

Course Code	VOCATIONAL EDUCATION AND TRAINING COURSES	Credit Hours		
		Theory	Practical	Total
Semester III				
VTC: 240	Agriculture			
VTC: 240.1	Organic Farming-I	1	3	4
VTC: 240.2	Fish Farming- I	1	3	4
VTC: 240.3	Bee-Keeping -I	1	3	4
VTC: 240.4	Piggery-I	1	3	4
VTC: 241	Horticulture			
VTC: 241.1	Floriculture and Landscaping-I	1	3	4
VTC: 241.2	Mushroom Cultivation- I	1	3	4
VTC: 242	Carpentry and Repairing			
VTC: 242.1	Automobile Repairing-I	1	3	4
VTC: 242.2	Electrical-I	1	3	4
VTC: 242.3	Electronic Repairing-I	1	3	4
VTC: 242.4	Carpentry-I	1	3	4
VTC: 243	Technology			
VTC: 243.1	Web Designing -I	1	3	4
VTC: 243.2	Desktop Publishing -I	1	3	4
VTC: 243.3	Computerized Accounting	1	3	4
VTC: 244	Tourism			
VTC: 244.1	Food and Beverage Services-I	1	3	4
VTC: 244.2	Event Management-I	1	3	4
VTC: 245	Music			
VTC: 245.1	Drums-I	1	3	4
VTC: 245.2	Piano-I	1	3	4
VTC: 245.3	Guitar-I	1	3	4
VTC: 245.4	Vocals-I	1	3	4
VTC: 245.5	Khasi Traditional Music-I	1	3	4
VTC: 246	Manufacturing			
VTC: 246.1	Baking and Confectionary-I	1	3	4
VTC: 246.2	Food Processing-I	1	3	4
VTC: 246.3	Wine Making-I	1	3	4
VTC: 247	Fashion and Beauty			
VTC: 247.1	Beauty Care-I	1	3	4
VTC: 247.2	Accessory Design	1	3	4
VTC: 247.3	Fashion Design	1	3	4
VTC: 248.	Others			
VTC: 248.1	Photography	1	3	4

Course Code	VOCATIONAL EDUCATION AND TRAINING COURSES	Credit Hours		
		Theory	Practical	Total
Semester IV				
VTC: 260	Agriculture			
VTC: 260.1	Organic Farming-II	1	3	4
VTC: 260.2	Fish Farming- II	1	3	4
VTC: 260.3	Bee-Keeping - II	1	3	4
VTC: 260.4	Piggery- II	1	3	4
VTC: 261	Horticulture			
VTC: 261.1	Floriculture and Landscaping-II	1	3	4
VTC: 261.2	Mushroom Cultivation- II	1	3	4
VTC: 262	Carpentry and Repairing			
VTC: 262.1	Automobile Repairing-II	1	3	4
VTC: 262.2	Electrical-II	1	3	4
VTC: 262.3	Electronic Repairing-II	1	3	4
VTC: 262.4	Carpentry-II	1	3	4
VTC: 263	Technology			
VTC: 263.1	Web Designing -II	1	3	4
VTC: 263.2	Desktop Publishing -II	1	3	4
VTC:263.3	Computerized Accounting-II	1	3	4
VTC: 264	Tourism			
VTC: 264.1	Food and Beverage Services-II	1	3	4
VTC: 264.2	Event Management-II	1	3	4
VTC: 265	Music			
VTC: 265.1	Drums-II	1	3	4
VTC: 265.2	Piano-II	1	3	4
VTC: 265.3	Guitar-II	1	3	4
VTC: 265.4	Vocals-II	1	3	4
VTC: 265.5	Traditional Music-II	1	3	4
VTC: 266	Manufacturing			
VTC: 266.1	Baking and Confectionary-II	1	3	4
VTC: 266.2	Food Processing-II	1	3	4
VTC: 266.3	Wine Making-II	1	3	4
VTC: 267	Fashion and Beauty			
VTC: 267.1	Beauty Care-II	1	3	4
VTC: 267.2	Accessory Design-II	1	3	4
VTC: 267.3	Fashion Design-II	1	3	4
VTC: 268.	Others			
VTC: 268.1		1	3	4
VTC:269.1	Photography-II			

Course Code	VOCATIONAL EDUCATION AND TRAINING COURSES	Credit Hours		
		Theory	Practical	Total
Semester VI				
VTC: 360	Agriculture			
VTC: 360.1	Organic Farming-III	1	3	4
VTC: 360.2	Fish Farming- -III	1	3	4
VTC: 360.3	Bee-Keeping -III	1	3	4
VTC: 360.4	Piggery--III	1	3	4
VTC: 361	Horticulture			
VTC: 361.1	Floriculture and Landscaping-III	1	3	4
VTC: 361.2	Mushroom Cultivation--III	1	3	4
VTC: 362	Carpentry and Repairing			
VTC: 362.1	Automobile Repairing-III	1	3	4
VTC: 362.2	Electrical-III	1	3	4
VTC: 362.3	Electronic Repairing--III	1	3	4
VTC: 362.4	Carpentry-III	1	3	4
VTC: 363	Technology			
VTC: 363.1	Web Designing -III	1	3	4
VTC: 363.2	Desktop Publishing -III	1	3	4
VTC: 363.3	Computerized Accounting-III	1	3	4
VTC: 364	Tourism			
VTC: 364.1	Food and Beverage Services--III	1	3	4
VTC: 364.2	Event Management--III	1	3	4
VTC: 365	Music			
VTC: 365.1	Drums-III	1	3	4
VTC: 365.2	Piano-III	1	3	4
VTC: 365.3	Guitar-III	1	3	4
VTC: 365.4	Vocals-III	1	3	4
VTC: 365.5	Khasi Traditional Music-III	1	3	4
VTC: 366	Manufacturing			
VTC: 366.1	Baking and Confectionary-III	1	3	4
VTC: 366.2	Food Processing-III	1	3	4
VTC: 366.3	Wine Making-III	1	3	4
VTC: 267	Fashion and Beauty-III			
VTC: 367.1	Beauty Care-III	1	3	4
VTC: 367.2	Accessory Design-III	1	3	4
VTC: 367.3	Fashion Design-III	1	3	4
VTC: 368.				
VTC: 368.1				
VTC: 369	Others			
VTC:369.1	Photography-III			
		1	3	4

Syllabus on Vocational Education and Training Course (VTC)

Paper Title			: Accessory Design -I					
CODE			: VTC: 247.2					
Number of Credits			: 4					
Semester			: III					
No. of Theory Hours Per Week			: One (1 hour)					
No. of Practical Hours per Week			: Three (3 Hours)					
Outline of the Paper:								
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)			
Accessory Design - I					In-Semester		End-Semester	
					Theory	Practical	Theory	Practical
	Unit-I Theory (25 Marks)	15	4	100	25			
Unit-II to IV Theory (75 Marks)	90				15		60	
Marks Distribution			: Internal Assessment: 40 : External Assessment: 60					
Course Objectives			The course is designed to further hone the skills of the students and help them explore their creativity in design thinking, colour combination and self-expression.					
Course Learning Outcome			After the completion of the course the students are able to: • make use of the theoretical and practical knowledge about materials of accoutrements and apparels, textiles, fabric, leather and accessories.					
Unit I: (Theory) 15 Hours			Elements of Design Primary Colours, Secondary Colours, Colour Wheel, Tints & Shades, Shapes (Line & Form), Combination of shape/form with lines, Object drawing and rendering, Paper craft (coiling, layering, quilling, rolling, exploration). Lab sessions.					
UNIT-II: (Practical) 30 Hours			Fashion Orientation Fashion and fashion cycles, Personality/Brand Icon, Fashion Capital, Costume of any state/country					
UNIT-III: (Practical) 30 Hours			Pattern Making Pockets (Patch, Slit, Slit with zipper),Bags (T-Base, Running Gusset, Run Round, Raise Gusset, Piano Gusset),Footwear (Sandal, Basic Shoe, Exploration), Hats (Round Top, Panel Hat), Belt (Basic, Exploration) Lab Sessions.					
UNIT-IV: (Practical) 30 Hours			Product Construction Understanding the Machine, Base Line Stitching, Seam Stitching (Plain, French, Flat-felled, Seam binding with tape, Bias Bound), Pockets (Patch, Slit, Slit with zipper), Trims (Magnetic buttons, Zipper, Dog hook, Eyelets & Lace, Adjuster), Bags (T-Base, Running Gusset, Run Round, Raised Gusset, Piano Gusset), Footwear (Sandal, Basic Shoe). Lab Sessions.					

Suggested Readings	1. Brommer, Gerald F. 2010. <i>Illustrated Elements of Art and Principles of Design: Hands on Activities, Full-Color Reproductions, Descriptions of Each Concept</i>. Northbrook: Crystal Productions. 2. Cumming, Valerie. 2011. <i>Understanding Fashion History</i>. London: Batsford Ltd. 3. Donnanno, Antonio. 2019. <i>Fashion Pattern Making Techniques for Accessories: Shoes, Bags, Hats, Gloves, Ties, Buttons, and Dog Clothing</i>. United Kingdom: Editeur distribué par Interforum. 4. Ebster, Klaus &Garaus, Marion. 2011. <i>Store Design and Visual Merchandising: Creating Store Space That Encourages Buying</i>. New York: Business Expert Press. 5. Fashionary. 2016. <i>Bag Design</i>. United Kingdom: Fashionary International Limited. 6. Fletcher, Kate & Grose, Lynda. 2012. Foreword by Paul Hawken. <i>Fashion & Sustainability</i>. London: Laurence King Publishing. 7. Rowland, Claire, Goodman, Elizabeth, Charlier, Martin, Light, Ann & Lui, Alfred. 2015. Foreword by Tom Igoe. <i>Designing Connected Products: UX for the Consumer Internet of Things</i>. Cambridge. 8. Singal, R. K. 2012. <i>Production Planning & Control</i>. New Delhi: S.K. Kataria & Sons. 9. Ulrich, Karl T., Eppinger, Steven D & Yang, Maria C. 2020. <i>Product Design and Development</i> (7th Edition). Noida: McGraw Hill.
Requirements	1. Classrooms and Studios: 2. Pattern Making Lab: 3. Sewing and Construction Lab: 4. Various stitching machines. 5. Seam and stitching tools. 6. Trims and fasteners (magnetic buttons, zippers, eyelets, etc.). 7. Leather sewing machines. 8. Lasts for shoe making. 9. Tools for cutting, stitching, and assembling bags and footwear. 10. Materials: leather, fabric, synthetic materials, adhesives. 11. Drawing and Rendering Tools 12. Paper Craft Supplies: Paper, glue, scissors, quilling tools, and materials for coiling, layering, and rolling. 13. Any other item as and when required
Qualified Instructors	• Instructors with experience in Accessory Design • Certifications or relevant qualifications Accessory Design

