

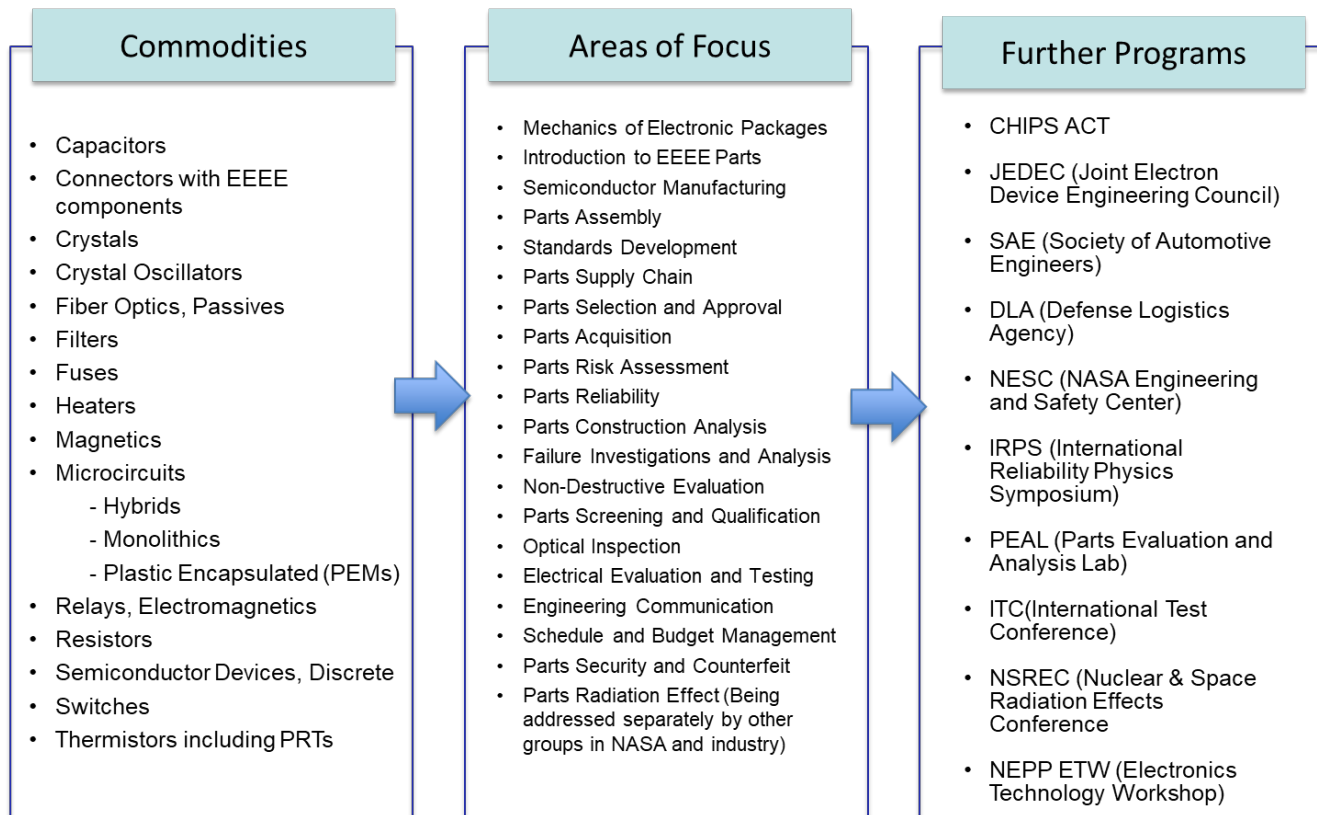


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### **NASA Parts Engineering School**

The NASA Electronic Parts and Packaging Program (NEPP) has encouraged the development of a NASA Parts Engineering Program alongside university partners Auburn University, the University of Maryland, and the University of Central Florida through NASA center-wide collaborations between NASA Jet Propulsion Laboratory (JPL), Goddard Space Flight Center (GSFC), Marshall Space Flight Center (MSFC), and Langley Research Center (LaRC). The program is assisting to address the knowledge gap in the current electronic parts engineering workforce and will lead to an increased number of trained professionals in the industry, cultivating the next generation of Parts Engineers.

Parts Engineering workforce development has been an ongoing challenge throughout NASA and the entire aerospace electronic parts community. The role of a Parts Engineer can include a wide variety of specialities, many of which are listed in the 'Areas of Focus' in the diagram below. The development of a curriculum which encompasses all areas of focus is crucial to ensure the growth of the field. With the development of this program, students will have the opportunity to experience a wide array of focus areas and find the ones that most suit them. Additional programs and resources, such as the CHIPS ACT and JEDEC, are available to further the knowledge base of the students.



