LESSON PLAN

Name of faculty: **SH. RAVINDER KUMAR**

Discipline: **Mechanical Engineering**
Semester: **2nd Semester**
Subject: **Applied Mechanics**

Lesson Plan Duration: **15 weeks**

Workload (Lecture/Practical) per week (in hours): **3 Lectures & 2Practicals**

Week	Theory		Practicals
	Day Lecture	Topic (Including Assignment/Test)	
1	1	**Introduction**: Concept of mechanics, Classification of mechanics, utility of mechanics in engineering field, Concept of rigid body, scalar and vector quantities	**Practical-1:** Verification of polygon law of forces using universal force table/Gravesend apparatus.
	2	**Laws of forces:** Definition of force, measurement of force in SI units, its representation,	
	3	Types of force: Point force/concentrated force & Uniformly distributed force, effects of force	
2	4	characteristics of a force, Different force systems (coplanar and non-coplanar)	**Practical-2:** Verification of Lami's theorem.
	5	Principle of transmissibility of forces, law of superposition, Free body diagram	
	6	Composition and resolution of coplanar concurrent forces, resultant force, method of composition of forces	
3	7	laws of forces, parallelogram law of forces (with derivation), triangle law of forces	**Practical-3:** To verify law of moments by using Bell crank lever.
	8	Polygon law of forces - graphically, analytically, resolution of forces	
	9	Resolving a force into two rectangular components, Lami's theorem, Simple numericals, Equilibrium of forces and its determination.	
4	10	**Moment**: Concept of moment, Moment of a force and units of moment, Varignon's theorem (definition only),	**VIVA**
	11	Principle of moment and its applications (Levers – simple and compound, steel yard, safety valve), Simple numericals	
	12	Parallel forces (like and unlike parallel force), calculating their resultant, Concept of couple, its properties and effects,	
5	13	General conditions of equilibrium of bodies under coplanar forces, Position of resultant force by moment.	**Practical-4:** To verify the forces in different members of jib crane.
	14	Assignment	
	15	**Sessional Test-1**	
6	16	**Friction:** Definition and concept of friction, types of friction, force of friction, Laws of static friction	**Practical-5:** To determine coefficient of friction between three pairs of given surface.
	17	coefficient of friction, angle of friction, angle of repose, cone of friction, Equilibrium of a body lying on a horizontal plane, equilibrium of a body lying on a rough inclined plane.	
	18	Calculation of least force required to maintain equilibrium of a body on a rough inclined plane subjected to a force acting along the inclined plane and subjected to a force acting at some angle with the inclined plane, Simple numericals.	

7	19	**Centre of Gravity and Centroid:** Concept, definition of centroid of plain figures and centre of gravity of symmetrical solid bodies. Axis of symmetry, Reference axis.	**Practical-6:** To find out center of gravity of regular lamina.
	20	Determination of centroid of plain and composite lamina (T, L, C and I shape) using moment method only, centroid of bodies with removed portion.	
	21	Determination of center of gravity of solid bodies - cone, cylinder, hemisphere and sphere; composite bodies and bodies with portion removed	
8	22	**Laws of Motion:** Newton's laws of motion and their applications, Concept of momentum. Derivation of force equation from second law of motion, numerical problems on second law of motion.	**VIVA**
	23	Assignment	
	24	**Sessional Test-2**	
9	25	Bodies tied with string, Newton's third law of motion, numerical problems	**Practical-7:** To find out center of gravity of irregular lamina.
	26	conservation of momentum, impulse and impulsive force	
	27	**Simple Machines:** Definition of effort, velocity ratio,	
10	28	mechanical advantage and efficiency of a machine and their relationship	**Practical-8:** To find the mechanical advantage, velocity ratio and efficiency of a screw jack
	29	law of machines, Simple and compound machine (Examples).	
	30	Definition of ideal machine, Reversible and self locking machine.	
11	31	Effort lost in friction ,Load lost in friction	**Practical-9** To find the mechanical advantage, velocity ratio and efficiency of worm and worm wheel.
	32	determination of maximum mechanical advantage and maximum efficiency	
	33	Simple numerical, System of pulleys (first, second, third system of pulleys), determination of velocity ratio	
12	34	Mechanical advantage and efficiency. Working principle and application of wheel and axle	**Practical-10** To find mechanical advantage, velocity ratio and efficiency of single purchase crab
	35	Weston's Differential Pulley Block ,Simple screw jack,	
	36	Worm and worm wheel, single and double winch crab.	
13	37	Expression for their velocity ratio and field of their application	**VIVA**
	38	Assignment	
	39	**Sessional Test-3**	
14	40	Revision Unit-1	**Repeat practicals**
	41	Revision Unit-2	
	42	Revision Unit-3	

