

International Summer School Manipal University Jaipur [ISSMUJ]-2022

[Hybrid Mode]

Project Overview

Name of Project: Performance, Emission and Combustion Characteristics of Diesel Engine Operated with Waste Cooking - Pongamia Oil Biodiesel Blends

Name of instructor: Dr. Rahul Goyal

Session: June-July 2022

Language of instruction: English

Number of contact hours: 36

Credit awarded: 03

Objective of Project

At the end of this project, participants will be able to:

1. Describe the fundamental idea, principles, and uses of alternative fuels in an IC engine.
2. Understanding of current R&D initiatives and employment possibilities in the field of alternative fuels for the sustainable development.
3. Extensive hands-on experience with alternative fuel characterisation techniques used in automobile sector.
4. To investigate the effect of biodiesel blends on performance, emission, and combustion characteristics of engine.

Syllabus

- Introduction to alternative fuels. - Need for alternative fuels - Availability of different alternative fuels for SI and CI engines.
- Various vegetable oils and their important properties. Different methods of using vegetable oils engines.
- Blending, preheating Transesterification and emulsification of Vegetable oils and different characterisation techniques for developed biodiesel.

Organization of Project

Total contact hrs 36		
1st week:	10 hrs (theory/research experiments)	2 hrs (self-study/project)
2nd week:	10 hrs (theory/research experiments)	2 hrs (Mid-term presentation/assessment/discussion based on review/experimental research paper writing)
3rd week:	10 hrs (theory/research experiments)	2 hrs (End term presentation/review/experimental research paper draft submission)

Mode of lectures: online lecture/online videos/ workshop/ hands-on experience

Course/Project Plan

Lecture no.	Topic	Lecture mode	Instructor
L: 1-5	Introduction to alternative fuels. - Need for alternative fuels - Availability of different alternative fuels for SI and CI engines.	PPT / Video	Dr Rahul Goyal
L: 6-15	Various vegetable oils and their important properties. Different methods of using vegetable oils engines.	PPT/ Live Video	Dr Rahul Goyal
L: 16-25	Blending, preheating Transesterification and emulsification of Vegetable oils.	PPT/ Live Video	Dr Rahul Goyal
L: 26-36	Different characterisation techniques for developed biodiesel.	PPT/ Live Video	Dr Rahul Goyal

Brief profile of the instructor

Dr. Rahul Goyal- Professor and Head, Department of Mechanical Engineering
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