## Certificate and Master's Degree Overview

The NASA Parts Engineering School team has partnered with three universities - Auburn University, University of Maryland, and University of Central Florida - to offer a certificate and a master's degree with an emphasis in Electronic Parts Engineering. The partnering universities were chosen based on their advanced level of expertise in the field of electronic parts. Interested students can enroll in designated courses at these partnering universities to pursue either an advanced, non-degree certification, or a master's degree. These graduate-level courses will be offered both online and in-person at the partnering universities.

The programs will also be offered with a NASA/NEPP designation allowing students to receive hands-on training onsite at JPL and Goddard initially, with more labs to be added. Students will be able to work closely with professionals in the industry and receive real-world experience.

The curriculum was developed with courses from multiple disciplines of engineering, including Mechanical, Materials, Electrical, and Reliability. Courses will continue to be tailored and developed as the programs and the field of parts engineering continue to evolve.

These programs will offer a variety of benefits to the Parts Engineering industry, including:

- Prepare incoming new hires with basic knowledge and supplement existing professionals with an extended knowledge base.
- Provide hands-on opportunities to cultivate an interest in parts engineering careers.
- Certification program and master's degree for enrolled students, graduates, or interested parties already working in the industry.
- Incorporate recommendations for personnel training from the NASA Engineering and Safety Center (NESC)<sup>1</sup>.

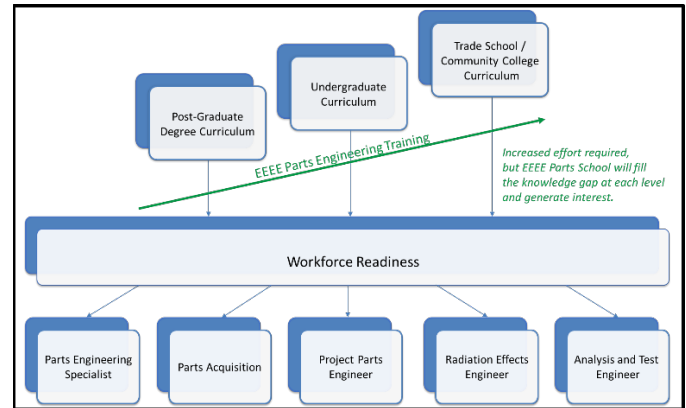


Figure 1. The additional level of training, based on the amount of schooling, required to become a trained parts engineer.

## Proposed Timeline and Deliverables

Courses became available Fall 2023 at Auburn University and the University of Maryland, and will be offered at the University of Central Florida beginning Spring 2024. More university and industry partners will be added as the program development matures and expands. NASA center workshops will begin development in the near future and will offer students the opportunity to work alongside professionals in the field.

## How to participate

A dedicated website for the NASA Electronic Parts Engineering School is now active, with information about the program, the curriculum, and admissions resources at partnering universities. Students, as well as working professionals in the field, can apply and take the recommended graduate courses through the individual universities. Courses can be taken at a single university or multiple universities in the program based on the home university's requirements. Application information is provided on the NASA Electronic Parts Engineering School website, which is listed in the Additional Resources section below.

Interested University and Industry Partners can reach out to Shri Agarwal and Seth Gordon for further information on the programs and partnership opportunities.

1. Phase II of the NESC Recommendations on Use of Commercial-Off-The-Shelf (COTS) Electrical, Electronic, and Electromechanical (EEE) Parts for NASA Missions: <https://ntrs.nasa.gov/citations/20220018183>

## Additional Resources

NASA Electronic Parts Engineering School

<https://www.jpl.nasa.gov/go/parts-engineering-school>

Auburn University: Samuel Ginn College of Engineering

<https://www.eng.auburn.edu/>

University of Central Florida: College of Engineering and Computer Science

<https://www.cecs.ucf.edu/>

University of Maryland: A. James Clark School of Engineering

<https://eng.umd.edu/>

## Conclusions

The university-level programs that have been developed will address the knowledge gap in the Electronic Parts Engineering industry and increase the number of trained professionals in the workforce. The goal of these programs is to cultivate the next generation of Parts Engineers to prepare them to join the workforce at NASA and throughout the aerospace electronic parts industry without requiring what can otherwise be several years of on-the-job training and mentorship to become proficient.

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## PREVIOUS ISSUES

**NASA OSMA EEE Parts:**

<https://sma.nasa.gov/sma-disciplines/eee-parts>

**Other NASA Centers:**

<https://nepp.nasa.gov/>

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