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FINAL FACULTY SENATE APPROVAL ON MAY 9, 2017

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**MEMORANDUM**

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TO: Faculty Senate

FROM: Jack Kirby 

DATE: April 25, 2017

SUBJECT: Curriculum Proposal #16-17-19  
Science Teacher Certification

I recommend approval of the attached Curriculum Proposal 16-17-19. This proposal seeks to create a secondary science teacher certification in conjunction with the B.A. in Education. (No new degree program is being proposed.) Please note the implementation date is August 2018.

Dr. Christina Lavorata  
Dr. Don Trisel  
Dr. Carolyn Crislip-Tacy  
Dr. Deb Hemler  
Mr. Sean Harwell  
Ms. Leslie Lovett  
Ms. Laura Ransom  
Dr. Shayne Gervais



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**MEMORANDUM**

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TO: Curriculum Committee

FROM: Jack Kirby *JK*

DATE: April 13, 2017

SUBJECT: Curriculum Proposal #16-17-19  
Science Teacher Certification

I recommend approval of the attached Curriculum Proposal 16-17-19. This proposal seeks to create a secondary science teacher certification in conjunction with the B.A. in Education. (No new degree program is being proposed.) Please note the implementation date is August 2018.

Dr. Christina Lavorata  
Dr. Don Trisel  
Dr. Carolyn Crislip-Tacy  
Dr. Deb Hemler  
Mr. Sean Harwell  
Ms. Leslie Lovett  
Ms. Laura Ransom  
Dr. Shayne Gervais

**CURRICULUM PROPOSAL** (Submit one hard copy and an electronic copy to the Associate Provost by the second Tuesday of the month.)

**Proposal Number:** 16-17-19

**School/Department/Program:** Biology, Chemistry, Geoscience- Science & Technology

**Preparer/Contact Person:** Dr. Deb Hemler & Sean Harwell

**Telephone Extension:** 4393

**Date Originally Submitted:** April 10, 2017

**Revision (Indicate date and label it  
Revision #1, #2, etc.):** \_\_\_\_\_

**Implementation Date Requested:** August 15, 2018

- I. **PROPOSAL.** Write a brief abstract, not exceeding 100 words, which describes the overall content of the proposal.

**This proposal seeks to create a secondary science teacher certification in conjunction with the B.A. in Education. To accomplish this, the proposal includes the following objectives:**

- 1. Add a secondary science teacher certification, Earth & Space Science (5-Adult)**
- 2. Modify the name & course number of existing GEOL 1103 Introduction to Environmental Geology,**
- 3. Generate two new courses in support of the Earth & Space Science (ESS) certification,**
- 4. Create a new prefix for geoscience course work: GEOS,**
- 5. Convert appropriate geoscience courses from the prefix PHSC to GEOS.**

(\*It should be noted: no new degree program is being proposed.)

- II. **DESCRIPTION OF THE PROPOSAL.** Provide a response for each letter, A-H, and for each Roman Numeral II–V. If any section does not apply to your proposal, reply N/A.

- A. Deletion of course(s) or credit(s) from program(s)

Total hours deleted. N/A

- B. Addition of course(s) or credit(s) from program(s)

**Creation of a new secondary science certification: Earth & Space Science (5-Adult) as part of the existing B.A.E in Secondary Education. (See Appendix A)**

Total hours added. 120

C. Provision for interchangeable use of course(s) with program(s)

**N/A**

D. Revision of course content. Include, as an appendix, a revised course description, written in complete sentences, suitable for use in the university catalog.