15	43	Revision Unit-4	**Repeat practicals**
	44	Revision Unit-5	
	45	Full syllabus class test	

Lesson Plan
Applied Chemistry-II

Week	Lecture Day	Theory	Practical	
		Topic(Including Assignments)	Practical Day	Topic
1st	1st	**Unit1:- Atomic Structure,Periodic Table and Chemical Bonding** Bohr's model of atom (qualitative treatment only),	1st	1.)To prepare standard solution of oxalic acid.(Group-1)
	2nd	Dual character of matter: derivation of de-Broglie's equation, Heisenberg's Principle of Uncertainty,		
	3rd	Modern concept of atomic structure: definition of orbitals , shapes of s, p and d-orbitals,	2nd	1)To prepare standard solution of oxalic acid.(Group-2)
2nd	4th	Quantum numbers and their Significance.	1st	2)To dilute the given KMnO4 solution(Group-1)
	5th	Electronic configuration: Aufbau and Pauli's exclusion principles		
	6th	Hund's rule, electronic configuration of elements up to atomic number 30.	2nd	2)To dilute the given KMnO4 solution(Group-2)
3rd	7th	Modern Periodic law and Periodic table	1st	3)To find out the strength in grams per litre of an unknown solution of sodium hydroxide using a standard (N/10) oxalic acid solution.(Group-1)
	8th	Classification of elements into s, p, d and f-blocks, metals, non-metals and metalloids		
	9th	Chemical bonding: cause of bonding	2nd	3)To find out the strength in grams per litre of an unknown solution of sodium hydroxide using a standard (N/10) oxalic acid solution.(Group-2)
4th	10th	Ionic bond, covalent bond, and metallic bond (electron sea or gas model)	1st	Revision/viva
	11th	Physical properties of ionic, covalent and metallic substances.		
	12th	**Unit2:- Metals and Alloys** Metals: mechanical properties of metals such as conductivity, elasticity, strength and stiffness, luster, hardness, toughness, ductility, malleability, brittleness, and impact	2nd	Revision/viva

		resistance and their uses.		
5th	13th	Definition of a mineral, ore, gangue, flux and slag Metallurgy of iron from haematite using a blast furnace	1st	4)To find out the total alkalinity in parts per million (ppm) of a water sample with the help of a standard sulphuric acid solution(Group-1)
	14th	Commercial varieties of iron. Definition,necessity of making alloys		
	15th	Composition, properties and uses of duralumin and steel. Heat treatment of steel- normalizing, annealing, quenching, tempering	2nd	4)To find out the total alkalinity in parts per million (ppm) of a water sample with the help of a standard sulphuric acid solution(Group-2)
6th	16th	First Sessional Test(Tentative)	1st	First Sessional Test(Tentative)
	17th	First Sessional Test(Tentative)		First Sessional Test(Tentative)
	18th	First Sessional Test(Tentative	2nd	First Sessional Test(Tentative)
7th	19th	**Unit3:- Water ,Solutions,Acids and Bases** Solutions: definition, expression of the concentration of a solution in percentage (w/w, w/v and v/v),	1st	5)To determine the total hardness of given water sample by EDTA method(Group-1)
	20th	Normality, molarity and molality and ppm.		
	21th	Simple problems on solution preparation.	2nd	5)To determine the total hardness of given water sample by EDTA method(Group-2)
8th	22th	Arrhenius concept of acids and bases, strong and weak acids and bases	1st	6)To determine the amount of total dissolved solids(TDS) in ppm in a given sample of water Gravimetrically(Group-1)
	23th	pH value of a solution and its significance		
	24th	pH scale. Simple numerical problems on pH of acids and bases.	2nd	6)To determine the amount of total dissolved solids(TDS) in ppm in a given sample of water Gravimetrically(Group-2)
9th	25th	Hard and soft water, causes of hardness of water, types of hardness – temporary and permanent hardness	1st	Revision/viva(Group-1)
	26th	Expression of hardness of water, ppm unit of hardness disadvantages of hard water;		

