PLANNED SYLLABUS COVERAGE(Theory)

GPK-F-17

P
ngra
LABUS
ERAGE

Department: Mechanical Engg. Subject Fluid Mechanics & Hydraulics machinery

Course Diploma (ME) Duration 14 weeks

Total Periods 56 Theory 56

Period Nos.	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
1 1-4	I Properties of fluids	Density, Specific gravity, Specific weight, Specific volume, Dynamic viscosity, Kinematic viscosity Surface tension, Capillarity. Vapour pressure, Compressibility	Fluids Mechanics & Hydraulic Machines by S S Rattan		
5-10	Fluid Pressure Pressure measurement	Fluid Pressure, Pressure Head, Pressure intensity, concept of vacuum and gauge pressure atmospheric pressure, absolute pressure, Simple and differential Manometers, Bourdon pressure (simple problems on manometers only)	Fluid Mechanics & Hydraulic machines by R.K. Bansal		
3. 11-18	II Fluid Flow	Types of Fluid Flow, Path line and stream line, continuity eqn Bernoulli's theorem for ideal fluid, principle of operation of venturimeter, orifice meter and pitot tube. Derivation for discharge, coefficient of discharge and simple numerical problems.			
1.9-27	Flow through pipes	Laminar and turbulent flow; Daley's eqn and Chezy's eqn. for friction losses, Minor losses in pipes,			

Approved from concerned HOD within seven days from beginning of semester & will be kept with the concerned teacher

riod Nos.	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
		Hydraulic gradient and tool gradient line, Simple numerical problems to estimate losses only.			
5. 28 - 36	III Impact of Jets	Impact of Jet on fixed vertical, moving vertical flat plates, Impact of jets on curved vanes with special reference to turbines, Simple numerical on work done & efficiency			
6. 37 - 46	Hydraulic Turbine	Layout of Hydroelectric power plant, Features of Hydro electric power plant classification of hydraulic turbines, Selection of turbine on the			

Extra Topics to be covered beyond the scope of the syllabus (as required by industry/ as recommended by Teacher which he/ she finds necessary)

Period No.	Topic Covered	Instruction Reference	Additional Study recommended	Remarks

Approved / Not approved	
Date 01/08/2025	HOD Sign.
Date	Principal Sign.

Additional sheets (if required).

GPK-F-17

PLANNED SYLLABUS COVERAGE(Theory)

P
ngra
LABUS
VERAGE

Department: Mechanical Engg. Subject Fluid Mechanics & Hydraulic Machinary
Course Diploma (ME) Duration 14 weeks
Total Periods 56 Theory 56

Sr No.	Period Nos.	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
			basis of Head and discharge available, Construction & working principle of pelton francis and kaplan turbines Draft tubes-types and construction, concept of cavitation in turbines Calculation of work done, Power, efficiency of turbine Unit quantities and Simple numericals.	Fluids mechanics & Hydraulic machines by SS. Rattan Fluid mechanics & Hydraulic machines by R.K. Bansal		
7	47-50	V Centrifugal Pumps	Principle of working & applications, Types of casing and impellers, concept of multistage, concept of priming and, cavitation Manometric head, workdone monometric efficiency, overall efficiency.			
8.	51-56	Reciprocating Pumps	construction, working principle and application of a single and double			

pproved from concerned HOD within seven days from beginning of semester & will be kept with the concerned teacher
e.

riod Nos.	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
		adding reciprocating pumps, Concept of slips, Negative slip Cavitation and separation			

Extra Topics to be covered beyond the scope of the syllabus (as required by industry/ as recommended by Teacher which he/ she finds necessary)

Period No.	Topic Covered	Instruction Reference	Additional Study recommended	Remarks

Approved / Not approved	
Date 01/08/2025	HOD Sign Ashamy
Date	Principal Sign

dditional sheets (if required).

