

**TEXAS HIGHER EDUCATION COORDINATING BOARD**  
**Summary Notes/Minutes**  
**Computer Science/Information Technology Field of Study**  
**Advisory Committee Meeting**  
**1200 East Anderson Lane, Board Room**  
**Austin, Texas**  
**October 8, 2018, 1:00 PM – 5:00 PM**  
**October 9, 2018, 8:30 AM – 12:00 PM**

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

<https://www.youtube.com/watch?v=M0KSJYM8FP8>

<https://www.youtube.com/watch?v=xGYMI2GqXoo>

**October 8, 2018:**

**1. Call to order and introductions**

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

The following committee members were present:

Mircea Agapie, Tarleton State University  
Linda Barasch, The University of Texas at Arlington  
Sam McCall (representing Robert Castenada), St. Philip's College  
Anila Das, Navarro College  
Marie-Anne Demuynck, Texas Woman's University  
Ginger Dennis, Kilgore College  
Scott King, Texas A&M University-Corpus Christi  
Stephen Lyford, Wharton County Junior College  
Mike McHugh, Blinn College  
Simeon Ntafos, The University of Texas at Dallas  
Bruce Porter, The University of Texas at Austin  
Apan Qasem, Texas State University  
Heather Sanders, Assistant Professor, Midland College  
Richard Sellers, Tarrant County Community College/Northeast Campus  
Christian Servin, El Paso Community College  
Vassilios Tzouanas, University of Houston-Downtown  
Hank Walker, Texas A&M University

The following committee members were absent:

Ali Berrached, Houston Community College

Robert Castenada, St. Philip's College

Coordinating Board Staff present:  
Allen Michie, Program Director  
Garry Tomerlin, Deputy Assistant Commissioner for Workforce

## **2. Consideration of appointing a recording secretary**

Ginger Dennis (Kilgore College) volunteered to serve as recording secretary and was elected by acclamation.

## **3. Consideration of election of Co-Chairs**

Christian Servin (El Paso Community College) was nominated to serve as co-chair from two-year institutions and was elected by acclamation. Bruce Porter (The University of Texas at Austin) was nominated to serve as co-chair from four-year universities 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.

After the consultation, Porter resigned, and Hank Walker (Texas A&M University) was elected co-chair for four-year universities.

## **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. There were critical comments about the necessity and impact of FOS from Ntafos, Barasch, and Walker. The consensus was

that institutions were not using the existing FOS and did not know about it, and students did not know about the FOS and were not taking the courses. Concern was expressed about the FOS could endanger ABET accreditation if universities have different requirements for native and transfer students.

## **7. Discussion and consideration of the Computer Science/Information Technology Field of Study curriculum**

The committee began with a review of the existing Computer Science FOS.

### **Programming Fundamentals I (COSC 1336/1436):**

Barasch said it is a remedial course, but King replied that we cannot assume people are getting it in high school or getting it with appropriate rigor.

King said it would be best to require the 4 SCH version (COSC 1436). Dennis said that only Programming Fundamentals II (COSC 1337/1437) could be required, and Programming Fundamentals I would be included as a prerequisite.

### **Programming Fundamentals II (COSC 1337/1437):**

There was discussion of whether to use the 3 SCH or the 4 SCH version. Barasch asked what would happen if the FOS required the 4 SCH version but a receiving institution offered only the 3 SCH version. There was discussion of whether the course should use C++ or Java.

### **Programming Fundamentals III (COSC 2336/2436):**

Porter said that this is a key course and students will not succeed without it. Many students transferring to The University of Texas at Austin are underprepared for it. Members noted that the course often has a prerequisite or co-requisite of Discrete Mathematics. Some universities combine the course with a higher-level data structures and algorithm analysis course.

Garry Tomerlin, the Coordinating Board's Deputy Assistant Commissioner for Workforce, arrived to answer questions about FOS policy. Tomerlin said that the FOS is a legislative mandate that has been in place for 15 years. He said it is not about compromising rigor, but about creating pathways to drive student success.