	27th	Removal of hardness: removal of temporary hardness by boiling and Clark's method; removal of permanent hardness of water by Ion-Exchange method	2nd	Revision/viva(Group-2)
10th	28th	Boiler problems caused by hard water: scale and sludge formation, priming and foaming, caustic embrittlement	1st	7)To determine the pH of different solutions using a digital pH meter.(Group-1)
	29th	Water sterilization by chlorine, UV radiation and RO		
	30th	**Unit4:- Fuels and Lubricants** Fuels: definition and classification of higher and lower calorific values, units of calorific value, characteristics of an ideal fuel	2nd	7)To determine the pH of different solutions using a digital pH meter.(Group-2)
11th	31st	Second Sessional Test (Tentative)	1st	Second Sessional Test (Tentative)
	32nd	Second Sessional Test (Tentative)		
	33rd	Second Sessional Test (Tentative)	2nd	Second Sessional Test (Tentative)
12th	34th	Petroleum: composition and refining of petroleum; gaseous fuels: composition, properties and uses of CNG, PNG, LNG, LPG	1st	8)To determine the calorific value of a solid/liquid fuel using a Bomb calorimeter(Group-1)
	35th	Relative advantages of liquid and gaseous fuels over solid fuels. Scope of hydrogen as future fuel		
	36th	Lubricants- Functions and qualities of a good lubricant,	2nd	8)To determine the calorific value of a solid/liquid fuel using a Bomb calorimeter(Group-2)
13th	37th	Classification of lubricants with examples; lubrication mechanism	1st	9)To determine the viscosity of a lubricating oil using a Redwood viscometer(Group-1)
	38th	Physical properties (brief idea only) of a lubricant: oiliness, viscosity, viscosity index, flash and fire point, ignition temperature, pour point		
	39th	**Unit5:-- Polymers and Electrochemistry** Polymers and Plastics: definition of polymer, classification, addition and condensation polymerization	2nd	9)To determine the viscosity of a lubricating oil using a Redwood viscometer(Group-2)
14th	40th	Preparation properties and uses of polythene, PVC, Nylon-66, Bakelite; definition of plastic	1st	10)To prepare a sample of Phenol-formaldehyde resin (Bakelite)/Nylon-66 in the lab(Group-1)
	41th	Thermoplastics and thermosetting polymers; natural rubber and neoprene, other synthetic rubbers (names only)		

	42nd	Corrosion: definition, dry and wet corrosion, factors affecting rate of corrosion, methods of prevention of corrosion	2nd	10)To prepare a sample of Phenol-formaldehyde resin (Bakelite)/Nylon-66 in the lab(Group-2)
15th	43th	Third Sessional Test(Tentative)	1st	Third Sessional Test(Tentative)
	44th	Third Sessional Test(Tentative)		
	45th	Third Sessional Test(Tentative)	2nd	Third Sessional Test(Tentative)
16th	46th	Hot dipping, metal cladding, cementation, quenching, cathodic protection methods	1st	Revision/Viva(Group-1)
	47th	Introduction and application of nanotechnology: nano-materials and their classification, applications of nanotechnology in various engineering applications		
	48th	Revision	2nd	Revision/Viva(Group-2)
17th	49th	Revision	1st	Revision/Viva(Group-1)
	50th	Revision		
	51th	Revision	2nd	Revision/Viva(Group-2)

Lesson Plan (2nd Semester)

Applied Mathematics-II

Dr. Namrata, Lecturer (Applied Mathematic-II)