PLANNED SYLLABUS COVERAGE(Theory)

GPK-F-17

P
ngra
LABUS
ERAGE

Department: Mechanical Engg. Subject Advanced Manufacturing Processes

Course Program Core Duration 14 weeks.

Total Periods 56. Theory

Period Nos.	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
1-14	Jigs & Fixtures	Definition of Jig; Types of Jigs, leaf Jig, Box & Handle Jig, Template Jig, plate Jig, Indexing Jig, Universal Jig, Vice Jigs, General consideration in the design of Drill jigs, Drill bush, Types of Fixtures, Vice Fixtures, Milling fixtures, Boring Fixtures, Grinding fixtures, Basic principles of location, Locating methods and devices; Basic principles of the clamping, Types of clamps, strap clamps, Cam clamps, screw clamps, Toggle clamps, Hydraulic & pneumatic clamps.	Production Technology: Tata Mc-Graw Hill; CNC Machine: Pabla B.S. & M Adithan; Non Conventional Machining - P.K. Mishra, Narosa Publishing House		
15-25	Plastic Processing	Processing of plastics, Moulding process, injection moulding, compression moulding, Transfer moulding, Extruding casting, Fabrication methods - sheet forming, Blow moulding, laminating plastics, reinforcing, Application of plastics			
26-34	Modern Machining Processes	Principle, Description & Application of Ultrasonic Machining, Electric Discharge Machining, Wire Cut EDM, Abrasive Jet Machining, Laser Beam Machining, Electrochemical Machining			
35-45	CNC Milling Machine	Vertical & Horizontal machining center; Constructional feature, Axis Identification, Electronic control system, Automatic Tool			

approved from concerned HOD within seven days from beginning of semester & will be kept with the concerned teach
e.

Period Nos.	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
		Changers tool magazine, CNC programming, preparatory functions Miscellaneous functions (M code, part programming,			
46-56	Special purpose Machines & Maintenance of Machine tools	Concept, General elements of SPM, Productivity improvement by SPM, Principles of SPM design. Types of Maintenance, Repair cycle Analysis, Repair complexity, Maintenance manual, Maintenance records, Housekeeping, Introduction to Total productive maintenance			

Extra Topics to be covered beyond the scope of the syllabus (as required by industry/ as recommended by Teacher which he/ she finds necessary)

Period No.	Topic Covered	Instruction Reference	Additional Study recommended	Remarks

Approved / Not approved	
Date 01/08/2025	HOD Sign
Date 01/08/2025	Principal Sign

Additional sheets (if required).

PLANNED SYLLABUS COVERAGE(Theory)

GPK-F-17

P
ngra
LABUS
'ERAGE

Department: Mechanical Engg. Subject OE-1 (Vehicular Systems)

Course Diploma Duration 14 weeks'

Total Periods 14x4 = 56 Theory 56

Period Nos.	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
	Introduction	Types of Automobiles, different layout of vehicle, chasis, frame and body, Spark ignition (SI) & compression ignition (CI)	Automobile Engg. by Kirpal Singh (Vol. I+II)		
	Automotive Engine parts	Cylinders - arrangements and their relative merits, Liners, piston, connecting rod, crankshaft, valve, valve actuating mechanisms.			
	Transmission systems	Clutch type and construction of single plate clutch, propeller shaft, slip joints, universal joints, Differential and rear axle.			
		Requirements, leaf spring, coil spring, Types of brakes, Mech. and hydraulic braking			

riod Nos.	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
		system, brake shoe assay, Disk brakes, Drum brake, Antilock-Braking system, purpose and operation of antilock braking system passive safety systems. Airbags, seatbelts, crumple zones, active safety system - Automatic Driver assist system; ABS, reverse parking system, Anti collision system - Traction control system - cruise control system, Heating, ventillation and AC (HVAC), autonomous Driving cars - Level of Driving automation (Basic definition & functionality).			

