

# Lesson Plan

Name of the faculty: - Mr. Rahul

Discipline: Mechanical

Semester: 4th

Subject: I.C Engines

Lesson Plan Duration: 15 weeks (From January, 2018 to April, 2018)

Work load (lecture / practical) per week (in hours) :- 3 lectures.

	Theory	
Week	Lecture Day	Topic
1st	1st	Unit – 1 Introduction to I.C Engines
	2nd	Working principle of two stroke
	3rd	Working principle four stroke cycle
2nd	4 <sup>st</sup>	SI engines
	5 <sup>th</sup>	CI engines
	6 <sup>th</sup>	Otto cycle, diesel cycle and dual cycle
3rd	7 <sup>th</sup>	Otto cycle, diesel cycle and dual cycle contd.....
	8 <sup>th</sup>	Location and functions of various parts of IC engines
	9 <sup>th</sup>	materials used for them
4th	10 <sup>th</sup>	Concept of IC engine terms: bore, stroke, dead centre, crank throw,
	11 <sup>th</sup>	compression ratio, piston displacement, piston speed
	12 <sup>th</sup>	Revision of unit -1
5th	13 <sup>th</sup>	Test of unit-1
	14 <sup>th</sup>	Unit – 2 Concept of carburetion
	15 <sup>th</sup>	Air fuel ratio
6th	16 <sup>th</sup>	Simple carburetor and its application,
	17 <sup>th</sup>	MPFI, Common rail system,
	18 <sup>th</sup>	super charging and turbo charger
7th	19 <sup>th</sup>	Revision of unit-2
	20 <sup>th</sup>	Test of unit-2
	21 <sup>st</sup>	Unit-3 Components of fuel system
8th	22 <sup>nd</sup>	Description and working of fuel feed pump
	23 <sup>rd</sup>	Fuel injection pump
	24 <sup>th</sup>	Injectors

9th	25 <sup>th</sup>	Revision of unit-3
	26 <sup>th</sup>	Unit-4 Description of battery coil and magnet ignition system
	27 <sup>th</sup>	Electronic ignition system
10th	28 <sup>th</sup>	Fault finding in ignition system and remedial action
	29 <sup>th</sup>	Revision of unit-4
	30 <sup>th</sup>	Test of Unit-4
11th	31 <sup>st</sup>	Unit-5 Function of cooling system in IC engine
	32 <sup>nd</sup>	Air cooling and water cooling system, use of thermostat,
	33 <sup>rd</sup>	radiator and forced circulation in water cooling (description with line diagram)
12th	34 <sup>th</sup>	Function of lubrication Types and properties of lubricant
	35 <sup>th</sup>	Lubrication system of engine Fault finding in cooling and lubrication and remedial action
	36 <sup>th</sup>	Revision of unit-5
13th	37 <sup>th</sup>	Test of unit -5
	38 <sup>th</sup>	Unit-6 Engine power - indicated and brake power
	39 <sup>th</sup>	Efficiency - mechanical, thermal. relative and volumetric
14th	40 <sup>th</sup>	Methods of finding indicated and brake power
	41 <sup>st</sup>	Morse test for petrol engine
	42 <sup>nd</sup>	Heat balance sheet
15th	43 <sup>rd</sup>	Concept of pollutants in SI and CI engines, pollution control,
	44 <sup>th</sup>	norms for two or four wheelers – BIS – I, II, III and IV methods of reducing pollution in IC engines, alternative fuels like CNG and LPG
	45 <sup>th</sup>	Overall Revision of the Syllabus.

# Lesson Plan

Name of the faculty : Mr. Jitender

Discipline: Mechanical

Semester: 4th

Subject: Workshop Technology -II

Lesson Plan Duration: 15 weeks (From January, 2018 to April, 2018)

Work load (lecture / practical) per week (in hours) :- 3 lectures.

