ESSEX NORTH SHORE
AGRICULTURAL & TECHNICAL SCHOOL

Fall 2022 Program Advisory Committee Minutes

October 20, 2022

Program: **Engineering Technology**

Members Present:

Barry Jackson, Engineering Instructor, Essex Tech
Merril McColl, Engineering Instructor, Essex Tech
Tenley Mugford, Student Representative Grade 11
Hanna Wiebe, Student Representative Grade 12
Chip Sheerin, Raytheon
Reed Brockman, New England Transportation
Wayne Spritz, AW Chesterton, Retired
Mary Sarris, Masshire
Ken Warnick, Medtonic
Dave Kempske, AET Industries
Chris Macrena, AET Industries
Lena Winston, Parent
Elanor Lukens, Ametek
Ben Clarke, Engineering Instructor

Program Facilitator: *Barry Jackson*
Committee Chair: *Wayne Spritz*

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Program Updates (enrollment, curriculum, equipment & projects/field work, etc.)

Meeting opened at 6:30 with all members present introducing themselves. The Engineering Program introduced one new member to the program committee, Chip Sheerin, Software engineer from Raytheon.
Reviewed current enrollment:
19 Seniors; 30% female representation
19 Juniors; 60% female representation
8 Sophomores
The recruiting of 8 sophomores caused some concern with the committee, and the topic on better recruitment of freshmen during the discovery and exploratory cycle dominated the discussion. The engineering instructors outlined the curriculum used during exploratory. In addition, feedback from the freshman cycling through last year's exploratory rotations identified to the instructors that there was too much drawing in the exploratory lessons. The curriculum was revised for the remaining cycles, and 80% of the students who choose engineering came from the last three cycles. Exploratory lessons now incorporate more exposure to the prototyping equipment used in the engineering labs. Lastly, it was proposed that previous grads of the engineering program return to the school to present and tout their success and achievements to the freshman during the exploratory cycles. The consensus is the program needs to do a better job at marketing itself.

Curriculum for the freshman and sophomore classes in the program has been solidified and mapped. The goal is to complete the curriculum map for the junior and senior year by January of this year.

The engineering program continues to purchase material for project lab work that are not consumables. Lego's, Arduono, soldering equipment, and digital electronics kits have been purchased to engage the students with project related prototyping equipment.

Community projects include the Dock Pond and the Larkin cottage sponsor wall. The dock pond project encompassed designing a dock for the pond located behind the school. The environmental program was in need of a means to launch canoes for the purpose of testing water quality. The task entailed understanding the environmental codes as the constraints within which the design was developed around. The length of the project extended beyond the foreseen schedule as individual bias impacted the initial process, and the design process was then repeated to conclude the project. The Sponsor wall is an ongoing project to design and source placards to be mounted on an interior wall of the new Larkin cottage currently under construction.

Since the program has two new instructors, field trips were not scheduled as other program related duties took precedent. Going forward several committee members extended invitations to their companies for engineering related field trips. Ms. Lukens discussed they were open to a field trip at their Wilmington Facility. Mr. Brockmen has a tour of the Boston bridges. His tour gives both a historical and structural component perspective for each bridge on the tour.

Curriculum Bias/Programmatic Review

The wide variety of topics that engineering needed to cover was discussed and the committee recognized that this program is the most diverse shop on campus. The committee chair opined the engineering program will be divorced from advanced manufacturing with the announced grant to house the engineering program in a new building across campus. The marriage between the two programs emulates the industry model, as well as share technology. Other committee members took a different stance and welcomed the program shifting into a facility created for an engineering program. Essex Tech has hired a third engineering teacher to liaison

between both shops as he has both an engineering and manufacturing background. He alternates instruction between the engineering and manufacturing programs dependent upon the scheduled rotations. During the students academic week they interface with him for one block, permitting some connection between the two programs.