**N/A**

E. Other changes to existing courses such as changes to title, course number, and elective or required status.

**GEOL 1103 Introduction to Environmental Geology changed to GEOL 2300 Environmental Geology**  
**PHSC 2201 Exosphere changed to GEOS 2201 Exosphere**  
**PHSC 2202 Geosphere changed to GEOS 2202 Geosphere**

F. Creation of new course(s). For each new course

1. Designate the course number, title, units of credit, prerequisites (if any), ownership (FSU or shared) and specify its status as an elective or required course. If you are creating a shared course, attach a memo from the Deans of the affected Schools explaining the rationale for the course being shared.

| <b>Designation</b>   | <b>Course #1</b>               | <b>Course #2</b>                  |
|----------------------|--------------------------------|-----------------------------------|
| <b>Course No.</b>    | GEOS 2200                      | GEOS 3100                         |
| <b>Course Title</b>  | Oceans and Climate             | Informal Science Field Experience |
| <b>Credits</b>       | 4 credits                      | 1 credit                          |
| <b>Prerequisites</b> | Admission to Teacher Education | Admission to Teacher Education    |
| <b>Ownership</b>     | FSU only                       | FSU only                          |
| <b>Status</b>        | Required Course                | Required course                   |

2. Include, as an appendix, a course description, written in complete sentences, suitable for use in the college catalog.

**GEOS 2200 Oceans and Climate: See Appendix B**  
**GEOS 3100 Informal Science Field Experience: See Appendix C**

3. Include, as an appendix, a detailed course outline consisting of at least two levels.

**GEOS 2200 Oceans and Climate: See Appendix B**

**GEOS 3100 Informal Science Field Experience: See Appendix C**

4. In order to meet the requirements as outlined in Goal One of the Strategic Plan, please include Outcome Competencies and Methods of Assessment as an appendix. Examples are available upon request from the Chair of the Curriculum Committee.

**GEOS 2200 Oceans and Climate: See Appendix B**

**GEOS 3100 Informal Science Field Experience: See Appendix C**

- G. Attach an itemized summary of the present program(s) affected, if any, and of the proposed change(s).

Describe how this proposal affects the hours needed to complete this program. Specifically, what is the net gain or loss in hours? Use the format for Current and Proposed Programs in Appendix A.

**The proposed certification program is new and included in Appendix A. The proposed program will consist of 120 credit hours as mandated by HEPC. For credit distribution, please consult Appendix A.**

**III. RATIONALE FOR THE PROPOSAL.**

- A. **Quantitative Assessment:** Indicate the types of assessment data, i.e., surveys, interviews, capstone courses, projects, licensure exams, nationally-normed tests, locally developed measurements, accreditation reports, etc., that were collected and analyzed to determine that curricular changes were warranted. Quantitative data is preferred.

*New certification:*

**The impetus for this curriculum proposal resulted when the new WV Science Standards in Policy 2520.3C, enacted in 2015, mandated an Earth & space science course at the high school level in fall of 2016. FSU science education faculty conducted a survey of WV higher education institutions. Only one institution (Ohio Valley University) in the state offered an Earth and Space Science (ESS) certification. The instructor who initiated and taught in that program recently retired and it is not certain whether they will hire a replacement instructor. WV Wesleyan University offered some variation on an environmental and ESS certification. The lack of certifying institutions created a bottleneck in the production of highly qualified teachers in this field. This proposal aims to assist the state by providing ESS certified teachers and become the first public institution in WV to offer a true Earth and space science certification.**

**A survey of ESS programs in the state (Ohio Valley University) and in neighboring states (Towson University) was conducted to determine coursework requirements. This proposed program contains more ESS content than OVU and exhibits better alignment with the Praxis II certification exam. The proposed coursework aligns with neighboring state programs.**

- B. **Qualitative Assessment:** Based upon the assessment data above, indicate why a curricular change is justified. Indicate the expected results of the change. Be sure to include an estimate of the increased cost, or reduction in cost of implementation. FOR EXAMPLE: Will new faculty, facilities, equipment, or library materials be required?

*ESS Certification:*

**This curricular change is necessary to provide highly qualified teachers to teach high school Earth and space science courses. Fairmont State should continue its tradition of being a leader in teacher**

preparation by being one of the first state institutions to offer ESS certification. It is hoped that by providing this unique certification, enrollments in secondary science education will increase. Neighboring states require ESS certifications to teach their high school ESS courses. FSU graduates with an ESS certification would be more competitive in seeking jobs outside of West Virginia.

