

**Wichita Falls Independent School District
Engineering Advisory Committee Meeting
Tuesday June 7, 2016
12 noon Education Center Room 301**

CALL TO ORDER

Michelle Wood, WFISD's CTE Coordinator, called the Engineering Advisory Committee Meeting to order at noon.

PARTICIPANTS

Michelle Wood, CTE Coordinator
Mike Kajs, Alcoa Facility Manager
Salim Azzouz, MSU engineering dept.
Donald Bell, Pratt and Whitney
Gary Oatman, GTO Engineering
Jeff Cooper, PPG
Synthia Kirby, WFISD, Carrigan principal
Ann Work Goodrich, WFISD communications specialist

BUSINESS

The group elected a chair (Jeff Cooper) and a secretary (Don Bell) to direct the meeting. A WFISD employee may not hold these positions, according to rules put forth by the Perkins Grant, which sponsored the meeting.

OVERVIEW

Michelle Wood explained that the advisory meetings are to make sure that WFISD educates kids in the areas needed by the community. "We are in the business of helping kids meet their needs," she said. It is important to have the conversations and the checks and balances of what school can offer and what the community needs.

In vocational tech classes, the district receives funding according to “butts in seats,” said Mrs. Wood. They receive \$1.33 per student, not \$1.00.

COURSE SEQUENCE

When WFISD students are in 8th grade, they do a Career Cruising survey that links their interests and skills with 40 career pathways. This new knowledge helps them pick one of the state’s five endorsement pathways, said Mrs. Wood. “We want them to try stuff,” she said.

In the 2015-2016 school year, students interested in engineering were lumped into the Principles of Industrial Trades class, under the Manufacturing Track. However, “We found out that the industrial and engineering students are not the same students,” said Mrs. Wood. Though the manufacturing track may be helpful, that’s not really what the engineering student wants. Next year, engineering-oriented students will take a Concepts of Engineering class. “It will be the first time to roll those kids into the Concepts of Engineering Principles Class,” she said.

Jeff Cooper asked if students would be taking calculus.

Many students choosing engineering will take 8th grade Algebra 1, geometry as freshmen in 9th grade, Algebra 2 as sophomores in 10th grade, then pre-calculus in their junior year and calculus as seniors. It is not a requirement, said Mrs. Wood.

Mr. Cooper said there is a dichotomy in engineering education versus the field. The education should be as broad as possible. Calculus is required to act as a filter for a lot of students

interested in the end result but to see if they will make that hurdle in college.

There's no reason to go into engineering if you can't pass that hurdle (of calculus).

Mrs. Wood explained that a lot of kids don't understand what they're asking for when they say they want to be an engineer or a doctor or a lawyer. "Most have no idea what it requires," she said.

Synthia Kirby interjected that some students, when signing up for engineering, think they will be working on a train as a train engineer.

Mrs. Wood said the average student doesn't know about chemical engineering or structural engineering and has little idea of what is involved in any of it. But at this stage, the district is trying to give them very broad boundaries and not eliminate anyone but instead to advise them, "Here is where you need to be strong academically," and "Don't consider this field if you don't plan to go to college after high school."

"We want to give them progressive exit strategies," said Mrs. Wood. For example, perhaps if they are good at robotics technology, they could earn a robotics certificate and go into the job field with that. Or they might take it and go on to Vernon College's industrial automation. Others will complete a four-year college. "We want to give everybody an exit point" that works for them, said Mrs. Wood.

Salim Assouz from MSU said students should take math classes and work up to calculus.

Mrs. Wood said, “We are trying not to pigeonhole kids based on their grades and effort. If they are on the fringe, we want to identify their skills and give them pathways to succeed.”

“That’s a very good idea,” said Mr. Azzouz.

Mr. Azzouz said at MSU there are typically about 100 students in the Introduction to Engineering freshman class, then 30 to 40 students who graduate four years later. They enter the field thinking sports cars, then they take the classes and think, “I can’t do this.”

Mrs. Wood said we must educate our kids so they can decide, “I like this. I don’t like that.”

Mike Kajs asked how a student gets out of engineering if he enrolls in it in 8th grade but by the end of 9th grade decides he doesn’t like it?

“Mrs. Wood said, “You change your endorsement.” A student can change his mind up to his junior year. The state wants a student to have four courses in their endorsement field and at least two in the same career. Or they can switch to the Multidisciplinary track, which is broader. But this is the time for them to try out the fields they think they would like – before they are spending their own money to learn, she said.

Gary Oatman asked what feedback a student gets if he says it’s hard and he wants to bail out?

“That’s a teacher’s job,” said Synthia Kirby. A CTE teacher works closely with her students and will counsel them, like a coach or a band director might. She said many students have accidentally called her “Mom.” A teacher will encourage kids to

push through hard circumstances. “It takes a village,” she said. “Just because a kid wants to give up doesn’t mean he should. Some persevere. Some try something else. Helping them decide is a big part of our job.”

Mrs. Wood added that CTE teachers have a deeper relationship level with kids and know their weak spots because they spend so much time with them.

Mr. Oatman said too many students today are rewarded for doing/achieving nothing. Their teams will host a victory celebration even if their team hasn’t won a game all year. Students never learn to knuckle down and work hard, he said.

