

TEXAS HIGHER EDUCATION COORDINATING BOARD
Summary Notes/Minutes
Natural Resources Field of Study Advisory Committee Meeting
1200 East Anderson Lane, Board Room
Austin, Texas
May 9, 2019, 1:00 PM – 5:00 PM
May 10, 2019, 2019, 8:30 AM – 12:00 PM

The webcasts of these meetings are available at the following links:

<https://www.youtube.com/watch?v=T3kZxNrtOqY>

<https://www.youtube.com/watch?v=ERrKAcgXrvA>

1. Call to order and introductions

Allen Michie called the meeting to order at 1:00 PM.

The following committee members were present:

Christian Brannstrom, Texas A&M University
Robert Cox, Texas Tech University
Wesley Highfield, Texas A&M University-Galveston
Philip Lavretsky, The University of Texas at El Paso
Carmen Nava-Fischer, St. Philip's College-MLK Campus
Andrew Sansom, Texas State University
T. Wayne Schwertner, Tarleton State University
Mark Shepherd, Austin Community College District
Bradley Turner, McLennan Community College (present for May 9 meeting)
Scott Walker, Northwest Vista College
Christopher Wild, San Jacinto College-South Campus
Kim Withers, Texas A&M University-Corpus Christi
Karen Yip, Houston Community College

The following committee members were absent:

Lucina Kuusisto, Texas A&M University-Commerce
Bradley Turner, McLennan Community College (absent for May 10 meeting)

Coordinating Board Staff present:

Allen Michie, Program Director

2. Consideration of appointing a recording secretary

Kim Withers (Texas A&M University-Corpus Christi) volunteered to serve as recording secretary and was elected by acclamation.

3. Consideration of election of Co-Chairs

Mark Shepherd (Austin Community College) was nominated to serve as co-chair from two-year institutions and was elected by acclamation. Christian Brannstrom (Texas A&M University) was nominated from four-year institutions and was elected by acclamation.

4. Public testimony

No one was available for public testimony.

5. Break for consultation between Coordinating Board staff and Co-Chairs

The committee recessed for 15 minutes.

6. Overview of Field of Study rules and mission – Dr. Allen Michie

Michie provided an overview of the Fields of Study (FOS) statute, how it is part of a wider range of transfer success initiatives, and how it contributes to the Texas Higher Education Coordinating Board's *60x30TX* strategic plan.

Michie stated the goals of the meeting:

- Review curricula from programs at representative two- and four-year institutions
- Review approved courses in the *Academic Course Guide Manual (ACGM)*
- Decide which lower division courses are necessary for success in upper division courses in a major
- Adjust course objectives and descriptions as necessary
- Balance student freedom with institution priorities
- Create a guaranteed pathway to the degree and minimize the number of excess hours that students take

Michie answered questions about FOS and the approval process.

7. Discussion and consideration of the Natural Resources Field of Study curriculum

Discussion began with defining the discipline by the relevance of related Classification of Instructional Program (CIP) codes. Michie said that at the very least, the Field of Study (FOS) needs to cover Environmental Science (03.0104.00).

Turner recommended Fish & Wildlife, and Brannstrom said that it will be considered after courses for the main Environmental Science FOS are determined. Schwertner said that a Pre-Veterinary Science sequence can be discussed when the committee considers covering Wildlife. Nava-Fischer recommended a separate track for Water/Wetlands/Marine Resources. Shepherd said that Geology should have its own FOS.

Brannstrom called on members around the room to see what courses they would like to see in

the FOS. Some of the topics that evoked discussion included Math courses and the requirements of existing programs. Turner said that Statistics is more useful than Algebra or Calculus. Highfield said that his institution requires Pre-Calculus and Calculus. Nava-Fischer recommended Microeconomics. Schwertner asked about whether Statistics belongs at the 2000 or 3000 level, and if courses could substitute for one another.

The committee also discussed Science requirements. Courses mentioned included Introduction to Geology, Earth Sciences, Biology I, Biology II, Introduction to Global Climate Change, Earth Sciences, Geographical Information Systems, Physics I, Introduction to Measurement and Quantitative Skills, Biology I and II, and Chemistry I and II, Physical Geology, and Botany.