Paper Title		: Accessory Design-II							
CODE		: VTC: 267.2							
Number of Credits		: 4							
Semester		: IV							
No. of Theory Hours Per Week		: One (1 hour)							
No. of Practical Hours per Week		: Three (3 Hours)							
Outline of the Paper:									
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)				
Accessory Design - II					In-Semester		End-Semester		
					Theory	Practical	Theory	Practical	
	Unit-I Theory (25 Marks)	15	4	100	25				
Unit-II to IV Theory (75 Marks)	90				15		60		
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60							
Course Objectives		The course is designed to further provide the students with the knowledge, skills, and practical experience in designing accessories through the use of the design board in creating, composing and constructing design material.							
Course Learning Outcome		After completion of the course students are able to: 1. develop the necessary skills and sense to help in the design and production of clothing and fashion accessories. 2. apply their imagination and skills to produce and innovate designed products of assorted accessories necessary for meeting the demands of the fashion market.							
Unit I: (Theory) 15 Hours		Design Process & Prototyping and Material Manipulation Inspiration Board, Mood Board, Silhouette/Stylize, Colour Board, Swatch Board, Story/Theme Board, Finalization and construction of design collection of 3 prototypes. Manipulating products from any waste material or natural waste (Home décor, Head ornaments, Hand Bags, Packaging Design. Lab Sessions.							
UNIT-II: (Practical) 30 Hours		Range Design &Prototyping Boards (Inspiration, Mood, Silhouette/Stylize, Colour, Swatch, Story/Theme). Matching products from the same story/theme that is Bag, Footwear, Hat or Headgear. Costume Jewellery. Lab Sessions.							
UNIT-III: (Practical) 30 Hours		Collection Construction & Portfolio Construction Collection construction of Bags, Footwear, Hats, Head ornaments). Creation of a professional portfolio showcasing the fashion design work of the student. Presenting designs to make them visually appealing. Design aesthetic communication. Lab Sessions.							
UNIT-IV: (Practical) 30 Hours		Internship / Apprenticeship Assisting Designers. Support Production. Marketing & PR Support. Research & Trend Analysis. Administrative Tasks. Networking							

	Opportunities.
Suggested Readings	1. Brommer, Gerald F. 2010. <i>Illustrated Elements of Art and Principles of Design: Hands on Activities, Full-Color Reproductions, Descriptions of Each Concept</i>. Northbrook: Crystal Productions. 2. Cumming, Valerie. 2011. <i>Understanding Fashion History</i>. London: Batsford Ltd. 3. Donnanno, Antonio. 2019. <i>Fashion Pattern Making Techniques for Accessories: Shoes, Bags, Hats, Gloves, Ties, Buttons, and Dog Clothing</i>. United Kingdom: Editeur distribué par Interforum. 4. Ebster, Klaus &Garaus, Marion. 2011. <i>Store Design and Visual Merchandising: Creating Store Space That Encourages Buying</i>. New York: Business Expert Press. 5. Fashionary. 2016. <i>Bag Design</i>. United Kingdom: Fashionary International Limited. 6. Fletcher, Kate & Grose, Lynda. 2012. Foreword by Paul Hawken. <i>Fashion & Sustainability</i>. London: Laurence King Publishing. 7. Rowland, Claire, Goodman, Elizabeth, Charlier, Martin, Light, Ann & Lui, Alfred. 2015. Foreword by Tom Igoe. <i>Designing Connected Products: UX for the Consumer Internet of Things</i>. Cambridge. 8. Singal, R. K. 2012. <i>Production Planning & Control</i>. New Delhi: S.K. Kataria & Sons. 9. Ulrich, Karl T., Eppinger, Steven D & Yang, Maria C. 2020. <i>Product Design and Development</i> (7th Edition). Noida: McGraw Hill.
Requirements	1. Classrooms and Studios 2. Pattern Making Lab 3. Sewing and Construction Lab Various stitching machines. 4. Seam and stitching tools. 5. Trims and fasteners (magnetic buttons, zippers, eyelets, etc.). 6. Leather sewing machines. 7. Lasts for shoe making. 8. Tools for cutting, stitching, and assembling bags and footwear. 9. Materials: leather, fabric, synthetic materials, adhesives. 10. Drawing and Rendering Tools 11. Any other item as required
Qualified Instructors	• Instructors with experience in Accessory Design • Certifications or relevant qualifications Accessory Design

	2. Cumming, Valerie. 2011. Understanding Fashion History. London: Batsford Ltd. 3. Donnanno, Antonio. 2019. Fashion Pattern Making Techniques for Accessories: Shoes, Bags, Hats, Gloves, Ties, Buttons, and Dog Clothing. United Kingdom: Editeur distribué par Interforum. 4. Ebster, Klaus & Garaus, Marion. 2011. Store Design and Visual Merchandising: Creating Store Space That Encourages Buying. New York: Business Expert Press. 5. Fashionary. 2016. Bag Design. United Kingdom: Fashionary International Limited. 6. Fletcher, Kate & Grose, Lynda. 2012. Foreword by Paul Hawken. Fashion & Sustainability. London: Laurence King Publishing. 7. Rowland, Claire, Goodman, Elizabeth, Charlier, Martin, Light, Ann & Lui, Alfred. 2015. Foreword by Tom Igoe. Designing Connected Products: UX for the Consumer Internet of Things. Cambridge. 8. Singal, R. K. 2012. Production Planning & Control. New Delhi: S.K. Kataria & Sons. 9. Ulrich, Karl T., Eppinger, Steven D & Yang, Maria C. 2020. Product Design and Development (7th Edition). Noida: McGraw Hill.
Requirements	1. Classrooms and Studios: 2. Pattern Making Lab: 3. Sewing and Construction Lab: 4. Various stitching machines. 5. Seam and stitching tools. 6. Trims and fasteners (magnetic buttons, zippers, eyelets, etc.). 7. Leather sewing machines. 8. Lasts for shoe making. 9. Tools for cutting, stitching, and assembling bags and footwear. 10. Materials: leather, fabric, synthetic materials, adhesives. 11. Drawing and Rendering Tools 12. Paper Craft Supplies: Paper, glue, scissors, quilling tools, and materials for coiling, layering, and rolling. 13. Any other item as required
Qualified Instructors	• Instructors with experience in Accessory Design • Certifications or relevant qualifications Accessory Design

Syllabus on Vocational Education and Training Course (VTC)

Paper Title		: Automobile Repairing -I						
CODE		: VTC: 242.1						
Number of Credits		: 4						
Semester		: III						
No. of Theory Hours Per Week		: One (1 hour)						
No. of Practical Hours per Week		: Three (3 Hours)						
Outline of the Paper:								
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)			
Automobile Repairing-I					In-Semester		End-Semester	
					Theory	Practical	Theory	Practical
	Unit-I Theory (25 Marks)	15	4	100	25			
	Unit-II to IV Theory (75 Marks)	90				15		60
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60						
Course Objectives		1. To recognise the basic principles of automobile operation and mechanics 2. To develop proficiency in diagnosing and troubleshooting automotive problems 3. To demonstrate practical experience in performing repairs and maintenance tasks on various vehicle systems 4. To identify diagnostic equipment and tools effectively. 5. To devise safety protocols and practices for working in an automotive repair environment.						
Course Outcome	Learning	At the end of the course students will able to: 1. Identify customer service skills, time management, and professional conduct in a workshop environment 2. choose employability and carrier prospects in the automotive repair field 3. solve common engine problems and perform its routine maintenance tasks. 4. use equipment and identify hazardous materials effectively.						
Unit I: (Theory) 15 Hours		Introduction to Automobile • Automobile Engine System, Overview of automobile components, Basic operation • Engine Fundamentals: Introduction to engine components, operation principles and basic troubleshooting techniques, • Safety Procedures: Emphasis on workshop safety practices, Handling of tools, equipment and hazardous materials, Fire safety and Personal Protective Equipment						

	(PPE).
UNIT-II: (Practical) 30 Hours	• Hands-on experience in performing routine maintenance tasks • Oil change, filter replacements • Tyre rotations and fluid checks on various vehicle models
UNIT-III: (Practical) 30 Hours	• Visual inspection of the engine • Fluid analysis • Identification of common engine problems
UNIT-IV: (Practical) 30 Hours	• Practical applications of workshop safety protocols • Proper handling of tools, equipment and hazardous materials • Motor Vehicle Acts and Rules. 30 Hours 30 Hours 30 Hours • Demonstrate the constructional details, working principles and operation of Multi cylinder engine: Diesel and Petrol Engines
Suggested Readings	1. Babu, A.K. Automotive Engines, Khanna Publishing House 2. Babu, K. S. C. Sharma, T.R. Banga, Automobile Mechanics, Khanna Publishing House 3. Giri, N. K., Automobile Mechanics (in S.I. Units) 4. Kirpal Singh, Automobile Engineering: Volume 1 5. Kirpal Singh, Automobile Engineering: Volume 2 6. Kirpal Singh, Automobile Engineering: Volume 3 7. Mahalik,P. Automotive Electrical and Electronics Systems
Requirements	• Workshop Area • Car Washer • Tyre Inflators • Steering System • Suspension System • Air Compressor Demonstration • Automatic Car Washer Procedure • Tyre Inflator Demonstration • Ackerman's Steering Principle Model • Complete Steering System Demonstration • Suspension System Location • Working Models of Suspension Systems • Shock Absorber Demonstration • Manual and Power Steering Systems • Regular Maintenance • Any other items as and when required
Qualified Instructors	• Instructors with experience in automotive technology and

	teaching. • Certifications or relevant qualifications in automotive repair and maintenance.
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Paper Title		: Automobile Repairing -II						
CODE		: VTC: 262.1						
Number of Credits		: 4						
Semester		: IV						
No. of Theory Hours Per Week		: One (1 hour)						
No. of Practical Hours per Week		: Three (3 Hours)						
Outline of the Paper:								
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)			
Automobile Repairing-II					In-Semester		End-Semester	
					Theory	Practical	Theory	Practical
	Unit-I Theory (25 Marks)	15	4	100	25			
Unit-II to IV Theory (75 Marks)	90				15		60	
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60						
Course Objectives		1. To provide the knowledge of measuring and services equipment. 2. To analyze the fundamentals and components of Steering and suspension system 3. To demonstrate the operating functions of air compressor, automatic car washer and tyre Inflator.						
Course Outcome	Learning	At the end of the course students will able to: 1. describe the principle of steering system and identify the gear box and steering leakage 2. demonstrate the use of air compressor, automatic car washer and tyre Inflator 3. identify the types of suspension system and shock absorber.						
Unit I: (Theory) 15 Hours		• Measuring and service equipment: Air Compressor, Car Washer, Tyre Inflators; • Steering System: Principle of Ackerman’s steering, Steering Gear Box, Steering Linkages; • Suspension System: Introduction, Types of suspension system, Components of a suspension system (Servicing of shock absorber)						
UNIT-II: (Practical) 30 Hours		• Demonstration of Air Compressor • Procedure of Automatic Car washer • Demonstration of tyre Inflator						
UNIT-III: (Practical) 30 Hours		• Working model of Ackerman’s Principle of steering • Demonstration of rack & pinion and recirculating types						

	of steering gear box • Demonstration of steering system with all components
UNIT-IV: (Practical) 30 Hours	• Location of suspension system • Working models of suspension systems • Demonstration of shock absorber • Demonstrate the constructional details, working principles and operation of Manual Steering Systems and Power steering
Suggested Readings	1. Babu, A.K. Automotive Engines, Khanna Publishing House 2. Babu, K. S. C. Sharma, T.R. Banga, Automobile Mechanics, Khanna Publishing House 3. Giri, N. K., Automobile Mechanics (in S.I. Units) 4. Kirpal Singh, Automobile Engineering: Volume 1 5. Kirpal Singh, Automobile Engineering: Volume 2 6. Kirpal Singh, Automobile Engineering: Volume 3 7. Mahalik, P. Automotive Electrical and Electronics Systems
Requirements	• Workshop Area • Car Washer • Tyre Inflators • Steering System • Suspension System • Air Compressor Demonstration • Automatic Car Washer Procedure • Tyre Inflator Demonstration • Ackerman's Steering Principle Model • Complete Steering System Demonstration • Suspension System Location • Working Models of Suspension Systems • Shock Absorber Demonstration • Manual and Power Steering Systems • Regular Maintenance • Any other items as and when required
Qualified Instructors	• Instructors with experience in automotive technology and teaching. • Certifications or relevant qualifications in automotive repair and maintenance.

