and Geog. 455 (Global Environmental Change). The proposed course differs from all of these courses by its focus on carbon capture and geological sequestration as a climate change mitigation strategy.
- 2.4 Relationship of the proposed course to courses offered in other departments: Geol. 315 will provide a broad overview of our current sources of energy and issues pertaining to climate change. Similar content is provided in Phys 100 - Energy, EE 130 - Our Electrical World. Geol. 315 differs significantly from those courses due to its focus on carbon; specifically its exploration of sources of CO₂ in the environment, the capture of CO₂ from atmospheric and industrial sources, and the process of geological CO₂ sequestration.

- 2.5 Relationship of the proposed course to courses offered in other institutions: Many institutions offer individual courses on energy resources, climate change and the global carbon cycle. These institutions include Duke University (ENV 330 - Energy and the Environment), the University of Chicago (GEOS 23400 - Global Warming: Understanding the Forecast), and Rutgers University (11:375:322 - Energy Technology and its Environmental Impact). Very few institutions integrate the themes of energy, climate and carbon into a single course. An example is a course (and textbook) developed by Dr. Peter Cook at the University of Melbourne, Australia . No Kentucky Universities currently offer a course similar to Energy, Climate and Carbon.

3. Discussion of proposed course:

3.1 Schedule type: Lecture

3.2 Learning Outcomes: After the completion of Geol. 315, students will be able to:

- Analyze the current and changing energy landscape
- Examine the carbon cycle and the causes of global climate change
- Compare a range of carbon sequestration strategies and emission reduction approaches from an Earth Systems perspective.
- Evaluate how public policies, societal norms and international agreements influence global efforts to minimize climate change.

3.3 Content outline:

- The Carbon Cycle
- Energy Consumption
- Greenhouse Gases and Climate Forcings
- Global Warming Events in Earth History
- Societal Impacts of Global Warming
- International Climate Change Treaties
- Sources of Anthropogenic CO₂
- CCS and Geological Sequestration
- DOE Regional Sequestration Partnerships
- Fluid Injection, Hydraulic Fracturing, and Subsurface Monitoring
- The 2014 IPCC 5th Assessment
- Terrestrial Sequestration
- Nuclear Energy and Renewables

3.4 Student expectations and requirements: Students will be expected to complete weekly assignments involving computerized climate models, readings and video presentations. Students will take quizzes, two to three exams and a final examination, some of which may be delivered online. One semester term paper and at least one class presentation will be required.

3.5 Tentative texts and course materials:

Archer, David, 2011, *Global Warming: Understanding the Forecast*, 2nd Edition. John Wiley and Sons, Inc., p. 203.

Cook, Peter J., 2012, *Clean Energy, Climate and Carbon*. CRC Press/Balkema, Leiden, The Netherlands. p. 215

Lynas, Mark, 2008, *Six degrees: Our Future on a Hotter Planet*. National Geographic Society, Washington DC. p. 335

4. Resources:

- 4.1 Library resources: Current resources are sufficient.
- 4.2 Computer resources: Existing resources are sufficient.

5. Budget implications:

- 5.1 Proposed method of staffing: the course will be staffed by existing faculty
- 5.2 Special equipment needed: no special equipment needed
- 5.3 Expendable materials needed: no expendable materials needed
- 5.4 Laboratory materials needed: no laboratory materials needed

6. Proposed term for implementation: 201630

7. Dates of prior committee approvals:

Department of Geography and Geology

 10/30/2015 _____

Ogden College Curriculum Committee

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: Fred Siewers, fred.siewers@wku.edu, 5-5988

1. Identification of program:

- 1.1 Current program reference number: #676
- 1.2 Current program title: Geology (A.B.)
- 1.3 Credit hours: 32