Porter asked Tomerlin if the coursework at community colleges should be treated as the equivalent of the coursework at four-year institutions. Tomerlin replied that the genesis of the community college model was to let students take the basics there and then go on to a university. But the world has changed, and there is no longer a four-year high school and four-year university model. Today it is more like a 3-2-3 model. There is a state and national movement for alignment between courses across levels.

Ntafos said there are students who are admitted to different programs who are working at different levels, and transfer agreements between local institutions work better than one statewide transfer agreement. Barasch added that universities are all ranked different

nationally, something that is threatened if they all use the same curriculum.

Porter replied that we have to take the problem of transferability seriously, and McHugh noted that the FOS has nothing to do with upper-division courses, which is where the differentiation between universities takes place.

### **Computer Organization and Machine Language (COSC 2325/2425):**

The committee discussed whether the course should be about architecture or assembly language. The focus for some is the machine from a software point of view, but this would be better as a junior level course. The focus for others was computer architecture. The committee discussed whether the course should be 2000 or 3000 level and how it could be substituted in transfer.

### **Calculus I (MATH 2313/2413) and Calculus II (MATH 2314/2414):**

The committee discussed whether to include the 3 SCH or the 4 SCH version. The consensus was to require the 4 SCH version.

### **Physics I (PHYS 2425) and Physics II (PHYS 2426):**

The consensus was to include the Physics courses in the FOS.

### **Discrete Math (MATH 2305):**

Barasch said that Discrete Math is an essential course and it is important that it be done well. Qasem said that two semesters of it should be required. Michie noted that the course is not offered at many community colleges. The committee discussed whether Discrete Math should be a prerequisite or co-requisite for COSC 2436 and the impact this would have on community colleges. The committee also discussed the learning objectives of the course as it appears in the ACGM.

The committee concluded with a discussion of how courses transfer and whether certain lower-division courses can be substituted for upper-division courses. Porter and McHugh suggested that placement exams could solve many transfer problems.

## **8. Adjournment**

The committee adjourned for the day at 5:00.

## **October 9, 2018:**

### **1. Call to order**

Michie called the meeting to order at 8:30 AM.

## **2. Discussion and consideration of Computer Science & Information Technology Field of Study curriculum**

Michie distributed the results of an overnight poll of committee members asking them which courses they would prefer to see in the FOS. There was widespread consensus on including Physics I, Physics II, Programming Fundamentals II, Programming Fundamentals III, Calculus I, and Calculus II.

There was continued discussion of Programming Fundamentals II. Walker noted that it is a prerequisite for Programming Fundamentals III. King said that it would force two-year institutions to create a placement test to see if students are ready for the course.

Committee members noted that more community colleges teach the 4 SCH version, but more universities teach the 3 SCH credit version. Some universities require that students pass exams before getting credit for this course, and some give credit and some do not. Some universities also require MATH2 305 as a co-requisite or prerequisite.

Ntafos recommended tabling the issue until the other FOS courses are chosen.

Discussion returned to Discrete Math. Walker noted that some institutions teach it at the upper division. The committee discussed cross-listing courses or adding discrete mathematics content to COSC 2436 or other courses.

The committee discussed whether the FOS was getting too large. Members noted that some courses can overlap with the core, and students will likely be FOS incomplete for a time as it will take time for community colleges to implement new courses. Tomerlin pointed out that students can complete the core after transfer if the FOS is too big to complete alongside the core in 60 SCH.

The committee discussed Computer Organization (COSC 2325). The consensus was to require the 3 SCH version.

Tomerlin and Michie clarified that receiving institutions should give credit for the course, not the credit hour. For example, if a 4 SCH course is required in the FOS and the receiving institution only offers the 3 SCH version, then the institution would not have to find room for that 1 extra SCH in the 120 SCH degree plan. The 1 SCH would just be an excess hour.