	Theory	
Week	Lecture Day	Topic
1st	1st	Cutting Tools - Various types of single point cutting tools and their uses, Single point cutting tool geometry,
	2nd	Tool signature and its effect, Heat produced during cutting and its effect.
	3rd	Cutting speed, feed and depth of cut and their effect and Revision.
2nd	1 <sup>st</sup>	Cutting Tool Materials - Properties of cutting tool material, Study of various cutting tool materials viz. High-speed steel, tungsten carbide
	2 <sup>nd</sup>	Cobalt steel cemented carbides, satellite, ceramics and diamond.
	3rd	Test of unit 1.
3rd	1 <sup>st</sup>	Principle of turning, Function of various parts of a lathe, Classification and specification of various types of lathe
	2 <sup>nd</sup>	Work holding devices. Revision.
	3 <sup>rd</sup>	Lathe tools and operations :- Plain and step turning, facing, parting off, taper turning, eccentric turning,
4th	1 <sup>st</sup>	Drilling, reaming, boring, threading and knurling, form turning, spinning.
	2 <sup>nd</sup>	Cutting parameters – Speed, feed and depth of cut for various materials and for various operations, machining time.
	3 <sup>rd</sup>	Speed ratio, preferred numbers of speed selection. Lathe accessories:- Centers, dogs, different types of chucks.
5th	1 <sup>st</sup>	Collets face plate, angle plate, mandrel, steady rest, follower rest, taper turning attachment, tool post grinder, milling attachment, Quick change device for tools.
	2 <sup>nd</sup>	Introduction to capstan and turret lathe
	3 <sup>rd</sup>	Assignment of unit 2.

6th	1 <sup>st</sup>	Principle of drilling. Classification of drilling machines and their description.
	2 <sup>nd</sup>	Various operations performed on drilling machine – drilling, spot facing, reaming and boring, counter boring.
	3 <sup>rd</sup>	Countersinking, hole milling, tapping. Speeds and feeds during drilling, impact of these parameters on drilling, Machining time.
7th	1 <sup>st</sup>	Types of drills and their features, nomenclature of a drill. Drill holding devices.
	2 <sup>nd</sup>	Test of unit 3.
	3 <sup>rd</sup>	Principle of boring Classification of boring machines and their brief description.
8th	1 <sup>st</sup>	Boring tools, boring bars and boring heads.
	2 <sup>nd</sup>	Assignment of unit -4.
	3 <sup>rd</sup>	Working principle of shaper, planer and slotter. Type of shapers
9th	1 <sup>st</sup>	Type of planers
	2 <sup>nd</sup>	Types of tools used and their geometry.
	3 <sup>rd</sup>	Speeds and feeds in above processes.
10th	1 <sup>st</sup>	Test of unit -5
	2 <sup>nd</sup>	Introduction Types of broaching machines – Single ram and duplex ram horizontal type,
	3 <sup>rd</sup>	Vertical type pulls up, pull down, push down.
11th	1 <sup>st</sup>	Elements of broach tool, broach tooth details – nomenclature, types, and tool material.
	2 <sup>nd</sup>	Assignment for unit -6
	3 <sup>rd</sup>	Importance and use of jigs and fixture
12th	1 <sup>st</sup>	Principle of location
	2 <sup>nd</sup>	Locating devices
	3 <sup>rd</sup>	Clamping devices
13th	1 <sup>st</sup>	Advantages of jigs and fixtures. Revision.
	2 <sup>nd</sup>	Test of unit - 7
	3 <sup>rd</sup>	Function of cutting fluid
14th	1 <sup>st</sup>	Types of cutting fluids
	2 <sup>nd</sup>	Difference between cutting fluid and lubricant
	3 <sup>rd</sup>	Selection of cutting fluids for different materials and operations
15th	1 <sup>st</sup>	Common methods of lubrication of machine tools.
	2 <sup>nd</sup>	Revision
	3 <sup>rd</sup>	Overall Revision of the Syllabus.

