

GANPAT UNIVERSITY									
FACULTY OF ENGINEERING & TECHNOLOGY									
Programme		Diploma Engineering			Branch		AUTOMOBILE		
Semester		III			Version		1.0.0.0		
Effective from Academic Year			2019-20		Effective for the batch Admitted in			June 2018	
Subject code		1AU2304	Subject Name		FUEL & LUBRICANTS				
Teaching scheme					Examination scheme (Marks)				
(Per week)	Lecture(DT)		Practical(Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	3	0	1	0	4	Theory	40	60	100
Hours	3	0	2	0	5	Practical	30	20	50

Pre-requisites:

Course Learning Outcomes:
The course content should be taught and implemented with an aim to develop different skills leading to the achievement of the following competencies and course learning outcomes: <ul style="list-style-type: none"> • Origin and distillation of crude oil. • Use of proper lubrication under different condition to improve engine performance. • Understand, to improve maintenance and performance of automobile. use of alternative Fuels its merits and demerits.

Course Content						
Name of UNIT	Unit Content		Unit Learning Outcomes		Marks	Hrs
UNIT – I Introduction to Fuels.	1 a	Basic requirements of a fuel & lubricant. Types of fuels & lubricants its uses & sources Theory of origin and accumulation of crude oil Methods of searching crude oil Recovery of crude oil Classification of crude oil & Hydrocarban Structure of various hydrocarbon Fractional distillation and classification of refinery products Various refining processes	1.1	Describe the term fuels its types & uses. Describe the term lubricants its types & uses. Explain the origin and manufacturing of fuel & lubricants.	8	6
	1 b		1.2			
	1 c		1.3			
	1 d					
	1 e					
	1 f					
	1 g					
	1h					
	1 i					

UNIT – V Properties, Gradation and Additives of Lubricants	5 a	various properties of lubricating oil	5.1	Explain various properties of lubricating oil	8	7
	5 b	Gradation of lubricating oil	5.2	Describe gradation of lubricating oil	8	7
	5 c	Introduction of I SO Cleanliness code				
	5 d	Function and type of additives of lubricating oil	5.3	Explain requirement of additives		
Unit- VI Alternative Fuel	6a	Alternative fuels and their economics- like, Alcohol, Ethanol, Methanol, Hydrogen, LPG, CNG, Bio Gas, Bio diesel	6.1	Describe alternative fuels	8	6
	6b					
Unit-VII Measurement of Various Properties of Fuels & Lubricant	7a	Measurement of various properties of fuels & lubricants.	7.1	Describe various instruments used for measuring various properties of fuels & lubricants	8	6
	7b	Safety precautions while measuring properties of fuels & lubricants.				

List of Practical		
No.	Unit	Name of Practical
1	I	Draw the chart & Describe distillation process of crude oil.
2	II	Determination of flash and fire point of given sample of fuel.
3	IV	Determination of viscosity of lubricating oil at different temperature.
4	V	Determination of specific gravity of given sample of fuel by westphal Balance
5	V	Study of measuring API gravity of fuel.
6	V	Determination of carbon residue of lubricating oil
7	VII	Determination of cloud and pour point of given sample of oil.

List of Instruments / Equipment / Trainer Board	
1	Red wood viscometer
2	Cloud and pour point apparatus
3	Flash and fire point apparatus
4	U tube viscometer
5	Carbon residue teste

List of Reference Books			
No	Title of Reference Books	Authors	Publication
1	Internal combustion engines	V.M. Domkundwar	Dhanpat Rai Publishing Company (P) Ltd
2	Automobile Engineering	K. M. Gupta	Umesh Publication
3	Internal Combustion Engine	R. K. Rajput	Laxmi Publication

Link of Learning Web Resource	
1	http://www.youtube.com/watch?v=_hwzJUDWIQQ
2	http://www.youtube.com/watch?v=vscX_zawdQw
3	http://lubricantspecialist.files.wordpress.com/2011/10/basic-of-lubricantslubrication.ppt
4	For mock test https://www.vskills.in/practice/petrol-and-diesel-engine-mechanic-mock-test

CO'S AND PO'S MAPPING

PO'S		CO1	CO2	CO3
PO1	An ability to apply knowledge of mathematics and engineering science.	SLI	SLI	SLI
PO2	An ability to demonstrate, develop and conduct experiments, as well as to analyze and interpret data.	SUB	SLI	SLI
PO3	An ability to design a system component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability.	MED	MED	SUB
PO4	An ability to perform with multidisciplinary teams.	MED	MED	SUB
PO5	Use of appropriate modern tool and application software that pertain to Automobile engineering technology systems.	NONE	SUB	MED.
PO6	An ability to identify, formulates, execute and solve engineering problems.	SLI.	SUB	MED.
PO7	An ability to communicate and present effectively in both verbal and written forms.	SLI	MED.	SUB
PO8	The broad education necessary to understand the impact of engineering solutions in global, economic, environmental and societal context.	MED.	SUB.	SUB.
PO9	Recognition of need for self-improvement, and an ability to engage in life-long learning.	SLI	NONE	NONE
PO10	Ability to aware about the contemporary issues.	SLI	SLI	SLI
PO11	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.	MED.	MED.	MED.
PO12	Demonstrate to analyse and apply unconventional processes, automation, robotics Nanotechnology, Computer-Aided-Design & Manufacturing and knowledge in Automobile Engineering, Thermodynamics, Refrigeration & Air Conditioning and Jet Propulsion & Rocket Engineering to analyse and solve complex problems and to work professionally in such systems and plants.	SLI	MED.	MED.