Porter wondered if the committee has the expertise to know the content of these courses. The committee may be doing a disservice to students to tell them that the courses are equivalent across institutions by the course title alone since there are different versions of Computer Organization at different levels and at different SCH.

Michie said that universities could still require students transferring with a completed FOS to take the upper-level course as long as they could show that it contained significantly different material. Others noted that the ACGM curriculum guide recommends that this material be taught at the 2000 level.

After brief discussion of Linear Algebra and Introduction to Computing, a series of votes were taken on including courses in the FOS:

- Include Physics I (PHYS 2425) in the FOS – 16 yes, 0 no
- Include Physics II (PHYS 2426) in the FOS – 15 yes, 1 no
- Include Calculus I (MATH 2413) in the FOS – 16 yes, 0 no
- Include Calculus II (MATH 2414) in the FOS – 16 yes, 0 no
- Include Programming Fundamentals II (COSC 1437) in the FOS - 16 yes, 0 no
- Do NOT include Programming Fundamentals I (COSC 1436), with the recommendation that the ACGM be modified to change the prerequisite for COSC 1437 from "COSC 1436" to "COSC 1436 or equivalent preparation." – 15 yes, 1 no
- Motion to table the discussion of Computer Organization (COSC 2325/2425) until it is decided how many courses end up in the FOS – 16 yes, 0 no
- Include Programming Fundamentals III (COSC 2436) and recommend that the ACGM be changed so that MATH 2305 is either a corequisite or prerequisite to COSC 2436 – 14 yes, 2 no
- Include Discrete Math (MATH 2305) – 14 yes, 2 no
- Motion to take postpone discussion of Computer Organization (COSC 2325) – 10 yes, 4 no, 1 abstention
- Include Computer Organization 3 SCH (COSC 2325) OR Computer Organization 4 SCH (COSC 2425)– 10 yes, 6 no

The following recommendations were made to a future Computer Science Learning Objectives committee for revisions to the ACGM:

- Change the prerequisite for COSC 1437 Programming Fundamentals II from "COSC 1436" to "COSC 1436 or equivalent preparation".
- Change Discrete Math (MATH 2305) so that COSC 2436 is either a co-requisite or prerequisite to MATH 2305.
- Change the prerequisite for COSC 2325/COSC 2425 Computer Organization from "COSC 1336 or COSC 1436" to "COSC 1336 or COSC 1436 or COSC 1337 or COSC 1437".

Michie asked the CIP codes to which the FOS would apply. These are the CIP codes in the two-digit 11 CIP code:

- 11.01 – yes
- 11.0101 – yes
- 11.0102 – no
- 11.0103 – no
- 11.0199 – yes
- 11.02 – yes
- 11.03 – no
- 11.04 – no
- 11.05 – no

- 11.06 – no
- 11.07 – yes
- 11.08 – no
- 11.09 – no
- 11.10 – no
- 11.99 – no

## **8. Overview of the timeline for public comments and Field of Study approval**

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.

## **9. Consideration of authorization of Co-Chairs to approve minutes and final Field of Study documents**

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.

## **10. Adjournment**

A motion was made to adjourn and was passed by acclamation at 5:00.

**Final Proposed Field of Study:**

<b>Course Title</b>	<b>Course Number</b>	<b>SCH</b>
University Physics I (lecture + lab)	PHYS 2425	4
University Physics II (lecture + lab)	PHYS 2426	4
Calculus I (4 SCH version)	MATH 2413	4
Calculus II (4 SCH version)	MATH 2414	4
Discrete Mathematics	MATH 2305	3
Programming Fundamentals II (4 SCH version)	COSC 1437	4
Programming Fundamentals III (4 SCH version)	COSC 2436	4
Choose one of the courses below: <ul style="list-style-type: none"><li>• Computer Organization (3 SCH version)</li><li>• Computer Organization (4 SCH version)</li></ul>	COSC 2325 COSC 2425	3-4
<b>TOTAL</b>		<b>30-31</b>