

# Samuel Ertl

102 Eastwood Dr.

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715-820-3058

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## Education

M.S. Automotive Engineering Technology 2017  
Minnesota State University, Mankato

Graduate Certificate in Quality Management Systems  
Minnesota State University, Mankato

B.S. Automotive Engineering Technology 2015  
Minor: Manufacturing Engineering Technology  
Minnesota State University, Mankato

Currently Enrolled

Ph.D. Energy Engineering 2018-Current  
University of North Dakota

## Engineering Experience

### Instructor – Minnesota State University, Mankato, 2017 – Current

- Automotive and Manufacturing Engineering Technology
- Classes Taught
  - Chassis Design and Performance Testing
  - Automotive Drivability and Diagnostics
  - Introduction to Parametric Modeling using CREO 6.0
  - Manufacturing Processes
  - Strength of Materials
  - Lab Experience
- Prepared lectures, labs, and assignments for courses
- Developed new coursework and projects to reflect student needs and department goals
- Worked with students on design projects and attended student competitions

### Formula SAE – 6 years

- Worked with students on the Formula SAE project to guide them through design and project management
- Helped develop tools for analysis of chassis design and testing
- Aided in vehicle testing and testing procedures
- Participated in Formula SAE for 3 years as a student
  - Worked as part of an engineering team to build a Formula SAE racecar
  - Team Leader and Suspension Team Captain
  - Achieved as high as 17<sup>th</sup> place at FSAE Michigan out of 120 teams from around the world
  - Developed a full vehicle model to characterize vehicle handling characteristics
  - Designed, built, and tested suspension systems to meet project goals and requirements
  - Developed 3D CAD models and assemblies of system components
  - Maintained team communication to ensure multiple system compatibility

### Vehicle Dynamics Modelling

- Developed a full vehicle model to characterize vehicle handling characteristics
- Tested vehicle components and assemblies to insure component compliance and model accuracy
- Measured physical vehicle characteristics to help determine model accuracy
- Developed data analysis methods to measure and analyze vehicle and driver characteristics

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## Composite Component Development

- Developed manufacturing and testing methods for composite structural members
- Designed member components to meet structural requirements
- Tested assembled components for maximum bond strength
- Statistically analyzed results to compare both bond thickness and cleaning methods
- Achieved 140% of manufacturer rated bonding strength

## Engineering Projects Lab

- Taught other students how to use the lathe, mill, and other general lab equipment
- Helped provide a safe working environment for students

## Software Experience

PTC Creo – Modelling, assemblies, sheet metal, FEA, flow analysis

Matlab, Simulink – Generation of mathematical models and minor programming of electronics with Simulink

ANSYS – Experience with static and transient structural analysis of individual components and assemblies

Motec i2 – Vehicle and driver analysis, math channels, and data organization

LabView

## Class Development

Chassis Design and Performance Testing

- Developed data acquisition unit including vehicle and driver analysis
- Developed lecture material to include inclusive load transfer calculations and the relationships of suspension parameters to vehicle load transfer characteristics. Students develop excel models for vehicle load transfer.
- Created a test fixture for anti-roll bars and am in the process of creating a cohesive lab/lecture design project involving measurements, vehicle modelling, and design

Materials Processing

- Further developed labs to help students develop better hands-on machining skills
- Developed in class demonstrations to help reinforce lecture material

## Professional Development

Participated in the ABET accreditation process in 2019

Seminars

- Applied Vehicle Dynamics – OptimumG (2015)
- Data Driven Performance Engineering – OptimumG (2018)
- Hybrid Systems Diagnostics – ATG (2019)

## Professional Memberships

SAE

ASEE