



# K4-12 Education Advisory Board Meeting Minutes January 25, 2018

## **Participants:**

- Jonathan Solomon – LGC
- Eliot Smalley – SC Public Charter Schools
- Keith Wilson – Dorchester District 2
- Anne Weston – Ashley Hall
- Darlene Anderson – Northwood Academy
- Suzi Raiford – Charleston Chamber of Commerce
- David Roemer – Wando High School

## **Not Present:**

- Nancy Muller – LGC
- Terri Nichols – Charleston County School District
- Sharon Snyder – Berkeley County School District
- Gwendolyn Bright – Dorchester District 4
- Dereck Rhoads – Beaufort County School District
- Sandra Leatherwood – Diocese of Charleston
- Carmelina Livingston – Lowcountry STEM
- Juliet White – Colleton County School District

## *Guest Speaker:*

David Roemer is a teacher in engineering and STEM education at Wando High School. A graduate of the United States Military Academy in 1974, he was posted to Fort Sill, Oklahoma, and Augsburg, FRG as a Field Artillery officer. Mr. Roemer joined Wando High School in 2002 as an Engineering Teacher, certified to teach five courses: Intro to Engineering Design, Aerospace Engineering, Computer Integrated Manufacturing, Digital Electronics, and Engineering Design & Development. In 2010, Mr. Roemer was named the Lowcountry STEM Teacher of the Year. In 2015, he was named the South Carolina STEM Teacher of the Year.

David discussed the organization of Wando High School and what makes Wando the perfect model to introduce STEM fields into high school education. Wando is required by SC state law to have a total of 17 core unit credits and 7 elective credits to allow a student to graduate with a high school diploma.

Understanding these requirements, Wando High School decided to adopt a system similar to that of colleges. With “Schools of Study,” the school allows for students to focus in an area of knowledge (a major) from the time they are sophomores to graduation. The Schools of Studies are Freshman Academy; Arts & Humanities; Business & Information Systems; Health, Human, and Public Services; and Math, Science, & Engineering (or STEM fields).

David works in the School of Math, Science, and Engineering but every “school” within Wando is organized in the same manner. Within these schools, are clusters of majors where four classes are required to complete the major. Within the School of Math, Science, and Engineering there are four clusters: Agriculture; Manufacturing; STEM; and Transportation, Distribution & Logistics. Engineering falls into the STEM and a student would be required to take the Foundational courses of Intro to Engineering Design and Principles of Engineering, along with two other courses of their choice.

In addition to the courses that students take for the selected major, complementary courses are recommended to students in order to enhance their knowledge of a specific area. These complementary courses span all subjects, including, but not limited to art; calculus; physics; environmental studies; computer programming; and advanced networking.

Students are given the options of what core classes they want to take within the major, with the exception of the foundation classes. These courses are called “specializations” because they tend to focus on different career paths within the field. For example, engineering has digital electronics, computer science, and aerospace engineering as specializations. “Pathways” are for the AP Academy and are based within the major. The engineering pathway requires any of the core requirements (including the foundational courses) and one AP course in either calculus, physics, chemistry, or computer science.

Outside of the classroom, Wando connects students with internships and job shadowing opportunities. They also connect students with non-profit organizations, groups, camps, and competitions to further create a dynamic and fun experience learning about the fields.

David commented that there has been a success among students and the quality of education has improved at Wando since the move to this system. There has been pushback from those parents desiring a more traditional, “well-rounded” education. However, David noted that the program and organization of courses have allowed students to obtain comprehensive knowledge of a field prior to graduating high school.

When asked about whether a major is required by all students, David stated that it is recommended however not required. David stated that it is better for a student to change majors and find their passion within the high school than in college due to costs.

Those present showed interest and intrigue in all that David shared.

Jonathan thanked the speaker for his presentation and knowledge and thanked him for the investment of time and energy to talk to the board. Elliot Smalley stated that it is an amazing program at Wando High School but he was unsure as to how that can be implemented at schools that are not as fortunate with funding and opportunities (i.e. Burke and Baptist Hill High Schools). Elliot suggested that as it should be everyone's goal to get programs like Wando's implemented, there is still great inequity within districts.

What can the LGC do for K-12 Education?

Being that it was Jonathan's and Elliot's first time at an advisory board meeting, Jonathan asked what the LGC can do for districts, teachers, and students. Suzi had mentioned that the Chamber of Commerce finished a report that they were publicizing in the near future of what the business sector and education sector deem the most important qualities for students and workers. Suzi also mentioned, in the acknowledgment of other members, that teachers feel as though they are not able to develop professionally nor have enough resources.