Extra Topics to be covered beyond the scope of the syllabus (as required by industry/ as recommended by Teacher which he/ she finds necessary)

Period No.	Topic Covered	Instruction Reference	Additional Study recommended	Remarks

Approved / Not approved	
Date 01/08/2025	HOD Sign
Date 01/08/2025	Principal Sign

additional sheets (if required).

GPK-F-17

PLANNED SYLLABUS COVERAGE(Theory)

P
ngra
LABUS
ERAGE

Department: Mech. Engg Subject Elements of R&AC

Course Diploma Duration 14 Weeks

Total Periods 56 Theory 56

Period Nos.	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
1 to 10	Unit - I Introduction to Refrigeration	Definition of Refrigeration, Refrigerating effect unit of refrigeration - COP, Carnot refrigeration cycle, Air refrigeration, Bell Coleman cycle, PV & TS diagram Advantages & disadvantages in air refrigeration (simple problems on Carnot refrigeration cycle only)			
11 to 23	Unit - II Refrigeration systems	Basic components, Flow diagram of working of vapour compression cycle, Representation of the vapour compression cycle on PH & TS diagram, Expression for refrigerating effect, WD & Power required, Type of vapour compression cycle, Effects of superheating & sub cooling, its advantages & disadvantages, Simple vapour absorptions cycle and its flow			

pproved from concerned HOD within seven days from beginning of semester & will be kept with the concerned teacher
e.

riod Nos.	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
		diagram, comparision of vapour absorption & vapour compression system.			
to 37	Unit -III Refrigeration Equipments:-	compressor - Hermetically sealed and semi hermetically sealed compressor, condensors :- Air cooled, natural and forced draught cooling system. Advantages & disadvantages of air cooled and water cooled condensors Evaporators - natural convection, forced convection types.			
	Refrigerants & Lubricants:	-Introduction to Refrigerants, Properties of a good			

Extra Topics to be covered beyond the scope of the syllabus (as required by industry/ as recommended by Teacher which he/ she finds necessary)

Period No.	Topic Covered	Instruction Reference	Additional Study recommended	Remarks

Approved / Not approved	
Date 01/08/2025	HOD Sign Ashalatha
Date	Principal Sign

Additional sheets (if required).

GPK

PLANNED SYLLABUS COVERAGE(Theory)

P
ngra
LABUS
ERAGE

Department: Mech. Engg. Subject Elements of R & AC
Course Diploma Duration 14 Weeks
Total Periods 56 Theory 56

Period Nos.	Topic	Details	Instruction Reference	Additional Study Recommended	R
		refrigerants, classification of refrigerants, detection of refrigerants leakage, charging the system with refrigerant, lubricants used in refrigeration & their properties.			
38 to 46	unit IV :- Refrigerant flow controls:	capillary tube, Automatic Expansion valve, Thermostatic expansion valve, High side and low side float valve, Solenoid valve, Evaporator pressure regulator.			
	Application of refrigeration	slow and quick freezing, cold storage & frozen storage, Dairy refrigeration, Ice making industry, water cooler.			
47 to 56	unit V :- Air conditioning :-	Introduction to Air conditioning, factor affecting air conditioning, Brief description of DBT, WBT, DPT, Psychometric chart and its use, Psychometric			

pproved from concerned HOD within seven days from beginning of semester & will be kept with the concerned tea
e.

...riod Nos.	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
		phases - SH & CH, Humidification & dehumidification, cooling & dehumidification, heating & humidification (simple problems on above psychrometric processes only by using psychrometric chart) Equipments used in Air conditioning cycle.			
	Refrigeration & Air conditioning tools:-	Tools used in refrigeration & Air conditioner Installation, Installation procedure, servicing procedure.			

Extra Topics to be covered beyond the scope of the syllabus (as required by industry/ as recommended by Teacher which he/ she finds necessary)

Period No.	Topic Covered	Instruction Reference	Additional Study recommended	Remarks

Approved / Not approved	
Date 01/08/2025	HOD Sign
Date	Principal Sign

Additional sheets (if required).