Mrs. Wood said, “Competition breeds excellence,” and that’s one reason the district will involve students in statewide competition. “It moves them to a higher level.”

Mrs. Wood said she worked at the registration tables when kids were signing up. What once were “blow-off classes” that were electives are now important, harder classes. Many students asked, “Which one is easy?”

“We told them, ‘If you enjoy it, it will be easy,’” she said.

Now students aren’t allowed to take just any elective but must take the classes in a prescribed order, with certain classes as prerequisites. We want to provide a level playing field, where every student at every school gets the same information when they take the same introductory course.

ENROLLMENT

“It’s outrageous,” said Mrs. Wood. There are 80 students on each campus signed up. On only a couple of the campuses can a

student take robotics. Only 10 juniors are signed up for robotics.

Mr. Cooper asked about the schedule of the CTE Center.

Mrs. Wood said it will open in the Fall 2017. In 2016-17, WFISD will be doing a “dry run” of its series of classes without the all-important CTE building. Not all classes will be available at all high school buildings, so some students will have to travel to other campuses. Shuttles will be provided to get them where they need to go.

Mrs. Kirby said they will also be allowed to drive, something they have already been able to do as part of the district’s CTE program. They drive from their home campus over to Carrigan. “One gender is no worse than the other” when it comes to driving, she said.

CURRICULUM

The district is hiring for two engineering positions now. One will teach at two campuses.

There are four curriculum pathways and most use Project Lead the Way for middle through high school. It’s said that it has raised the level of learning so high that some kids can’t do it.

Other curriculums are Intel Links, Carnegie Mellon, and AIM (which integrates math).

The district will probably purchase something canned for its first couple of years. “Why reinvent the wheel?” asked Mrs. Wood.

Mr. Azzouz said he has heard about BECS VECS, a classroom set of 30 robots for robotics classes for freshmen and sophomores.

Mr. Kajs said his exposure to VECS has been through competition.

Mrs. Wood said students will be urged to compete at the junior and senior levels to raise their skill level as they “show off.”

Mr. Azzouz said MSU has a TCEA that would love to have WFISD kids participate.

Mrs. Wood said teachers that are hired to teach this curriculum must have three years of industry experience. “Teachers make or break the program all the time,” she said.

Mr. Cooper said, “A lot of engineers do not make good teachers.” He asked about the timeline on the curriculum and if it had been purchased.

Mrs. Wood said she would be ordering it “next week.” She will go with VECS and Intel Engineering because they seemed the most comprehensive with lesson plans. She wanted something to give to new teachers.

Mr. Azzouz asked about software for design. MSU’s architecture lab has CAD, Autodesk and suite so they can do 3-D design. “I’d love for them to get Solidworks,” but it is expensive. You use the software to draw, then load it into the machine, remove the layers and 3D print it.

Mrs. Wood said 3D printers are “pretty cheap” and the district already has several: 2 at Rider High School, 1 at Carrigan Career Center, and 1 at Wichita Falls High School.

Mr. Kajs said, "Solidworks is the leader. But it is not easy."

Mr. Cooper advised starting out with 2D Auto cad and Autodesk to give them 2 dimensional drawing skills.

They need to use a T-square and a triangle.

"That's a natural progression?" asked Mrs. Wood.

"Very much so," said Mr. Cooper.

Mr. Azzouz said, "Kids pick up the software very quickly."

Mr. Oatman said young engineers in the industry 10 years write so poorly that he can't read their writing. "It's a lost skill of writing and sketching by hand," he said.

Mr. Azzouz agreed. "Students have to write their labs. It's pathetic. But on the computer, they're very sharp."

Mrs. Wood agreed that writing skills are a big need – and has been in every career area.

Mr. Cooper said engineers require legible printing on captions.

"Writing is a lost art," said Mr. Oatman.

Mrs. Wood said the district will purchase new computers for architect/engineer classes because they require a lot of space for their big programs.

CERTIFICATIONS

- Basics in Auto CAD

- Solidworks certification
- “Vernon College offers quite a few,” said Mr. Cooper.
- “Industrial automation is the best fit” at VC, said Mrs. Wood.

STUDENT ORGANIZATIONS

- Skills USA
- National Technical Honor Society

Mrs. Kirby said it is great when community leaders and industry professionals come into the classroom to help. Chris Venegas helped prepare kids for competition, she said. “If you have any interest in volunteering....” She said. “Chris is our poster child of what CTE is.”

“He’s very sharp in design,” said Mr. Azzouz.

SUPPLIES

The district will be ordering robots.

Mr. Azzouz said to talk with Jim Hogg at MSU’s IT department. Perhaps there could be a transfer of computers, since every three years, MSU upgrades its computers, he said.

Mrs. Wood said the district would gladly accept any things the professionals are not using.

Mr. Azzouz confirmed that MSU has a local chapter of the American Society for Mechanical Engineers. “Would you want to help sponsor a high school chapter?” asked Mrs. Wood.

“That’s definitely possible,” he said. “We are looking for activities.” The president is Kenneth Griffen, he said.

SPECIAL POPULATIONS

This track has more men.

The meeting adjourned at 1:20 p.m.