2. Identification of the proposed program changes:

- The number of required GEOL course hours changes from 26 to 27
- The number of required elective hour changes from 6 to 5
- Course number change: GEOL 308 becomes GEOL 408
- Course number change: GEOL 460 becomes GEOL 360
- Course title revision: the new GEOL 360 becomes Sedimentology and Stratigraphy
- Course credit hours for GEOL 460 (3 hours) are changed to 4 hours for the new GEOL 360
- The math required in the program is changed from MATH 116 to MATH 117
- Prerequisite change: a pre- or corequisite change of MATH 117 is added to the new GEOL 408
- GEOL 315 is added under the elective courses category
- Prerequisite change: the GEOL 380 prerequisite is dropped from the new GEOL 360; GEOL 112/114 becomes the prerequisite for the new GEOL 360
- Required field course: students have the option of taking GEOG 452 in lieu of GEOL 380.
- PHYS 180/181 is added as a Physics option in the Requirements outside Geology category

3. Detailed program description:

Courses	Hours		
<u>Required Courses</u>	26	<u>Required Courses</u>	<u>27</u>
GEOL/GEOG 103 Our Dynamic Earth OR GEOL 111 The Earth	3	GEOL/GEOG 103 Our Dynamic Earth OR GEOL 111 The Earth	3
GEOL 112 Earth History	3	GEOL 112 Earth History	3
GEOL 113 The Earth Lab	1	GEOL 113 The Earth Lab	1
GEOL 114 Earth History Lab	1	GEOL 114 Earth History Lab	1
GEOL 308 Structural Geology	4	GEOL 408 Structural Geology	4
GEOL 311 Oceanography	3	GEOL 311 Oceanography	3
GEOL 325 Intro to Minerals and Rocks	3	GEOL 325 Intro to Minerals and Rocks	3
GEOL 380 Intro to Field Techniques	3	GEOL 380 Intro to Field Techniques or GEOG 452 Geoscience Field Experiences	3

GEOL 460 Sedimentation and Stratigraphy	3	GEOL 360 Sedimentology and Stratigraphy	4
GEOL 499 Professional Preparation	2	GEOL 499 Professional Preparation	2
<u>Elective Courses</u>	<u>6</u>	<u>Elective Courses</u>	<u>5</u>
6 hours of elective courses selected from any GEOL 2xx – 4xx courses, such as: 270, 310, 330, 350, 399, 405, 415, 420, 430, 432, 440, 465, 470, 475, and from GEOG 310, 316, 391, 417, 419, 420	6	5 hours of elective courses selected from any GEOL 2xx – 4xx courses, such as: 270, 310, 311, 315 , 325, 330, 350, 399, 405, 415, 420, 430, 432, 440, 465, 470, 475, and from GEOG 310, 391, 420, and GISC 417, 419	5
<u>Minimum Program Hours</u>	<u>32</u>	<u>Minimum Program Hours</u>	<u>32</u>
<u>Requirements outside Geology</u>	<u>21</u>	<u>Requirements outside Geology</u>	<u>21</u>
GEOG 316 Fundamentals of GIS	4	GEOG 316 Fundamentals of GIS	4
MATH 116 College Algebra	3	MATH 117 Trigonometry	3
CHEM 105 Fundamentals of General Chemistry	3	CHEM 105 Fundamentals of General Chemistry	3
CHEM 106 Fundamentals of General Chemistry Lab	1	CHEM 106 Fundamentals of General Chemistry Lab	1
GEOG 121 Meteorology	3	GEOG 121 Meteorology	3
PHYS 201 College Physics	4	PHYS 201 or PHYS 180-181 Intro. Modern Physics + Lab	4
METR 121 Meteorology	3	METR 121 Meteorology	3
Minor Field		Minor Field	

4. **Rationale for the proposed program change:** The proposed changes will strengthen the Geology program with more supervised lab time in GEOL 360 and more appropriate pre- and corequisites for GEOL 408. The new numbering sequence will be more logical to students. Adding PHYS 180/181 as a Physics option will create more scheduling flexibility for students. Adding the option to take GEOG/GEOL 452 in the field category will also create more flexibility for students. Raising the level of math to MATH 117 will increase student’s quantitative abilities and better prepare them for upper level Geology courses.