Week	Theory/Practical	
	Lecture Day	**Topic Including(assignment/Test)**
Ist	**1**	Introduction to syllabus and evaluation scheme **Unit1:- Differential Calculus** **1.1 Definition of function:** Concept of limits (Introduction only) and problems related to four standard limits only.
	2	**1.1 Definition of function:** Concept of limits (Introduction only) and problems related to four standard limits only.
	3	**1.1 Definition of function:** Concept of limits (Introduction only) and problems related to four standard limits only.
	4	**1.2** Differentiation of x^n , Sin x, Cos x, e^x by first principle.
IInd	**1**	**1.3** Differentiation of sum, product and quotient of functions.
	2	**1.3** Differentiation of sum, product and quotient of functions.
	3	**1.3** Differentiation of sum, product and quotient of functions.
	4	**Unit 2 Differential Calculus and Its Application** **2.1** Differentiation of trigonometric functions, inverse trigonometric function, Logarithmic differentiation, successive differentiation (upto 2^{nd} order)
IIIrd	**1**	**2.1** Differentiation of trigonometric functions, inverse trigonometric function, Logarithmic differentiation, successive differentiation (upto 2^{nd} order)
	2	**2.1** Differentiation of trigonometric functions, inverse trigonometric function, Logarithmic differentiation, successive differentiation (upto 2^{nd} order)
	3	**2.1** Differentiation of trigonometric functions, inverse trigonometric function, Logarithmic differentiation, successive differentiation (upto 2^{nd} order)
	4	**2.2** Application of differential calculus in: (a) Rate measure (b) Maxima and minima
IVth	**1**	**2.2** Application of differential calculus in: (a) Rate measure (b) Maxima and minima
	2	**2.2** Application of differential calculus in: (a) Rate measure (b) Maxima and minima
	3	Revision
	4	**Unit 3 Integral Calculus** **3.1** Integration as inverse operation of differentiation with simple examples.
Vth	**1**	First Sessional Test(Tentative)
	2	First Sessional Test(Tentative)
	3	First Sessional Test(Tentative)
	4	**3.1** Integration as inverse operation of differentiation with simple examples.
VIth	**1**	**3.1** Integration as inverse operation of differentiation with simple examples.
	2	**3.2** Simple standard integrals and related problems, Integration by Substitution

		method and integration by parts.
	3	**3.2** Simple standard integrals and related problems, Integration by Substitution method and integration by parts.
	4	**3.3** Evaluation of definite integrals with given limits. Evaluation of $\int_0^{\pi/2} sin^n x.\, dx$, $\int_0^{\pi/2} cos^n x\, dx$, $\int_0^{\pi/2} sin^m x\, cos^n .\, dx$, Using formula without proof (m and n being positive integers only) using pre-existing mathematical models.
VIIth	**1**	**3.3** Evaluation of definite integrals with given limits. Evaluation of $\int_0^{\pi/2} sin^n x.\, dx$, $\int_0^{\pi/2} cos^n x\, dx$, $\int_0^{\pi/2} sin^m x\, cos^n .\, dx$, Using formula without proof (m and n being positive integers only) using pre-existing mathematical models.
	2	**Unit4:- Application of Integration, Numerical Integration and Differential Equations** **4.1** Application of integration for evaluation of area under a curve and axes (Simple problems).
	3	**4.1** Application of integration for evaluation of area under a curve and axes (Simple problems).
	4	**4.2** Numerical of integration by Trapezoidal rule and Simpson's 1/3rd Rule using pre-existing mathematical models.
VIIIth	**1**	**4.2** Numerical of integration by Trapezoidal rule and Simpson's 1/3rd Rule using pre
	2	**Deferential, Equations** **4.3** Definition, order, degree, Type of differential Equation, Linearity, Formulation of ordinary differential equation (up to 1st order), solution of ODE (Ist order) by variable separation method.
	3	**4.3** Definition, order, degree, Type of differential Equation, Linearity, Formulation of ordinary differential equation (up to 1st order), solution of ODE (Ist order) by variable separation method.
	4	Revision
IXth	**1**	Second Sessional Test(Tentative)
	2	Second Sessional Test(Tentative)
	3	Second Sessional Test(Tentative).,
	4	**4.3** Definition, order, degree, Type of differential Equation, Linearity, Formulation of ordinary differential equation (up to 1st order), solution of ODE (Ist order) by variable separation method.
Xth	**1**	**Unit 5 Statistics and Software:- Statistics** **5.1 Measures of Central Tendency:** Mean, Median, Mode
	2	**5.1 Measures of Central Tendency:** Mean, Median, Mode
	3	**5.2 Measures of Dispersion:** Mean deviation, Standard deviation
	4	**5.2 Measures of Dispersion:** Mean deviation,Standard Deviation
XIth	**1**	**5.2 Measures of Dispersion:** Mean deviation,Standard Deviation
	2	**Software** **5.3 Sci lab Software**- Theoretical Introduction.
	3	**5.3 Sci lab Software**- Theoretical Introduction.
	4	**5.4** Basic difference between MATLAB and Sci Lab Software,