*Renumbering and renaming of GEOL 1103 Introduction to Environmental Geology:*

The new certification predominantly uses existing course work offered regularly in conjunction with other science majors and secondary science certifications. The new number and name for the Introduction to Environmental Geology course is necessary due to the prerequisite coursework and the nature of the course content. Environmental geology rarely has a 1000 level designation at other universities since it assumes foundational knowledge of chemistry and geology. Since we are requiring prerequisite courses, the need for "Introduction to" in the title is no longer necessary. It makes sense rename and renumber GEOL 1103 Introduction to Environmental Geology to GEOL 2300 Environmental Geology.

The offering of the Environmental Geology course will not require new faculty since the coursework in this certification will be offered in alternating years. Currently GEOL 1102 Historical Geology is offered every spring with low enrollment numbers. Alternating Historical Geology and Environmental Geology will increase enrollments and lower the number of existing under-enrolled geology courses.

*Creation of new GEOS prefix:*

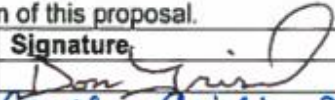
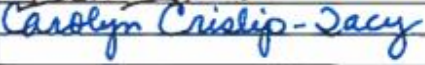
Physical Science (PHSC) prefix is not descriptive of the content being offered in the elementary science courses currently labeled as PHSC. The content of the education science courses are earth and space science-related so are more appropriately described as "geoscience" or the prefix "GEOS". Registrar, Shayne Gervais, has confirmed that this prefix is not currently in use and would be appropriate to use with these courses.

*Creation of two new courses:*

An analysis of course content for the classes suggested for the certification program was conducted to check for alignment with objectives for the Praxis II ESS certification exam. Oceanography was missing from the program. Also, it was noted in other ESS programs from other states, upper division courses were often lacking in these programs. GEOS 2200 and GEOS 3100 will serve to eliminate the gap in content, as well as, the deficiency in upper level geoscience classes. Each has been offered twice as PHSC 1199 courses and are fully developed and vetted. It should be noted that these courses have been offered in-load so no new faculty will be required to offer these new courses.

- IV. Should this proposal affect any course or program in another school, a memo must be sent to the Dean of each school impacted and a copy of the memo(s) must be included with this proposal. In addition, the Deans of the affected schools must sign below to indicate their notification of this proposal.

By signing here, you are indicating your college's/school's notification of this proposal.

| College/School           | Dean                            | Signature   |
|--------------------------|---------------------------------|---|
| Dr. Don Trisel           | College of Science & Technology |  |
| Dr. Carolyn Crislip-Tacy | School of Education             |  |
|                          |                                 |   |

V. Should this proposal affect any course to be added or deleted from the general studies requirements, a memo from the chair of the General Studies Committee indicating approval of the change must be included with this proposal.

**NA**

VI. ADDITIONAL COMMENTS.

**APPENDIX A: B.A. Degree in Education (Earth & Space Science 5-Adult)  
Proposed Program**

| <b>Required Major Courses (ESS certification)</b>   |   | <b>HRS</b> |
|---|---|------------|
| BIOL 1105   | Biological Principles I                 | 4          |
| CHEM 1105   | Chemical Principles I                   | 5          |
| PHYS 1101   | Introduction to Physics I               | 4          |
| PHYS 2202   | Astronomy                               | 3          |
| GEOL 1101   | Physical Geology                        | 4          |
| GEOL 1102   | Historical Geology                      | 4          |
| GEOL 2300   | Environmental Geology                   | 4          |
| GEOS 2200   | Oceans and Climate                      | 4          |
| GEOS 3100   | Informal Science Field Experience       | 1          |
| SCIE 1120   | Introduction to Meteorology             | 4          |
| SCIE 1107   | Geographic Information Systems (GIS)    | 4          |
| SCIE 1105   | Environmental Science                   | 4          |
| PHSC 4431   | Methods & Materials in Teaching Science | 3          |
| PHSC 4430   | Science Integration Seminar             | 1          |
| <b>TOTAL Required Major Courses</b>   |   | <b>49</b>  |
| Major Electives (Note: MATH 1540 is a prerequisite for PHYS 1101 and serves as a General Studies requirement) |   |            |

