

### **NIU Student Design Team Collaborates with EIGERlab's Center for Product Development**

NIU's mechanism design and analysis student team was assigned a challenging project—

create a six-legged walking robot complete with a Hoeckens Linkage to compete with fellow student

teams. Post design, they enlisted EIGERlab to print their creation utilizing additive manufacturing or 3D printing. Haley Cummings, a junior mechanical engineering major on the team, said, "The students were given design constraints by the professor, which included adding a Hoeckens linkage. Translation, it had to have six legs, walk, and have three feet on the ground at all times. This mechanism makes the legs of the robot walk along a path guided by the front leg."

EIGERlab's Center for Product Development assists both startups and existing companies with all facets of design, engineering and 3D printing; anything that's necessary to bring a product to market. "The walking mechanism will be printed as an assembly so it'll be a fully functional model when we print it—no assembly necessary," said Mike Cobert, EIGERlab's assistant director.

NIU's student design team, consisting of Haley Cummings, Veronica Finegan, Andrew Johnson, Nathan Marshall and John Seper, was given a motor, battery cases and an on and off switch. Plastic and access to laser-cutting machinery provided by the College of Engineering were also available, but Cummings said, "Creating the robot with plastic would have proven too bulky given the movements necessary for our design."

The design was somewhat complex and, Jeff Metters, EIGERlab's prototyping technician said, "We print intricate designs on a regular basis, but it amazed me that such a complex design could be printed as one unit, and walk immediately after cleanup."

Professor Fallahi shared with the team, "In the end it was less about the competition, but more about the challenge and completing the design process as well as gaining valuable experience."



Left to right: Nathan Marshall, Andrew Johnson, Haley Cummings, Veronica Finegan and John Seper