

Indian Institute of Technology Guwahati
Proposal for a New Course / Revision of a Course

Course Number & Title: EN205 Fuels and Combustion Laboratory	
L-T-P-C: 0-0-0-6	
Type of Letter Grading (Regular Letter Grades / PP or NP Letter Grades): Regular letter grades	
Kind of Proposal (New Course / Revision of Existing Course): New Course	
Offered as (Compulsory / Elective): Compulsory course	
Offered to: B.Tech in Energy Engineering	
Offered in (Odd/ Even / Any): Odd	
Offered by (Name of Department/ Center): School of Energy Science & Engineering	
Pre-Requisite: None	
Preamble / Objectives (Optional): To provide comprehensive knowledge on types of fuels, and ASTM methods for testing and handling of the fuels.	
Types of fuel: Solid fuels- liquid fuels-gaseous fuel; properties of fuel: calorific value, ignition temperature, flash and fire points, flame temperature, aniline point, cetane number, emission analysis; combustion calculations; flue gas analysis; Proximate and ultimate analyses; fuel handling; Alternative fuels: bio-mass and properties	
List of Experiments:	
1) Calorific Value of solid and liquid fuels using Bomb Calorimeter	
2) Determination of calorific value of gaseous fuels using Junker's Calorimeter	
3) Determination of Flash point/Fire point Flash/Fire point tester	
4) Determination of Cloud/Pour Point -80°C liquid bath	
5) IC engine operation on SI/CI fuels & emission analysis	
6) Transesterification for biodiesel	
7) Determination of aniline point & Cetane number	
8) Proximate analysis	
9) Briquette making Pelletizer	
10) Thermal efficiency of cook stove by water boiling test Cook stove	
11) Biomass gasification	
12) Fiber analysis of biomass	
Books (In case UG compulsory courses, please give it as "Text books" and "Reference books". Otherwise give it as "References".	
Text Books: (Format: Authors, <i>Book Title in Italics font</i> , Volume/Series, Edition Number, Publisher, Year.)	
1.	Samir Sarkar, <i>Fuels and Combustion</i> , Orient Longman Pvt. Ltd, 3rd edition, 2009
2.	Pankaj Kalita, <i>Laboratory manual for Fuel Engineers</i> , IIT Guwahati, 2022
Reference Books: (Format: Authors, <i>Book Title in Italics font</i> , Volume/Series, Edition Number, Publisher, Year.)	
1.	H. Joshua Philips, <i>Fuels – Solids, liquids and gases – Their analysis and valuation</i> , Biobliflife Publisher, 2008.
2.	Francis Peter, <i>Fuels and Fuel Technology</i> , 1st Edition, A.Wheatan & Co.Ltd. of Exefer, 1965
3.	Instructor notes

Detailed Course Content (Optional)

It will not be included in the Courses of Study Booklet		
Sl. No.	Broad Title / Topics	Number of Lectures
1		
Total Number of Lectures =		