| <b>Required Major Courses (Professional Education)</b> |   | <b>HRS</b> |
|--|---|------------|
| EDUC 2200  | Introduction to Education                 | 3          |
| EDUC 2201  | Instructional Technology                  | 3          |
| EDUC 2203  | Human Development, Learning and Teaching  | 3          |
| EDUC 2240  | High Incidence Disabilities for Educators | 3          |
| EDUC 2260  | Instructional Design I                    | 3          |
| EDUC 2265  | Field Experience II                       | 1          |
| EDUC 3331  | Reading in the Content Areas              | 3          |
| EDUC 3340  | Instructional Design II                   | 3          |
| EDUC 3351  | Inclusive Classroom Practices             | 3          |
| EDUC 3365  | Field Experience III                      | 2          |
| EDUC 4485  | Action Research                           | 1          |
| EDUC 4486  | Portfolio                                 | 1          |
| EDUC 4496  | Secondary Student Teaching                | 10         |
| <b>TOTAL Required Major Courses</b>                    |   | <b>39</b>  |
| Major Electives  |   |            |

Minor Requirements/Electives (if minor is required)

|  |           |
|--|-----------|
| <b>TOTAL HOURS FOR MAJOR (and minor if required)</b> | <b>88</b> |
|--|-----------|



| <b>Required General Studies Courses</b>                         |  |            |
|---|--|------------|
| Attribute 1 – Critical Analysis                                 |  | 3          |
|   | ENGL 1102 Wr. English (or any other Att. 1)              |            |
| Attribute 2 – Quantitative Literacy                             |  | 3          |
|   | MATH 1540 Trigonometry (or any other Att. 2)             |            |
| Attribute 3 – Written Communication                             |  | 3          |
|   | ENGL 1101 Wr. English I (or any other Att. 3)            |            |
| Attribute 4 – Teamwork  |  | 3          |
|   | COMM 2202 Int. to Group Discussion (or any other Att. 4) |            |
| Attribute 5 – Information Literacy                              |  | X          |
|   | ENGL 1102 Written English II                             |            |
| Attribute 6 – Technology Literacy                               |  | X          |
|   | EDUC 2201 Instructional Technology                       |            |
| Attribute 7 – Oral Communication                                |  | X          |
|   | COMM 2202 Int. to Group Discussion                       |            |
| Attribute 8 – Citizenship                                       |  | 3          |
|   | POLI 1103 American Gov. (or any other Att. 8)            |            |
| Attribute 9 – Ethics  |  | 3          |
|   | SOCY 2205 Race Class & Gender (or any other Att. 9)      |            |
| Attribute 10 – Health   |  | X          |
|   | EDUC 2203 Hum. Dev., Learning                            |            |
| Attribute 11 – Interdisciplinary                                |  | 3          |
|   | GEOG 2210 Intro to Geography (or any course in Att. 11)  |            |
| Attribute 12 – Arts   |  | 3          |
|   | Any course in Att. 12                                    |            |
| Attribute 13 – Humanities                                       |  | X          |
|   | ENGL 2220 World Lit. I (or any other Att. 13)            |            |
| Attribute 14 – Social Sciences                                  |  | 3          |
|   | PSYC 1101 Intro to Psych. (or any other Att. 14)         |            |
| Attribute 15 - Natural Science                                  |  | X          |
|   | CHEM 1105 Chem. Principles I                             |            |
| Attribute 16 – Cultural Awareness                               |  | 3          |
|   | ENGL 2220 World Lit. I                                   |            |
| Additional General Studies hours (Writing Intensive coursework) |  | X          |
|   | EDUC 3331, EDUC 3351                                     |            |
| <b>TOTAL GENERAL STUDIES HOURS</b>                              |  | <b>30</b>  |
| <b>TOTAL FREE ELECTIVES</b>                                     |  | <b>2</b>   |
| <b>TOTAL HOURS</b>  |  | <b>120</b> |

## APPENDIX B: GEOS 2220 Oceans and Climate

| Designation   | Course #1                      |
|---------------|--------------------------------|
| Course No.    | GEOS 2200                      |
| Course Title  | Oceans and Climate             |
| Credits       | 4 credits                      |
| Prerequisites | Admission to Teacher Education |
| Ownership     | FSU only                       |
| Status        | Required Course                |