Other courses discussed included Technical Writing and an Academic Cooperative.

There was particular discussion of Geographic Information Systems (GIS). Michie explained that Geographic Information Systems are Workforce courses in the *Workforce Education Course Manual* (WECM), and the FOS needs to draw exclusively from the *Lower-Division Academic Course Guide Manual* (ACGM). A course from WECM could be used as a model for a new ACGM course, however. Walker said it is a fundamental class, and GIS is a tool everyone needs to use. Turner added that GIS courses are usually 3000 level, and Shepherd agreed that it may be easier to keep it there than to have it added to the ACGM. Lavretsky said that not every institution will have the faculty to teach GIS, and Turner agreed that it would often be taught by adjunct faculty. Withers said that GIS is important but not critical as a lower-division prerequisite. Shepherd said that employers want graduates to have knowledge of GIS, especially governmental employers.

The committee also discussed Environmental Science courses. Members reviewed the requirements in their own programs. Brannstrom asked if there should be multiple tracks in the FOS because of the diversity of specialties within Environmental Sciences. Brannstrom added that while Environmental Science II is an important course, he didn't know where Texas A&M University would put it in the degree program. Members also discussed whether Environmental Science I could count toward the Life & Physical Sciences section of the core curriculum. There was consensus to include Environmental Science I in the FOS, and the committee discussed whether to require the 3 semester credit hour (SCH) version or the 4 SCH version with a lab. Shepherd said that students can do well without the lab so long as they have a lab section in their Chemistry course. He added that there is not a consistent core body of knowledge for Environmental Science labs across institutions. Turner said it has had to take Environmental Science seriously as a science if there is not lab component to it.

Discussion of the Biology courses included consideration of whether Biology II is necessary, and if so, for what specialties. There was discussion of whether Botany or Zoology is a better selection, or a choice of Biology and Botany/Zoology.

Discussion of Math courses included consideration of whether Calculus I should be the entry-level course and whether students come in prepared for that level of coursework. Nava-Fischer said that most students coming in are not even ready for pre-Calculus. Brannstrom said students will need Calculus I and II to succeed in upper-division courses at Texas A&M University.

8. Adjournment

The meeting adjourned at 5:00 PM.

Day 2: May 10, 2019

1. Call to order

Brannstrom and Shepherd called the meeting to order at 8:30 AM.

2. Discussion and consideration of the Natural Resources Field of Study curriculum

Schwertner asked for confirmation that institutions cannot require any additional lower-division requirements for the major if a transfer student comes in FOS and core complete. Michie confirmed this, and he said that a lower-division course could still be required if it is required of every student in a College or University regardless of major. Lower-division courses can still be offered, but not required, as designated electives for the major. Michie answered additional questions about FOS policy and the implications of a large or small FOS. Committee members discussed the lower-division requirements at their home institution programs. Withers expressed concern that the FOS would cause more problems than it would solve.

Committee members discussed the ideal length of the FOS and how certain FOS courses could overlap with the core curriculum. Withers suggested that some lab hours could count toward institutions' component area option.

The committee discussed Human Geography (GEOG 1302) and if it should be required in the FOS, even though it not a commonly taught course at Community Colleges. Walker said that faculty who teach World Regional Geography could also likely teach Human Geography.

Brannstrom asked whether the committee should specify a course for the Social & Behavioral Sciences section of the core.

Schwertner proposed offering a choice between Chemistry I and Biology I, and then Chemistry II and Biology II. Yip proposed adding a choice of Physics. Wild added that Physics is required in the U-Teach programs. Committee members discussed whether to require parts I and II of Biology, Chemistry, and/or Physics. The committee reviewed the requirements at existing Environmental Science programs, and there appeared to be little uniformity across universities. Shepherd said that there is a great deal of variety across programs because of the diversity of the discipline. Schwertner said that a broad FOS helps the colleges, but a narrow FOS helps the universities.

