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

Dr. Taha Alyousef
Dr. Doug Harper
Dr. Michelle Jackson
Dr. Pat Kambesis
Dr. Phil Lienesch
Dr. Jeremy Maddox
Dr. Andy Mienaltowski
Dr. Les Pesterfield
Dr. Todd Willian

**FROM:** Stuart Burris, Chair

**SUBJECT: Agenda for Thursday, January 30, 2020 4:00 p.m. in OCH 1028**

**A. OLD BUSINESS:**

I. Consideration of the minutes of the December 5, 2019 meeting.

**B. NEW BUSINESS:**

| Type of item | Description of Item & Contact Information |
|---|---|
| Informational | The following items were submitted via the expedited review process:<br>EMDS 401, Natural and Technological Disaster Risks<br>EMDS 402, Resiliency in Response to Terrorism and Violence<br>EMDS 403, Advanced Disaster Planning, Management, and Prep<br>PSYS 451, Psychology of Religion |
| Consent | **Proposal to Revise Course Title**<br>GEOG 391, Spatial Data Analysis, 4 hrs.<br>Contact: Kevin Cary, kevin.cary@wku.edu, x52981 |
| Consent | **Proposal to Revise Course Prerequisites/Corequisites**<br>GEOL 408, Structural Geology, 3 hrs.<br>Contact: Nahid Gani, Nahid.gani@wku.edu, x52813 |
| Action | **Proposal to Revise a Program**<br>Ref. 577, Geology, 120 hrs.<br>Contact: Royhan Gani, Royhan.gani@wku.edu, x55977 |
| Action | **Proposal to Create a New Course**<br>PHYS 363, Science Controversies: Historical & Contemporary, 3 hrs.<br>Contact: Scott Bonham, scott.bonham@wku.edu, x56196 |
| Action | **Proposal to Revise a Program**<br>Ref. 434, Minor in Neuroscience, 21 hrs.<br>Contact: Andy Mienaltowski, andrew.mienaltowski@wku.edu, x3918 |

**C. OTHER BUSINESS**

**Minutes – OCSE Curriculum Committee** **December 5, 2019**

**Members Present:**

Dr. O.E. Mansour for Dr. Taha Alyousef
Dr. Doug Harper
Dr. Michelle Jackson
Dr. Pat Kambesis
Dr. Phil Lienesch
Dr. Jeremy Maddox
Dr. Andy Mienaltowski
Dr. Todd Willian
Guest: Mr. Jason Wilson
Guest: Dr. Fred Siewers
Guest: Dr. Leslie North
Guest: Dr. Stuart Burris

**FROM:** Greg Arbuckle, Interim Chair

The meeting was called to order at 4:00pm.

**OLD BUSINESS:**

Maddox/Willian moved to approve of the minutes of the November 21st meeting. Motion passed.

**NEW BUSINESS:**

**Consent Agenda**

Maddox/Willian motioned to move the Proposal to Revise Course Prerequisites: AMS 217 to the action agenda. After hearing from the Chemistry Department guest, Maddox/Willian moved to table the proposal. Motion tabled until further notice.

The remaining consent agenda was approved unanimously.

**Action Agenda**

**Chemistry Department**

Jackson/Willian moved to approve Proposals to Make Multiple Revisions to a Course: CHEM 476. Motion passed unanimously.

Willian/Jackson moved to approve Proposals to Make Multiple Revisions to a Course: CHEM 491. Motion passed unanimously with a friendly amendment.

**Geography & Geology Department**

Mienaltowski/Maddox moved to approve the Proposal to Create a New Program: Environmental, Sustainability, and Geographic Studies. Motion passed unanimously with a few friendly amendments.

**School of Engineering & Applied Sciences**

Maddox/Jackson moved to approve Proposals to Revise Course Credit Hours: CE 342. Motion passed unanimously with a friendly amendment.

Willian/Maddox moved to approve Proposals to Revise a Program: Ref. 534 Civil Engineering. Motion passed unanimously with a friendly amendment.

**OTHER BUSINESS:**

None.

Proposal Date: 12.12.2019

**Ogden College of Science and Engineering**
**Office of the Dean**
**Proposal to Revise Course Prerequisites/Corequisites**
**(Consent Item)**

Contact Person: Dr. David E. Oliver david.oliver@wku.edu 270-745-4181

Dr. Joshua Durkee Joshua.durkee@wku.edu 270-745-8777

1. **Identification of course:**
   1.1 Course prefix (subject area) and number: EMDS 401
   1.2 Course title: Natural and Technological Disaster Risks

2. **Current prerequisites/corequisites/special requirements:** EMDS 400 or Permission of Instructor

3. **Proposed prerequisites/corequisites/special requirements:** None

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

   Based on the initial EMDS offerings and evolving recruitment strategies and results, offering the courses independently provides improved efficiency and flexibility.

5. **Effect on completion of major/minor sequence:** None

6. **Proposed term for implementation:** Next available

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

   Office of the Dean
   Ogden College
   Provost's Office

Proposal Date: 12.12.2019

**Ogden College of Science and Engineering**
**Office of the Dean**
**Proposal to Revise Course Prerequisites/Corequisites**
**(Consent Item)**

Contact Person: Dr. David E. Oliver david.oliver@wku.edu 270-745-4181

Dr. Joshua Durkee Joshua.durkee@wku.edu 270-745-8777

1. **Identification of course:**
   1.1 Course prefix (subject area) and number: EMDS 402
   1.2 Course title: Resiliency in Response to Terrorism and Violence

2. **Current prerequisites/corequisites/special requirements:** EMDS 400 or Permission of Instructor

3. **Proposed prerequisites/corequisites/special requirements:** None

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

   Based on the initial EMDS offerings and evolving recruitment strategies and results, offering the courses independently provides improved efficiency and flexibility.