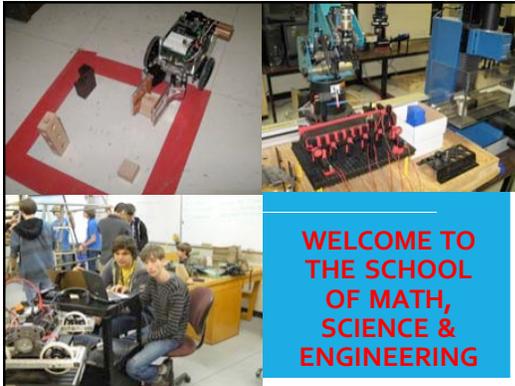
Jonathan asked about leadership opportunities for teachers, and Keith answered that there are opportunities for them but many feel as though that is primarily for teachers wanting to go into administration.

Jonathan informed the board that the **next meeting of the Advisory Board is June 21<sup>st</sup>, 2018 at 4:30 pm** which some asked if it the meeting could be scheduled at an earlier time of day due to no classes. Jonathan said he would check and get opinions.

The meeting was adjourned at 6:00 p.m.

Jonathan Solomon  
Administrative Assistant  
Lowcountry Graduate Center

**Copy of David's presentation below**



Based on State Law, requirements to receive a South Carolina High School Diploma (graduation requirements) for students in grades 9 - 12 are prescribed as follows:

|  |                 |
|--|-----------------|
| English/Language Arts                  | 4 units         |
| Mathematics                            | 4 units         |
| Science                                | 3 units         |
| United States History and Constitution | 1 unit          |
| Economics                              | ½ unit          |
| United States Government               | ½ unit          |
| Other Social Studies Elective          | 1 unit          |
| Physical Education or Junior ROTC      | 1 unit          |
| Computer Science*                      | 1 unit          |
| Foreign Language**                     | 1 unit          |
| <b>OR</b>                              | <b>OR</b>       |
| Career and Technology Education        | 1 unit          |
| <b>TOTAL CORE UNITS</b>                | <b>17 UNITS</b> |
| Electives:                             | 7 units         |
| Must include Comprehensive Health***   |                 |
| <b>TOTAL UNITS</b>                     | <b>24 UNITS</b> |

## Wando Schools of Study

- Freshman Academy
- Arts & Humanities
- Business & Information Systems
- Health, Human & Public Services
- Math, Science & Engineering

## School of Math, Science & Engineering Overview

- Mechatronics
- Horticulture
- Engineering
- Computer Science
- Automotive Technology

## Mechatronics

Mech 1 - simple and compound machines  
flow of energy, industrial safety

Mech 2 - control systems, instrumentation,  
electronics, power tools

Mech 3 – robotics, information systems,  
hydraulics, pneumatics

Mech 4 – manufacturing processes

## Engineering

**Foundation:** Introduction to Engineering Design  
Principles of Engineering

**Specialization:** Digital Electronics  
and/or Computer Integrated Manufacturing  
and/or Civil Engineering and Architecture  
and/or Environmental Sustainability  
and/or Aerospace Engineering  
and/or Computer Science Principles

**Capstone:** Engineering Design and Development

## Automotive Technology

- Auto Tech 1 and 2 (4 units total)
- Students learn about all systems of the automobile, as well as diagnostics , service and repair
- Leads to an ASE certification as an Automotive Technician

## Computer Science

- AP Computer Science
- Networking
- Computer Science Principles
- Programming
- Cyber Security

## Horticulture

- Introduction to Horticulture
- Equipment Operation & Maintenance
- Landscape Technology
- Nursery and Greenhouse Technology
- Turf and Lawn Management

## Engineering Pathway

### Any three

- IED
- DE
- AE
- CEA
- ES
- CSA
- POE
- CIM
- EDD

### Any one

- AP Calculus
- AP Physics
- AP Chemistry
- AP Computer Science

## Connections Outside the Classroom

- Internships
- Job Shadow
- VEX Robotics
- FIRST Robotics
- Sea Perch
- TARC
- ExploraVision
- Robotics Camp
- SME Gateway Academy
- Cyber Patriot
- Trebuchet
- Quest
- Extreme Redesign
- Youth Apprenticeship
- Extreme Redesign

## Our Major Business Partners

- BP Chemical
- Leidos
- SPAWAR
- Rotorion
- Bosch
- Blackbaud
- BenefitFocus
- SME Chapter 430
- Charleston Home Builders Association