### **GEOS 2220 FSU Oceans and Climate .....4 hrs.**

The Oceans and Climate course uses relevant ocean issues to teach oceanography and climate concepts. Teacher candidates are exposed to the integrated nature of the science involved in understanding ocean issues. Project-based learning modules explore student understanding of ocean issues, promote ocean science literacy, explore impacts on the ocean and/or terrestrial environment, and require application of content knowledge to complete authentic assessments designed to suggest solutions for societal needs. (Students completing this course may not receive credit for both SCIE 2200 and GEOS 2200) PR: GEOL 1101, BIOL 1105

### **Course Outline**

1. Ocean Basins
  - a. Ocean Geography and Intro to Plate Tectonics
  - b. Ocean Literacy
2. Tidal Energy
  - a. Gravity
  - b. Tides
  - c. Energy
3. Offshore Drilling
  - a. Seafloor structure
  - b. Oil and Gas Formation
  - c. Oil and Gas Exploration
4. Tsunamis
  - a. Plate motion
  - b. Earthquakes
  - c. Tsunami warning
5. Red Tides or Algal Blooms
  - a. Taxonomy
  - b. Cycles: Nitrogen and Phosphorus
  - c. Algal Blooms
6. Coral Bleaching
  - a. Photosynthesis
  - b. Symbiosis
  - c. Coral Classification
  - d. Coral Bleaching
7. Garbage Gyres
  - a. Watersheds

- b. Currents
- c. Density
- d. Major Garbage Gyres
- 8. Ocean Acidification
  - a. Acids/bases & pH
  - b. Calcium carbonate and Shell formation
  - c. Water chemistry
  - d. Ocean acidification
- 9. Ocean Storms
  - a. Meteorology
  - b. Storm classification
  - c. Hurricane formation
- 10. Dead Zones
  - a. Water chemistry (dissolved oxygen)
  - b. Runoff
  - c. Dead zone formations
- 11. Overfishing
  - a. Food webs
  - b. Trophic levels
  - c. Population ecology
  - d. overfishing
- 12. Invasive Species
  - a. Ecosystems
  - b. Biomes
  - c. Competition by invasive species
- 13. Sea Level Rise
  - a. Thermal expansion
  - b. Climate change
  - c. Topographic maps
  - d. Sea level rise
- 14. El Nino/La Nina
  - a. Climate zones
  - b. Climate & weather
  - c. Ocean circulation
  - d. El Nino/La Nina effects
- 15. Coastal Environment Degradation
  - a. Coastal environment classification
  - b. Barrier Islands
  - c. Coastal wetland ecology
- 16. Pedagogy Analysis
  - a. Project-based Learning WebQuest
    - i. Connecting Climate Change to Ocean Issues
    - ii. Applying course content
  - b. Learning cycle
    - i. Exploring
    - ii. Concept Development
    - iii. Application
  - c. Inquiry Learning

**Oceans and Climate Course Outcomes:**

| <b>Outcome</b>  | <b>Assessment</b>  |
|---|--|
| 1. <b>Content Knowledge:</b> Teacher candidates demonstrate a competency in fundamental concepts, principles, theories, and laws pertaining to ocean science.   | Average of module quizzes (n=12)<br>(80% of students will average 70% or higher)         |
| 2. <b>Scientific Inquiry:</b> Teacher candidates engage in scientific inquiry when investigating ocean phenomena.   | Average on inquiry activities (n=4)<br>(80% of students will average 70% or higher)      |
| 3. <b>Science Technology Society:</b> Teacher candidates will use new-found knowledge and skills to identify ecological and societal impacts and suggest viable solutions to remediate effects on local and global communities. | Ocean issue framework assignments (n=13)<br>(80% of students will average 7.0 or higher) |

## APPENDIX C: GEOS 3100 Informal Science Field Experiences

| Designation   | Course #2                         |
|---------------|-----------------------------------|
| Course No.    | GEOS 3100                         |
| Course Title  | Informal Science Field Experience |
| Credits       | 1 credit                          |
| Prerequisites | Admission to Teacher Education    |
| Ownership     | FSU only                          |
| Status        | Required course                   |

### **GEOS 3100 FSU Informal Science Field Experience.....1 hr.**

The informal science field experience course provides students with the opportunity to teach as informal science educators to provide unique learning environments to increase appreciation and understanding of science. Students will participate in informal science training, deliver science presentations designed to deepen K-12 student understanding of science, showcase West Virginia science & engineering, and encourage K-12 students to pursue future careers in STEM fields.

