Engineering Advisory

12/7/21

5:00pm – 7:00pm

Virtual Meeting Minutes

*Present: Northrop Grumman Corporation – Mark Edmonds, Don McKenzie, the Aerospace Corporation – Alan Hopkins, Cal Poly Pomona – Massoud Moussavi, Boeing – Kim Armstrong, LBCC –Juan Flores-Zamora, Ladera Barbee, Dana Fries, Veronica Rodriguez*

**Welcome & Introductions:**

J. Flores-Zamora called the meeting to order at 5:07pm. J. Flores-Zamora welcomed everyone and provided an update about the Engineering Technology and Computer Design Program. Both programs have moved from the CTE Department to the Math and Engineering Department. This move is helpful because it better aligns the engineering programs at LBCC.

**Computer Aided Design – Mechanical Program:**

J. Flores-Zamora provided an overview of the CAD program courses. This program provides a good foundation for students with mechanical design. It also includes an introduction to higher education, an introduction to the field, and an introduction to engineering technology. One of the key focuses of this program is that it will line up with the programs at UC’s and CSU’s. Most of the courses are 2-unit courses, and students can earn a certificate or AS degree. Students can also earn three smaller certificates that are stackable.

D. McKenzie asked if the coursework could produce hardware and apply GD&T to what the students are learning. J. Flores-Zamora stated that students would be able to do 3D printing. One of the focus areas will be to find dedicated lab space for the program. The GD&T class is primarily theoretical, but in the future, there should be a lab component.

D. McKenzie suggested that course include the product life cycle from inception to design, programming, producing it, and product validation. J. Flores-Zamora stated that an intermediate course that integrated GD&T concepts with Solidworks and CATIA and create 3D models that fit would be a great idea. D. McKenzie stated that students could validate their design by doing the GD&T on the drawing or on the model and then look at the way it is laid out to make sure dimensions are correct.

K. Armstrong asked if this program tied into the AS degree and certificate program. J. Flores-Zamora said yes, it does.

Advisory members recommend having a dedicated lab space for the CAD program to validate and demonstrate the practical application of the dimension and tolerance requirements of the design. The lab will help to have purposeful experience of outcomes. Having a space where students can quickly create parts helps with innovation and creative thinking.

L. Barbee mentioned that work was done in spring 2020 to find a dedicated space; however, J. Flores-Zamora stated that the space was not big enough and since most of the 3D printers are in different locations, it is not a dedicated center. In addition, a dedicated staff member will be necessary.

J. Flores-Zamora stated that the current iteration of the engineering technology program is career heavy. It has a legacy of working with Project Lead the Way at LBUSD and most of the coursework is offered through the dual enrollment program at LBUSD. Students receive credit for the courses; however, LBCC and LBUSD need to bridge the gap and have students continue and finish the program. There are multiple iterations of the engineering technology program and students have had different program plans. This program also pulls from other programs, such as advanced manufacturing, that are not fully established at LBCC, nor have the facilities needed. This is part of the reason why students are not able to enroll and complete the program. In addition, this program is not fully transferrable and the majority of students who attend LBCC want to transfer.

J. Flores-Zamora is proposing a new modified engineering technology program that provides a certificate, AS degree, and transfer. Courses for the new program are already established, so no new courses will have to be created.

M. Moussavi suggested changes to the number of units because students who want to transfer will not receive credit for the course. For example, CAD 50 is a 2-unit course, which does not match the CSU’s 3-unit course. In addition, the PHYS 2A & 2B are both 4.5-unit courses that students will only receive 8-units for. L. Barbee stated that discussions are taking place to have the 5-unit Calculus class reduced to 4-units; however, this will not happen for at least three years. M. Moussavi suggested developing courses that are transferrable and students do not lose the course or units.

K. Armstrong asked if there are electrical or robotics courses that can be added to the new program to keep it broader. J. Flores-Zamora stated that one of the issues in adding more courses is that the program would increase in units; certificate is currently 23-units.