Paper Title		: Automobile repairing -III							
CODE		:VTC: 362.2							
Number of Credits		: 4							
Semester		:VI							
No. of Theory Hours Per Week		: One (1 hour)							
No. of Practical Hours per Week		: Three (3 Hours)							
Outline of the Paper:									
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)				
Automobile Repairing-III					In-Semester		End-Semester		
					Theory	Practical	Theory	Practical	
	Unit-I Theory (25 Marks)	15	4	100	25				
Unit-II to IV Theory (75 Marks)	90				15		60		
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60							
Course Objectives		1. To identify the fundamentals of workshop equipment and engine tuning. 2. To demonstrate the details of fault diagnosis, overhaul and reconditioning procedure. 3. To be able to operate the cooling and fuel systems.							
Course Learning Outcome		At the end of the course students will able to: 1. apply and perform equipment testing, spark plug replacement, belt and hose inspection 2. identify the fault diagnosis by using MAP Sensor Circuit, VSS Circuit check, evaporative emission control system check. 3. conduct the procedure of overhaul and reconditioning in engine, clutch, gear box 4. determine the necessity of cooling system and concepts of fuel system in petrol and diesel engine 5. design and analyse various road emission testing of petrol and diesel vehicles for PUC/RTO.							
Unit I: (Theory) 15 Hours		• Workshop Equipment: Equipment for testing electrical accessories: Electric test bench, growler, coil tester, ignition and cam-dwell-angle tester; wiring harness tester, Ampere-hour battery tester, Brake efficiency measurement; • Engine Tuning: Adjustments of spark plug gap, valve tappet clearance, head bolts, Air cleaner cleaning, Ignition timing setting by timing light; • Fault Diagnosis: MAP Sensor Circuit, VSS Circuit Check, Evaporative Emission Control system Check, Inspection of ECM & its Control; Overhaul and Reconditioning Procedure: Overhaul and reconditioning procedures of engine, clutch, gear box; • Cooling System: Necessity of cooling of I.C. engines. Methods of							

	cooling-air cooling, water cooling, liquid cooling. Pressurized cooling system; • Fuel System (Diesel & Petrol Engines): Fuel supply system, Fuel injection pump, Common Rail Direct Injection, Air/fuel ratio, Air cleaners (wet & dry).
UNIT-II: (Practical) 30 Hours	• Diagnostic tools and equipment to troubleshoot electrical issues • Battery testing, alternator output checks, circuit continuity testing • Advanced practice in brake system repair and upgrade options
UNIT-III: (Practical) 30 Hours	• Spark plug replacement, belt and hose inspection, coolant flushes, timing bely replacement • Exploration of specialized automotive systems (air conditioning, heating, emission control) • Practical training in diagnosis and repair
UNIT-IV: (Practical) 30 Hours	• ABS System diagnosis and brake line replacement • Report based on visit to vehicle testing and research organization • On road emission testing of petrol and diesel vehicles for PUC/RTO 30 Hours • Demonstrate the constructional details, working principles and operation of Carburetors, Diesel Fuel Injection Systems and Gasoline Fuel Injection Systems
Suggested Readings	1. Babu, A.K. Automotive Engines, Khanna Publishing House 2. Babu, K. S. C. Sharma, T.R. Banga, Automobile Mechanics, Khanna Publishing House 3. Giri, N. K., Automobile Mechanics (in S.I. Units) 4. Kirpal Singh, Automobile Engineering: Volume 1 5. Kirpal Singh, Automobile Engineering: Volume 2 6. Kirpal Singh, Automobile Engineering: Volume 3 7. Mahalik,P. Automotive Electrical and Electronics Systems
Requirements	• Workshop Area • Car Washer • Tyre Inflators • Steering System • Suspension System • Air Compressor Demonstration • Automatic Car Washer Procedure • Tyre Inflator Demonstration • Ackerman's Steering Principle Model • Complete Steering System Demonstration • Suspension System Location • Working Models of Suspension Systems • Shock Absorber Demonstration

	• Manual and Power Steering Systems • Regular Maintenance • Any other items as and when required
Qualified Instructors	• Instructors with experience in automotive technology and teaching. • Certifications or relevant qualifications in automotive repair and maintenance.

Syllabus on Vocational Education and Training Course (VTC)

Paper Title			: Baking and Confectionary -I					
CODE			: VTC: 246.1					
Number of Credits			: 4					
Semester			: III					
No. of Theory Hours Per Week			: One (1 hour)					
No. of Practical Hours per Week			: Three (3 Hours)					
Outline of the Paper:								
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)			
Baking and Confectionary-I					In-Semester		End-Semester	
					Theory	Practical	Theory	Practical
	Unit-I Theory (25 Marks)	15	4	100	25			
	Unit-II to IV Theory (75 Marks)	90				15		60
Marks Distribution			: Internal Assessment: 40 : External Assessment: 60					
Course Objectives			1. To describe a wide variety of topics related to basics of bakery, and its related technology 2. To explain about the various types of food products made using baking technology					
Course Learning Outcome			After the completion of the course the students are able to: 1. describe the basic concepts of bakery 2. make use of the major and minor baking equipment 3. analyse the sensory quality parameter in prepared bread 4. plan and create small-scale bakery unit					
Unit I: (Theory) 15 Hours			Introduction to bakery • Introduction: Scope of bakery, Units of measurement, Bakery terms, Organization chart of bakery, Minor and major equipment, baking temperatures for bread. • Major baking ingredients and their functions: Role of raw materials in bread making- Flour, Salt, Leavening Agents, Water, Sugar, Egg, Milk, Fat, Oil. Bread improvers and additives - S.M.P, Soya flour, Glycerol Mono State, Potassium Bromate, Potassium Iodate. • Flour: Structure of wheat, Types of Wheat, Types of Flour, Processing of Wheat-flour, Uses of Flour in Food Production, Cooking of Flour (Starch); Characteristics of good flour used for making bread, biscuits and cakes. Quality – Hardness,					

	Gluten strength, protein content, soundness. • Ingredients and equipment: Identification and uses of equipment- large, medium, and small; • Mixing methods: Basic steps involved in mixing ingredients- Kneading, stirring, whipping, creaming etc. • Breads: Principles of Bread making, Methods of bread making Bread Making Process - Methods- Straight Dough Method, Ferment dough, salt delayed method, no dough time method- types of bread. Quality of Bread - Characteristic of good bread- External- volume, symmetry, shape, colour- Internal- texture, aroma, elasticity. Bread faults and remedies-Basic reasons for faults, Common bread faults (internal and external), Remedies. • Bread diseases: Rope and Mold-Causes and Prevention. • Setting up Bakery unit: Setting up a bakery unit- Location, Layout, Selection of equipment, Total space required, and Electricity, Government procedure.
UNIT-II: (Practical) 30 Hours	A. Basic Laboratory skills for bakery: • Introduction to ingredients / Equipment • Identification and uses of equipment – large, small and utilities • Ingredients – Types of flour, Sugar, Nuts and Dry fruits, Shortenings, leavening etc. • Know the different dough making procedures • Acquire skill in operating different types of ovens • Handling of major and minor baking equipment • Analyze the sensory quality parameter in prepared bread • Handling the raw materials and baking supplies. • Design the layout of bakery unit B. Quality Checking & Basic Mixing Methods • Flour: W.A.P Test, Gluten Content • Yeast: Flying fermentation • Mixing Methods: Basic steps involved in mixing ingredients – Kneading, stirring, whipping, creaming etc. • Simple yeast fermented products: Bread Sticks, Bread Rolls, hand and Soft Rolls, sour dough etc.
UNIT-III: (Practical) 30 Hours	A. Preparations: • Basic buns • Fruit buns • Hot cross buns

	• Garlic rolls • Milk bread • Bread loaf • Raisin bread • Masala bread
UNIT-IV: (Practical) 30 Hours	A. Preparations: • Fermented doughnuts • Brioche • Baba au rhum • French bread • Chelsea bread • Croissants • Burger buns • Pizza base. • Visit to the bakery industry: Report writing and presentation
Suggested Readings	1. Potter, N. N., & Hotchkiss, J. H. (2012). Food science. Springer Science & Business Media. United States. 2. Mathuravalli, S. M. D. (2021). Handbook of Bakery and Confectionery. CRC Press. United States. 3. The Culinary Institute of America (CIA). (2018). Baking and pastry: Mastering the art and craft (3rd ed.). John Wiley & Sons, United States. 4. Migoya, F. J. (2017). The elements of dessert. John Wiley & Sons, United States.
Requirements	• Ovens • Refrigerators • Mixers, blenders, rolling pins, scales, measuring cups and spoons. • Baking sheets, pans, molds, mixing bowls, spatulas, whisks, piping bags. • Basic Ingredients for baking • Any other items as and when required
Qualified Instructors	• Bakery Experts: Hire instructors with extensive experience in baking and food science. • Pedagogical Training: Ensure instructors have or receive training in effective teaching methods.

Paper Title		: Baking and Confectionary -II							
CODE		:VTC: 266.1							
Number of Credits		: 4							
Semester		: IV							
No. of Theory Hours Per Week		: One (1 hour)							
No. of Practical Hours per Week		: Three (3 Hours)							
Outline of the Paper:									
Type of Course Baking and Confectionary - II	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)				
					In-Semester		End-Semester		
					Theory	Practical	Theory	Practical	
	Unit-I Theory (25 Marks)	15	4	100	25				
Unit-II to IV Theory (75 Marks)	90				15		60		
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60							
Course Objectives		1. To explain to students the knowledge on confectionary 2. To describe and illustrate to them the manufacturing technology of Confectionary products focusing on skill development to meet the demands from ongoing innovations in the field.							
Course Outcome	Learning	After completion of the course students are able to: 1. apply various methods and techniques of baking confectionery products 2. connect and differentiate various principles of pastry cakes and icing 3. apply various methods and techniques of baking of cakes 4. distinguish and prepare various baking and confectionery products							
Unit I: (Theory) 15 Hours		• Manufacture of Sugar: Sugarcane, jaggery, khandasari sugar, raw sugar, refined sugar, white sugar, beet sugar, manufacture of sugar from sugar cane, refining of sugar. • Confectionery: Introduction - Scope of confectionery, confectionery terms, small and large equipment used in bakery and confectionery. • Classification of confectionery: Sugar boiled confectionery- crystalline and amorphous confectionery, rock candy, hard candy, lemon drop, china balls, soft							

	candy, lollypop, marshmallows, fudge, cream, caramel, toffee, lozenges, gumdrops, honeycomb candy. • Confectionery Ingredients: Moistening agents-milk, egg, water. Leavening agents-chemical, natural, water vapour. Role of raw materials-wheat flour, sugar, fat, eggs. Essential ingredients, flour sugar, shortening, egg. Optional ingredients baking powder, milk, milk products, dry fruits, baking soda, dairy products. • Chocolate Work - Fundamentals of the science of chocolate, • Established industry standards in - Tempering, moulding, modelling, enrobing, filling, show pieces, stencils, chocolate couverture. Sugar Work - Chemical properties and changes in sugars at various stages of the cooking and cooling processes, Pulled, blown, Spun, Poured, caramelized sugar. Casting of sugar. Pastillage and Saltillage fondant, gum paste and royal icing
UNIT-II: (Practical) 30 Hours	A. Toffees: • Milk Toffee, Chocolates • Stick Jaws • liquor chocolates B. Indian Confectionery: • Chenna - Rasgulla, Chamcham, Pakiza, Chenna Toast, Rasmalai • Khoya - Gulab Jamun, Barfi • Sugar - Mysore Pak, Ghewar • Flour / Besan - Patisa, Shakarpare, Halwa, Laddoo, Peda. • Milk - Kheer, Rabri • Nuts - Barfi, Chekki C. Quality checking and sensory tests for products
UNIT-III: (Practical) 30 Hours	A. Chocolate works: • • Chocolate candies • Ganache fillings • Hand-dipped candies • Molded bonbons • Danish pastry and truffles • Use of an enrobing machine • Clean and store chocolate candy moulds and other equipment used in chocolate candy making B. Quality checking and sensory tests for products
UNIT-IV: (Practical) 30 Hours	A. Sugar works: • Fruit paste • Guimauve (marshmallow) • Praline