GPK-F-17

PLANNED SYLLABUS COVERAGE(Theory)

GP Kangra

Department: Mech. Engg. Subject Theory of Machines & M.

Course Diploma Duration 3 Years.

SYLLABUS COVERAGE

Total Periods 70 · Theory 70

Sr. No.	Period Nos.	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
1.	1 – 10	Cam and followers	Concept, Defination and application of cams and followerss; Classification of cams and followers; Different follower motion and their Displacement Diagrams like Uniform velocity, SHM, uniform Acc. and Retardation; Drawing of Profile of radial cam with knife edge and roller follower without offset for reciprocating motion (Graphical Method for uniform velocity and SHM only.	Theory of Machine by R.K Bansal, Laxmi publication.	Theory of Machine by S.S Ratan Tata McGraw Hill - publication	
2.	11 – 24	Power Transmission	Type of Drives; flat belt, V-belt & its application, Material for flat and V belt. Angle of Lap, Belt length, Slip and creep. Determination of velocity ratio; Ratio of tight side and slack side tension, Centrifugal tension and Initial tension			

To be approved from concerned HOD within seven days from beginning of semester & will be kept with the concerned teacher in his file.

Sr. No.	Period Nos.	Topic	Details	Instruction Reference	Additional Study Recommended	Re
			Condition of Max. power transmission (without slip); Simple Numerical; Chain drive, advantage and Disadvantage; Gear drive - Spur gear terminology; Type of gears and gear trains Train value and velocity ratio for simple and compound gear train.			

Extra Topics to be covered beyond the scope of the syllabus (as required by industry/ as recommended by Teacher which he/ she finds necessary)

Sr. No.	Period No.	Topic Covered	Instruction Reference	Additional Study recommended	Remarks

Approved / Not approved	
Date 01/08/2025	HOD Sign
Date	Principal Sign

(Use additional sheets if required)

GPK-F-17

PLANNED SYLLABUS COVERAGE(Theory)

G P Kangra

SYLLABUS COVERAGE

Department: Mech. Engg. Subject Theory of Machine & M.

Course Diploma Duration 3 years.

Total Periods 70 Theory 70.

Sr. No.	Period Nos.	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
3.	25 - 41	fly Wheel and Governors	Flywheel - Concept, function and application of fly wheel with the help of T. M. D. for Single cylinder 4-stroke I.C Engines; Coeff. of fluctuation of energy and speed with its significance; Governor Type and explanation with neat sketch (Centrifugal, Watt and porter); Concept function & Terminology of Governors; Comparison b/w fly wheel and Governors;			
4.	42 - 57	Break Clutch and Bearing	function of Brakes; Type of Brakes; Comparison b/w brakes and Dynamometers Construction and Working of Shoe Break, Band Break, Disc Break, Concept of self locking & self energizing Break; clutch - Function of clutch and its applications, construction and Working of Single plate, Multiplate clutch, Centrifugal clutch, cone clutch, Bearing, Simple pivot, Collar Bearing, conical pivot.			

To be approved from concerned HOD within seven days from beginning of semester & will be kept with the concerned teacher in his file.

Sr. No.	Period Nos.	Topic	Details	Instruction Reference	Additional Study Recommended	Re
5.	58-70	Balancing and Vibration	Concept of Balancing; Balancing of Single rotating mass; Graphical Method of Balancing of several Masses Revolving in same plane; Vibration and its types; Concept of Damping; Cause of vibration in Machines; Their Harmful effects and Remedies			

Extra Topics to be covered beyond the scope of the syllabus (as required by industry/ as recommended by Teacher which he/ she finds necessary)

Sr. No.	Period No.	Topic Covered	Instruction Reference	Additional Study recommended	Remarks

Approved / Not approved	
Date 01/08/2025	HOD Sign
Date	Principal Sign

* Use additional sheets (if required)