XIIth	**1**	**5.4** Basic difference between MATLAB and Sci Lab Software,
	2	**5.5 Calculations with MATLAB or Sci Lab –** (a) Representation of matrix (2*2 order), (b) Additional , Subtraction of matrices (2*2 order) in MATLAB or Sci Lab
	3	**5.5 Calculations with MATLAB or Sci Lab –** (a) Representation of matrix (2*2 order), (b) Additional , Subtraction of matrices (2*2 order) in MATLAB or Sci Lab
	4	Revision
XIIIth	**1**	Third Sessional Test (Tentative).
	2	Third Sessional Test (Tentative).
	3	Third Sessional Test (Tentative).
	4	Revision
XIVth	**1**	Revision
	2	Revision
	3	Revision
	4	Revision
XVth	**1**	Revision
	2	Revision
	3	Revision
	4	Revision
XVIth	**1**	Revision
	2	Revision
	3	Revision
	4	Revision
XVIIth	**1**	Revision
	2	Revision
	3	Revision
	4	Revision

Physics (2nd Semester)

Sh. Abhimanyu Lecturer (Applied Physics-II)

Week	Theory		Practical	
	Lecture Day	Topic(Including Assignments)	Practical Day	Topic
Ist	1	**Unit1:- Wave Motion and its Applications 1.1 Waves**: Definition ,types(mechanical and electromagnetic wave) **1.2 Wave Motion**-transverse and longitudinal with examples, terms used in wave motion like displacement,amplitude,time period,frequency,wave length,wave velocity,relationship among wave velocity,frequency and wave length	1	1) Familiarization with apparatus (resistor, rheostat, key ammeter, voltmeter, telescope, microscope etc. (Group-1)
	2	**1.3 Simple Harmonic Motion(SHM):**Definitions , Examples **1.4 Cantilever :** Definitions , Formula of Time Period(Without Derivation)	2	1) Familiarization with apparatus (resistor, rheostat, key ammeter, voltmeter, telescope, microscope etc. (Group-2)
2nd	1	**1.5** Free, forced and resonant vibrations with examples. **1.6 Sound waves:** Types (infrasonic, audible, ultrasonic) on the basis of frequency, noise, coefficient of absorption of sound, echo	1	2) To find the time period of a simple pendulum. (Group-1)
	2	**Unit2:- Optics:-** 2.1 Reflection and refraction of light with laws, refractive index 2.2 Lens: Introduction, lens formulae (no derivation), power of lens and simple numerical problems	2	2) To find the time period of a simple pendulum. (Group-2)
3rd	1	**2.3** Total internal reflection and its applications, critical angle and conditions for total internal reflection	1	3) To study variation of time period of simple pendulum with change in length of