	• Caramels • Nougats • Lollipops • Marzipans • Gummies. • Prepare sugar sticks, nest, bow, ribbon, flower, leaf, bubble sugar and decorations • Appropriate package and display of candies. • Fudge • Almond paste B. Quality checking and sensory tests for products C. Industry Visit: 1. Report writing and presentations
Suggested Readings	1. Cauvain, S. P., & Young, L. S. (2008). Baked products: science, technology and practice. John Wiley & Sons, United States. 2. Friberg, B. (2002). The professional pastry chef: fundamentals of baking and pastry. John Wiley & Sons, United States. 3. Pyler, E. J., & Gorton, L. A. (2010). Baking science & technology: Formulation & production. Sosland Pub, United States. 4. Zhou, W., Hui, Y. H., De Leyn, I., Pagani, M. A., Rosell, C. M., Selman, J. D., & Therdthai, N. Bakery Products Science and Technology. Wiley-Blackwell, United States.
Requirements	• Ovens • Refrigerators • Mixers, blenders, rolling pins, scales, measuring cups and spoons. • Baking sheets, pans, molds, mixing bowls, spatulas, whisks, piping bags. • Basic Ingredients for baking • Any other items as and when required
Qualified Instructors	• Bakery Experts: Hire instructors with extensive experience in baking and food science. • Pedagogical Training: Ensure instructors have or receive training in effective teaching methods.

Paper Title	: Baking and Confectionary -III							
CODE	:VTC: 366.1							
Number of Credits	: 4							
Semester	:VI							
No. of Theory Hours Per Week	: One (1 hour)							
No. of Practical Hours per Week	: Three (3 Hours)							
Outline of the Paper:								
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)			
Baking and Confectionary - III	Unit-I Theory (25 Marks)	15			In-Semester		End-Semester	
					Theory	Practical	Theory	Practical
	Unit-II to IV Theory (75 Marks)	90	4	100		15		60
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60						
Course Objectives		1. To explain to students the how to apply technology in baking and confectionary. 2. To demonstrate how to use manufacturing technology in bakery and confectionary production.						
Course Outcome	Learning	After completion of the course students are able to: 1. identify different types of ingredients used in confectionery 2. identify the small and large equipment used in confectionery 3. prepare and present basic sponges and different cookies and biscuits, pastries and its derivatives 4. prepare basic icings and toppings 5. prepare and present international cakes and puddings						
Unit I: (Theory) 15 Hours		Cake and Biscuit manufacturing: Processing of cakes and biscuits-ingredients, development of batter, baking and packing, Spoilage in cakes and biscuits. Cake making methods: rubbing in method, melting method, creaming method, whisking method, all in one method. Cake faults and their remedies. Icing- types of icing. Preparation of cookies and biscuits- principles of cookies and biscuits making, various types of cookies and biscuits, Pastry: Pastry making principles of pastry making, various types of pastries.						

UNIT-II: (Practical) 30 Hours	A. Cake making: • Plain sponge • Madeira cake • Rock cake • Fruit cake • Fatless sponge • Swiss rolls • Genoise sponge B. Icings and Toppings: • Fondant • American frosting • butter cream icing • Royal icing, • Glace icing C. Basic Pastry & Derivatives: • Short crust pastry • Choux pastry • Puff pastry • Flaky pastry • Apple pie • Filo pastry D. Quality checking and sensory tests for products
UNIT-III: (Practical) 30 Hours	A. Preparation of Biscuits and cookies: • Plain biscuits • Piping biscuits • Cherry knobs • Langue –de – chats (cats tongue) • Salted biscuits • Nut biscuits • Coconut biscuits • Melting moment • Macaroons • Chocolate biscuits • Marble biscuits • Nan-khatai • Short bread biscuits • Ginger biscuits • Cheese biscuits • Cream fingers. B. Quality checking and sensory tests for products
UNIT-IV: (Practical) 30 Hours	A. Hot dessert: • Caramel custard • Soufflé chaud • Bread and butter pudding truffle B. Cold dessert:

	• Bavarois • Ginger pudding • Cold lemon soufflé • Chocolate mousse C. Ice Cream • Vanilla • Strawberry • Chocolate • Pineapple • Mango • Sorbets • Bombe • Sundaes • Parfaits B. Quality checking and sensory tests for products
Suggested Readings	1. John Wiley & Sons, United States. Gisslen, W. (2016). Professional baking (7th ed.). John Wiley & Sons, United States. 2. Pomeranz, Y. (2003). Modern Cereal Science and Technology. MVCH Publications, New York. Figoni, P. (2010). How baking works: Exploring the fundamentals of baking science (2nd ed.). 3. Stanley, P., Cauvain, S. Linda and Young. (2008). Baked Products: Science Technology and Practice. John Wiley & Sons Publishers, United States. 4. Zhou, W., and Hui, Y. H. (2014). Bakery Products Science and Technology. Wiley Blackwell Publishers, United Kingdom.
Requirements	• Ovens • Refrigerators • Mixers, blenders, rolling pins, scales, measuring cups and spoons. • Baking sheets, pans, molds, mixing bowls, spatulas, whisks, piping bags. • Basic Ingredients for baking • Any other items as and when required
Qualified Instructors	• Bakery Experts: Hire instructors with extensive experience in baking and food science. • Pedagogical Training: Ensure instructors have or received training in effective teaching methods.

Syllabus on Vocational Education and Training Course (VTC)

Paper Title		: Beauty Care -I						
CODE		: VTC: 247.1						
Number of Credits		: 4						
Semester		: III						
No. of Theory Hours Per Week		: One (1 hour)						
No. of Practical Hours per Week		: Three (3 Hours)						
Outline of the Paper:								
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)			
Beauty Care -I					In-Semester		End-Semester	
					Theory	Practical	Theory	Practical
	Unit-I Theory (25 Marks)	15	4	100	25			
Unit-II to IV Theory (75 Marks)	90				15		60	
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60						
Course Objectives		1. To enable students to recognize and adhere to professional ethics and conduct in the workplace, ensuring high standards of professionalism and integrity in all aspects of their work. 2. To explain and equip students with various techniques of manicure and pedicure, promoting proper nail care and aesthetic enhancement. 3. To enable students to apply skills in threading, bleaching, facials, and waxing, offering a range of beauty treatments to meet client needs effectively. 4. To demonstrate the skills required for comprehensive hair care, including various hair treatments, to maintain and improve hair health and appearance.						
Course Learning Outcome		Students will be able to 1. recognise professional ethics and professional conduct in the work place 2. explain and equip themselves with the various technique of manicure and pedicure 3. appple the skill of threading, bleaching, facial and waxing 4. demonstrate the skill for hair care including hair treatment						
Unit I: (Theory) 15 Hours		Personal Development for beautician and Introduction to Beauty care (Theory) • Professional Outlook, Personal Grooming, Professional Ethics and Communication Skills • Threading and Bleach - Types, Side effects and Remedial measures • Facial - Types, Types of Skin, Phases of massages, Side effects and Remedial measures. Waxing - Types of wax,						

	Types of waxing, Preparation of wax and Testing • Importance of hair care, Types of hair, Factors affecting hair growth, Hair problems
UNIT-II: (Practical) 30 Hours	Introduction to basic Beauty care (Practical): • Threading - Materials required, Methods • Bleach –Trolley setting, Materials required, Methods • Facial - Materials required, Method, • Waxing - Methods of applying wax- hand, leg and underarm waxing, Methods of Epilation and Depilation.
UNIT-III: (Practical) 30 Hours	Manicure and Pedicure (Practical): • Types of pedicures and manicure • Manicure and pedicure techniques • Nail Art: Different methods of nail art, types of nail polish, application and their methods. • Mehendi: Introduction, preparation of Mehendi paste, Mehendi cone preparation and Technique of application - hands and legs.
UNIT-IV: (Practical) 30 Hours	Hair Care (Practical) • Scalp massage - Materials required and Procedure and Technique • Shampooing and rinsing- Types of shampoo and their uses, Application and Technique, Types of rinses and methods of rinsing • Hair conditioning – Types of Hair conditioner, Application and Technique • Hair Treatment
Suggested Readings	1. Burne, Deborah. The Beauty Geek's Guide to Skin Care: 1,000 Essential Definitions of Common Product Ingredients. Rockridge Press, 2019 2. Coetzee, Bronwyn. Manicure & Pedicure: A Complete Guide to Beautiful Hands and Feet. Kindle Editions 2015 3. Essential Beauty Guide. Goodwill Publishing House 2001 4. Gupta, Renu. Complete Beautician course. New Delhi, Diamond pocket books Pvt Ltd, 2001 5. Husain, Shanaz. Shahnaz Husain's Beauty Book, Orient Paperbacks, 2014 6. Johnson, Dale H. Hair and Hair Care. New York: Marcel Decker Inc, 1997 7. Kochar, Blossom. Hair, Skin and Beauty Care 9 The complete body Book. New Delhi: VBSPD/VBS Publishers Distributors Ltd 2000 8. Paudwal, Madhumita. Practical Guide to Beautician Training. New Delhi: Asian Publishers, 2002 9. Saikia, Madhumita. Basic Beautician Training Course. Computech Publications Limited, 2019

	10. Sinha, M, Rajgopal and Banerjee. S. All You Wanted To Know About Hair Care. New Delhi: Sterling Publishers Pvt. Ltd, 2000 11.
Requirements	Threading • Thread (antibacterial and hypoallergenic) • Tweezers • Threading scissors • Disinfectants and sterilization equipment Bleach • Bleach creams and powders • Mixing bowls and applicators • Trolley for organization • Protective gear (gloves, masks) • Aftercare products (soothing creams, lotions) Facial • Cleansers, toners, and moisturizers • Facial masks and scrubs • Massage creams and oils • Steamers and facial towels • Sponges and cotton pads • Facial beds/chairs Waxing • Wax heaters • Different types of wax (soft, hard, strip) • Wax applicators (spatulas) • Waxing strips • Pre-wax and post-wax care products Manicure and Pedicure • Manicure and pedicure kits (nail files, buffers, clippers, cuticle pushers) • Bowls for soaking • Foot baths and spas • Exfoliating scrubs • Lotions and creams Nail Art • Nail polishes (various types and colors)

	• Nail art brushes and tools • Stencils and stickers • UV/LED nail lamps for gel polish Mehandi • Henna powder • Mixing bowls and spoons • Mehandi cones • Design stencils and instructional guides Hair Care Scalp Massage • Massage oils and creams • Scalp massagers and brushes • Towels and capes Shampooing and Rinsing • Various types of shampoos and conditioners • Rinsing bowls or salon sinks • Applicator bottles Hair Conditioning • Different hair conditioners • Leave-in conditioners and hair masks • Heat caps and steamers Hair Treatment • Treatment-specific products (anti-dandruff, anti-hair fall) • Applicators and mixing bowls • Towels and capes Any other item as and when required
Qualified Instructors	• Qualified instructors with experience in beauty care • Guest lecturers or industry professionals for specialized sessions • Ensure instructors have or receive training in effective teaching methods.

