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## ISE students get hands-on experience within the Chevrolet Bolt EV manufacturing process

Students taking Oakland University's Industrial and Systems Engineering (ISE) "**Lean Principles and Applications**" graduate course are required to conduct a real-life case study. Instructor Larry Osentoski wants students to practice the lean principles they learn in the class on a real-life application.

Before the end of last year, Line Deschenes and Sudip Sharma, students in the ISE master's program, got an opportunity to carry out their lean project in the General Motors Orion Assembly Plant near Oakland University's campus and home of the Chevrolet Bolt EV. Their project was conducted in the body shop's sub-assembly area for the new total electric vehicle from Chevrolet – the Bolt EV (EPA-estimated 238 miles range in one charge).

Instructor Larry Osentoski said, "Our GM Bolt EV student team was the only project focused on manufacturing this semester. The other projects were focused on government systems impacting our surrounding communities. Manufacturing is commonly associated with lean implementation and the principles are undoubtedly easier for students to understand in this environment. Given the various background and experience levels of our master degree level students, it is important to put them in the best position to succeed and this project was certainly win-win for GM and Oakland University."

GM engineers Nathan Gendron from Global Manufacturing Engineering, and Vilma Kocllari from Industrial Engineering at Orion Assembly, teamed with Oakland students to guide and support the project, which focused on developing a new layout that helped to prevent potential waste and improve performance in two of the Bolt EV's workstations. Additionally, the Bolt EV team conducted a detailed time study to assist in developing ideas for a possible future state.

Using the principles and tools learned in class (PDCA, 5 whys, process mapping, brainstorming, workflow diagrams, etc.), the students worked with the operators and UAW-GM local 5960 core team representative Dave Shields on the project. With a focus on two important lean principles, "**Respect for People**" and "**Communication**". The team succeeded in proposing a new layout for improving the elimination of waste and workstations' performance, and delivered the additional detailed time study previously describe.

"My greatest satisfaction of the project resides in the conclusion – The 'Lean' tool by itself cannot be one direction interaction, but multidirectional interactions in a sense that all parties involved must feel positively engaged in the project. That's why 'Respect and Communication' are the most important key factors for success," said ISE student Line Deschenes.

During a final presentation to GM Orion Assembly Leadership, the team's results and recommendations were well received by the body shop managers and engineers. ISE student Sudip Sharma added, "This project in a reputed organization such as GM was a huge platform for me to get a hands-on experiential learning about the application of lean principles in a manufacturing plant. I am quite confident that the project will benefit the plant through our recommended improvements. I'm very grateful to the ISE Department for having this curriculum



*ISE students Sudip Sharma and Line Deschenes worked with Nathan Gendron, the Global Manufacturing Engineer for the area assigned to students, on the 2017 Chevrolet Bolt EV.*



me with this remarkable opportunity.”

a new workstation layout to prevent potential waste and improve performance in two of the Bolt EV’s workstations.

Robert Van Til, Pawley Professor of Lean Studies and Chair of the Industrial and Systems Engineering Department commented on his appreciation to GM. “We would like to extend our thanks and gratitude to everyone at the GM Orion Assembly Plant for supporting not only this project, but several previous ISE student projects as well. Such projects are extremely important in helping our students to bridge what they learn in the classroom to the manufacturing world.”