



## BUILDING 21<sup>st</sup> CENTURY MANUFACTURING TALENT

### Heroes' Alliance Cooperative Learning Center Pilot

An Education & Workforce Development Initiative  
for LIFT...Lightweight Innovations for Tomorrow



#### THE PROBLEM

The state of Michigan, and the U.S. as a whole, are currently experiencing a major skills gap for a wide range of advanced manufacturing disciplines including lightweighting technologies and additive manufacturing. Many secondary and post-secondary students have little to no awareness of the myriad advanced manufacturing careers available. Exacerbating this issue is the fact that the state is also experiencing the drain of its talent pool to other regions of the country.

For example, as of Q3 2017, there were over 33,600 online job ads for occupations related to lightweighting in Michigan – up 11 percent from the more than 30,300 job ads posted the previous year.

#### THE SOLUTION

LIFT and Heroes' Alliance pilot program will develop an after-school, STEM engagement, vehicle technology competition and curriculum for Detroit high school students for the 2017-18 school year. The program will initially establish two teams that will work both independently and cooperatively to complete a vehicle technology project themed around lightweighting technologies and additive manufacturing. The pilot teams, made up of between 16-24 students, will include Martin Luther King, Jr. Senior High School and Detroit Collegiate Preparatory High School.

In response to the national agenda for increased STEM education, Heroes' Alliance has created a platform to engage students, especially underrepresented minorities in Southeastern Michigan, in STEM education through after-school enrichment. In addition to focusing on learning outcomes that increase both knowledge and skills, Heroes' Alliance is committed to creating a systematic means of supporting our students from secondary education through entry into the STEM workforce.

#### ABOUT THE PROGRAM

During the project, students will be working with industry professionals to design, build, and test an electric-solar vehicle that will be raced by the students in a national competition during summer 2018. Two schools will work collaboratively to complete the project during year one of the pilot.

The program will accomplish a number of goals to provide the students and their parents with an increased level of awareness related to potential careers in advanced manufacturing, as well as continue to foster improved relationships between industry and academia to better serve those students.

#### PROJECT PARTNERS



## Among the topics the program will work on are:



### *Curriculum validation*

The program will include a standardized after school curriculum with learning objectives defined in collaboration with LIFT, Wayne State University, and General Motors. The program will validate that curriculum and assess the cooperative learning environment.



### *Establish and Expand Industry and Academic Relationships*

This pilot will also focus on the establishment and expansion of industry and university partners and formalizing the relationships and roles that create opportunities for long-term student success.



### *Parental Engagement*

The pilot will include a platform for parental engagement that will allow students and parents together to explore pathways toward advanced manufacturing including college and career options. Students and parents will come together once a month to explore STEM pathways in advanced manufacturing side by side. As options and opportunities are presented to the students, they will simultaneously be presented to the parents, creating an atmosphere of shared interest and responsibility. Likewise, as myths concerning advanced manufacturing careers are debunked for the students, they will simultaneously be debunked for the parents, thus breaking down potential barriers to a student's long-term success.



### *Mentorship*

The pilot program will incorporate a two-fold mentorship program that includes peer mentors from Wayne State University as well as industry mentors from General Motors.

## DELIVERABLES

- Working with two schools, including between 16-24 students and two certified teachers
- Learning outcomes specific to lightweighting technologies and additive manufacturing along with state aligned standards will be identified, implemented, and analyzed for effectiveness during the pilot.
- Attracting additional industry partners that are key to the success of the full-scale program that will have reach and impact across the entire state of Michigan and beyond.

## ALIGNMENT TO STRATEGIC FOCUS AREAS



Attracting students and workers to educational pathways and careers in manufacturing



Ensuring students gain STEM foundational skills for success in manufacturing



Linking and leveraging resources and related initiatives on the ground today