Proposed ETEC Certificate and Associate Degree:

|  |  |  |
| --- | --- | --- |
| ETEC 10 | Intro to Engineering Technology | 1 |
| CAD 50 | Mechanical Drafting, Into | 2 |
| PHYS 2A | General Physics | 4.5 |
| PHYS 2B | General Physics | 4.5 |
| MATH 60 | First Calculus | 5 |
| CAD 60 | Geometric Dimensioning & Tolerancing | 3 |
| ETEC 60 | Materials for Engineering Technology | 3 |
|  | **Total** | **23** |

The industry advisory board voted to approve adoption of the proposed ETEC Certificate and Associate Degree as presented with modifications to unit values for the following class:

* CAD 50 – change from 2-unit course to 3-unit course

Vote passed unanimously.

Proposed ETEC Advanced Certificate with focus to integrate LBUSD:

|  |  |  |
| --- | --- | --- |
| ETEC 10 | Intro to Engineering Technology | 1 |
| ETEC 20 | Intro to Engineering Design | 2.5 |
| ETEC 30 | Principles of Engineering Technology | 2.5 |
| ETEC 40 | Digital Electronics for Engineering Technology | 2.5 |
| ETEC 60 | Material Science for Engineering Technology | 3 |
| PHYS 2A | General Physics | 4.5 |
| PHYS 2B | General Physics | 4.5 |
| MATH 60 | First Calculus | 5 |
| CAD 51 | Mechanical Drafting, Intro | 2 |
| CAD 60 | Geometric Dimensioning & Tolerancing | 3 |
|  | **Total** | **30.5** |

M. Moussavi asked what the reason was for having 2.5-unit courses instead of 3-unit courses. J. Flores-Zamora stated that this is based on student contact time; however, they can explore this further.

M. Moussavi stated that if courses are kept at 2/2.5-units, students could take only the lab portion at Cal Poly Pomona.

A. Hopkins asked if the ETEC 60 – Material Science for Engineering Technology course is a material science course or material engineering course. J. Flores-Zamora stated that it is a material selection course. A. Hopkins asked if this course is transferrable to CSU’s. J. Flores-Zamora stated that coursework will need to be articulated.

M. Moussavi stated that the courses can be easily transferred to Cal Poly Pomona’s program.

The industry advisory board approves adoption of the proposed ETEC Advanced Certificate as presented with modification to unit values for the following classes:

* ETEC 20 - change from 2.5-unit course to 3-unit course
* ETEC 30 - change from 2.5-unit course to 3-unit course
* ETEC 40 - change from 2.5-unit course to 3-unit course

Vote passed unanimously.

**Questions:**

A. Hopkins asked if there is any value in looking at statistics that follow students in their two-year track; where do they end up, what is their final degree, then bringing them back to provide feedback about the program. J. Flores-Zamora stated that Advisory Boards typically include students and alumni and will consider this in the future.

D. McKenzie asked what are the target schools in LBUSD. J. Flores-Zamora stated that the target schools are Cabrillo, Sato, McBride, and Jordan. LBUSD students are receiving credit for taking the Project Lead the Way courses, but they are not successfully entering the LBCC program. The goal is this new program will streamline the process for students.

K. Armstrong suggested connecting with the Aerospace Advisory at PGWIN to discuss the program and provide credit to students for work experience or internships.

D. Friez suggested looking at and modeling a mentorship program for the engineering sector.

J. Flores-Zamora would like to connect with industry for input on curriculum development and will discuss with department for future courses.

A. Hopkins asked how often the committee meets. J. Flores-Zamora said once per year.

D. Friez stated that advisory meetings are required by ED Code and they ensure that students are prepared for the workforce. This can only happen if industry is providing feedback on program design to ensure it meets their needs.

Minutes recorded and submitted by Veronica Rodriguez, pending approval.

Meeting adjourned at 5:54pm