5. **Effect on completion of major/minor sequence:** None

6. **Proposed term for implementation:** Next Available

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

   Office of the Dean
   Ogden College
   Provost's Office

Proposal Date: 12.12.2019

**Ogden College of Science and Engineering**
**Office of the Dean**
**Proposal to Revise Course Prerequisites/Corequisites**
**(Consent Item)**

Contact Person: Dr. David E. Oliver david.oliver@wku.edu 270-745-4181

Dr. Joshua Durkee Joshua.durkee@wku.edu 270-745-8777

1. **Identification of course:**
   1.1 Course prefix (subject area) and number: EMDS 403
   1.2 Course title: Advanced Disaster Planning, Management, and Preparedness

2. **Current prerequisites/corequisites/special requirements:** EMDS 401 and 402 or Permission of Instructor

3. **Proposed prerequisites/corequisites/special requirements:** None

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

   Based on the initial EMDS offerings and evolving recruitment strategies and results, offering the courses independently provides improved efficiency and flexibility.

5. **Effect on completion of major/minor sequence:** None

6. **Proposed term for implementation:** Next Available

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

   Office of the Dean
   Ogden College
   Provost's Office

Proposal Date: 9/7/2019

**Ogden College of Science and Engineering**
**Department of Psychological Sciences**
**Proposal to Revise Course Prerequisites/Corequisites**
**(Consent Item)**

Contact Person: Andrew Mienaltowski, andrew.mienaltowski@wku.edu, (270) 681-0270

1. **Identification of course:**
   1.1 Course prefix (subject area) and number: PSYS 451
   1.2 Course title: Psychology of Religion

2. **Current prerequisites/corequisites/special requirements:**
   Nine hours of psychology, including PSYS 100 / PSY 100, and junior standing; or permission of the instructor. PSYS 210 / PSY 210, PSYS 313 / PSY 313, and PSYS 450 are preferred but not essential.

3. **Proposed prerequisites/corequisites/special requirements:**
   PSYS 100 or PSY 100 or PSYS 160, and junior standing.

4. **Rationale for the revision of prerequisites/corequisites/special requirements:**
   The listed prerequisites and preferred courses propose a complex hierarchy of sequencing that is not needed for this course. The proposed prerequisite courses reflect the material, experiences, and student standing necessary for students to be successful in the course. The revised prerequisites, removing the unnecessary sequencing, will also make this course easier to include in the rotation of courses offered by faculty within the Department of Psychological Sciences.

5. **Effect on completion of major/minor sequence:**
   The proposed revision should allow students to take this course earlier on in their program of study at WKU, allowing Psychological Science students to avoid obstacles to graduation if this course is needed.

6. **Proposed term for implementation:** Spring 2020

7. **Dates of prior committee approvals: (streamlined approval process in AY 2019-2020)**

Department Head of Psychological Sciences **Kelly L. Madole** _____

Ogden College Dean _____

Provost's Office 's Office _____

Proposal Date: Dec. 6, 2019

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

Contact Person: Kevin B. Cary, kevin.cary@wku.edu, 5-2981

1. **Identification of proposed course:**
   - 1.1 Course prefix (subject area) and number: GEOG 391
   - 1.2 Course title: Spatial Data Analysis
   - 1.3 Credit Hours: 4

2. **Proposed course title:** *Geoscience Data Analysis*

3. **Proposed abbreviated course title:** *Geoscience Data Analysis*
(maximum of 30 characters/spaces)

4. **Rationale for the revision of course title:** "Geoscience" expands beyond the spatial element and is specific to the data analysis and statistics of the physical processes and human activities on Earth.

5. **Proposed term for implementation: Fall 2020**

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

| | |
|---|---|
| Department/ Unit Geography and Geology | December 11, 2019 |
| Ogden College Curriculum Committee | |
| Undergraduate Curriculum Committee | |
| University Senate | |

Proposal Date: 1/24/2020

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

Contact Person: Nahid Gani, nahid.gani@wku.edu, 270-745-2813

1. **Identification of course:**
   - 1.1 Course prefix (subject area) and number: GEOL 408
   - 1.2 Course title: Structural Geology

2. **Current prerequisites/corequisites/special requirements:** GEOL 111, GEOL 113, MATH 117

3. **Proposed prerequisites/corequisites/special requirements:** GEOL 111 and GEOL 113

4. **Rationale for the revision of prerequisites/corequisites/special requirements:** GEOL408 is a core course for the current Geology major, which is in the process of revision, creating two concentrations. Although GEOL 408 remains in the required common core, none of the proposed concentrations requires MATH 117. Thus MATH 117 should be removed from the prerequisite of GEOL 408 to ease the accessibility of this course to majors. Based on the past few years of experience in teaching GEOL 408, it can be stated that removing MATH 117 will have negligible impact in delivering the content of GEOL 408.

5. **Effect on completion of major/minor sequence: Not applicable.**

6. **Proposed term for implementation: Fall 2020**

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

| | |
|---|---|
| Department/ Unit: Geography and Geology | January, 27 2020 |
| Ogden College Curriculum Committee | |
| Undergraduate Curriculum Committee | |
| University Senate | |

Geol 408

University Undergraduate Curriculum Proposal Checklist

Please complete the following checklist to ensure your proposal will proceed smoothly and efficiently. Include the checklist as a cover sheet with your proposal. Proposals without the checklist will be returned to the proponent.

☑ For new or revised programs, courses, or course descriptions, what departments/programs have been consulted concerning potential impact (e.g. to possible duplication or conflict, changed corequisite or prerequisite for equivalent courses, etc.)? Please provide names and dates for individuals consulted.

N/A

☑ What are the potential budget implications for this proposal? If any additional staffing is required, how will it be funded? If not, how will current staffing accommodate the proposed course/program?

N/A

☐ If you are proposing a new undergraduate program or changes to an existing undergraduate program, please include a new or updated four-year degree pathway.

☑ Has the proposal been checked carefully for mechanics, grammar, syntax, and clarity?

Fredrick D. Siewers

Digitally signed by Fredrick D. Siewers
Date: 2020.01.27 08:23:05 -06'00'

Department Head

Dean or Designee

Date

Date

**Proposal to Revise a program:** Geology, B.S.
**Ogden College of Science and Engineering**
**Department/Unit:** Department of Geography and Geology

**Section 1: Proponent Contact Information**

**1.1** Name/Title: M. Royhan Gani, Associate Professor
**1.2** Email address: royhan.gani@wku.edu
**1.3** Phone # 270-745-5977

**Section 2: Program Information**

**2.1** Current Program reference number: 40.0601

**2.2** Current Program title: Geology, B.S. (#577)

**2.3** Current total number of credits required in the program: 52 hours

**Section 3: Proposed program revisions and rationales**

**Introduction:** As part of the CAPE review (2019), Geology was asked to revise its curriculum based on current trends and job market need. We spent a significant amount of time sifting through regional and national databases (e.g., American Geosciences Institute) to understand the future of geology higher-education. To revitalize the program, we propose to modify our curriculum responding to current employment trends and student interests. The major will have a common core of GEOL courses and two concentrations tied to growth areas in the geosciences. In addition, each concentration will have additional required cognate math and science courses.