Cox pointed out that colleges are not required to make their associate degree programs identical to the FOS, and colleges are not required to offer all the courses in an FOS.

The committee discussed the possibility of having multiple tracks according to different career paths or academic specialties. Michie explained that Natural Resources could have a track for

teachers, or the committee could leave that up to a future Interdisciplinary Studies FOS Advisory Committee. The consensus was not to have a teaching track. Discussion included what to do with Calculus II, Physics II, and Biology II courses and in what specialties they are most necessary.

The committee recessed to have small-group discussions on possible tracks. Brannstrom recommended not limiting the definition of tracks to the definitions of existing CIP codes.

Brannstrom proposed a general track in Earth Science, and a second track in Sustainability, Policy, and Planning.

Schwertner proposed a track with a Biological emphasis.

Brannstrom made a motion to proceed with three tracks, along the lines of General Earth Science, Policy, and Life Sciences.

After some discussion of naming, the consensus was to name the first track "Earth Sciences," the second track "Sustainability, Policy, and Planning," and the third track "Life Sciences."

The committee considered the possibility of removing University Physics II from the FOS in order to bring it down to 62 SCH. After discussion, Cox made a motion to remove Physics II from the Earth Sciences track. The motion to remove Physics II carried unanimously.

The committee discussed what courses to include in the Sustainability, Policy, and Planning track. After those were determined, the committee selected courses for the Life Sciences track.

Sansom made a motion to recommend to a future Learning Objectives committee that they add an Introduction to GIS course to the ACGM, perhaps one modeled on what is currently in the WECM. The motion passed with one abstention.

Withers proposed a fourth track in Chemistry. The committee discussed the courses that would be included.

A motion was made to accept the Sustainability, Policy, and Planning FOS as proposed. The motion passed 12-0.

A motion to approve the Life Sciences track FOS was approved unanimously.

A motion to approve the Chemistry track FOS was approved unanimously.

The committee discussed what CIP codes would apply to the FOS tracks. The committee consensus was to have the FOS apply to all Bachelor of Arts (BA) and Bachelor of Science (BS) programs in Environmental Studies (CIP code 03.0103) and Environmental Science (03.0104.00). It would not apply to programs in Natural Resources/Conservation, General (CIP code 03.0101), Natural Resources Management and Policy (CIP 03.0201), Water, Wetlands, and Marine Resources Management (CIP 03.0205), Natural Resources Law Enforcement and Protective Services (CIP 03.0208), Fishing and Fisheries Sciences and Management (CIP 03.0301), Forestry, General (CIP 03.0501), Forest Sciences and Biology (CIP 03.0502), Forest

Management/ Forest Resources Management (CIP 03.0506), or Wildlife, Fish and Wildlands Science and Management (CIP 03.0601). It also does not apply to any Biology- or Ecology-related programs in the two-digit CIP code 26.

3. Overview of the timeline for public comments and Field of Study approval – Dr. Allen Michie

Michie stated that the proposed FOS would go out for a 30-day public comment period. Committee members would be given a copy of each comment for a response. If changes are made, the revised FOS would go out for a second 30-day comment period. The FOS curriculum would go before the Coordinating Board's Committee on Academic and Workforce Success committee and the full Board for final approval.

Michie said that there could be a second committee meeting, depending upon the number and nature of the public comments received and whether committee members indicate that they want to make significant changes.

4. Consideration of authorization of Co-Chairs to approve the meeting notes, make non-substantive edits to documents, and conduct assorted committee business relating to submission of the Field of Study to the Coordinating Board for approval

A motion was made to authorize the co-chairs to approve the final meeting minutes and carry other related business for the FOS approval process before the Board. The motion passed.

5. Adjournment

The meeting adjourned at 12:00 PM.