				pendulum.(Group-1)
	2	**2.4** Superposition of waves (concept only), definition of interference, diffraction and polarization of waves	**2**	3) To study variation of time period of simple pendulum with change in length of pendulum. (Group-2)
4th	**1**	**2.5** Introduction of Microscope, Telescope and their applications	**1**	4) To determine and verify the time period of Cantilever (Group-1)
	2	Revision of above topics	**2**	4) To determine and verify the time period of Cantilever.(Group-2)
5th	**1**	First Sessional Test(Tentative)	**1**	Revision and Viva-voce (Group-1)
	2	First Sessional Test(Tentative)	**2**	Revision and Viva-voce (Group-2)
6th	**1**	**UNIT3:- Electrostatics and Electricity** **3.1** Electric charge, unit of charge, conservation of charge	**1**	5) To verify Ohm's laws by plotting a graph between voltage and current (Group-1)
	2	**3.2** Coulomb's law of electrostatics Assignment 1	**2**	5) To verify Ohm's laws by plotting a graph between voltage and current (Group-2)
7th	**1**	**3.3** Electric field, electric lines of force (definition and properties), electric field intensity due to a point charge **3.4** Definition of electric flux, Gauss law (statement and formula)	**1**	6) To study colour coding scheme of resistance. (Group-1)
	2	**3.5** Capacitor and capacitance (with formula and unit) **3.6** Electric current and its SI Unit, direct and alternating current	**2**	6) To study colour coding scheme of resistance. (Group-2)
8th	**1**	**3.7** Resistance, conductance (definition and unit) **3.8** Series and parallel combination of	**1**	7) To verify laws of resistances in series combination (Group-

		resistances		1)
	2	**3.9** Ohm's law (Statement and formula) Assignment 2	**2**	7) To verify laws of resistances in series combination (Group-2)
9th	**1**	Second Sessional Test(Tentative)	**1**	Revision and Viva-voce (Group-1)
	2	Second Sessional Test(Tentative)	**2**	Revision and Viva-voce (Group-2)
10th	**1**	**Unit 4 Classification of Materials and their Properties** **4.1** Definition of energy level, energy bands **4.2** Types of materials (conductor, semiconductors (introduction only)	**1**	8) To verify laws of resistance in parallel combination .(Group-1)
	2	**4.3 Introduction to magnetism, type of magnetic materials:** Diamagnetic, paramagnetic and ferromagnetic materials with examples **4.4** Magnetic field, magnetic lines of force, magnetic flux **4.5** Electromagnetic induction (definition)	**2**	8) To verify laws of resistance in parallel combination.(Group-2)
11th	**1**	**Unit5 Modern Physics** **5.1 Laser:** Introduction, principle, absorption, spontaneous emission, stimulated emission population inversion **5.2** Engineering and medical applications of laser	**1**	9) To find resistance of galvanometer by half deflection method (Group-1)
	2	**5.3** Fibrelti optics: Introduction to optical fibers (definition, principle and parts), light propagation, fiber types (mono-mode, multi-mode), applications in medical, telecommunication and sensors.	**2**	9) To find resistance of galvanometer by half deflection method (Group-2)
12th	**1**	**5.4 Nanotechnology:** Introduction, definition of nonmaterial's with examples, properties at nano scale, applications of nanotechnology (brief)	**1**	10) To verify laws of reflection of light using mirror (Group-1)
	2	Assignment 3 and Revision of above topics	**2**	10) To verify laws of

				reflection of light using mirror (Group-2)
13th	**1**	Third Sessional Test(Tentative)	**1**	Revision and Viva-voce (Group-1)
	2	Third Sessional Test(Tentative)	**2**	Revision and Viva-voce (Group-2)
14th	**1**	Revision of above topics	**1**	11) To verify laws of refraction using glass slab.(Group-1)
	2	Revision of above topics	**2**	11) To verify laws of refraction using glass slab.(Group-2)
15th	**1**	Revision of above topics	**1**	12) To find the focal length of a concave lens, using a convex lens.(Group-1)
	2	Revision of above topics	**2**	12) To find the focal length of a concave lens, using a convex lens.(Group-2)
16th	**1**	Revision of above topics	**1**	13) Practice
	2	Revision of above topics	**2**	13) Practice
17th	**1**	Revision of above topics	**1**	14) Practice
	2	Revision of above topics	**2**	14) Practice