Paper Title		: Beauty Care -II						
CODE		: VTC: 267.1						
Number of Credits		: 4						
Semester		: IV						
No. of Theory Hours Per Week		: One (1 hour)						
No. of Practical Hours per Week		: Three (3 Hours)						
Outline of the Paper:								
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)			
Beauty Care-II					In-Semester		End-Semester	
					Theory	Practical	Theory	Practical
	Unit-I Theory (25 Marks)	15	4	100	25			
Unit-II to IV Theory (75 Marks)	90				15		60	
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60						
Course Objectives		1. To enable students to identify hair anatomy, hair types and conditions 2. To enable students to recognize hair and scalp disorders and implement massage techniques 3. To enable students to develop proficiency in hair cutting and hair styling techniques 4. To choose appropriate hair colour and make use of colouring techniques						
Course Outcome	Learning	At the end of the course students will be able to: 1. explain the anatomy of hair and to identify hair conditions, and different hair types. 2. identify hair and scalp disorder and the influencing factors that may cause damage to the hair and equip oneself with various massage technique 3. make use of skills relating to hair cutting and hair styling techniques 4. describe the classification of hair colour and as well as colouring techniques						
Unit I: (Theory) 15 Hours		Introduction to Hair care (Theory) • Anatomy and physiology of hair, Hair analysis, Structure of hair and Layers of Hair • Benefits of hair spa and Precautions • Study of profiles, Hair shaping and cutting implements and their uses, Different types of sectioning and patterns making. • Basic law of colour, classification of hair colour, allergy test and precaution, hair dyeing (Herbal & Chemical)						

UNIT-II: (Practical) 30 Hours	Scalp Massage and Hair Spa (Practical) - Identifying client's hair and scalp condition - Procedure of hair spa and Massage manipulation - Hair Spa for - dandruff, oily scalp, coloured hair, hair smoothing and itchy scalp - Massage techniques: Effleurage, petrissage, tapotement, rotary, vibration, friction, champissage
UNIT-III: (Practical) 30 Hours	Hair Cutting and Hair styling (Practical) - Types of cutting to suit the texture (fine, curly, straight, wavy and course hair). - Types and technique of haircuts- trimming, blunt-cut, layered, cutting & tapering - Basic hairstyle - Open Hair Styles, Semi-Tied & Up styles, Bridal Hair Dos, Party Hairdos, Sleep-in Looks, Ringlets and Plaits - Types of hairstyling -Thermal styling, Wet styling, Roller Setting and Artificial Aids, Technique of Hair styling: Rolls, twists, braiding, Roller setting, Blow drying, Comb out techniques,
UNIT-IV: (Practical) 30 Hours	Hair colouring and tinting (Practical) - Examination of scalp and hair: Skin test, colour or dye selection, Sectioning the hair, application of hair, colour or dye, conditioning and setting. - Colouring techniques – frosting, tipping, slicing, foil technique, comb technique, global colouring. - Types and techniques of crimping - Pre and post treatment
Suggested Readings	- Claude Bouillon and John Wilkinson. The Science of Hair Care, Taylor & Francis, 2005 - Goldman, D. The Professional's Illustrated Guide to Haircare & Hairstyles, Lorenz Books, 2010 - Johnson, Dale H. Hair and Hair Care. New York: Marcel Decker Inc, 1997 - Kochar, Blossom. Hair, Skin and Beauty Care. New Delhi: VBSPD/VBS Publishers Distributors Ltd 2000 - Meenakshi Sinha, Reena Rajgopal, Suchismita Banerjee. All You Wanted to Know About Hair Care, New Delhi: Sterling Publishers Pvt. Ltd., 2000 - Parott. Hairstyles Coloring Book, Notion Press 2022 - Paudwal, Madhumita. Practical Guide to Beautician Training. New Delhi: Asian Publishers, 2002 - Regan Peter. Hair Colour Book: A Practical Guide To The Theory Of Colouring Hair. Kindle Edition 2018 - Worthington, C. The Complete Book of Hairstyling., Carlton Books Ltd, 2001
Requirements	Hair Spa - Hair spa products (shampoos, conditioners, masks) - Massage oils and creams

	• Towels and capes Hair Cutting and Hair Styling • High-quality hair cutting scissors • Thinning shears • Razors • Combs and sectioning clips Basic Hairstyle Techniques • Hair styling products (gels, sprays, mousses) • Hair accessories (pins, bands, clips) • Tools for creating different styles (curling irons, flat irons, rollers) • Instructional materials for various styles (open hairstyles, semi-tied styles, bridal hairdos, party hairdos, sleep-in looks, ringlets, and plaits) Examination of Scalp and Hair • Skin test kits • Color or dye selection charts • Sectioning clips and combs Colouring Techniques • Hair coloring products (frosting, tipping, slicing, foil technique, comb technique, global coloring) • Applicators (brushes, bowls) • Protective gear (gloves, capes) • Conditioning and setting products Types and Techniques of Crimping • Crimping tools and irons • Instructional guides on crimping techniques Pre and Post Treatment • Pre-treatment products (scalp protectors, primers) • Post-treatment products (conditioners, serums) • Care instructions for colored and treated hair
Qualified Instructors	• Qualified instructors with experience in hair care and styling • Guest lecturers or industry professionals for

	specialized sessions • Ensure instructors have or receive training in effective teaching methods. Any other item as and when required
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Paper Title	: Beauty Care III							
CODE	: VTC: 367.1							
Number of Credits	: 4							
Semester	:VI							
No. of Theory Hours Per Week	: One (1 hour)							
No. of Practical Hours per Week	: Three (3 Hours)							
Outline of the Paper:								
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)			
Basic Beauty Care-III					In-Semester		End-Semester	
					Theory	Practical	Theory	Practical
	Unit-I Theory (25 Marks)	15			25			
	Unit-II to IV Theory (75 Marks)	90	4	100		15		60
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60						
Course Objectives		1. To enable students to identify and explain various skin care problems, such as acne, dryness, and sensitivity, and describe basic skin care methods to address these issues effectively. 2. To enable students to develop and equip oneself with techniques for effective facial cleansing and facial massage, promoting healthy skin and relaxation. 3. To enable students to gain proficiency in applying different types of facial makeup, including foundation, eyeshadow, and lipstick, to enhance facial features and create desired looks. 4. To enable students to discover and describe different types of spa therapies and massage techniques, learning how they contribute to overall wellness and skin health.						
Course Outcome	Learning	At the end of the course students will be able to 1. identify and explain the various skin care problems and describe the basic skin care methods 2. develop and equip themselves with the techniques of facial cleansing and facial massage 3. make use of skills relating to facial make-ups 4. discover different types of spa therapies and massage techniques						
Unit I: (Theory) 15 Hours		Introduction • Importance of skin care, Factors affecting skin condition, skin analysis, Basic skin care methods Natural and artificial • Classification & identification of common skin problems, Skin type and treatment, Types of Natural cleanser,						

	importance and types of Toners • Types of facial, Facial masks- Benefits and contraindications, Types of Make-up • SPA products and knowledge, Product Testing, Efficacy, Shelf Life, Storage, Contamination and Allergies, Types of massage Therapy, benefits of massage and its precautions
UNIT-II: (Practical) 30 Hours	Cleansing and Facial • Types of Cleanser, Techniques of cleansing for different skin types • Techniques used in Plain facial, Vegetable peel facial, Gauze facial, Paraffin mask treatment, High frequency facial, Ozone facial, Galvanic facial, Thermo herb facial, Aroma facial, Gold and silver facial. • Knowledge and use of machines in facial • Pack and mask- Preparation of pack and mask, Techniques of applying face pack and mask
UNIT-III: (Practical) 30 Hours	Make-up • Color Wheel, Skin tones, Brow shaping • Selection of cosmetics -Foundation Gel, Moisturizer, Face powder, Face compact, Concealer, Blusher, Eye shadow and lipstick • Selection of Tools - Different types of brushes, Make-up products, Selection of Sponges • Techniques of applying Make-up- Day make-up, Evening Make-up, Party Make-up, Bridal Make-up and special effects make-up
UNIT-IV: (Practical) 30 Hours	SPA • SPA therapies - Acupressure, Acupuncture, Colon therapy, Ear Candling • SPA products and its uses - Essential Oils, Aromatic Oils, Body Scrubs, Body Wraps, Active Ingredients, Carrier Oil & Base Creams, Pre blended oils, pre-blended creams, Soaps, lotions. • Seasonal SPA therapy - winter, spring, summer, and autumn • Massage Techniques and procedure
Suggested Readings	1. Baumann, Leslie. The Skin Type Solution, Bantam, 2006 2. Baxi, Nishant. Massage Therapy, Notion Press, 2023 3. Brown, Bobbi. Makeup Manual, Grand Central Life & Style, 2011 4. Goroway, Patricia. Facial Fitness, Ergodebooks, 2006 5. Handa, P. Speaking of Skin Care, New Dawn Press, 2007 6. Reyna, G.M. How to Be a Professional Makeup Artist, Kindle Edition, 2013

	7. Shapiro, B. Skin Deep: Women on Skin Care, Makeup, and Looking Their Best, Harry N. Abrams, 2017 8. Sharma, Rajiv. Skin And Hair Care, Delhi: Manoj Publications, 2017 9. Steve Capellini, (2009), The Complete Spa Book for Massage Therapists, Cengage Learning Publishing 10. Tezak, Edward. Successful Salon and Spa Management, Milady Publishing Co, 2011
Requirements	Cleansing and Facial Facial Techniques • Facial beds or chairs • Facial steamers • Machines for advanced treatments (galvanic, ozone) • Masks and treatment products (paraffin, high frequency) Pack and Mask - Preparation of Pack and Mask, Techniques of Applying Face Pack and Mask • Mixing bowls and spatulas • Ingredients for pack and mask preparation (clays, herbs) • Instructional guides on application techniques Make-up • Color wheels and charts • Makeup palettes (foundations, powders, blushes, eye shadows, lipsticks) • Eyebrow shaping tools (tweezers, eyebrow pencils) Selection of Cosmetics • Makeup brushes (various types for foundation, eye makeup, blush) • Sponges and applicators • Makeup products for different skin tones and types SPA SPA Therapies - Acupressure, Acupuncture, Colon Therapy, Ear Candling • SPA therapy equipment (acupressure mats, acupuncture needles, ear candles) • Safety and hygiene protocols for specialized therapies SPA Products and Their Uses • Essential oils, aromatic oils, carrier oils

	• Body scrubs, wraps, active ingredients • Pre-blended oils, creams, soaps, and lotions Seasonal SPA Therapy - Winter, Spring, Summer, and Autumn • Seasonal skincare products (moisturizers, masks) • Instructional materials on seasonal treatments Massage Techniques and Procedure • Massage tables or chairs • Massage oils and creams • Training on various massage techniques (swedish, deep tissue, aromatherapy) Any other item as and when required
Qualified Instructors	• Qualified instructors with experience in skincare, makeup, and spa therapies • Guest lecturers or industry professionals for specialized sessions • Ensure instructors have or receive training in effective teaching methods.

