GUJARAT TECHNOLOGICAL UNIVERSITY

Syllabus for Bachelor of Vocation (B.Voc), 1st Semester
Branch: Production Technology
Subject Name: Production Technology
Subject Code: 1110303

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)		PA(V)		PA (I)	
					PA	ALA	ESE	OEP		
03	00	00	03	50	00	00	00	00	00	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	**PRODUCTION MACHINE TOOLS**: Machine tools used for quantity production, semi automatic multi tools centre lathe. Auto-lathes, sliding head types, Single spindle automatics, Multi-spindle automatics, Mechanical copying systems, Hydraulic servo copying systems for lathe, Electric copying systems. **TRANSFER MACHINES**: Types of productions. Types of layout, Economic justification of transfer machines, Inline transfer, drum type transfer machines. Automatic loading & Transferring methods, Machining heads, Automatic inspections, Tool servicing, Transfer press linked lines.	4	
02	**GENERATION OF FORMS**: Forming `V' generating. Thread chasing. Die heads. Thread rolling. Thread milling. Thread grinding. Gear planning, Gear shaping, Gear hobbing, Straight Bevel Gear Manufacture. Spiral bevel Gear Manufacture.	6	
03	**SURFACE TREATMENT & FINISHING**: Meaning of the terms surface treatment and its purpose, Elements of surface treatment cleaning protecting, Colouring, Altering surface properties. **Surface Treatment Processes**- Wire brushing, Belt sanding, Alkaline cleaning, Vapour degreasing, Pickling, Latest trends in Surface preparation, Ultrasonic cleaning, Solvent cleaning, Painting application by dipping, Hand spraying, Automatic spraying, Electrostatic spray finishing. Electro-coating, Hot dip coating, phosphate coating- Packerising and bonderasing, Buffing,. Blackening, Anodising. Electro Nickle Plating, Nickle carbide plating, Sputtering, Automation in Painting, **AUTO CONTROL OF SIZE**: Auto sizing, Mechanical calliper for turning operation, Pneumatic sizing of external cylindrical ground work, Pneumatic slide position measuring device, Digital slide position measuring device, Auto sizing device for centre-less grinding operation. Friction rollers, Optical measurement	8	
04	**CUTTING TOOLS FOR MACHINING:** Elements of machining process, Single point tools - Basic angles, Chip formation, Effect of manipulating factors such as velocity,	6	

	size of cut, effect of tool geometry, Tool material, Cutting fluids and contamination in them, Work piece material, Tool life model, Machining economics, Specific power consumption Basic principles of multipoint tools, Linear travel tools, Broaches, Gear shaper cutters,. Axial feed rotary tools-Twist drill, Reamers, Core drills, Counter bores and counter sinks, Multiple diameter tools, Hobs, Characteristics of tools materials,. Tool materials, Tool steels, High speed steel, Cast cobalt alloys. Carbides or cintered carbide, Ceramics, Carbide tools Surface treatment of cutting tools- Its advantage, Tin coated high speed steel diamonds. Cubic boron nitrides,. Specialised knowledge of steel cutting		
05	**PRESS TOOLS**: Factors affecting press tool design, Shearing, Bending, Drawing, Combination tools, Progression tools, Rubber die formatting, high energy forming, Explosive forming **SPECIFICATION OF QUALITY & RELIABILITY**: Quality, Specification Designing for production Standardisation, Preferred numbers, Limits and fits, Tolerance build up, Geometric tolerances. Limit gauging	6	

Reference Books

- Production Engineering: PC Sharma
- Production Technology: CK Singh