Final Proposed Field of Study:

Table 1. Proposed 2019 FOS Curriculum for Environmental Science: Sustainability, Policy, and Planning Track

Course Number	Course Title	SCH
MATH 1325	Calculus for Business & Social Sciences	3
I. A. CHEM 1411 B: 1. CHEM 1311 2. CHEM 1111 II. A. BIOL 1406 B: 1. BIOL 1306 2. BIOL 1106	Choose one of the following: I. General Chemistry I II. Biology for Science Majors I	4
I. GEOG 1302 II. ECON 2301	Choose one of the following: I. Human Geography II. Principles of Macroeconomics	3
I. ENVR 1401 II: A. ENVR 1301 B. ENVR 1101	Environmental Science I	4
I: A. GEOL 1403 B: 1. GEOL 1301 2. GEOL 1101 II: GEOG 1301	Choose one of the following: I. Physical Geology (with lab) II. Physical Geography	3-4

<p>I. A. BIOL 1411 B: 1. BIOL 1311 2. BIOL 1111</p> <p>II. A. BIOL 1413 B: 1. BIOL 1313 2. BIOL 1113</p> <p>III. A. BIOL 2406 B: 1. BIOL 2306 2. BIOL 2106</p>	<p>Choose one of the following: I. General Botany II. General Zoology III. Environmental Biology</p>	<p>4</p>
<p>I. ENVR 1402 II: A. ENVR 1302 B. ENVR 1102</p>	<p>Environmental Science II</p>	<p>4</p>
<p>PHYS 1301</p>	<p>College Physics I</p>	<p>3</p>
<p>TOTAL</p>		<p>28-29</p>

Table 2. Proposed 2019 FOS Curriculum for Environmental Science: Chemistry Track

Course Number	Course Title	SCH
MATH 2413	Calculus I	4
I. CHEM 1411 II: A. CHEM 1311 B. CHEM 1111	General Chemistry I	4
I. CHEM 1412 II: A. CHEM 1312 B. CHEM 1112	General Chemistry II	4
I. ENVR 1401 II: A. ENVR 1301 B. ENVR 1101	Environmental Science I	4
I. CHEM 2423 II: A. CHEM 2323 B. CHEM 2123	Organic Chemistry I	4
I. CHEM 2425 II: A. CHEM 2325 B. CHEM 2125	Organic Chemistry II	4
I. PHYS 2425 II: A. PHYS 2325 B. PHYS 2125	University Physics I	4
I. PHYS 2426 II: A. PHYS 2326 B. PHYS 2126	University Physics II	4
TOTAL		32

Table 3. Proposed 2019 FOS Curriculum for Environmental Science: Earth Science Track

Course Number	Course Title	SCH
MATH 2413	Calculus I	4
I. CHEM 1411 II: A. CHEM 1311 B. CHEM 1111	General Chemistry I	4
I. CHEM 1412 II: A. CHEM 1312 B. CHEM 1112	General Chemistry II	4
I. ENVR 1401 II: A. ENVR 1301 B. ENVR 1101	Environmental Science I	4
I. GEOL 1403 II: A. GEOL 1301 B. GEOL 1101	Physical Geology	4
I. BIOL 1406 II: A. BIOL 1306 B. BIOL 1106	Biology for Science Majors I	4
I. BIOL 1407 II: A. BIOL 1307 B. BIOL 1107	Biology for Science Majors II	4
I. PHYS 2425 II: A. PHYS 2325 B. PHYS 2125	University Physics I	4
TOTAL		32

Table 4. Proposed 2019 FOS Curriculum for Environmental Science: Life Sciences Track

Course Number	Course Title	SCH
MATH 2413	Calculus I	4
I. CHEM 1411 II: A. CHEM 1311 B. CHEM 1111	General Chemistry I	4
I. CHEM 1412 II: A. CHEM 1312 B. CHEM 1112	General Chemistry II	4
I. ENVR 1401 II: A. ENVR 1301 B. ENVR 1101	Environmental Science I	4
I. CHEM 2423 II: A. CHEM 2323 B. CHEM 2123	Organic Chemistry I	4
I. BIOL 1406 II: A. BIOL 1306 B. BIOL 1106	Biology for Science Majors I	4
I. BIOL 1407 II: A. BIOL 1307 B. BIOL 1107	Biology for Science Majors II	4
I. BIOL 2406 II: A. BIOL 2306 B. BIOL 2106	Environmental Biology	4
TOTAL		32