Syllabus on Vocational Education and Training Course (VTC)

Paper Title	: Beekeeping -I							
CODE	: VTC: 240.3							
Number of Credits	: 4							
Semester	: III							
No. of Theory Hours Per Week	: One (1 hour)							
No. of Practical Hours per Week	: Three (3 Hours)							
Outline of the Paper:								
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)			
Beekeeping-I					In-Semester		End-Semester	
					Theory	Practical	Theory	Practical
	Unit-I Theory (25 Marks)	15	4	100	25			
	Unit-II to IV Theory (75 Marks)	90				15		60
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60						
Course Objectives		1. For identification of bees, bee biology, behaviour and importance of bee keeping. 2. Explain the different requirements for bee farming establishment and to identify different equipment's, accessories and handling.						
Course Outcome	Learning	At the end of the course students will able to: 1. describe the basic concepts of apiculture, tools and equipment of beekeeping 2. identify different bee species, bee products and handling of bee hives 3. choose the basic requirements for beekeeping establishment 4. explain the scientific care and management of bees.						
Unit I: (Theory) 15 Hours	• Introduction to apiculture/beekeeping; Scope and importance of beekeeping; • Bee biology; Morphology and anatomy of bee; • Classification of bees; • How, when and where to start bee-keeping; • Caste determination and their specific role; Age related activities of workers; Communication in honeybees; swarming and its prevention; robbing and its prevention							
UNIT-II: (Practical) 30 Hours	• Identification of honeybee species • Identification of different castes of honeybee • Dissection of worker bees to study different morphological and anatomical characteristics. • Comb structure and stages.							

	• Handling of bee colony and colony inspection.
UNIT-III: (Practical) 30 Hours	• Bee keeping accessories and equipments • Handling of bee colonies. • Collection and preservation of bee pasture. • Seasonal management.
UNIT-IV: (Practical) 30 Hours	• Identification of different types of bee hives. • Identification of bee flora. • Identification of bee products. • Visit to important apiaries and bee keeping societies around the region.
Suggested Readings	1. Atwal AS. 2000. Essentials of Beekeeping and Pollination. Kalyani Publishers, New Delhi Ludhiana, India. 2. Atwal AS. 2001. World of Honey Bees. Kalyani Publishers, New Delhi- Ludhiana, India. 3. Cramp, D. 2008. Practical manual of beekeeping. Little, Brown Book Group, United Kingdom. 4. Rahman, A. 2017. Apiculture in India, ICAR, New Delhi 5. Sardar Singh. 1962. Beekeeping in India. ICAR, New Delhi, India (Reprint: 1982) 6.
Requirements	Classroom Facilities Apiary Beekeeping Equipment 1. Protective Gear 2. Beekeeping Tools: Such as hive tools, smokers, bee brushes, and queen catchers. Specialized Labs and Facilities 1. Honey Processing Unit 2. Bee Product Laboratory 3. Pest and Disease Management Lab Storage and Preservation Facilities 1. Cold Storage 2. Library and Resource Center Field and Outdoor Facilities 1. Bee Flora Garden

	2. Field Visit Coordination Office Miscellaneous Facilities 1. Supplementary Feeding Facility 2. Swarm Management Area Safety and Compliance 1. Safety Equipment: Including first aid kits, emergency response kits, and safety protocols for handling bees and bee products Any other item as required
Qualified Instructors	Instructors with experience in Bee-keeping Certifications or relevant qualifications in Bee-keeping.

Paper Title	: Beekeeping-II							
CODE	: VTC: 260.3							
Number of Credits	: 4							
Semester	: IV							
No. of Theory Hours Per Week	: One (1 hour)							
No. of Practical Hours per Week	: Three (3 Hours)							
Outline of the Paper:								
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)			
Beekeeping-II					In-Semester		End-Semester	
					Theory	Practical	Theory	Practical
	Unit-I Theory (25 Marks)	15	4	100	25			
	Unit-II to IV Theory (75 Marks)	90				15		60
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60						
Course Objectives		To impart knowledge about the honey bees, and their behaviour and activities; bee husbandry, bee multiplication, bee enemies and diseases and their management; management of bees during different seasons; study on queen and its rearing.						
Course Learning Outcome		After completion of the course students are able to: 1. identify, diagnose and manage the bee pests and diseases 2. handle the rearing of queen, workers and other bees and their management 3. manage beehives for honey production and pollination 4. describe the process of scientific care and management of bees						
Unit I: (Theory) 15 Hours		• Study of pests and diseases of honeybees and their management; Bee pasturage and pollination; • Honey bee nutrition and artificial diets; • Seasonal management of honey bees: Honey bees on Canola, Spring management of bees, Wintering bees, Apiary management for winter/early spring pollination. Summer management of honey production; • Queen rearing and colony multiplication; Queenless colonies and their rectification; Methods of rearing queens; Pesticides effect and bee health.						
UNIT-II: (Practical) 30 Hours		• Identification, diagnosis and management of bee pests. • Identification, diagnosis and management of bee diseases.						

	• Study of pesticide effects on bees. 4. Abiotic stress study on bees.
UNIT-III: (Practical) 30 Hours	• Formulation of supplementary/artificial feeding and water supply. • Swarm management. • Hiving of colony. • Management practices like feeding, dividing, uniting, prevention of swarming, robbing and absconding.
UNIT-IV: (Practical) 30 Hours	• Rearing of queen and other bees. • Multiplication of colony. • Fixing comb foundation sheet, providing of super chamber. • Visit to Apiary and Bee research Institute.
Suggested Readings	1. Abrol DP and Sharma D. 2009. Honey Bee Mites and Their Management. Kalyani Publishers, New Delhi, India 2. Abrol DP. 2009. Honey bee Diseases and Their Management. Kalyani Publishers, New Delhi, India. 3. Abrol DP. 2010. Bees and Beekeeping in India. Kalyani Publishers, New Delhi, India. 4. Atwal AS. 2000. Essentials of Beekeeping and Pollination. Kalyani Publishers, New Delhi Ludhiana, India. 5. Bailey L and Ball BV. 1991. Honey Bee Pathology. Academic Press, London. 6. Cramp, D. 2008. Practical manual of beekeeping. Little, Brown Book Group, United Kingdom. 7. Crane Eva and Walker Penelope. 1983. The Impact of Pest Management on Bees and Pollination. Tropical Development and Research and Institute, London 8.
Requirements	Apiary Beekeeping Equipment 1. Protective Gear 2. Beekeeping Tools: Such as hive tools, smokers, bee brushes, and queen catchers. Specialized Labs and Facilities 1. Honey Processing Unit 2. Bee Product Laboratory 3. Pest and Disease Management Lab Storage and Preservation Facilities

	1. Cold Storage 2. Library and Resource Center Field and Outdoor Facilities 1. Bee Flora Garden 2. Field Visit Coordination Office Miscellaneous Facilities 1. Supplementary Feeding Facility 2. Swarm Management Area Any other item as required
Qualified Instructors	• Instructors with experience in Bee-keeping • Certifications or relevant qualifications in Bee-keeping

Paper Title	: Beekeeping-III							
CODE	:VTC: 360.3							
Number of Credits	: 4							
Semester	:VI							
No. of Theory Hours Per Week	: One (1 hour)							
No. of Practical Hours per Week	: Three (3 Hours)							
Outline of the Paper:								
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)			
Beekeeping-III					In-Semester		End-Semester	
					Theory	Practical	Theory	Practical
	Unit-I Theory (25 Marks)	15			25			
	Unit-II to IV Theory (75 Marks)	90	4	100		15		60
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60						
Course Objectives		1. To develop entrepreneurial skill enhancement on bee farming, understand the bee hive products, value added products; quality parameter of bee products. 2. To explain on Marketing and economical study of beekeeping. 3. To identify the management systems of bee pollination of crops						
Course Learning Outcome		After completion of the course students are able to: 1. identify the different bee products extraction and processing 2. describe the quality parameters and testing of bee products 3. choose the packaging and marketing of various bee products 4. explain the economic aspects on beekeeping.						
Unit I: (Theory) 15 Hours		• Bee products – An introduction, honey, pollen, royal jelly, bees wax, propolis & venom; Significance of bee products; • Value added honey products; Properties of honey products; Nutritional value and composition of honey; Acid content and flavor effects; Types of value-added honey products; • Economics of bee keeping: Economics in small scale and large-scale bee keeping. Economic value of commercial beekeeping. • Marketing of bee products: Case study on economic aspects of bee farmers.						
UNIT-II:		• Honey extraction, processing, bottling.						

(Practical) 30 Hours	• Bees wax rendering and purification. • Royal jelly preparation • Bee pollen, propolis extraction. • Value added honey product preparation.
UNIT-III: (Practical) 30 Hours	• Hive products and their uses. • Quality testing of honey. • Testing of other products. • Visit to honey testing and other products testing laboratories.
UNIT-IV: (Practical) 30 Hours	• Value addition of hive products. • Economic study of small, medium and large-scale beekeeping. • Visit to the progressive bee farmers, research station, co-operative societies working on beekeeping.
Suggested Readings	1. Abrol DP and Sharma D. 2009. Honey Bee Mites and Their Management. Kalyani Publishers, New Delhi, India 2. Abrol DP. 2009. Honey bee Diseases and Their Management. Kalyani Publishers, New Delhi, India. 3. Abrol DP. 2010. Bees and Beekeeping in India. Kalyani Publishers, New Delhi, India. 4. Atwal AS. 2000. Essentials of Beekeeping and Pollination. Kalyani Publishers, New Delhi Ludhiana, India. 5. Bailey L and Ball BV. 1991. Honey Bee Pathology. Academic Press, London. 6. Cramp, D. 2008. Practical manual of beekeeping. Little, Brown Book Group, United Kingdom. 7. Crane Eva and Walker Penelope. 1983. The Impact of Pest Management on Bees and Pollination. Tropical Development and Research and Institute, London
Requirements	Beekeeping Equipment 1. Protective Gear 2. Beekeeping Tools: Such as hive tools, smokers, bee brushes, and queen catchers. Specialized Labs and Facilities 1. Honey Processing Unit 2. Bee Product Laboratory 3. Pest and Disease Management Lab Storage and Preservation Facilities 1. Cold Storage 2. Library and Resource Center

	Field and Outdoor Facilities 1. Bee Flora Garden 2. Field Visit Coordination Office Miscellaneous Facilities 1. Supplementary Feeding Facility 2. Swarm Management Area Any other item if required
Qualified Instructors	• Instructors with experience in Bee-keeping • Certifications or relevant qualifications in Bee-keeping

