



Design  
Technology  
Alumni

Dakota High School  
Class of 2003



**Amanda (Mandi) Damman**

**General Motors - Chief Engineer for Autonomous Vehicles**

**Scott Herz** (left)

**General Motors - Lead Test Engineer, Global Battery Systems Laboratory**

**Scott Mitchell** (right)

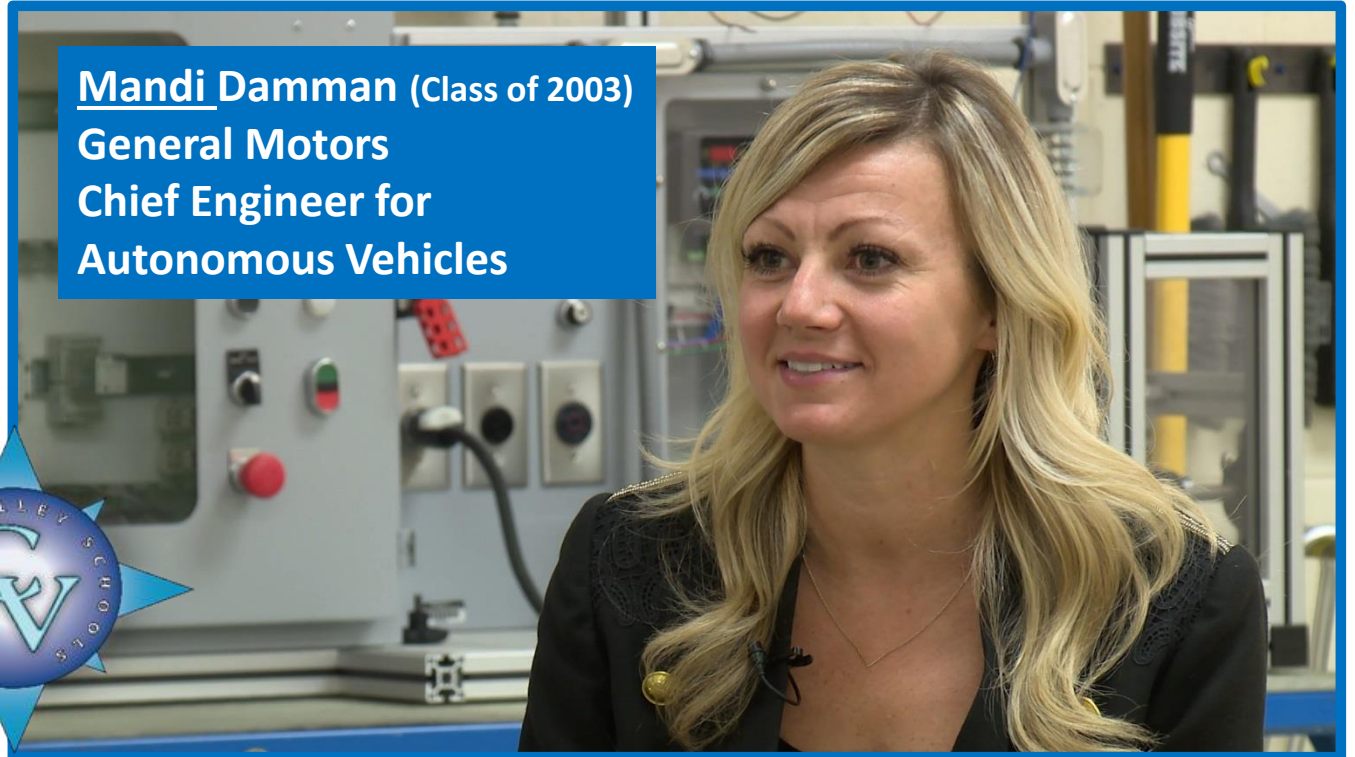
**CTE Design Technology - Instructor**

## *In her own words...*

“The exposure to engineering concepts of **Design-Build-Test is so important**. The projects and design-engineering challenges, all made sense from a physics standpoint. Prior to the CTE classes, I didn’t know why I was taking the math. When I started seeing how it would apply to engineering, it made me much more interested... **I knew why we were solving problems.**”



**Mandi Damman** (Class of 2003)  
**General Motors**  
**Chief Engineer for**  
**Autonomous Vehicles**



“There were 5 or 6 of us that went through the engineering program at Dakota HS who all went on to Kettering together. We were known as this ‘group from Dakota’ because **we were so much further ahead** in our CAD classes and we knew our way around the machine shop. We came in with the basics of engineering, and we knew so much more than students from other high schools.”

“To sum up my CTE experience in one word, it’s **opportunity**. It truly opened my eyes to engineering. If it weren’t for this program, I have no idea what I would be doing...I wouldn’t be where I am. It all comes back to this CTE program, and the fact that I took a chance, tried it out and loved it!”

*In his own words...*



**Scott Herz** (Class of 2003)  
**General Motors**  
**Lead Test Engineer**  
**Global Battery**  
**Systems Laboratory**

**“A powerful engineer is someone who knows the theory, can do the calculations, and then *apply* it and make it work. That is something that started here in this CTE program.”**

“CTE is where you brought everything together and really developed your **problem-solving skills**. In CTE, we learned to dive into a problem and figure out what’s contributing to it and ultimately how to solve it. If you’re exposed to that early *before* you go to a university, the trades, or an apprenticeship, you can go all in.”

