EEE 498 Research Credit opportunity – Circular Economy Fall 2023

“A circular economy reduces material use, redesigns materials, products, and services to be less resource intensive, and recaptures ‘waste’ as a resource to manufacture new materials and products.” (U.S. EPA). Municipal solid waste landfills are potential source of valuable materials, including many metals.

An EEE team is actively working on value recovery from landfill leachate (Prof. Shah, Prof. Hua and Dr. Zyaykina), and seeking either one undergraduate student interested in earning 2 research credits (involvement 10-12 hours per week) or two undergraduate students interested in earning 1 research credit each (involvement 5-6 hours per week per person) during Fall 2023 in the frame of EEE 498.

The Undergraduate Research Assistant(s) – URAs – are going to support experimental research towards characterization of landfill leachate samples collected from several landfills nationwide. The student(s) will learn operation of the advanced lab equipment and instrumentation, such as Microwave Assisted Acid Digestion (MWAD) and Inductively Coupled Plasma Optical Emission Spectrometry (ICP-OES), sample handling techniques, statistical data analysis and safe laboratory practices.

The requirements are:

1. Wiliness and ability to work in wet lab with hazardous chemicals. Detailed safety training and PPE (Personal Protective Equipment) will be provided.
2. Ability to follow written experimental protocols (SOPs = standard operating procedures) to the letter.
3. Ability to keep to the pre-scheduled appointments to insure the team work. The experimental schedule will be developed together with the student(s) accounting for everyone’s availability and will be limited to Monday-Friday, 8 am – 5 pm.
4. Prior lab experience is preferred, but not required.

Interested students should contact Prof. Shah (adshah@purdue.edu), Prof. Hua (hua@purdue.edu) or Dr. Zyaykina (nzyaykina@purdue.edu) for further details and to initiate the registration process.