Course Type	Course Code	Name of Course	L	T	P	Credit
DP	NFMC530	Energy Technology Lab	0	0	3	1.5

Course Objective
The course aimstocompare and giveinformationaboutconventional and non-conventional energy technologies.
Learning Outcomes
Attheend ofthe course,studentswill gethands-on knowledgeabout the • Pyrolysis& Gasification time scales and their products • Efficiency of alternate energy resources. • Detailed working of alternate energy resources.

Exp. No.	Name of Experiment	Practical Hours	Learning Outcome
1	Introduction to the basics of the Energy Technology Lab	3	Basic understanding of the lab manual and lab procedures. Lab guidelines.
2	COKE making from coal	3	Knowledge about coking and non-coking coals.
3	The time scale for the combustion of char	3	Knowledge about char combustion rates with different oxidizers for different particle sizes.
4	The time scale for combustion of char	3	De-volatilization kinetics.
5	Techno-Economic Analysis	3	About Techno-economic aspects of systems.
6	Life Cycle Assessment.	3	About life cycle assessment of processes.
7	Response of Photovoltaic cells under EMR of different frequencies	3	Photovoltaic cell response to different EMR.
8	Microwave pyrolysis	3	Knowledge of microwave devolatilization.
9	Microwave hotspot	3	Knowledge of microwave hotspots.
10	Comparing microwave and conventional heating of a coal sample	3	Knowledge of microwave and conventional heating.
11	Moisture removal from conventional and microwave heating.	3	Impact of heating method on moisture removal from coal.
12	CO2 fixation in solids	3	Knowledge about CO2 fixation.
13	Syngas in Direct reduced iron	3	Knowledge about Syngas DRI
14	Viva Voce	3	Students understanding of the course will be gauged based on a Viva voce.
Total		**42**	

Text Books:

1. Gupta, O. P. Energy Technology. Khanna Publishers, 2018.
2. S. Rao, B.B. Parulekar, Energy Technology, Khanna Publishers, 1994.

Reference Book:

1. Lab Manual of the Energy Technology Lab at the FMME Department in IIT ISM Dhanbad.