5. **Proposed term for implementation and special provisions (if applicable):** 201630

6. Dates of prior committee approvals:

Department of Geography and Geology

10/30/2015

Ogden College Curriculum Committee

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: Fred Siewers, fred.siewers@wku.edu, 5-5988

1. Identification of program:

- 1.1 Current program reference number: #577
- 1.2 Current program title: Geology Extended (B.S.)
- 1.3 Credit hours: 52

2. Identification of the proposed program changes:

- Course number change: GEOL 308 becomes GEOL 408
- Course number change: GEOL 460 becomes GEOL 360
- Course credit hours for the old GEOL 460 (3 hours) is changed to 4 hours for the new GEOL 360
- Prerequisite change: a pre- or corequisite change of Math 117 is added to the new GEOL 408
- Prerequisite change: the GEOL 380 prerequisite is dropped from the new GEOL 360; GEOL 112/114 becomes the prerequisite for the new GEOL 360
- GEOL 315 is added under the elective courses category
- GEOL 399 is dropped from the required courses category
- the number of required GEOL hours changes to 43-44

3. Detailed program description:

Courses	Hours		
<u>Required Courses</u>	43-46	<u>Required Courses</u>	<u>43-44</u>
GEOL/GEOG 103 Our Dynamic Earth OR GEOL 111 The Earth	3	GEOL/GEOG 103 Our Dynamic Earth OR GEOL 111 The Earth	3
GEOL 112 Earth History	3	GEOL 112 Earth History	3
GEOL 113 The Earth Lab	1	GEOL 113 The Earth Lab	1
GEOL 114 Earth History Lab	1	GEOL 114 Earth History Lab	1
GEOL 270 (3) OR GEOL 432 (4)	3-4	GEOL 270 (3) OR GEOL 432 (4)	3-4
GEOL 308 Structural Geology	4	GEOL 408 Structural Geology	4
GEOG 316 Fundamentals of GIS	4	GISC 316 Fundamentals of GIS	4
GEOG 317 GIS	4	GISC 317 GIS	4
GEOL 330 Mineralogy	4	GEOL 330 Mineralogy	4
GEOL 350 Petrology	4	GEOL 350 Petrology	4
GEOL 380 Intro. Field Techniques (3 hrs) plus GEOG 452 Geoscience Field Experiences (3 hrs) OR GEOG 452 (6 hours) OR GEOG 417 GIS Analysis & Modeling (3 hrs) and GEOG 419 GIS Programming (3 hrs)	6	GEOL 380 Intro. Field Techniques (3 hrs) plus GEOG 452 Geoscience Field Experiences (3 hrs) OR GEOG 452 (6 hours) OR GISC 417 GIS Analysis & Modeling (3 hrs) and GISC 419 GIS Programming (3 hrs)	6

GEOL 399 Supervised Research	1-3		
GEOL 460 Sedimentation and Stratigraphy	3	GEOL 360 Sedimentology and Stratigraphy	4
GEOL 499 Professional Prep.	2	GEOL 499 Professional Prep.	2
<u>Elective Courses</u>	<u>9-6</u>	<u>Elective Courses</u>	<u>9-6</u>
9 or 6 hours of elective courses selected from any GEOL 2xx – 4xx courses, such as: 270, 310, 311, 325, 330, 350, 399, 405, 415, 420, 430, 432, 440, 465, 470, 475, and from GEOG 310, 391, 417-419, 420 and from BIOL 122/123	9-6	9 or 6 hours of elective courses selected from any GEOL 2xx – 4xx courses, such as: 270, 310, 311, 315 , 325, 330, 350, 399, 405, 415, 420, 430, 432, 440, 465, 470, 475, and from GEOG 310, 391, 420, GISC 417, 419 , and from BIOL 122/123	9-6
<u>Minimum Program Hours</u>	<u>52</u>	<u>Minimum Program Hours</u>	<u>52</u>
<u>Requirements outside Geology</u>	<u>13</u>	<u>Requirements outside Geology</u>	<u>13</u>
MATH 136 Calculus I	4	MATH 136 Calculus I	4
CHEM 120 College Chemistry I	3	CHEM 120 College Chemistry I	3
CHEM 121 College Chemistry I Lab	2	CHEM 121 College Chemistry I Lab	2
PHYS 180-181 Intro. Modern Physics + Lab OR PHYS 201	4	PHYS 180-181 Intro. Modern Physics + Lab OR PHYS 201	4
<u>Other Requirements</u>		<u>Other Requirements</u>	
To graduate with Geology Honors, take an additional 12 hours of GEOL courses beyond the minimum required for the major and maintain a GPA of 3.25 or greater	12	To graduate with Geology Honors, take an additional 12 hours of GEOL courses beyond the minimum required for the major and maintain a GPA of 3.25 or greater	12