### **Course Outline**

1. Informal Science Training
  - a. Delivering Science content in informal settings
  - b. Pedagogy in Informal science settings
  - c. Group management
  - d. WV SPOT Ambassador workshop
2. Presentation Certification
  - a. Professionalism and presenting
  - b. Practice presentations
  - c. Certification on one STEM presentation
  - d. Proficiency in hands-on activity
3. Presentations
  - a. Presenting in After School Programs
  - b. Presenting in PDS schools
  - c. Presenting at West Virginia Science Teachers Association

### **Course Outcomes and Assessments**

| Outcomes  | Assessment   |
|---|--|
| 1. Teacher candidate will become proficient in delivery of WV STEM-based presentation.        | Oral presentation Rubric<br>(80% of students will receive certification on at least one presentation)                                |
| 2. Teacher candidates will successfully present a minimum of two presentations to the public. | WV SPOT confirmation matrix & K12 feedback<br>(80% of certified presenters will successfully deliver a minimum of two presentations) |

## Appendix D: Dean of Education, Health, and Human Performance Memo

### Curriculum Proposal



Hemler, Debra

Thu 4/6/2017 2:37 PM

To: Crislip-Tacy, Carolyn

Cc: Harwell, Sean; Trisel, Donald

Reply all

Dear Dr. Crislip-Tacy,

I am emailing to let you know that I am submitting the new 5-Adult Earth & Space Science certification (for the B.A.E) curriculum proposal for inclusion in the Fall 2018 catalog as was discussed and endorsed by the School of Education during the 2016 EPPAC meeting. This new certification will provide a new option for students who do not want to pursue careers in teaching high school in Biology, Physics, or Chemistry. In addition, as part of this proposal, the elementary science Physical Science (PHSC) coursework will be changed over to the new, more appropriate, GEOS prefix. This will necessitate the revision of your advising forms for Fall 2018.

Please do not hesitate to contact me regarding this curriculum proposal.

Dr. Deb Hemler  
Geoscience Program Coordinator  
Fairmont State University  
[1201 Locust Avenue](#)  
[Fairmont, WV 26554](#)  
(304)367-4393

Science & Technology



Reply Reply All Forward



Crislip-Tacy, Carolyn

Hemler, Debra; Tannous, Carol; Gervais, Murray

11:55 AM

RE: Curriculum Proposal

Thanks Deb. Just be sure we don't forget to change advising sheets.  
Carolyn

Appendix E. Program Mission, Outcomes, and Assessments

**Mission Statement:** Fairmont State University's mission for the Earth & Space Science Education Program is to ensure teacher candidates in Earth & space science education (5-Adult) have the necessary knowledge, skills, and dispositions in their area of licensure to be effective science teachers in service to their school and community at large. The Earth & Space Science Education program creates opportunities for teacher candidates to engage as professionals in formal and informal educational settings, as well as, their field of geoscience. Teacher candidates demonstrate competencies in science content, nature of science, scientific practices (inquiry), and science pedagogical content knowledge (PCK).

**Program Goals:**

| Goals  | Measures                    |
|--|-----------------------------|
| Goal 1-Recruitment: To increase the visibility of FSU's science education program statewide to facilitate FSU and program recruitment efforts.             | Outreach Activity Log       |
| Goal 2- Employment: To assist teacher candidates in seeking employment in a related field of study or graduate school within the first year of graduation. | Graduate employment survey  |
| Goal 3-Accreditation: To begin NSTA/CAEP Accreditation process for the ESS Program.  | NSTA Accreditation Report   |
| Goal 4_ Advisory Board: To create an Advisory Board to guide the direction and future of the Program   | Advisory Board Contact List |