**3.1 Name change:** The program name is changed from "Geology" to "Geological Sciences". This change reflects the fact that the traditional geology degree has been expanded to include various subdisciplines rooted more into science.

**3.2 Concentrations:** Current program has no concentration, whereas the proposed program will have two concentrations: Geology, and Environmental Earth Science. Creation of concentrations will provide students options to choose from two growth areas in geosciences. Geology concentration is more generalized, and is aligned with the increasing need for students to get Professional Geologist (P.G.) license after graduation in order to perform certain jobs. On the other hand, the Environmental Earth Science concentration is designed to recognize the rapid job growth in environmental geoscience sector (currently 31%, source: AGI).

**3.3 Common Core:** 26 hours of common core are identified from the list of all currently required GEOL courses. These core courses will provide a fundamental disciplinary background to all students irrespective of their choice of concentration. Nationwide, these courses are regarded as essential ones, providing a key set of knowledge to all geologists.

**3.4 'Geology' concentration:** Instead of requiring some specific courses (i.e., courses that are not in the proposed common core but are currently required), which may or

may not be useful to students for their future career, concentration hours (22 hrs) are largely kept open as 'required electives' in the major field. Over the years, the scope of the geology discipline has expanded significantly with modern tools and techniques, and emphasizing grand challenges of the earth systems and other planets. On a rotation basis (and with a limited number of electives each semester), we offer a large variety of geology elective courses. Thus, Geology concentration students can choose from these courses based on their interest and career goal. The geological breadth that the students are expected to gain in this concentration is also helpful for obtaining a P.G. license.

**3.5 'Environmental Earth Science' concentration:** Here, concentration hours (22 hrs) are more defined and structured comparing to the Geology concentration. These required concentration courses are designed to build the concept and application of environmental geoscience. Students graduating out of this concentration will be better prepared for environment- and climate-related jobs.

**3.6 Additional requirements:** For our majors, it is critical to take some relevant cognate math and science courses. Additional requirements are revised based on current trends in geosciences. For generalized 'Geology' concentration, calculus and physics are more helpful to gain quantitative skills applicable to solid earth field; whereas in 'Environmental Earth Science' concentration, statistics and microbiology are more relevant to solve environmental problems. In addition, both concentrations include chemistry, GIS, and writing courses.

**Section 4: Consultations**

Do any of the proposed revisions in section 3 above involve or in any other way impact other departments/units? YES

As indicated in section 3.6, 'Additional requirements' include course from the departments of Biology, Chemistry, Mathematics, and Physics and Astronomy. Heads/Chairs of these four departments have been contacted via emails on 1/24/2020 specifying these required courses, and providing an estimated enrollment. Except Biology, all departments have promptly acknowledged this communication.

**Section 5: Proposed term for implementation:** Fall, 2020

**Section 6: Approval Flow Dates:**

**Proposing department/unit:** January 23, 2020
**Ogden College Curriculum Committee:**
**Undergraduate Curriculum Committee:**
**University Senate:**

**Section 7: Required Appendices: Current & proposed program descriptions:**

**7.1 Current Program Description:** (please see page 3)

**7.2 Proposed Program Description:** (please see page 4 & 5)

**7.1: Current B.S. in Geology (#577)**

| Required courses | Credits | Notes |
|---|---|---|
| ~~GEOL/GEOG 103: Our Dynamic Planet~~ | 3 | |
| ~~or~~ GEOL 111: The Earth | | |
| GEOL 112 : Earth History | 3 | |
| GEOL 113: The Earth Laboratory | 1 | |
| GEOL 114: Earth History Lab | 1 | |
| GEOL 330: Mineralogy | 4 | |
| GEOL 350: Petrology | 4 | |
| GEOL 360: Sedimentology and Stratigraphy | 4 | |
| GEOL 408: Structural Geology | 4 | |
| ~~GEOL 270: Analytical Techniques in Geology~~ | ~~3~~ | |
| ~~or GEOL 432: Diffraction and Spectroscopyy~~ | | |
| GISC 316: Fundamentals of GIS | 4 | |
| ~~GISC 317: Geographic Information Systems~~ | ~~4~~ | |
| GEOL 499: Professional Preparation in Geology | 2 | |
| ~~Choose one of the following (6 hrs):~~ | ~~6~~ | |
| GEOL 380 : Introductory Field Techniques | | |
| ~~& GEOG 452: Applied Geoscience Field Experience~~ | | |
| ~~GEOG 452: Applied Geos Field Experience (6hrs)~~ | | |
| ~~GISC 417: GIS Analysis and Modeling~~ | | |
| ~~& GISC 419: GIS Programming~~ | | |
| | | |
| ~~Program elective courses (8-9 hrs):~~ From any GEOL 200 level course or above | ~~8-9~~ | |
| Program hours: | ~~51-52~~ | |
| | | |
| Additional requirements (~~16 hrs~~): | | |
| MATH 136 : Calculus I | 4 | |
| CHEM 120 : College Chemistry I | 5 | |
| & CHEM 121 : College Chemistry I Laboratory | | |
| ~~PHYS 180: Introductory Modern Physics~~ | 4 | |
| ~~& PHYS181: Introductory Modern Physics Lab~~ | | |
| ~~or PHYS 201: College Physics I~~ | | |
| GEOG 300 : Writing in the Geosciences | 3 | |
| Additional hours: | ~~16~~ | |