4. **Rationale for the proposed program change:** The proposed changes will strengthen the Geology core with more supervised lab time in GEOL 360 and more appropriate pre- and corequisites for GEOL 408. The new numbering sequence will be more logical to students. The deletion of the previously required GEOL 399 (1 hour) will allow the Geology #577 program hours to remain unchanged.
5. **Proposed term for implementation and special provisions (if applicable):** 201630
6. **Dates of prior committee approvals:**

Department of Geography and Geology

10/30/2015

Ogden College Curriculum Committee

Undergraduate Curriculum Committee

University Senate

Proposal Date: 10/7/2015

**Science & Engineering
Department of Physics and Astronomy
Proposal to Create a New Course
(Action Item)**

Contact Person: Doug Harper, doug.harper@wku.edu, (270) 745-6194

1. Identification of proposed course:

- 1.1 Course prefix and number: PHYS 299
- 1.2 Course title: Research Experiences
- 1.3 Abbreviated course title: Research Experiences
- 1.4 Credit hours and contact hours: 1.0 to 3.0 variable
- 1.5 Grade Type: Standard letter grade
- 1.6 Prerequisites: MATH 117 or equivalent; and PHYS 180 or PHYS 201 or PHYS 231 or PHYS 255; and permission of instructor
- 1.7 Course catalog listing: Individual or group research project carried out under direct faculty supervision. A faculty approved public presentation is required. Course may be repeated for a maximum of 3 hours.

2. Rationale:

- 2.1 Reason for developing the proposed course:
Faculty in the department are often approached by students either from other disciplines or from the Gatton Academy of Mathematics and Science in Kentucky who are interested in working on a mentored research project. If these students have not taken our gateway course PHYS 321 – Modern Physics II, then they are not eligible to take our upper level research course PHYS 399. The proposed course is aimed toward less experienced but still highly qualified students with a limited physics background who wish to complete a research project with a faculty mentor, receiving course credit in the process.
- 2.2 Projected enrollment in the proposed course:
Up to 10 students per semester, based on recent interest and on the assumption that a small number of Gatton Academy students will elect to pursue a physics research project.
- 2.3 Relationship of the proposed course to courses now offered by the department:
There are upper level courses that provide academic credit for students participating in a mentored research project, a practicum or an internship. None of these upper level courses is appropriate for students enrolled in the Gatton Academy or for students who have not taken PHYS 321 – Modern Physics II.
- 2.4 Relationship of the proposed course to courses offered in other departments:
CHEM 299 and ASTR 298 are comparable courses. Many other departments offer research courses for juniors or senior students, while this course has been developed for

less experienced but still highly qualified students, such as those enrolled in the Academy of Mathematics and Science in Kentucky.

- 2.5 Relationship of the proposed course to courses offered in other institutions:
All but two of our benchmark institutions offer research courses; however, only four of these offer them at the introductory level. None of our benchmarks serves a population like the students attending the Gatton Academy of Mathematics and Science in Kentucky.

3. Discussion of proposed course:

3.1 Schedule Type:

R—Research: Directed investigation or experimentation

3.2 Learning outcomes:

The student should complete the course with a solid understanding of the skills, tools and processes required to complete an original scientific research project successfully.

3.3 Content outline:

Course content will vary depending upon research projects offered by faculty mentors.

3.4 Student expectations and requirements:

Students will be expected to participate in regular meetings with the research mentor. Assessment will be based on the required public presentation and/or written report.

3.5 Tentative texts and course materials:

A text is not applicable for mentored individual or group research projects.