Syllabus on Vocational Education and Training Course (VTC)

Paper Title		: Carpentry - I							
CODE		: VTC: 242.4							
Number of Credits		: 4							
Semester		: III							
No. of Theory Hours Per Week		: One (1 hour)							
No. of Practical Hours per Week		: Three (3 Hours)							
Outline of the Paper:									
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)				
Carpentry - I					In-Semester		End-Semester		
					Theory	Practical	Theory	Practical	
	Unit-I Theory (25 Marks)	15	4	100	25				
Unit-II to IV Theory (75 Marks)	90				15		60		
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60							
Course Objectives		1. Equip with Safety Protocols and Practical Skills: The course aims to provide students with a comprehensive understanding of safety protocols and practical skills necessary for carpentry work. 2. Develop Proficiency in Tool Usage, Joint Construction, and Timber Management: Students will develop proficiency in using woodworking tools, constructing various joints, and managing timber effectively through hands on training and theoretical knowledge. 3. Prepare for Entry Level Carpentry Positions or Further Study: By the end of the course, students will be prepared to pursue entry level carpentry positions or further study in the field, equipped with the necessary skills and knowledge.							
Course Learning Outcome	At the end of the course students are able to: 1. apply to safety measures in a woodworking environment, ensuring their wellbeing and that of others 2. develop proficiency in the usage and maintenance of various woodworking tools, enhancing their efficiency and effectiveness 3. demonstrate the construction of different types of woodworking joints, including framing joints, enhancing their versatility in carpentry projects 4. demonstrate timber seasoning and preservation techniques, enabling them to manage wood effectively to prevent warping and ensure durability 5. develop skills to execute carpentry tasks with precision and efficiency, resulting in high quality craftsmanship and timely project completion								

	6. Illustrate a professional attitude towards carpentry work, demonstrating professionalism, responsibility, and dedication in their craft.
Unit I: (Theory) 15 Hours	Basic Safety and Woodworking Tools • Safety Precautions • Types of Saws and Planes • Hand and Striking Tools • Classification of Joints • Timber Seasoning and Preservation
UNIT-II: (Practical) 30 Hours	Practical Introduction to Hand Tools and Sawing 1.Introduction to the Trade: • Introduction to the woodworking trade, including its scope and applications. 2. Identification of Hand Tools: • Identify and familiarize with various hand tools used in woodworking, understanding their specific functions. 3. Sawing Practice: • Develop skills in sawing, including straight and curved cutting using different saws. 4. Planning Practice: • Practice planning techniques to achieve smooth and even surfaces on wooden pieces. 5. Tool Handling and Maintenance: • Learn proper handling and maintenance of hand tools to ensure efficiency and safety during use.
UNIT-III: (Practical) 30 Hours	1.Chiseling Techniques: • Gain proficiency in chiseling techniques, including basic and advanced chiseling practices. 2. Multiple Chiseling Practices: • Perform multiple chiseling exercises to develop precision and control. 3. Joint Practice: • Demonstrate various joint making techniques, focusing on framing joints. 4. Construction of Frames: • Construct frames using different types of joints, ensuring accuracy and stability. 5. Application of Joint Techniques: • Apply joint techniques in practical projects, enhancing overall woodworking skills.
UNIT-IV: (Practical) 30 Hours	Practical Timber Drying and Broadening Joints 1. Timber Drying Techniques: • Learn and demonstrate techniques for drying timber to prevent warping and cracking. 2. Understanding Broadening Joints: • Understand the concept and application of broadening

	joints in woodworking projects. 3. Practical Application of Broadening Joints: - Perform practical exercises on creating broadening joints to expand the width of wooden pieces. 4. Integration of Techniques: - Integrate drying and broadening techniques into comprehensive woodworking projects. 5. Quality Control: - Develop skills in quality control to ensure the durability and aesthetic appeal of finished woodworking products
Suggested Readings	1. Andy Engel, "Carpentry Complete: Expert Advice from Start to Finish" 2. Albert Jackson, David Day, and Simon Jennings, "The Complete Manual of Woodworking" Reference Books: 3. Bill Hylton, "Illustrated Cabinetmaking: How to Design and Construct Furniture That Works" 4. Chris Marshall, "The Complete Guide to Carpentry for Homeowners: Basic Carpentry Skills & Everyday Home Repairs"
Requirements	- Saws (hand saw, coping saw, crosscut saw, rip saw) - Chisels (bevel edge, mortise, paring) - Hammers (claw, mallet) - Screwdrivers - Planes (block plane, bench plane) - Measuring tools - Marking tools (pencil, marking gauge) - Sandpaper - Clamps (G-clamps, bar clamps) - Safety gear (gloves, goggles, dust masks) - First aid kits - Toolboxes for organization - Workbenches and sawhorses - Storage for wood and materials Any other item as and when required
Qualified Instructors	- Instructors with experience in Carpentry and teaching. - Certifications or relevant qualifications in Carpentry

Paper Title		: Carpentry -II							
CODE		: VTC: 262.4							
Number of Credits		: 4							
Semester		: IV							
No. of Theory Hours Per Week		: One (1 hour)							
No. of Practical Hours per Week		: Three (3 Hours)							
Outline of the Paper:									
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)				
Carpentry-II					In-Semester		End-Semester		
					Theory	Practical	Theory	Practical	
	Unit-I Theory (25 Marks)	15	4	100	25				
Unit-II to IV Theory (75 Marks)	90				15		60		
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60							
Course Objectives		1. Mastery of theoretical knowledge and practical skills in carpentry, including the use of boring tools, chisels, drilling machines, planes, and timber types. 2. Proficiency in furniture layout and construction, with the ability to create tables, racks, frames, etc., using nails and screws of appropriate sizes. 3. Competence in wood carving and the application of varnish and polish for finishing furniture objects.							
Course Outcome	Learning	At the end of the course students are able to: 1. identify the different types of boring tools used in carpentry and their specific applications in woodworking tasks 2. demonstrate proficiency in using chisels for shaping, carving, and sculpting wood, understanding various chisel types and their uses. 3. develop practical skills in operating drilling machines safely and effectively, including knowledge of different drill bits and drilling techniques 4. use planes for shaping and smoothing wood surfaces, understanding different plane types and their functions. 5. identify different types of timber commonly used in carpentry, understanding their properties and suitability for various projects 6. identify the quality of plywood, including its composition, grades, and applications in carpentry projects 7. develop skills in proper nailing and screwing techniques, including selecting the right fasteners and driving them accurately 8. the process of timber conversion from raw logs to usable lumber, including sawing, milling, and seasoning							

	techniques 9. prepare a bill of materials for carpentry projects, including estimating material quantities and costs. 10. differentiate types of sandpaper grits and their uses in sanding wood surfaces to achieve desired finishes. 11. use skills in furniture polishing, including surface preparation, application of stains or finishes, and buffing for a professional appearance.
Unit I: (Theory) 15 Hours	Theory of Woodworking Tools, Materials, and Finishing Techniques • Boring Tools and Drilling Machines • Timber and Plywood • Properties of Wood and Fasteners • Material Estimation and Bill Preparation • Finishing Techniques
UNIT-II: (Practical) 30 Hours	Application of Boring Tools and Timber Layout 1. Hands on with Boring Tools: • Gain practical experience in using boring tools effectively in woodworking tasks. 2. Timber Layout Techniques: • Learn to layout timber for different furniture pieces, ensuring accurate measurements and efficient use of materials. 3. Timber Selection and Preparation: • Develop skills in selecting the appropriate timber for specific furniture projects and preparing it for use. 4. Application of Theoretical Knowledge: • Apply theoretical knowledge about timber and tools in practical scenarios, enhancing understanding and proficiency. 5. Safety Practices: • Practice safe handling and usage of tools and timber during woodworking tasks.
UNIT-III: (Practical) 30 Hours	Woodworking: Furniture Making 1. Construction of Furniture Pieces: • Construct small furniture items such as tables, racks, and frames using appropriate woodworking techniques. 2. Usage of Fasteners: • Learn to select and use nails and screws of various sizes effectively in different furniture making contexts. 3. Assembly Skills: • Develop skills in assembling furniture components accurately and securely. 4. Project Planning and Execution: • Plan and execute small woodworking projects from start to finish, including design, material selection, and construction.

	5. Problem Solving: Enhance problem solving skills by addressing and resolving issues encountered during the furniture making process.
UNIT-IV: (Practical) 30 Hours	Finishing and Polishing Techniques 1. Wood Carving Techniques: - Gain hands on experience in wood carving, learning various techniques to create intricate designs. 2. Finishing Skills: - Develop skills in finishing wooden objects, including sanding, varnishing, and polishing to achieve a professional look. 3. Application of Finishing Products: - Learn to apply varnish and polish correctly to enhance the appearance and durability of wooden furniture. 4. Understanding Finishing Stages: - Understand the different stages of finishing and the importance of each stage in achieving a high quality end product. 5. Handson Training: - Obtain hands on training in finishing techniques, ensuring competence in creating smooth and polished wooden surfaces.
Suggested Readings	- Andy Engel, "Carpentry Complete: Expert Advice from Start to Finish" - Albert Jackson, David Day, and Simon Jennings, "The Complete Manual of Woodworking" Reference Books: - Bill Hylton, "Illustrated Cabinetmaking: How to Design and Construct Furniture That Works" - Chris Marshall, "The Complete Guide to Carpentry for Homeowners: Basic Carpentry Skills & Everyday Home Repairs"
Requirements	- Saws (hand saw, coping saw, crosscut saw, rip saw) - Chisels (bevel edge, mortise, paring) - Hammers (claw, mallet) - Screwdrivers - Planes (block plane, bench plane) - Measuring tools - Marking tools (pencil, marking gauge) - Sandpaper - Clamps (G-clamps, bar clamps) - Safety gear (gloves, goggles, dust masks) - First aid kits - Toolboxes for organization - Workbenches and sawhorses - Storage for wood and materials

	• Any other item as and when required
Qualified Instructors	• Instructors with experience in Carpentry and teaching. • Certifications or relevant qualifications in Carpentry