**7.2a: Proposed B.S. in Geological Sciences (#577): Geology concentration**

| Rquired Courses | Credits | Notes |
|---|---|---|
| **Common core (26 hrs):** | | |
| GEOL 111: The Earth | 3 | |
| GEOL 112: Earth's Past and Future | 3 | |
| GEOL 113: The Earth Laboratory | 1 | |
| GEOL 114: Earth's Past and Future Lab | 1 | |
| GEOL 330: Mineralogy | 4 | |
| GEOL 350: Petrology | 4 | |
| GEOL 360: Sedimentology and Stratigraphy | 4 | |
| GEOL 408: Structural Geology | 4 | |
| GEOL 499: Professional Preparation in Geology | 2 | |
| **Concentration requirements (22 hrs):** | | |
| GEOL 380 : Introductory Field Techniques | 3 | |
| Concentration elective courses (19 hrs):<br>Selected from any GEOL 200-or-above level course, **and from GEOG 391 and GEOG 452 with advisor approval.** | **19** | At least 3 hours must be at 300-or-above level. |
| Program hours: | **48** | |
| Additional requirements (24 hrs): | | |
| MATH 136 : Calculus I | 4 | |
| **MATH 137 : Calculus II** | 4 | |
| CHEM 120 : College Chemistry I | 5 | |
| & CHEM 121 : College Chemistry I Laboratory | | |
| **PHYS 231: Intro to Physics & Biophysics I** | 4 | |
| **& PHYS 232: Intro to Physics & Biophysics I Lab** | | |
| GEOG 300 : Writing in the Geosciences | 3 | |
| GISC 316: Fundamentals of GIS | 4 | |
| Additional hours: | **24** | |

**7.2b: Proposed B.S. in Geological Sciences (#577): Environmental Earth Science concentration**

| Rquired Courses | Credits | Notes |
|---|---|---|
| **Common core (26 hrs):** | | |
| GEOL 111: The Earth | 3 | |
| GEOL 112: Earth's Past and Future | 3 | |
| GEOL 113: The Earth Laboratory | 1 | |
| GEOL 114: Earth's Past and Future Lab | 1 | |
| GEOL 330: Mineralogy | 4 | |
| GEOL 350: Petrology | 4 | |
| GEOL 360: Sedimentology and Stratigraphy | 4 | |
| GEOL 408: Structural Geology | 4 | |
| GEOL 499: Professional Preparation in Geology | 2 | |
| **Concentration requirements (22 hrs):** | | |
| **GEOL 250: Environmental Geology** | **3** | |
| **GEOL 310: Global Hydrology** | **3** | |
| **GEOL 415: Applied Enviromental Geology** | **3** | |
| **GEOL 420: Geomorphology** | **3** | |
| **Choose two from below (6 hr):** | **6** | |
| **Geol 301: Geology and climate** | | |
| **Geol 311: Oceanography** | | |
| **Geol 315: Energy, Climate & Carbon** | | |
| **Geol 440: Hydrogeology** | | |
| **Geol 445: Aqueous Geochemistry** | | |
| **Geol 465: Geophysics** | | |
| Concentration elective courses (4 hrs): Selected from any GEOL **300**-or-above level course**, and from any GEOG 400-level and GISC 300-400 level course with advisor approval.** | **4** | |
| Program hours: | **48** | |
| Additional requirements (21 hrs): | | |
| **MATH 115 (or higher): Applied College Algebra** | **3** | |
| **MATH 183: Introductory Statistics** | **3** | |
| **CHEM 105 (or higher): General Chemistry** | **4** | |
| **& CHEM 106 (or higher): General Chemistry Lab** | | |
| **BIOL 207: General Microbiology** | **4** | |
| **& BIOL 208: General Microbiology Lab** | | |
| GEOG 300: Writing in the Geosciences | **3** | |
| GISC 316: Fundamentals of GIS | **4** | |
| Additional hours: | **21** | |

| | |
|---|---|
| WKU | **Bachelor of Science in Geological Sciences (#577)**<br>**Geology Concentration**<br>Department of Geography and Geology<br>Ogden College of Science and Engineering<br>Western Kentucky University |
| | The suggested program of study shown below should be used in consultation with your advisor(s). |

## Finish in Four Plan

| **FIRST YEAR (Freshman Year)** | | | |
|---|---|---|---|
| GEOL 111 The Earth (Colonnade Sci. w/Lab) | 3 | GEOL 112 Earth's Past and Future | 3 |
| GEOL 113 The Earth Lab | 1 | GEOL 114 Earth's Past and Future Lab | 1 |
| ENG 100 Writing (Colonnade College Comp) | 3 | ENG 200 Literature (Colonnade Literature) | 3 |
| COMM 145 (Colonnade Human Communicat.) | 3 | CHEM 120 & 121 College Chemistry w/Lab | 5 |
| HIST 101 or 102 (Colonnade World History) | 3 | Geology Concentration Elective-1 (GEOL 250) | 3 |
| GEOG 175 University Experience | 2 | | |
| **Semester Credit Hours** | **15** | **Semester Credit Hours** | **15** |

| **SECOND YEAR (Sophomore Year)** | | | |
|---|---|---|---|
| GEOL 330 Mineralogy | 4 | GEOL 350 Petrology | 4 |
| GEOL 380 Field Techniques | 3 | GEOL 360 Sedimentology and Stratigraphy | 4 |
| MATH 136 Calculus I (Colonnade Qnt. Reason.) | 4 | MATH 137 Calculus II | 4 |
| Arts & Humanities (Colonnade Explorations) | 3 | Social & Cultural (Colonnade Connections) | 3 |
| Social & Behavioral (Colonnade Explorations) | 3 | | |
| **Semester Credit Hours** | **17** | **Semester Credit Hours** | **15** |

| **THIRD YEAR (Junior Year)** | | | |
|---|---|---|---|
| PHYS 231 & 232 Physics & Biophysics I w/Lab | 4 | GEOL 408 Structural Geology | 4 |
| GISC 316 Fundamentals of GIS | 4 | Geology Concentration Elective-3 | 3 |
| Systems (Colonnade Connect.) (GEOL 315) | 3 | GEOG 300 Writing (Colonnade Writing in discip) | 3 |
| Geology Concentration Elective-2 | 3 | Local to Global (Colonnade Connections) | 3 |
| | | Geology Concentration Elective-4 (GEOL 399) | 3 |
| **Semester Credit Hours** | **14** | **Semester Credit Hours** | **16** |

| **FOURTH YEAR (Senior Year)** | | | |
|---|---|---|---|
| GEOL 499 Professional Preparation | 2 | University Elective (or GEOL 399) | 2 |
| Geology Concentration Elective-5 | 3 | University Elective (Any) | 3 |
| Geology Concentration Elective-6 | 3 | University Elective (Any) | 3 |
| Geology Concentration Elective-7 | 3 | University Elective (Any) | 3 |
| University Elective (Any) | 3 | University Elective (Any) | 3 |
| **Semester Credit Hours** | **14** | **Semester Credit Hours** | **14** |
| | | **Total Credit Hours:** | **120** |

| | |
|---|---|
| WKU | **Bachelor of Science in Geological Sciences (#577)**<br>**Environmental Earth Science (EES) Concentration**<br>Department of Geography and Geology<br>Ogden College of Science and Engineering<br>Western Kentucky University |
| | The suggested program of study shown below should be used in consultation with your advisor(s). |