4. Resources:

4.1 Library resources: See attached library resource form and bibliography

4.2 Computer resources: No new additional resources required

5. Budget implications:

5.1 Proposed method of staffing: Current staff

5.2 Special equipment needed: None

5.3 Expendable materials needed: None

5.4 Laboratory materials needed: None

6. Proposed term for implementation: Fall 2016

7. Dates of prior committee approvals:

Department of Physics & Astronomy: October 14, 2015

Ogden College Curriculum Committee _____

University Curriculum Committee: _____

University Senate:

Attachment: Bibliography, Library Resources Form, Course Inventory Form

PHYS 299: Research Experiences

Books/Readings in WKU Libraries collection – representative list of supplemental materials

Reviews in PER Volume 2: Getting Started in Physics Education Research, Charles Henderson and Kathleen A. Harper, editors, http://www.per-central.org/per_reviews/volume2.cfm

J. D. Bransford, A. L. Brown, R. R. Cocking and W. D. C. National Academy of Sciences - National Research Council, How People Learn: Brain, Mind, Experience, and School. (1999).

S. R. Singer, N. R. Nielsen, H. A. Schweingruber, N. R. C. National Academies and N. A. o. S. National Academies, Discipline-Based Education Research: Understanding and Improving Learning in Undergraduate Science and Engineering. (National Academies Press, 2012).

D. Vollath, Nanomaterials: an introduction to synthesis, properties and application. (Wiley, 2008).

M. Ratner, D. Ratner, Nanotechnology: a gentle introduction to the next big idea (Prentice Hall, 2003).

L.J. Oakes, Hybrid nanostructures for artificial machine olfaction, Thesis (WKU Department of Physics and Astronomy, 2012).

Journals in WKU Libraries collection – representative list of supplemental materials

Journal of Physical Chemistry, American Journal of Physics, Reviews of Modern Physics, Physical Review, Biophysical Journal and other physics and astronomy research journals

LIBRARY RESOURCES

Date: October 13, 2015

Proposed Course Name and Number: PHYS 299: Research Experiences

Current Library holdings in support of the described course are:
_____ adequate _____ inadequate*
* Additional materials that would raise support to an adequate level:

Monographs or Nonprint Resources:

(Note: put any additional recommended titles on reverse side)

Serials to be recommended for adoption:

Comments:

Doug Harper, Faculty Member Proposing Course

Liaison Librarian

Coordinator, Collection Development

A tentative course proposal including bibliography must be submitted to the appropriate Subject Reference Librarian at least three weeks prior to the departmental curriculum committee meeting when the proposal will be considered. The availability of Library Resources Statement will be completed and returned to the course proposer.

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

Contact Person: Farley Norman, farley.norman@wku.edu, 745-2094

1. Identification of proposed course:

- 1.1 PSYS 380:
- 1.2 Course title: Psychology and Science Fiction
- 1.3 Abbreviated course title: Psychology and Science Fiction
(maximum of 30 characters or spaces)
- 1.4 Credit hours: 3 Variable credit : No.
- 1.5 Grade type: Standard Letter Grade
- 1.6 Prerequisites: Junior standing and PSYS/PSY 100, or permission of the instructor.
- 1.7 Course description: Examination of mind and behavior as portrayed in science fiction.

2. Rationale:

Reason for developing the proposed course:

Important issues and topics in Psychology are frequently used to form the core themes of science fiction stories, books, and movies. Examples of topics regularly included in science fiction include 1) Psychobiology, 2) Learning & Memory, 3) Sensation/Perception, 4) Social Psychology, 5) Psychological Development, 6) Personality, 7) Psychopathology, 8) Psychotherapy, etc. Other courses, such as PSYS/PSY 100, require students to learn basic facts and information about Psychology. Exposing students to science fiction and asking them to evaluate the validity of the psychological issues that are portrayed requires students to think critically about psychology; this course will thus help students to consolidate and apply their knowledge about Psychology.

This course aligns with our 2012-2018 strategic plan (Challenging the Spirit). According to Objective 1.1, we are to tasked to “implement a revised core curriculum ... aligned with Association of American Colleges and Universities Liberal Education and America’s Promise (LEAP) outcomes”. One of the “Essential Learning Outcomes” of LEAP is critical thinking about “big questions”. An example of a “big question” to be discussed in this course is “what does it mean to be human?”. Consider artificial intelligence and robotics, which are topics frequently included in science fiction. Does an “intelligent” robot/android deserve human rights? If sophisticated robots do possess human rights, how will that affect society throughout the remainder of the 21st century? The course will consider this important issue, among many others.

