A summary of proposal submitted to the National Science Foundation for an Advanced Technological Education grant to support a Mechatronics Technician (MechTech) Institute

ACC has submitted a proposal to the National Science Foundation for a $200,000 Advanced Technological Education grant to address the challenges of recruiting high school students into the mechatronics engineering technology program at ACC. According to a survey of local manufacturers, more than 200 mechatronics-related positions will be available in Alamance County over the next three to five years. This is a three-year grant scheduled to begin summer of 2017. Each year 12-15 ABSS STEM teachers and Career and Technical Education (CTE) counselors will participate in the MechTech Institute.

The MechTech Institute will prepare high school STEM teachers and CTE counselors to:

1. Represent mechatronics as a career choice by discussing the career options and outlook and demonstrating its application in the classroom.
2. Use mechatronics project-based learning to strengthen STEM skill attainment needed to advance through courses required for certificates, diplomas, and degrees.

During the MechTech institute, STEM teachers and CTE counselors from eight ABSS high schools will attend a series of workshops at ACC with ACC mechatronics and physics instructors. They will learn about mechatronics equipment and mathematical and physics applications as related to mechatronics. They will be given replica mechatronics kits to use in their classrooms. They will visit local manufacturers. They will develop lesson plans for use in their home classrooms.

The STEM teachers and CTE counselors will develop, with the assistance of ACC instructors, an online community where lesson plans can be shared. The ACC instructors will visit the ABSS classrooms and coach them on their instruction of the mechatronics concepts. CTE counselors will be able to speak more knowledgeably about the local opportunities provided by an ACC mechatronics credential. Ultimately, the longer term goal is for more ABSS students to enter into the mechatronics program at ACC and be placed in jobs with local employers, strengthening the local economy.

Grant dollars will be used to support release time for the mechatronics department head and for a physics instructor to prepare the lesson plans for the MechTech Institute, teach the workshops and provide follow up support to the participants. Grant funds will also provide stipends for the STEM instructors and counselors to participate in the workshops and provide them with mechatronics "kits" to take back to their classrooms.

This grant was submitted to the NSF in mid-October. We had our first response from the NSF ATE program in mid-December that our grant had been favorably reviewed, contingent on ACC responding to a number of questions and requirements.

The UNC-Greensboro SERVE Center has been contracted as the outside evaluator for this grant. The NSF requires that all grants be reviewed externally. The results of the evaluation of effectiveness of the MechTech Institute will be shared with other community colleges across the U.S. to help meet the needs for trained manufacturing technicians nationally.
One of the NSF requirements for funding is an assurance of human subjects protection. The fundamental principle of human subjects protection is that people should not be involved in research without their informed consent, and that subjects should not incur increased risk of harm from their research involvement, beyond the normal risks inherent in everyday life.

While it is extremely unlikely that any of the evaluation activities related to the MechTech Institute will be harmful in anyway, the NSF requirement is that ALL institutions receiving any-type of NSF funding need to have a policy and procedure in place to ensure that human subjects are protected. While we have received positive feedback thus far on our proposal, the NSF has informed ACC that we cannot proceed in the process unless the human subjects protection policy and procedure are in place.