“As you work through projects, it’s all about **team work**. To design something, then pass it on to a classmate to build, brings up the questions that need to be answered. There is an iterative, back-and-forth communication and problem-solving process that takes place until you actually get the part that you need. Once you’ve achieved that, you can test it, make sure that it functions appropriately. Of course, when it doesn’t, you continue the **critical thinking** process until you successfully achieve your goal. The dual design and fabrication aspects of the courses here really helped me to understand...And in the world of work, it’s all about the team, being a part of the team, understanding what your role is in the team and ultimately succeeding in that role regardless of whether you picked it or not. Very rarely does the lone soldier succeed.”

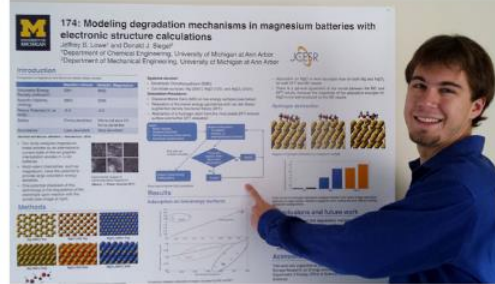


# Design Technology

# STEM by Design in Chippewa Valley Schools

**By Claire Brisson**  
Director of Career  
Technical Education

The greatest gift a student can give to an educator is the knowledge that they have made a positive difference in their life. As validating as this is, such feedback is a rarity for teachers, especially arriving unsolicited, several years after graduation. But such is the email that Design Technology instructor, Scott Mitchell, received in 2014 from Dakota High School alumnus Jeff Lowe (class of 2007). Jeff shares insights into the tremendous contribution that his teachers and current teachers



Dakota HS alumnus Jeff Lowe (class of 2007) is now a PhD candidate at U of M researching new battery technologies. About his high school Design Technology experience he says, "What I learned in your classes still benefits me today."



The fabrication lab at Dakota High School offers advanced Design Technology students Haas CNC lathe, CNC mill, plasma cutter, welding, laser cutter, 3-D printing, and more. Lab technician Pat Dinunzio looks on as student Mike Serra fabricates a part on the CNC mill.

## Designed for success: Real world perspectives

It is the built-in paradox of teaching that an instructor may never know the positive impact that something they did or said may have had on their students. Yet many of us have had teachers in our lives that did just that — made a pivotal difference at just the right time. Such is the case for Florin Blebea, a 2008 graduate of Dakota High School.

Florin discovered his passion for automotive design while in Scott Mitchell's advanced engineering design course, which is part of the larger design technology program in Chippewa Valley Schools.

As Blebea described it, "Mr. Mitchell brought in a guest speaker who had completed the same engineering program I was in. He was attending the College for Creative Studies in Detroit, majoring in automotive design. After seeing him sketch out some cars I knew immediately that I too wanted to pursue a career in automotive design."



Dakota High School graduate Florin Blebea, shown here as he skillfully contributes to creating a full-size, clay model of the Superlite Apex vehicle being manufactured by Superlite Cars LLC in Clinton Township.

had an advantage over my classmates, as they were struggling to draw the same vehicle in different views." Blebea also credits his high

school for providing a national Avanti Summa Cum Laude Award in 2010, becoming the first two-time winner of a major Avanti Award. His dedication, talent

— all having had industry experience, are committed to developing a very hands-on program based on the premise of the Design/



him more than just teamwork, shop etiquette, safety and how to use power tools. He said, "This gave me a confidence to later build things that I didn't know I could."

Blebea really demonstrated that ability while working for Race Car Replicas in Clinton Township, a company that manufactures a variety of replica car component kits. Within the sister company, called Superlite Cars — which specializes in original designs, not replicas — Blebea served as an associate designer and clay model sculptor on a mid-

sculpt, to model the vehicle he learned technical skills. "A typical design mostly visualizing are being designed in a 3-dimensional or 4-dimensional space. What advice do you have for middle school students who may have similar interests? I have one of the best engineering design programs in the county. Take advantage of it."



Budding engineers, Rachel Zaprawa and Kristina Stojanoski use the laser cutter to create a wood, gear prototype that will later be fabricated out of metal on the CNC mill. Both girls plan to study mechanical engineering after graduation at Kettering University and Lawrence Technological University respectively.



like Jeff Lowe, or branch off into CNC machining, robotics, programming, or something else entirely different, they benefit from this program. There is a good reason why Design Technology is officially recognized as a STEM program: it clearly integrates science, technology, engineering principles, and math. Both current students like Michael Serra and past students like Mitch Kelps, say they find the experience engaging, relevant, and one that delivers benefits for years to come!

We need innovative thinkers in all occupations — people who collaborate, ask good questions, and take calculated risks — to find new solutions to challenges. Research supports the notion that everyone needs to become skillful

## Macomb Daily 2015

Chippewa Valley Schools

# Design Technology



**Design – Build – Test – Analyze**

## Essential qualities of innovators:

*Perseverance*

*Willingness to experiment*

*Take calculated risks*

**Capacity for “design thinking”**

*Tolerate failure*

*Critical thinking*



## 5 Characteristics of “design thinkers”

1. *Empathy* – imagine the world from multiple perspectives
2. *Integrative thinking* – see all aspects of a problem & possible breakthroughs
3. *Optimism* – no matter how challenging, a solution can be found
4. *Experimentalism* – trial/error; explore solutions in new/creative ways
5. *Collaboration* – interdisciplinary