Lesson Plan

Name of the Faculty : Sh. Ravinder Kumar
Discipline : Mechanical Engineering
Semester : 2nd
Subject : Mechanical Engineering Drawing-I (MED-I)
Lesson Plan Duration : 06
Work Load(Lecture/Practical) per week (in hours): 03Hrs (Lecture) 03Hrs (Practical)

Week	Theory	
	Lecture day	Topic (including assignment/test)
1st	1	Principle and utility of detail and assembly drawings
	2	Practical exercise on drawing from detail to assembly or vice versa using
	3	Different wooden joints as example (lap joint –T joint and corner joint, Mortise and tenon joint, Bridle joint, Mitre faced corner joint).
2nd	4	Nomenclature of threads
	5	Types of threads. Single and multiple star threads, right hand and left hand
	6	Thread Forms of various external thread sections V thread
3rd	7	(Metric thread, British associate, American thread, Basic whitworth thread), Square, Acme , Buttress thread. Different views of hexagonal and square headed nuts and bolts.
	8	Assembled view of nuts and bolts with Washers
	9	Foundation bolt-Rag bolt, Hook bolt. Lewis bolt, Eyebolt and curved bolt
4th	10	Simplified Conventional representation of V thread.
	11	Locking nuts-Castle nut, Sawn nut, and Split pin lock nut. Locking by spring washers, Locking plates.
	12	REVISION
5th	13	Drawing of various types of machine and set screws.
	14	Drawing of various types of studs,through bolt, tap bolt and stud bolt.
	15	**SESSIONAL TEST -1**
6th	16	Various types of keys and their application.
	17	Preparation of drawings of various keys and cotters.
	18	REVISION
	19	Various
	20	Types of joints(a) Gib and Cotter joint(b) Knuckle joint (c) Spigot and Socket

7th	21	REVISION
8th	22	Types of general purpose rivet heads (Snap Head,Pan Head,Flat and counter
	23	REVISION
	24	Types of riveted joints, lap(single and double riveted), butt (single cover pla double cover plate), chain and zigzag riveting (Double riveted)
9th	25	Caulking and fullering operation of riveted joints.
	26	REVISION
	27	Introduction to coupling, their uses and types, Muff Coupling
10th	28	Protected type flange coupling. Flexible or non-rigid coupling
	29	REVISION
	30	Introduction, Various 2D commands- Draw, modify and option Prepare at least 4 sheets
11th	31	**SESSIONAL TEST -2**
	32	CAD software–one drawing each from wooden joint, threads,
	33	Nut and bolts, coupling.
12th	34	REVISION
	35	SHEETS REVISION OF CHAPTER ONE
	36	SHEETS REVISION OF CHAPTER TWO
13th	37	SHEETS REVISION OF CHAPTER THREE
	38	SHEETS REVISION OF CHAPTER FOUR
	39	SHEETS REVISION OF CHAPTER FIVE
14th	40	SHEETS REVISION OF CHAPTER SIX
	41	SHEETS REVISION OF CHAPTER SEVEN
	42	SHEETS REVISION OF CHAPTER EIGHT
15th	43	SHEETS REVISION OF CHAPTER NINE
	44	**SESSIONAL TEST -3**
	45	REVISION OF COMPLETE SYLLABUS

LESSON PLAN

NAME OF FACULTY: SH. PRADEEP KUMAR

DISCIPLINE: MECHANICAL ENGINEERING

SEMESTER: 2ND

SUBJECT: WORKSHOP TECHNOLOGY-1

LESSON PLAN AND DURATION: 15 WEEKS

WORK LOAD (LECTURE/PRACTICAL) PER WEEK: 3 LECTURES (3 HOURS)