**Program Outcomes:**

| Outcomes   | Measures  |
|--|---|
| 1. Knowledge-Effective teachers of science articulate the knowledge and practices of contemporary science. They interrelate and interpret important concepts, ideas, and applications in their fields of licensure.  | <ul style="list-style-type: none"> <li>- Field GPA</li> <li>- Praxis II Test Scores</li> <li>- Student Teaching Assessment</li> <li>- Unit Plan rubric</li> </ul> |
| 2. Content Pedagogy-Effective teachers of science use knowledge of student learning to develop student's scientific knowledge. Preservice teachers use scientific inquiry to develop this knowledge for all students.  | <ul style="list-style-type: none"> <li>- Research Paper</li> <li>- Unit Plan rubric</li> </ul>  |
| 3. Learning Environments-Effective teachers of science are able to plan for engaging all students in science learning by setting appropriate goals that are consistent with knowledge of how students learn science and are aligned with state and national standards. The plans reflect the nature and social context of science, inquiry, and appropriate safety considerations. Candidates design and select learning activities, instructional settings, and resources--including science-specific technology, to achieve those goals; and they plan fair and equitable assessment strategies to evaluate if the learning goals are met. | <ul style="list-style-type: none"> <li>- Student teaching observation rubric</li> <li>- Unit Plan rubric</li> </ul>   |
| 4. Safety- Effective teachers of science can, in a P-12 classroom setting, demonstrate and maintain chemical safety, safety procedures, and the ethical treatment of living organisms needed in the P-12 science classroom appropriate to their area of licensure.   | <ul style="list-style-type: none"> <li>-Student Teaching Observation Rubric</li> <li>- PCK Portfolio rubric</li> <li>-Unit Plan Rubric</li> </ul>                 |

|  |  |
|--|--|
| <p>5. Impact on Student Learning- Effective teachers of science provide evidence to show that P-12 students' understanding of major science concepts, principles, theories, and laws have changed as a result of instruction by the candidate and that student knowledge is at a level of understanding beyond memorization. Candidates provide evidence for the diversity of students they teach.</p> | <ul style="list-style-type: none"> <li>- Action Research Paper rubric</li> <li>- Science AR supplement rubric</li> </ul> |
| <p>6. Professional Knowledge and Skills- Effective teachers of science strive continuously to improve their knowledge and understanding of the ever changing knowledge base of both content, and science pedagogy, including approaches for addressing inequities and inclusion for all students in science. They identify with and conduct themselves as part of the science education community.</p> | <ul style="list-style-type: none"> <li>- PCK Portfolio</li> </ul>  |



**From:** Gervais, Shayne  
**Sent:** Wednesday, February 08, 2017 11:19 AM  
**To:** Hemler, Debra <[Deb.Hemler@fairmontstate.edu](mailto:Deb.Hemler@fairmontstate.edu)> **Subject:** RE:  
Prefix codes

Other than a curriculum proposal I can't think that there would be anything else. GEOS has never been used so that's fine. You'll have to identify what the old and new numbers will be for each course.

Shayne Gervais, PhD  
University Registrar  
Fairmont State University  
317 Turley Center 304-367-4658  
[sgervais@fairmontstate.edu](mailto:sgervais@fairmontstate.edu)

**From:** Hemler, Debra  
**Sent:** Wednesday, February 08, 2017 10:47 AM **To:** Gervais,  
Shayne  
**Subject:** Prefix codes

Hi Shane,

I am drafting a curriculum proposal to shift my geoscience courses out of the PHSC designation and into a more appropriated prefix that represents the coursework. Also we are drafting a curriculum proposal for a new course. So my question... We have two options: GEOS for Geoscience or ESSC for Earth & Space Science. After talking to my chair, Steve Roof, and Sean we were leaning toward GEOS since we have a geoscience program and nothing that reflects that. Do you see any reason why we should not start naming the new courses GEOS? Do I have to fill out any special paperwork other than a curriculum proposal to initiate a new prefix? Deb

Dr. Deb Hemler  
Geoscience Program Coordinator  
Fairmont State University  
1201 Locust Avenue  
Fairmont, WV 26554  
(304)367-4393

 Science & Technology