GUJARAT TECHNOLOGICAL UNIVERSITY

Syllabus for Bachelor of Vocation (B.Voc), 1st Semester
Branch: Production Technology
Subject Name: General Mechanical Engineering-II
Subject Code: 1110302

With effective from academic year 2018-19

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks				Total Marks
				Theory Marks		Practical Marks		
L	T	P	C	ESE (E)	PA (M)	ESE (V)	PA (I)	
3	-	0	3	50	-	-	-	50

L- Lectures; P- Practical; OJT- On Job Training; C- Credit; ESE- End Semester Examination; PA- Progressive Assessment

Content:

Sr. No.	Topic	No. of Hours	% Weightage
01	**Basics of Thermodynamics** Basic definition of heat, work, Thermodynamic process, parameters of working body and their units, Equation of state, Universal gas constant, Relation between heat capacity and temperature. Determination of quantity of heat	5	15
02	**Laws of Thermodynamics** Elementary concept of laws of thermodynamics, first law and second law, Graphical representation of process, The work of expansion and compression of a gas, Change in the state of ideal gas-Isochoric, Isothermal and Adiabatic process, Carnot-cycle	6	20
03	**IC ENGINES** External & internal combustion engines, working of diesel and petrol engine, horse power of IC engines **Steam Generators & Condensers** Construction and working of Babcock & Wilcox boiler, Cochran boiler, Steam condenser & its types	5	15
04	**Fundamentals of Statics** Force, types of forces, Characteristics of a force, System of forces, Composition and resolution of forces, Newton's Laws of Motion, Coplanar concurrent and non-concurrent force system: Resultant, Equilibrant, Free body diagrams, Coplanar concurrent forces: Resultant of coplanar concurrent force system by analytical and graphical method, Law of triangle of forces, Law of polygon of forces, Equilibrium conditions for coplanar concurrent forces, Lami's theorem. Application of these principles, Coplanar non-concurrent forces: Moments & couples, Characteristics of moment and couple, Equivalent couples, Force couple system, Varignon's theorem, Resultant of non-concurrent forces by analytical method and graphical method, Equilibrium conditions of coplanar non-concurrent force system	8	30
05	**Simple stresses & strains** Basics of stress and strain, Normal/axial stresses: Tensile & compressive, Tangential Stresses :Shear and complementary shear, Strains: Linear, shear, lateral, thermal and volumetric, Hooke's law, Elastic Constants: Modulus of elasticity, Poisson's ratio, Modulus	6	20

	of rigidity and bulk modulus and relations between them, Application of normal stress & strains		

Reference Books

- Mechanical Engineering: Khurmi & Gupta
- General Mechanical Engineering: JK Kapoor
- A Textbook of Applied Mechanics: R.K. Rajput
- strength of materials: Ramamrutham