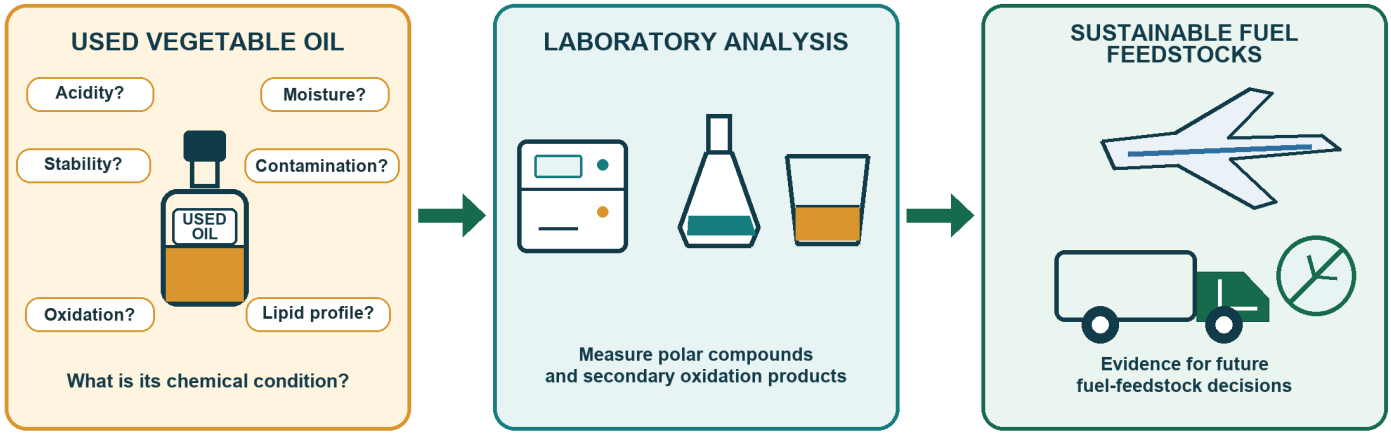
UNDERGRADUATE RESEARCH OPPORTUNITY | FALL 2026

Can Used Cooking Oil Help Power a More Sustainable Future?

Explore the chemistry that determines whether waste oils can become viable alternative-fuel feedstocks.

ONE STUDENT | 3 RESEARCH CREDITS | EEE 49800 | APPROX. 10 HOURS/WEEK



TWO QUESTIONS. ONE FOCUSED PROJECT.

RESEARCH QUESTION 1

What chemical clues distinguish fresh vegetable oil from oil that has undergone substantial deterioration?

RESEARCH QUESTION 2

Which combination of analytical methods is most cost-efficient for preliminary feedstock-quality screening?

WHAT YOU WILL DO AND WHAT YOU WILL LEARN

YOUR ANALYTICAL WORK

COMPARE A set of fresh and deteriorated vegetable oil samples.

MEASURE Polar degradation compounds and secondary oxidation products.

VALIDATE Calibration, blanks, controls, replicates, and method repeatability.

INTERPRET Chemical profiles and practical feedstock-quality signals.

YOUR RESEARCH EXPERIENCE

HANDS-ON SKILLS Lipid chemistry, chromatography, spectrophotometry, safe sample handling, and quality assurance.

DATA SKILLS Visualization, comparison, and scientific interpretation.

SUSTAINABILITY INSIGHT Examine the transition from conventional fossil fuels to sustainable fuel systems.

JOIN THE PROJECT

Apply ASAP for Fall 2026

Dr. Nadya Zyaykina, Research Assistant Professor in Sustainability Engineering and Environmental Engineering

Send a professional resume and a brief motivation letter to **nzyaykina@purdue.edu**