2.1 Projected enrollment in the proposed course: 20. Course enrollment will be kept at a moderate size to enable discussion of important issues, such as those described above. Students both inside and outside the Psychological Science department (majors & minors) are expected to enroll as students of many majors already take Introduction to Psychology (PSYS/PSY 100) to fulfill their General Education requirements.

2.2 Relationship of the proposed course to courses now offered by the department:

No similar course exists within our department. However, the content in the course would be especially relevant for particular concentrations within our major (e.g., Biobehavioral Psychology, Cognitive Psychology, & Social Psychology).

2.3 Relationship of the proposed course to courses offered in other departments:

While there is no other course offered at WKU specifically concerned with Psychology and Science Fiction, two courses utilize science fiction content to some degree, depending upon the instructor and semester offered (ENG 340, Speculative Fiction & FILM/ENG 465, Film Genres). However, these courses (ENG 340, FILM/ENG 465) were not specifically created for instruction in Psychology.

2.5 Relationship of the proposed course to courses offered in other institutions:

A variety of American Colleges and Universities offer a Psychology and Science Fiction or similar course. Examples of these include:

Hanover College, Indiana (PSY 113, Psychology and Science Fiction)

State University of New York at Potsdam (PSYC 451, Psychology and Sci Fi)

University of Utah (HONORS 4474, Psychology Through Science Fiction)

Dowling College, New York (PSY 4188C, Psychological Science Fiction in Film)

Cornell University (Mind and Reality in Science Fiction, Topics in Cognitive Science, COGST 4310, cross listed as: PSYCH 4320)

Willamette University (IDS 101, Exploring Mind, Brain, and Behavior through Science Fiction)

College of Charleston (FYSE 121 and FYSS 101, Science Fiction and the Human Condition)

3. Discussion of proposed course:

3.1 Schedule type: Lecture

3.2 Learning Outcomes: Students will be able to:

- Identify psychological content present in science fiction
- Evaluate the validity of psychological content present in science fiction
- Critically evaluate the ethics/morality of the psychology/science depicted in science fiction
- Communicate their findings both orally and in writing

3.3 Content outline:

A wide variety of topics in Psychology will be covered in the course, including: Psychobiology, Learning, Memory, Sensation/Perception, Language, Motivation, Intelligence, Social Psychology, Psychological Development, Personality, Psychopathology, and Psychotherapy.

3.4 Student expectations and requirements:

Students will be graded on their performance using quizzes and/or exams. The assessments will contain questions that require written answers (short answers, essays) in addition to multiple choice questions. Each student will also be required to select a work of science fiction and write a paper about it, evaluating the accuracy and validity of the psychological issues that are depicted. The students will also be expected to participate in the frequent classroom discussions.

3.5 Tentative texts and course materials:

Current Science Fiction:

Nature Futures (published once a week in the science journal *Nature*). For example science fiction stories involving Psychology, see:

Robson, M. A. (2015). The puppet: Is this the real life? *Nature*, 517, 650. doi:10.1038/517650a

Campbell-Hicks, J. (2015). Transference: The shock of the new. *Nature*, 520, 578. doi:10.1038/520578a

Older science fiction:

Asimov, I., Waugh, C. G., & Greenberg, M. H. (Eds.). (1983). *Hallucination Orbit: Psychology in Science Fiction*. New York: Farrar Straus & Giroux.

Katz, H. A., Warrick, P., & Greenberg, M. H. (Eds.). (1974). *Introductory Psychology through Science Fiction*. Chicago: Rand McNally.

4. Resources

- 4.1. Library resources: The University Library has 1223 works of science fiction in its collection. The library also has 10,000 movie DVD's in its holdings. In addition, the Psychology and Science indexing/abstracting/full-text services offered by the WKU library will provide adequate access to journal articles that will be helpful as supplemental sources for this course.

- 4.2. Computer resources: WKU's web-based instructional tools (i.e., Blackboard) will be used for this course. This technology is adequate for the needs of the professor and the students

5. Budget implications:

- 5.1 Proposed method of staffing: Existing faculty will teach this course.
- 5.2 Special equipment needed: None.
- 5.3 Expendable materials needed: None.
- 5.4 Laboratory materials needed: None.