WEEK	LECTURE NO.	TOPIC
1st	1	**UNIT:1. HAND TOOLS** **CHISELS**: Types and uses of chisels, wood working chisels,
	2	Metal Working chisels–cold chisel, hard chisel, stone chisel, masonry chisel.
	3	Hammers – Types, Basic design and variations,
2nd	4	Physics of hammering,
	5	Hammer as force multiplier, effect of head's mass, effect of handle.
	6	Saw–Saw terminology, types of saws, types of saw blades, material used for saw
3rd	7	Hacksaw frame and its types.
	8	Pliers – Function and types.
	9	Wrenches/Spanners–Common General wrenches/spanners,
4th	10	Specialized wrenches/spanners,
	11	Surface plate, V-block, files, Surface Gauge.
	12	**2. MEASURING INSTRUMENTS** Calipers–Types–Inside, outside, divider,
5th	13	**SESSIONAL TEST-1**
	14	Odd leg caliper. Vernier Caliper-Parts, uses, Checking error, least count,working principle.
	15	Outside micrometer - Introduction, parts, Principle, Least count, Checking zero error.

6th	16	**UNIT:2 CUTTING TOOLS AND CUTTING MATERIALS** Cutting Tools-Various types of single point cutting tools and their use
	17	Single point cutting tool geometry,
	18	tool signature and its effect,
7th	19	Heat produced during cutting and its effect
	20	Cutting speed, feed
	21	Depth of cut and Their effect.
8th	22	Cutting Tool Materials - Properties of cutting tool material,
	23	Study of various cutting tool materials viz. High-speed steel, tungsten carbide, cobalt steel cemented carbides, Stellite, ceramics and diamond.
	24	**SESSIONAL TEST-2**
9th	25	**UNIT 3:WELDING** Welding Process-Principle of welding, Classification of welding processes
	26	Advantages and limitations of welding, Industrial applications of welding, Welding positions and techniques, symbols. Safety precautions in welding.
	27	Gas Welding - Principle of operation, Types of gas welding flames and their applications, Gas welding equipment - Gas welding torch, Oxygen cylinder, acetylene cylinder, cutting torch, Blow pipe, Pressure regulators,
10th	28	Arc Welding - Principle of operation, Arc welding machines and equipment. A.C. and D.C. arc welding,
	29	Filler rods and fluxes and personal safety equipment for welding.
	30	Effect of polarity, current regulation and voltage regulation, Electrodes: Classification, B.I.S. specification and selection
	31	Flux for arc welding. Requirements of pre heating, post heating of electrodes and work piece. Welding defects and their testing methods

11th	**32**	**UNIT 4: LATHE** Principle of turning, Description and function of various parts of a lathe.
	33	Classification and specification of various types of lathe,
12th		Drives and transmission, Work holding devices. Lathe tools: Parameters/Nomenclature and applications.
	35	Lathe operations - Plain and step turning, facing, parting off, taper turning, eccentric turning, drilling, reaming, boring, threading and knurling,
	36	Form turning, spinning. Cutting parameters, Speed, feed and depth of cut for various materials and for various operations,
13th	**37**	Machining time. Speed ratio, preferred numbers of speed selection, Lathe accessories:- Centers, dogs,
	38	different types of chucks, collets, face plate, angle plate, mandrel, steady rest, follower rest,
	39	Taper turning attachment, tool post grinder, milling attachment, Quick change device for tools. Brief description of capstan and turret lathe, comparison of capstan/turret lathe, work holding and tool guiding devices in capstan and turret lathe.
14th	**40**	**UNIT:5-DRILLING**: Principle of drilling. Classification of drilling machines and their description. Various operation performed on drilling machine – drilling, spot facing, reaming, boring, counter boring, counter sinking,
		hole milling, tapping. Speeds and feeds during drilling, impact of these parameters on drilling, machining time. Types of drills and their features, nomenclature of a drill. Drill holding devices. Types of reamers.
	41	**BORING**: Principle of boring, Classification of boring machines and their brief description. Specification of boring machines. Boring tools, boring bars and boring heads. Description of jig boring machine.
	42	**CUTTING FLUIDS AND LUBRICANTS**: Function of cutting fluid, Types of cutting fluids, Difference between cutting fluid and lubricant,
15th	**43**	Selection of cutting fluids for different materials and operations, Common methods of lubrication of machine tools,
	44	Certifying Organizations (such as SAE, ASTM) for rating standards of lubricants.
	45	**SESSIONALTEST-III**