## Finish in Four Plan

| FIRST YEAR (Freshman Year) | | | |
|---|---|---|---|
| GEOL 111 The Earth (Colonnade Sci. w/Lab) | 3 | GEOL 112 Earth's Past and Future | 3 |
| GEOL 113 The Earth Lab | 1 | GEOL 114 Earth's Past and Future Lab | 1 |
| ENG 100 Writing (Colonnade College Comp) | 3 | ENG 200 Literature (Colonnade Literature) | 3 |
| MATH 115 Applied College Algebra | 3 | CHEM 105 & 106 General Chemistry w/Lab | 4 |
| HIST 101 or 102 (Colonnade World History) | 3 | GEOL 250 Environmental Geology | 3 |
| GEOG 175 University Experience | 2 | | |
| **Semester Credit Hours** | **15** | **Semester Credit Hours** | **14** |

| SECOND YEAR (Sophomore Year) | | | |
|---|---|---|---|
| GEOL 330 Mineralogy | 4 | GEOL 350 Petrology | 4 |
| GEOL 310 Hydrology | 3 | GEOL 360 Sedimentology and Stratigraphy | 4 |
| Arts & Humanities (Colonnade Explorations) | 3 | MATH 186 Statistics (Colonnade Qnt. Reason.) | 3 |
| COMM 145 (Colonnade Human Communicat.) | 3 | Social & Behavioral (Colonnade Explorations) | 3 |
| BIOL 207 & 208 General Microbiology w/Lab | 4 | | |
| **Semester Credit Hours** | **17** | **Semester Credit Hours** | **14** |

| THIRD YEAR (Junior Year) | | | |
|---|---|---|---|
| GEOL 420 Geomorphology | 3 | GEOL 408 Structural | 4 |
| EES Choice-1: Geol 301/311/315/440/445/465 | 3 | GEOL 415 Applied Environmental Geology | 3 |
| Systems (Colonnade Connect.) (GEOL 315) | 3 | Social & Cultural (Colonnade Connections) | 3 |
| GISC 316 Fundamentals of GIS | 4 | GEOG 300 Writing (Colonnade Writing in discip) | 3 |
| Local to Global (Colonnade Connections) | 3 | EES Elective-1 (GEOL 399) | 1 |
| **Semester Credit Hours** | **16** | **Semester Credit Hours** | **14** |

| FOURTH YEAR (Senior Year) | | | |
|---|---|---|---|
| GEOL 499 Prof Prep | 2 | University Elective (or GEOL 399) | 3 |
| EES Choice-2: Geol 301/311/315/440/445/465 | 3 | University Elective (Any) | 3 |
| EES Elective-2 | 3 | University Elective (Any) | 3 |
| University Elective (Any) | 3 | University Elective (Any) | 3 |
| University Elective (Any) | 3 | University Elective (Any) | 3 |
| University Elective (or GEOL 399) | 1 | | |
| **Semester Credit Hours** | **15** | **Semester Credit Hours** | **15** |
| | | **Total Credit Hours:** | **120** |

Ref. 577
Geology Program

University Undergraduate Curriculum Proposal Checklist

Please complete the following checklist to ensure your proposal will proceed smoothly and efficiently. Include the checklist as a cover sheet with your proposal. Proposals without the checklist will be returned to the proponent.

☑ For new or revised programs, courses, or course descriptions, what departments/programs have been consulted concerning potential impact (e.g. to possible duplication or conflict, changed corequisite or prerequisite for equivalent courses, etc.)? Please provide names and dates for individuals consulted.

Following four Dept Chairs were contacted on 1/24/2020: Dr. Michael Carini (Physics and Astronomy), Dr. Michael Smith (Biology), Dr. Rui Zhang (Chemistry), and Dr. Bruce Kessler (Mathematics).

☑ What are the potential budget implications for this proposal? If any additional staffing is required, how will it be funded? If not, how will current staffing accommodate the proposed course/program?

The proposed program revision will be staffed by the existing faculty of the Geology program. Any necessary adjustment to the current staffing patterns will be accomplished mostly by course rotation and schedule adjustment.

☑ If you are proposing a new undergraduate program or changes to an existing undergraduate program, please include a new or updated four-year degree pathway.

☑ Has the proposal been checked carefully for mechanics, grammar, syntax, and clarity?

Fredrick D. Siewers — Digitally signed by Fredrick D. Siewers Date: 2020.01.27 08:47:04 -06'00'

Department Head

Dean or Designee

Date

Date

**(Action Item)**

**Proposal to Create a New Course:** PHYS 363
**Ogden College**
**Department/Unit: Physics and Astronomy**

## Section 1: Proponent Contact Information

**1.1 Name/Title:** Scott Bonham
**1.2 Email address:** scott.bonham@wku.edu
**1.3 Phone #:** 745-6196

## Section 2: Course Catalog Information

**2.1 Course prefix (subject area) and number:**

**2.2 Course CIP code:** 30.1501: Science, Technology and Society

**2.3 Course title:** Science Controversies: Historical and Contemporary

**2.4 Abbreviated Course title:** Science Controversies

**2.5 Credit hours/Variable credit: 3**

**2.6 Repeatability:** N/A

**2.7 Course Term: Is this course intended to span more than a single term?**
NO

**2.8 Course Catalog Description:** Examine the historical and contemporary scientific conflicts within their social and cultural contexts to better understand and communicate across different scientific and cultural paradigms.