6. Proposed term for implementation: Fall 2016

7. Dates of prior committee approvals:

Department of Psychological Sciences
OCSE Curriculum Committee
Undergraduate Curriculum Committee
University Senate

**Ogden College of Science and Engineering
Department of Psychological Sciences
Proposal to Revise A Program
(Action Item)**

Contact Person: Andrew Mienaltowski, andrew.mienaltowski@wku.edu, (270) 745-2353

1. Identification of program:

- 1.1 Current program reference number: 440
- 1.2 Current program title: Minor in Psychological Science
- 1.3 Credit hours: 19 hours

2. Identification of the proposed program changes:

- Rename Category A and move the developmental psychology courses from this category into their own restricted electives category which includes PSYS 220.
- Increase the program's hours from 19 to 22.

3. Detailed program description:

<p>The minor in Psychological Science provides graduates with a broad overview of the discipline as well as exposure to the foundations of the discipline. The Psychological Science minor focuses students on becoming more engaged and critical consumers of the science underlying psychology through courses informed by current research and practice in the scientific study of individual and collective behavior, the physical and environmental bases of behavior, and the analysis and treatment of behavioral problems. This minor might appeal to students who are in a pre-professional track (e.g., pre-med) or to students majoring in disciplines where psychological science can inform research and practice (e.g., biology, computer science, philosophy, religious studies, nursing, communication disorders, management, etc.).</p> <p>The minor requires a minimum of 19 credit hours. The following 7 hours are required: PSYS 100, 210, and 211.</p> <p>Students must select one course from the following Individual Differences and</p>	<p>The minor in Psychological Science provides graduates with a broad overview of the discipline as well as exposure to the foundations of the discipline. The Psychological Science minor focuses students on becoming more engaged and critical consumers of the science underlying psychology through courses informed by current research and practice in the scientific study of individual and collective behavior, the physical and environmental bases of behavior, and the analysis and treatment of behavioral problems. This minor might appeal to students who are in a pre-professional track (e.g., pre-med) or to students majoring in disciplines where psychological science can inform research and practice (e.g., biology, computer science, philosophy, religious studies, nursing, communication disorders, management, etc.).</p> <p>The minor requires a minimum of 19 22 credit hours. The following 7 hours are required: PSYS 100, 210, and 211.</p> <p>Students must select 3 hours one course from the following Individual Differences and Social</p>
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<p>Developmental Processes (Category A) courses: PSYS 321, 350, 423, or 440.</p> <p>Another 3 hours must be selected from Learning, Cognition, and Biopsychology (Category B) courses: PSYS 331, 333, 360, or 363.</p> <p>Six additional upper-level credit hours of PSYS courses are required. These hours can include the above restricted elective courses that were not taken to meet the Category A and Category B requirements, and can include no more than 3 credit hours of PSYS 490.</p>	<p>Developmental Processes (Category A) courses: PSYS 321, 350, 423, or 440.</p> <p>Another 3 hours must be selected from Learning, Cognition, and Biopsychology (Category B) courses: PSYS 331, 333, 360, or 363.</p> <p>Students must select 3 hours from the following Developmental Processes (Category C) courses: PSYS 220, 321, or 423.</p> <p>Six additional upper-level credit hours of PSYS courses are required. These hours can include the above restricted elective courses that were not taken to meet the requirements of Categories A, B, and C. These hours can include no more than 3 credit hours of PSYS 490.</p>
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(Side-by-side table is required for most program changes showing revised program on the right and identifying deletions by strike-through and additions in boldface.)

4. Rationale for the proposed program change:

Developmental psychology is an important discipline within the psychological sciences, and the proposed change will ensure that all students completing the minor will complete at least one course with content in this discipline. Additionally, the minor appeals to pre-professional students who would benefit from the additional developmental psychology content, as the MCAT (Medical College Admission Test) taken by pre-professional students was recently revised to include theories in developmental science. The addition of PSYS 220 as a possible restricted elective in the developmental category will give students more options when completing this new category requirement in the minor.

