# PLANNED SYLLABUS COVERAGE (Theory)

| "PVC" NSSK G.P Bilaspur at Kalol | Department: **Mech. Engg.(3rd Sem.)** | | | Subject: **APPLIED MECHANICS** | |
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| | Course: Diploma . | | | Duration: Three years. | |
| **SYLLABUS COVERAGE** | Total Periods: 56 | | Theory: 56 | | |

| Sr No | Period No's | Topic | Details | Instruction Reference | Additional Study Recommended | Remarks |
|---|---|---|---|---|---|---|
| 1. | 1-8 | Introduction | Concept of engineering mechanics (Applied Mechanics), definition of mechanics, statics, dynamics, application of engineering mechanics in practical fields. Definition of mass and weight basic quantities and derived Quantities of basic units and derived units. Concept of rigid body, scalar and vector quantities. | Birinder Singh, Kaption Publishing House, New Delhi | | |
| 2. | 9-18 | Laws of forces | Definition of force, measurement of force in SI units, its representation, Point force, concentrated force & Uniformly distributed force, characteristics of a force, and effects of force. Different force systems (coplanar and non-coplanar), principle of transmissibility of forces, law of super-position. Composition and resolution of coplanar concurrent forces, resultant force, method of composition of forces, laws of forces, triangle law of forces, polygon law of forces - graphically, analytically, resolution of forces, resolving a force into two rectangular components.Free body diagram,equilibrant force and its determination, Lami's theorem. | -------do------- | | |
| 3. | 19-28 | Moment | Concept of moment, Moment of a force and units of moment, Varigon's theorem, Principle of moment and its applications (Levers – simple and compound, balance,steel yard, safety valve, reaction at support) Parallel forces (like and unlike parallel force),Concept of couple its properties and its effects, calculating their resultant, General conditions of equilibrium of bodies under coplanar forces, Position of | -------do------- | | |

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| | | | resultant force by moment | | | |
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| 4. | 29-38 | **Friction** | Definition and concept of friction, types of friction, force of friction Laws of static friction, 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. 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 horizontally, At an angle with the inclined plane. | -------do------- | | |
| 5. | 39- 46 | **Centre of Gravity** | Concept, definition of centroid of plain figures and centre of gravity of symmetrical solid bodies .Determination of centroid of plain and composite lamina using moment method only, centroid of bodies with removed portion Determination of centre of gravity of solid bodies - cone, cylinder, hemisphere and sphere; composite bodies and bodies with portion removed. | -------do------- | | |
| 6. | 47 -56 | **Simple Lifting Machines** | Definition of effort, velocity ratio, mechanical advantage and efficiency of a simple machine and their relationship, law of machines. Examples of Simple and compound machines, Definition of ideal machine, reversible and self-locking machine Effort lost in friction, Load lost in friction, determination of maximum mechanical advantage and maximum efficiency. System of pulleys (first, second, third system of pulleys), determination of velocity ratio, mechanical advantage and efficiency Working principle and application of inclined plane, wheel and axle, different pulley blocks, simple screw jack, worm and worm wheel, single and double winch crab. Expression for their velocity ratio and field of their application | -------do------- | | |

| Approved | | HOD Sign. *lverno* |
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| Date | 30-08-22 | |