**2.9 Prerequisite:** 21 hours of Colonnade Foundations and Explorations courses.

**2.10 Additional Enrollment Requirements:** no

**2.11 Other Special Course Requirements:** no

**2.12 Grade Type:** Standard

**2.13 Schedule Type:** Seminar

## Section 3: Description of proposed course

**3.1 Course Content Summary:** Science is an integral part of our modern, technology-driven lives, yet there is often a disconnect between the practice and communication of science with the larger socio-cultural context in which we live. Prime examples are socio-scientific controversies such as global warming, origins, genetically modified organisms, vaccinations and the like. In such situations the scientific understand is important, but so are the social and

cultural perspectives of the larger society that shape the science and its reception; perspectives that do not always align with each other and can seem incomprehensible with each other. The goal of this course is to develop abilities to understand scientific work in the larger social and cultural context from multiple perspectives and communicate across them.

During the first part of the course students will study one historical scientific controversy from multiple perspectives: the science itself, the cultural context in which it happened, and social perspectives through which that was interpreted. Examples could be Galileo's trial, relativity, or the multiple shifts on the nature of light. Students will read multiple works on the topic, analyzing the science involved, the perspective of the author, and the scientific controversy itself. During the latter part of the semester, students will choose a different scientific controversy, historical or contemporary, study it from multiple perspectives and reporting their findings.

Example Reading List (for a course using the trial of Galileo as the touch stone historical example):

- Dava Sobel, *Galileo's Daughter: A Historical Memoir of Science, Faith, and Love*.
- Galileo Galilei, *Dialogue Concerning the Two Chief World Systems*.
- Christopher M. Graney, *Setting Aside All Authority: Giovanni Battista Riccioli and the Science against Copernicus in the Age of Galileo*.
- Aristotle, *On the Heavens* (selections).
- Andrew Dickson White, *A History of the Warfare of Science with Theology in Christendom* (selections).
- Sam Leith, *You Talkin' to Me? Rhetoric from Aristotle to Obama*
- Additional handouts.
- In addition, each student will study two or more books, videos or other cultural artifacts relating to another scientific controversy selected in consultation with the instructor.

**3.2 Learning Outcomes:**

- Identify and describe one's own socio-scientific paradigm/worldview and expertise, and reflect on how that is similar and different from others. (Analyze the development of self in relation to others and society. )
- Examine the starting assumptions, values, methods and goals of different groups in a socio-scientific controversy. (Examine diverse values that form civically engaged and informed members of society.)
- Study a controversial topic from multiple perspectives, identifying common ground and roots of differences in perspective. (Evaluate solutions to real-world social and cultural problems.)
- Analyze a historical scientific controversy, its roots, dynamics and impacts on science and society even today.

**3.3 Assessment/Evaluation:** Students will write several short papers and a longer, final paper in which they examine at least two artifacts (book, film, etc.) from different perspectives/paradigms on a chosen contemporary controversy, discussing the science, paradigms, assumptions, goals and methods. Students will also make a class presentation on it.

## Section 4: Rationale

**4.1 Reason for developing this proposed course**:Science and humanities have often been characterized as "two cultures" that are largely independent of each, and at the university level scientific material is generally taught independent of historical/philosophical/social context, and vice versa. As a result our society tends to be ill-equiped to be able to deal with the different dimensions of social-scientific controversies, retreating into like-minded tribes struggling to engage in meaningful communication with those operating out of different paradigms. The goal of this course is to develop the ability to examine both the scientific and cultural aspects of such controversies and improve ability to communicate across those differences.

This course will be offered as a Connections course in the social to cultural category, bringing together both scientific and cultural understanding, seeking to bridge the "two cultures" divide between science and humanities.

**4.2 Relationship to similar courses offered by other university departments/units:**

- Do any other courses already being offered by other university departments/units share content with this proposed course?

  There is some overlap with PHIL 330: Philosophy of Science.

- Are any of the proposed pre/co-requisites for this course offered by another university department/unit? NO

- If the answer to both questions is NO, simply proceed to item 5.

- If the answer to either of those questions is YES, indicate here who in the affected departments/units was consulted, and the dates of those consultations:

  Discussed this proposal on 9/19/19 with Dr. Jannai Shields from Philosophy and Religion who teaches the Philosophy of Science course. He agreed that while there is some overlap, this course would strongly complement his Philosophy of Science course.

## Section 5: Projected Enrollments/Resources

**5.1 How many students per section are expected to enroll in this proposed course?** 20

**5.2 How many sections of this course per academic year will be offered?** The current department plan is to offer it once every other year (rotating with other Connections courses).

**5.3 How many students per academic year are expected to enroll?** 20

**5.4 How were these projections calculated? Explain any supporting evidence/data you have for arriving at these projections.**

This course will be offered as a Connections course; we expect it to be of particular interest to science majors as there are few science Connections courses.

**5.5 Proposed method of staffing: Current staffing**

**5.6 Instructional technology resources:** Will use standard classroom technology resources. Many days students with own laptops/tablets will be encouraged to bring them to use in class.

**5.7 Library resources:** Will this proposed course require the use of library resources (books, journals, reference materials, audio-visual materials, electronic databases, etc.)? YES NO

If YES, was a Library Resources Form submitted to the appropriate collection development librarian prior to consideration at the college curriculum level?

**Section 6: Proposed term for implementation:** Fall 2020

**Section 7: Supplemental/Supporting Documentation**:

# Physics 363: Science Controversies

**Time**: TBD
**Instructor**: Dr. Scott Bonham
**Office Hours:** TBA

**Location:** Ogden College Hall 1003
**Office**: Kelly Thompson Hall 2023
**Email**: Scott.Bonham@wku.edu

> *Cultural conflicts are not simply products of the machinations of the warped minds of one's opponents, but rather reflect deeply embedded cultural patterns. These patterns will need to be understood and taken into account by those who are looking for non-polarizing solutions to the problems of living together peacefully.*
>
> —George Marsden

## Overview

Science is an integral part of our modern, technology-driven lives, yet there is often a disconnect between the practice and communication of science with the larger socio-cultural context in which we live. Prime examples are socio-scientific controversies such as global warming, origins, genetically modified organisms, vaccinations and the like. In such situations the scientific understanding is important, but so are the social and cultural perspectives of the larger society that shape the science and its reception; perspectives that do not always align with each other and can seem incomprehensible with each other. The goal of this course is to develop abilities to understand scientific work in the larger social and cultural context from multiple perspectives and communicate across them.