5. Proposed term for implementation and special provisions (if applicable): Fall 2016

6. Dates of prior committee approvals:

Department of Psychological Sciences	<u>10/30/2015</u>
OCSE College Curriculum Committee	_____
Undergraduate Curriculum Committee	_____
University Senate	_____

CURRICULUM COMMITTEE, OCSE, STANDING RULES

I. Purpose and Functions

- A. To review recommendations concerning undergraduate college and university curricula which are relevant to the Ogden College of Science and Engineering and to the welfare and best interests of the University, its students, and its faculty.
- B. To render decisive action on matters of undergraduate curriculum and academic policy which affect only the College of Science and Engineering.
- C. To submit for consideration to the University Curriculum Committee all approved recommendations which do not qualify for final action under the conditions of Item B.
- D. To initiate, create or otherwise instigate thought, ideas, and action which will promote the best possible continuing improvement of all phases of science, mathematics, and technology at Western Kentucky University.

II. Membership

- A. The committee membership shall consist of one elected faculty representative from each Department/Academic Unit. Faculty representatives shall be elected for two years. The Departments of Biology, Computer Science, Architectural & Manufacturing Sciences, Mathematics, and Physics & Astronomy shall elect members in even-numbered years, and the Departments of Agriculture, Chemistry, Engineering, Geography & Geology, Psychological Sciences and SkyTeach, in odd-numbered years. The faculty representatives shall be elected in the spring semester to take office at the beginning of the following fall semester. Other faculty may be invited by any member of the Committee to attend meetings as associate contributors without voting privileges. The Dean or their designate may attend in an advisory capacity and will be considered ex officio members of the committee.
- B. The Chairperson of the Committee shall be elected by the membership from the Ogden Curriculum Committee membership or the committee may elect the Dean/ Associate Dean to serve as Chairperson. The election shall occur at the last meeting in the spring and the Chairperson Elect will assume the position at the first meeting in the fall. The chairperson may designate an Acting Chair in his or her absence.
- C. An absent member may designate an alternate from the same Department to attend a meeting or give their proxy to another member. A member of the Ogden Curriculum Committee cannot hold more than one proxy. The chairperson should be notified by email if a proxy has been given.

III. Meetings

- A. All meetings will be called by the Committee Chairperson. The Curriculum Committee shall meet once a month during the academic year unless changed by a vote of the Committee. The date, time, and place of the meetings are to be determined by the Committee Chairperson.
- B. A quorum will consist of a simple majority of all voting members.
- C. A legal vote will consist of a simple majority of the quorum.
- D. A member may designate a proxy by email to the Chairperson in advance of the meeting. The proxy will count toward the determination of a quorum.
- E. Requests for items to be included on the agenda will be submitted electronically to the Dean's Office no later than six days before the meeting.
- F. The meeting agenda will be posted electronically on the Ogden College Curriculum Committee web site at least three days in advance of the meeting.

IV. Procedural Rules and Regulations

Guidelines for procedures in all Committee activities will be established and reviewed periodically to insure the maximum effectiveness and efficiency of the Curriculum Committee.

- A. The privilege of speaking to the Committee will be acknowledged by the Chair. Special circumstances which involve matters that may be expedited by open discussion without addressing the Chair will be recognized and declared by the Chair of the Committee.
- B.
 - 1. All recommendations will be presented and outlined in the agenda.
 - 2. Any action originating in the OCSE Curriculum Committee shall be given a first and second reading before final action is taken on the proposal or recognition.
 - 3. Recommendations involving amendments to these Standing Rules shall be automatically tabled until the following meeting. Consideration for immediate action can be made only by unanimous consent.
 - 4. All proposals will be considered for final action at the first reading, unless the Chair or a majority of the members present request a second reading.

- C. If any emergency arises which required immediate action of the Committee, the Chairperson (or Acting Chair) will use the best possible means of obtaining a majority vote by the members.
- D. Subcommittees may be appointed for special investigations by the Chairperson. Subcommittees may include faculty members who are not members of the Curriculum Committee.
- E. A uniform style of presentation will be adhered to concerning all proposals. The Ogden College Curriculum Committee will adopt the templates and format of proposals utilized by the University Curriculum Committee.

Approved April, 1972
OCSE Curriculum Committee

Revised October, 1981
OCSE Curriculum Committee

Revised October, 1984
OCSE Curriculum Committee

Revised October, 2015
OCSE Curriculum Committee