

MAY 2019

# INSTRUCTIONAL TECHNOLOGY TO STIMULATE, ENHANCE, AND ATTRACT STUDENTS IN THE ENGINEERING TECHNOLOGY FIELD



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## SUNY CANTON

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## TELL ME MORE...



### A LITTLE BIT ABOUT THE PROJECT

A project-based engineering course will be developed and will use two primary teaching technologies to deliver engineering content to improve attraction and retention rates in Engineering Technology at SUNY Canton: a 3-D projector system and a gesture controlled armband, called the Myo. The 3-D projector system allows students to view items in 3 dimensional space and the Myo analyzes muscle movement provided by an individual's arm to control technology. These teaching technologies will provide students with the opportunity to view applications and showcase ideas of engineering technology in a new, novel way. These technologies were also shown and delivered into other classrooms.

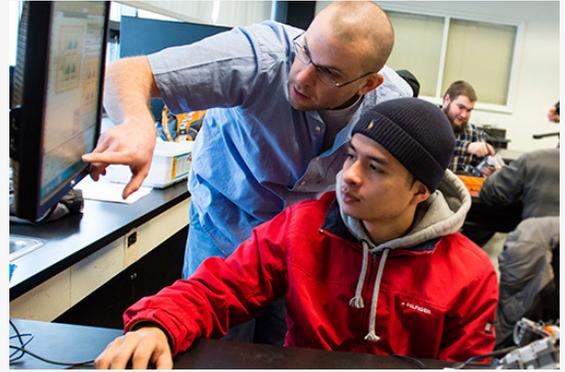
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# HOW DID THE PROJECT BEGIN?

How do we get more students into the field and keep them engaged?

With a group of highly motivated people that have a huge interest in new technology and trying to help students get the best out of education SUNY Canton tried to answer that question.

In Dr. Craig's own words, "From the start of my TA position in grad school, I have always pictured a lecture room having a holographic capabilities. Imagine (like Iron Man) where a professor stands in the middle of the room projecting holograms of lecture material that students can pull apart (like DC motors, etc.) to show them applications of engineering without purchasing expensive tools. We initially looked at Microsoft's HoloLens (virtual reality) but it was too expensive and new at the time, so we went with the 3D projector and Myo wrist bands. These bands can control powerpoint slides by flicking your fingers apart and the 3D projector can provide exploded views of material! Very cool and exciting!"



## PROJECT DELIVERABLES

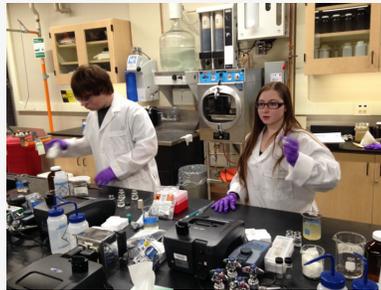
- Improve student engagement and attraction in lectures
- Provide different technology to deliver lectures for faculty and students
- Get students into the field of engineering technology

# SCOPE OF WORK

## WHAT'S THE NITTY-GRITTY?

The project was intended as an outreach program to local schools to get them interested in engineering technology and to get them college credit early. The students came to campus after school for the class, "Engineering Technology Awareness." The students had the opportunity to go through different types of engineering technologies and participate in various hands-on projects. The course was a 2 credit, 3 hour lab class that met once a week.

The new technologies, the MYO wrist bands and 3D projector, were used in both the Engineering Technology Awareness class and other classes on campus and in local middle and high schools. They were also used for recruitment and events on campus (admissions open houses, etc.).



## Why does new technology matter?

Engaging students is more important than ever. There is currently a shortfall of qualified advanced-degree STEM workers. The tech helps them engage in the material much easier and it's a different form of deliverables (something new and different that they haven't seen). For example, having blood from a heart shoot at you in 3D is exciting and makes students move their entire body when they see it. You can't get that with simple 2D PowerPoint lectures. The Myo wrist bands makes students learn a new technology to provide a different way of showcasing powerpoint presentations, controlling quad copters, or other robotic objects. With the wrist bands, you can make a fist to have a laser pointer show up on the powerpoint.

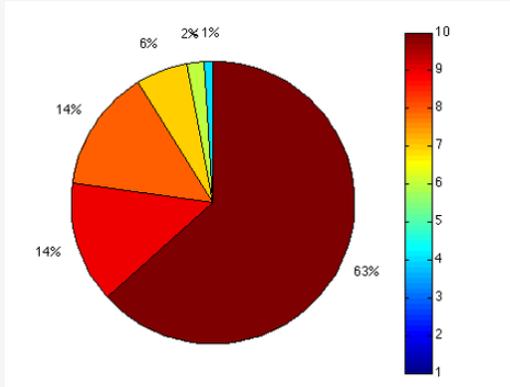
## Keys to Success

Engage students in a way that excites them, some of them said, "If we had this, I would come to school everyday!"

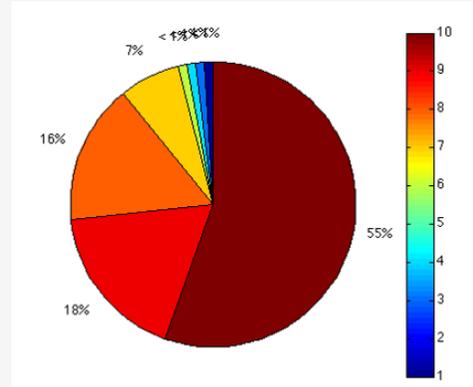
Provide options for students to deliver materials and keep them attracted and wanting to learn

Provide an opportunity to follow up and continue - students who took the class are now going into an engineering technology discipline

# MEASURING SUCCESS AND STUDENT FEEDBACK



Question to students: Please indicate your attention level when viewing the 3D projector



Question to students: Please indicate how well you think you were educated by using the 3D projector

## Student comments on the new technologies

1. New and refreshing to see
2. Very engaging and entertaining
3. Really interesting to a visual of what we are learning instead of pictures

1. 3D projector was attention grabbing and interesting but would advise only using once in a while so it keeps the "wow" factor
2. Getting dizzy and starting to get a headache

## LOOKING FORWARD, DEVELOPING 3D CONTENT

The hope is to work with a graphic multi-media design program to develop the colleges own 3D content. Dr. Craig wants to make videos of machines that can be ripped apart to look inside. Think about an RC car - they would be able to virtually take off the wheel, which would have bearings, and then look inside to see gears, brushes, etc. That's the goal!