## Class Format

This is a seminar class, primarily driven by the readings. For the majority of the semester, each student will need to complete the assigned reading ahead of time and come to class prepared to discuss it. Preparation and active participation in the discussion is essential and will be part of the evaluation. In addition, the instructor will frequently make short presentations to provide more context, background, or explain difficult passages. During the last few weeks when you will be working on your project, there will be time for individual work, discussions about your readings with small and large groups, and individual conferences with the instructor.

## Learning Objectives:

- Analyze the development of self in relation to others and society through identifying your own position on a controversial issue, reflecting on why you hold that position in terms of values, assumptions and influences, and how that relates to others.
- Examine diverse values that form civically engaged and informed members of society through analyzing the paradigms, assumptions, goals and methods of different positions on a controversial topic.
- Evaluate solutions to real-world social and cultural problems by learning to understand different perspectives, identifying common ground and roots of differences.
- Analyze a historical socio-scientific controversy, its roots, dynamics and impacts on science and society even today.

## Texts

Dava Sobel, *Galileo's Daughter: A Historical Memoir of Science, Faith, and Love*
Galileo Galilei, *Dialogue Concerning the Two Chief World Systems* *
Christopher M. Graney, *Setting Aside All Authority: Giovanni Battista Riccioli and the Science against Copernicus in the Age of Galileo*
Andrew Dickson White, *A History of the Warfare of Science with Theology in Christendom* *†
Sam Leith, *You Talkin' to Me? Rhetoric from Aristotle to Obama*
Aristotle, *On the Heavens* *†
Additional articles and handouts will be posted on Blackboard.

## Assignments

Over the course of the semester you will write several short papers and one significant analysis paper, on which you will also make a classroom presentation. More details and grading rubrics will be provided for these during the semester. The assignments will include:

- Metacognitive analysis of four texts: *Galileo's Daughter, Dialogue Concerning the Two Chief World Systems, Setting Aside All Authority*, and *A History of the Warfare Between Science and Theology in Christendom*. For each you will discuss who the author is (background and motivation), theme(s) and objectives of the work, assumptions, science, rhetorical approach, and choices of what was included and what was left out. (~2 pages each.)
- Comparison/contrast paper: select one component of the historical controversy treated by two or more authors and includes scientific/philosophical issues. (For example: observations of stars, of other heavenly bodies, falling of objects on a rotating sphere, etc.) You should explain the science involved (at least at a conceptual level), discuss how that is presented in the works being referred to, noting commonalities and differences, and how those presentations relate to the larger paradigm/goals of the author. (3-5 pages.)
- Analysis of at least two books, films, or other cultural artifacts focused on a historical or contemporary scientific controversy that look at it from different perspectives. Your paper and presentation will discuss the science involved, its social and cultural context, and different perspectives through which it is understood. This includes analyzing and critiquing the perspectives of the authors of the works analyzed—assumptions, paradigm, intended audience, methods, choices of what to include and what to leave out, quality of the science, rhetorical style, etc. As part of this, you will need to identify the perspective that you are operating out of and at least a brief justification for it. (10-20 pages).
- Class presentation on your study (12-15 minutes).

---

* May either be downloaded from the internet (free of charge) or purchased in book form.
† Will read selections from this work.

## Grading

The breakdown in the worth of each assignment is in the chart below. For each assignment, you will be provided with specific instructions and a general-level grading rubric to help you better understand the expectations.

| | |
|---|---|
| Class participation | 10% |
| Analysis of assigned readings (4) | 5% each |
| Comparison/contrast paper | 15% |
| Project proposal | 5% |
| Final (artifact analysis) paper | 40% |
| Class presentation | 10% |

## Schedule of the semester

| Week | Topics | Reading |
|---|---|---|
| 1 | Overview, introducing Galileo | *Galileo's Daughter* |
| 2 | Galileo's life and culture | *Galileo's Daughter* |
| 3 | The astronomical models | *Dialogue; You Talkin' to Me?* |
| 4 | Galileo's discoveries and implications | *Dialogue; You Talkin' to Me?* |
| 5 | Evaluating scientific claims | *Setting Aside All Authority; You Talkin' to Me?* |
| 6 | Cultural and philosophical underpinnings | *On the Heavens*, handouts |
| 7 | Scientific and cultural impacts | *Galileo's Daughter*; *A History of the Warfare* |
| 8 | Rhetoric and Paradigms | *A History of the Warfare*; *You Talkin' to Me?* |
| 9 | Explore different controversies and select topic | *You Talkin' to Me?*; handouts |
| 10 | Individual study/group discussions | handouts |
| 11 | Individual study/instructor conferences | Individual readings |
| 12 | Preliminary presentations | Individual readings |
| 13 | Individual study/instructor conferences | Individual readings |
| 14 | Formal student presentations | |
| Final | Formal student presentations | |

## Classroom policies

**Respecting others:** By the nature of this course, you will likely interact with others who may hold a different position on a topic that can significant in a person's own sense of identity. Our goal is to develop our capacity to have meaningful, productive communication across different perspectives. You are encouraged to discuss those differences and to argue for your position, but it is essential that this be done in a respectful, considerate manner, which will be discussed more during the semester. Failure to adhere to expectations will result in consequences, up to being dismissed from the class.

**Attendance:** Class participation is essential to this course, both for you and for your fellow students. You must attend and participate in all class sessions unless you have a good, valid reason for not being in class. If you must miss class, you should notify the instructor in advanced for previously scheduled absences and as soon as possible for unscheduled ones. You will still be responsible for finding out what went on during class and any work done.

**Academic integrity** is expected of all students. All work you submit must be your own. Quotes and other material from other authors must be properly cited. Significant plagiarism or relying on others to do your work for you is grounds for immediate dismissal from the course and receiving a failing grade.

**Late policy:** I reserve the right to refuse to accept any late assignments without a documented, valid excuse. However, in most cases I will allow it with an appropriate late penalty on the score. It is your responsibility to ask.

**Disability statement:** In compliance with University policy, students with disabilities who require academic and/or auxiliary accommodations for this course must contact the Student Accessibility Resource Center located in Downing Student Union, 1074. The phone number is 270.745.5004 [270.745.3030 V/TTY] or email at sarc@wku.edu. Please do not request accommodations directly from the professor or instructor without a faculty notification letter (FNL) from The Student Accessibility Resource Center.