The new building on the south campus will contain biotech, IT, and engineering. Biotech is on the top of the list as far as state workforce requirements. The marriage between engineering and biotechnology is equally important as advanced manufacturing, due to the cooperative opportunities becoming available for the engineering students with biotechnology firms. Currently we have four juniors out doing an internship with Medatronics.

One of the student representatives expressed interest in coding, in place of the current curriculum. Elanor Lukens stated there Is a program "Girls who Code" that is available for just that purpose.

Cooperative Education Update

Gineapp Architects, LLC, Danvers
Clock Tower Engineering, Ipswich
Middleton Electric and Light Department, Middleton
ARCH Medical Solutions, Woburn

Employment Outlook/Industry Trends

Marry Sarris stated the industry trend, “It's All Good, Every industry is hiring due to huge number of retirements.” Mary was asked by the chair, what are the needs that this engineering program has to focus on? Her response was, No dip in any area, electrical engineering, mechanical engineering many industries have open positions yet to be filled. Life-science positions are new and expanding and the positions can not be functioned remotely. The life sciences industry comprises companies

operating in the research, development and manufacturing of pharmaceuticals, biotechnology-based food and medicines, medical devices, biomedical technologies, nutraceuticals, cosmeceuticals, food processing, and other products that improve the lives of organisms. New spaces for life science companies are retail outlets that have gone under, and there are thousands of positions to fulfill, in the North shore alone.

Mary also stated any industry related to the Department of Defense has open engineering positions, and the new arena is photonics. The applications for photonics spread across several sectors, from optical data communications to lasers, imaging, lighting and displays, and is principally needed in the manufacturing sector, life sciences, health care, and security and safety. The D.O.D defense budget is $800 Billion. The committee let that one sink in for the moment. Essex Tech’s district and surrounding communities are heavily populated with industry related to defense. Any program offering skills which they seek would be in high demand.

Included here but discussed during the discussion on field trips is the new venture in Salem Harbor. The offshoring of windmills for the Gulf Of Maine will be set up and tugged out to sea from there. The positions to assemble, store and test these assemblies extends to other programs as well as engineering. It is anticipated this facility will be on-line by 2025.

Recommendations for Program *(including budget needs for FY24)*

The chair did not recognize the automation and robotics program as a chapter 74 program here at Essex Tech and limited discussion on recommendations for this type of equipment. Engineering Technology is a recognized chapter 74. There are some Engineering Technology frameworks that cover automated systems, but are not familiar to the chairperson.

In a perfect world every engineering student would have a dedicated laptop that would be loaded with all the engineering program applications (solidworks, Multisim, Fluid-sims, Grabcad, etc…). The rationale here is the student is not limited to shop time to complete assignments requiring the use of the software needed in this program. The total student enrollment in this program exceeds the number of laptops, therefore additional seats will need to be purchased.

It is requested; that every student enrolled into this program be provided a laptop, with all appropriate software for student learning inside and outside the classroom, with the anticipation to be used for the 31/2 years they are enrolled in the program. One of the current limitations with the laptops is the size of the graphic screen is not ergonomically feasible for the visual graphics needed, they are too small. It is recommended that we purchase dual monitors as currently used in the engineering computer lab to be placed in the classroom for in class instruction. To facilitate this in the current classroom electrical drops are requested to power the dual monitors in their permanent positions.

Requested 4 VEX robotics equipment kits for Skills competitions.

Requested 4 desktop CNC Intelitek vertical milling machines. The current desktop CNC vertical milling machine is too heavy to transport to the state skills competition.

The above motion was recommended by Reed Brockman and seconded by Chip Sheerin. Motion was passed.

Financial Fair Recruitment

Financial literacy was presented by the chair to recruit volunteers from the committee to attend the financial fair. There were no takers.

New Business

The current chair asked if there is any interest in another member of the committee willing to take over the role as the chair. He stated the chair's responsibilities. The discussion was shelved as several members had left and there was not a quorum to support or vote on this motion.

Annual Programmatic Review was not completed and tabled for the next meeting.

The meeting adjourned at (9:15):