**Proposal to Revise a program:**
**Ogden College of Science and Engineering**
**Department of Psychological Sciences**

**Section 1: Proponent Contact Information**

**1.1** Name/Title: Andy Mienaltowski
**1.2** Email address: andrew.mienaltowski@wku.edu
**1.3** Phone #: 270-681-0270

**Section 2: Program Information**

**2.1** Current Program reference number: 434

**2.2** Current Program title: Minor in Neuroscience

**2.3** Current total number of credits required in the program: at least 21

**Section 3: Proposed program revisions and rationales**

**3.1** Revision #1 and Rationale. Expand additional electives available to meet minor requirements to include BIOL 324 Histology, BIOL 464 Endocrinology, PSYS 463 Evolutionary Psychology, and PSYS 482 Psychology of Sexuality. Allows for greater breadth of electives to support students' neuroscience-relevant knowledge growth. Also may facilitate timely completion of minor requirements by including more offerings in the program.

**3.2** Revision #2 and Rationale. Remove requirement that students earn a C or better for each course in the minor. This requirement appears on iCap but not in the program description. The university requirement that students earn a 2.0 GPA overall across both their major and minor programs is adequate.

**Section 4: Consultations**
Do any of the proposed revisions in section 3 above involve or in any other way impact other departments/units? **YES** NO

If NO, simply proceed to item 5.

If YES, identify those revisions here, referring to them by the numbers assigned in section 3 above, and for each, indicate who in the affected department/unit was consulted, and the date of that consultation:
Dr. Crawford in the Department of Biology was consulted and approved the addition of the two Biology courses to the minor by email on November 1, 2019.

**Section 5: Proposed term for implementation:** Fall 2020

**Section 6: Approval Flow Dates:**

**Department of Psychological Sciences: December 13, 2019**
**Ogden College Curriculum Committee:**
**Undergraduate Curriculum Committee:**
**University Senate:**

**Section 7: Required Appendices: Current & proposed program descriptions:**

**7.1 Current Program Description:** (On a separate pages):

**Minor in Neuroscience**

**Reference Number:** 434
**Minimum Hours for Minor:** 21

The minor in Neuroscience offers students the opportunity to study the intersection of brain and behavior in a manner that incorporates tools and perspectives from the psychological and biological sciences, and related disciplines. This minor will be an attractive option for students who are (1) planning to pursue advanced study in any of several fields related to neuroscience, including psychology, biology, medicine, counseling, or social work or (2) seeking relevant training for jobs related to the assessment, rehabilitation, and treatment of brain damage, brain diseases, and addiction.

The minor in Neuroscience requires a minimum of 21 credit hours of coursework. This includes 6 hours of the following required courses: PSYS 360 or PSYS 362, and BIOL 335. An additional 15 credit hours in electives may be selected from the following courses: PSYS 331, PSYS 333, PSYS 363, PSYS 462, PSYS 465, BIOL 319, BIOL 327, BIOL 334, BIOL 446/CHEM 446 or PHIL 332. Note: Students must choose at least 1 course from Biology and Psychological Sciences. Students must take PSYS 100 or PSYS 160 and BIOL 120/BIOL 121 prior to beginning their coursework in the minor (some courses available for the minor may have additional prerequisites).

~~**[iCap indicates that students must earn a C or better in each course]**~~

**7.2 Proposed Program Description:** (On separate pages):

**Minor in Neuroscience**

**Reference Number:** 434
**Minimum Hours for Minor:** 21

The minor in Neuroscience offers students the opportunity to study the intersection of brain and behavior in a manner that incorporates tools and perspectives from the psychological and biological sciences, and related disciplines. This minor will be an attractive option for students who are (1) planning to pursue advanced study in any of several fields related to neuroscience, including psychology, biology, medicine, counseling, or social work or (2) seeking relevant training for jobs related to the assessment, rehabilitation, and treatment of brain damage, brain diseases, and addiction.

The minor in Neuroscience requires a minimum of 21 credit hours of coursework. This includes 6 hours of the following required courses: PSYS 360 or PSYS 362, and BIOL 335. An additional 15 credit hours in electives may be selected from the following courses: PSYS 331, PSYS 333, PSYS 363, PSYS 462, **PSYS 463,** PSYS 465, **PSYS 482,** BIOL 319, **BIOL 324**, BIOL 327, BIOL 334, BIOL 446/CHEM 446, **BIOL 464,** or PHIL 332. Note: Students must choose at least 1 course from Biology and Psychological Sciences. Students must take PSYS 100 or PSYS 160 and BIOL 120/BIOL 121 prior to beginning their coursework in the minor (some courses available for the minor may have additional prerequisites).

Ref. 434
Neuroscience Minor

University Undergraduate Curriculum Proposal Checklist

Please complete the following checklist to ensure your proposal will proceed smoothly and efficiently. Include the checklist as a cover sheet with your proposal. Proposals without the checklist will be returned to the proponent.

☑ For new or revised programs, courses, or course descriptions, what departments/programs have been consulted concerning potential impact (e.g. to possible duplication or conflict, changed corequisite or prerequisite for equivalent courses, etc.)? Please provide names and dates for individuals consulted.

This proposal revises the Neuroscience minor. The revisions involve courses offered by the Department of Biology. Psychological Sciences contacted Dr. Crawford, Biology Department Chair, on 11/1/19. He approved of the revisions on behalf of Biology.

☑ What are the potential budget implications for this proposal? If any additional staffing is required, how will it be funded? If not, how will current staffing accommodate the proposed course/program?

The proposed revision will allow both the Departments of Biology and Psychological Sciences greater flexibility in scheduling elective courses within the minor within their respective course rotations. Additional staffing is not required, and a more efficient allocation of workload across staff is permitted through course rotations.

☑ If you are proposing a new undergraduate program or changes to an existing undergraduate program, please include a new or updated four-year degree pathway.

☑ Has the proposal been checked carefully for mechanics, grammar, syntax, and clarity?

Madole, Kelly Digitally signed by Madole, Kelly Date: 2020.01.22 12:26:23 -06'00'

Department Head

Dean or Designee

1/22/2020

Date

Date