Paper Title		: Carpentry -III							
CODE		: VTC: 362.4							
Number of Credits		: 4							
Semester		:VI							
No. of Theory Hours Per Week		: One (1 hour)							
No. of Practical Hours per Week		: Three (3 Hours)							
Outline of the Paper:									
Type of Course Carpentry-III	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)				
					In-Semester		End-Semester		
					Theory	Practical	Theory	Practical	
	Unit-I Theory (25 Marks)	15	4	100	25				
Unit-II to IV Theory (75 Marks)	90				15		60		
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60							
Course Objectives		1. Mastery of woodworking machinery operations, including knowledge of machine types, sizes, parts, functions, and safety precautions. 2. Proficiency in pattern and design making, as well as the construction of window frames and shutters. 3. Competence in furniture repair techniques for various objects like doors, windows, and racks. 4. Understanding of fundamental geometrical concepts and units of measurement, including angles, triangles, rectangles, squares, rhombuses, parallelograms, and system conversions. 5. Practical experience in operating woodworking machines such as the drilling machine, grinding machine, mortiser machine, and universal woodworking machine. 6. Application of geometric principles and unit conversions in woodworking exercises.							
Course Learning Outcome		At the end of the course students are able to: 1. explain the theoretical knowledge and practical skills in operating various woodworking machines, including saws, planers, routers, and sanders 2. differentiate the market forms of timber, such as rough sawn, dressed, and seasoned timber, and understand their characteristics and uses 3. identify descriptions, features, and functionalities of common woodworking machines, including their components and operation 4. make use of safety precautions when working with woodworking machinery, including proper attire, machine setup, and emergency procedures . 5. design principles and techniques for creating woodworking							

	projects, including drafting, sketching, and using design software - develop skills in diagnosing and repairing common issues with woodworking machinery, ensuring smooth operation and longevity of equipment - assess the economic factors influencing woodworking practices, including material costs, labor expenses, and market demand - specify geometrical concepts relevant to woodworking, such as measurements, angles, and geometric shapes, to ensure accuracy and precision in project construction.
Unit I: (Theory) 15 Hours	Woodworking Machines and Basic Woodworking Principles - Understanding Woodworking Machines - Functions and Operations - Machine Care and Maintenance - Introduction to Pattern and Design Making - Fundamentals of Repairing Techniques
UNIT-II: (Practical) 30 Hours	Practical Operation of Woodworking Machines Demonstration of Woodworking Machines: - Observe and understand the operational techniques of various woodworking machines such as drilling, grinding, and mortising machines. Hands on Experience with Drilling Machine: - Operate a drilling machine to create precise holes in wood. Hands on Experience with Grinding Machine: - Utilize a grinding machine to smooth and shape wooden components. Hands on Experience with Mortiser Machine: - Use a mortiser machine to create mortises for joints. Universal Woodworking Machine: - Gain proficiency in the use of a universal woodworking machine, understanding its multifunctional capabilities.
UNIT-III: (Practical) 30 Hours	Practical Woodworking Techniques and Repairs Pattern and Design Making: - Execute pattern and design making techniques on woodworking projects. Marking and Making Window Frames: - Practice marking and making window frames, ensuring precision and accuracy. Making Window Shutters: - Construct window shutters, applying appropriate woodworking techniques. Repairing Techniques: - Perform practical exercises on repairing furniture, doors, windows, and racks. Practical Application of Repairing Skills: - Apply theoretical knowledge to real life repairing scenarios,

	improving problem solving skills.
UNIT-IV: (Practical) 30 Hours	Practical Applications of Geometry in Woodworking 1. Geometrical Definitions and Properties: - Understand and apply fundamental geometrical definitions and properties related to angles, triangles, rectangles, squares, rhombuses, and parallelograms. 2. Geometric Construction Exercises: - Conduct exercises involving the construction and analysis of various geometric shapes. 3. System of Units: - Gain proficiency in the system of units for length, area, volume, capacity, weight, time, and angle, including their conversions. 4. Measurement and Conversion: - Perform accurate measurements and conversions between different units of length, area, volume, capacity, weight, and time. 5. Practical Geometry Applications: - Apply geometric principles to practical woodworking tasks, enhancing the precision and quality of the work.
Suggested Readings	1. Andy Engel, “Carpentry Complete: Expert Advice from Start to Finish” 2. Albert Jackson, David Day, and Simon Jennings, “The Complete Manual of Woodworking” Reference Books: 3. Bill Hylton, “Illustrated Cabinetmaking: How to Design and Construct Furniture That Works” 4. Chris Marshall, “The Complete Guide to Carpentry for Homeowners: Basic Carpentry Skills & Everyday Home Repairs”
Requirements	• Saws (hand saw, coping saw, crosscut saw, rip saw) • Chisels (bevel edge, mortise, paring) • Hammers (claw, mallet) • Screwdrivers • Planes (block plane, bench plane) • Measuring tools • Marking tools (pencil, marking gauge) • Sandpaper • Clamps (G-clamps, bar clamps) • Safety gear (gloves, goggles, dust masks) • First aid kits Any other item as required
Qualified Instructors	• Instructors with experience in Carpentry and teaching. • Certifications or relevant qualifications in Carpentry

Syllabus on Vocational Education and Training Course (VTC)

Paper Title		: Computerized Accounting -I						
CODE		: VTC:243.3						
Number of Credits		: 4						
Semester		: III						
No. of Theory Hours Per Week		: One (1 hour)						
No. of Practical Hours per Week		:Three (3 Hours)						
Outline of the Paper:								
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)			
Computerized Accounting-I					In-Semester		End-Semester	
					Theory	Practical	Theory	Practical
	Unit-I Theory (25 Marks)	15	4	100	25			
Unit-II to IV Theory (75 Marks)	90				15		60	
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60						
Course Objectives		To introduce the students to the computerized accounting environment to enable them creating and managing accounting records using computerized accounting software.						
Course Learning Outcome		At the end of the course students will able to: 1. gain proficiency in using Accounting Software for Accounting and Financial Management tasks 2. describe the fundamental concept of accounting, including ledger creation, journal entries and trial balance						
Unit I: (Theory) 15 Hours		Introduction to Computerized Accounting Understanding basic accounting principles and concepts, Definition of Accounting terms, Concept ofCapital and Revenue Expenditure and Receipt. Characteristics of Computerized Accounting,Advantages and Disadvantages, Manual Accounting Vs Computerized Accounting, Readymade Accounting Packages, Advantages and Disadvantages of Readymade Accounting Packages,Customized Accounting Package, Tailor-made Accounting Packages, Own Developed AccountingPackage, Third Party Developed Accounting Software, Advantages and disadvantages of Third Party Accounting Software, Factors to be considered while Purchasing Accounting Software.						
UNIT-II: (Practical) 30 Hours		Introduction to Accounting Software Interface and Navigation, Company Information, Remote Access, Security control, Usage of Function Keys. Installation and Configuration of the Accounting software, Company Information.						

	Parts of Screen, Company Create, Select, Shut, Alter, Delete, Split Company, Backup and Restore Company, Vault and Security, Gateway of Tally: Features and Configurations - F11 and F12. Masters: Creation, Alter and Chart ofAccounts, Creation of Groups, Display, Delete and Configure Groups.
UNIT-III: (Practical) 30 Hours	Ledgers and Sub Ledgers Concept, Creation, Alter, Delete and Configuration: with and without Opening Balances, Revenue Receipt and Revenue Payment, Capital Receipt and Capital Payment. Cost Centers and Cost Categories: Create Display and Alter, Accounting Voucher Entry in Single entry and Double Entry, Contra Voucher, Receipt and Payment Voucher, Journal Voucher, Memorandum Voucher and Reversing Journals.
UNIT-IV: (Practical) 30 Hours	Report Generation Vouchers entry, Accounting and Inventory features, statutory and Taxation features: TDS, GST, preparing Trial balance, financial statements and reports (The curriculum has been divided into three progressive levels spread across three semesters, totalling 315 hours (105 hours for each semester). Each semester combines theoretical knowledge with practical application through hands-on exercises.)
Suggested Readings	1. Agrawal Gaurav, Learn Tally Prime with GST, Digital Muneem Ji Publications 2. Bhaderia, Gagan, Tally Prime: Advanced Notes with QR Code, Notion Press 3. Mishra, V, Tally Prime with GST, TBP Publications 4. Nadhani, K Asok, Mastering Tally Prime, BPB Publications 5. Prime, BPB Publications 6. Sangwan, Rakesh, Tally Workbook using Tally Prime, Ascent Prime Publications 7. Tally Education Private Limited, Official Guide to Managing your Business using Tally 8. Tally India, Official Guide to Financial Accounting using Tally Prime, BPB Publications
Requirements	Accounting Software • Types of Accounting Packages Tally Accounting Software • Interface and Navigation • Masters Management Voucher Entry

	• Single entry and double entry accounting • Types of vouchers: Contra, receipt, payment, journal, memorandum, and reversing journals Report Generation • Vouchers entry • Accounting and inventory features • Statutory and taxation features: TDS and GST • Preparing trial balance, financial statements, and reports GST Concepts and Procedures • GSTIN registration • HSN code and input tax credit • Composition scheme and returns Bank Reconciliation • Creation of ledgers for bank reconciliation • Methods of transactions Payroll Processing Inventory Management System • Hands-on Exercises • Case Studies Any other item as required
Qualified Instructors	Instructors with experience in Computerized Accounting Certifications or relevant qualifications in Computerized Accounting

Paper Title		: Computerized Accounting-II							
CODE		: VTC:263.3.							
Number of Credits		: 4							
Semester		: IV							
No. of Theory Hours Per Week		: One (1 hour)							
No. of Practical Hours per Week		: Three (3 Hours)							
Outline of the Paper:									
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)				
Computerized Accounting-II					In-Semester		End-Semester		
					Theory	Practical	Theory	Practical	
	Unit-I Theory (25 Marks)	15	4	100	25				
Unit-II to IV Theory (75 Marks)	90				15		60		
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60							
Course Learning Outcome	At the end of the course students will able to: 1. Gain proficiency in using Accounting Software for Accounting and Financial Managementtasks. 2. Manage inventory efficiently using Tally Prime, including stock entries and stock valuations. 3. Manage to Create of Payroll, salary details, attendance 4. Develop skills to generate various financial reports such as balance sheet, profit and loss statement cash flow statement								
Unit I: (Theory) 15 Hours	Concept of Bank reconciliation, Concept of GST, Methods of Transactions, GSTIN Registration, HSN Code, Input Tax Credit, Composition Scheme and Returns, Payroll Processing, TDS, Inventory Management System.								
UNIT-II: (Practical) 30 Hours	Creation of Ledgers (Bank Reconciliation), Creation of Inventory Masters: Stock Groups, inventory information, stock groups, stock categories, stock items, unit of measurement, loan, Godown andLocations, Creation of Price level and Price Listing (Invoicing).								
UNIT-III: (Practical) 30 Hours	Creation of Payroll: Concept, Masters, Pay Heads, Employee and Employee Groups, Salary Details, Attendance and Production Type, Voucher Type: Display and Alter Purchase Voucher: In Voucher Mode, Accounting Invoice Mode and Item Invoice Mode, Sales Voucher In Voucher Mode, Accounting Invoice Mode and Item Invoice Mode, Debit and Credit Note, Goods								

	Out:- Delivery Note and Rejection Out, Goods In:- Receipt Note and Rejection In ; Order Voucher: Purchase and Sales Order
UNIT-IV: (Practical) 30 Hours	Inventory vouchers, predefined inventory vouchers, Types of inventory vouchers, Bills of material, location/ Godown, designing supplier and System for accounting module and report. Day Book, Interest received and Payable. Inventory vouchers entries for traders and manufacturing concerns.
Suggested Readings	1. Agrawal Gaurav, Learn Tally Prime with GST, Digital Muneem Ji Publications 2. Bhaderia, Gagan, Tally Prime: Advanced Notes with QR Code, Notion Press 3. Mishra, V, Tally Prime with GST, TBP Publications 4. Nadhani, K Asok, Mastering Tally Prime, BPB Publications 5. Prime, BPB Publications 6. Sangwan, Rakesh, Tally Workbook using Tally Prime, Ascent Prime Publications 7. Tally Education Private Limited, Official Guide to Managing your Business using Tally 8. Tally India, Official Guide to Financial Accounting using Tally Prime, BPB Publications
Requirements	Accounting Software • Types of Accounting Packages Tally Accounting Software • Interface and Navigation • Masters Management Voucher Entry • Single entry and double entry accounting • Types of vouchers: Contra, receipt, payment, journal, memorandum, and reversing journals Report Generation • Vouchers entry • Accounting and inventory features • Statutory and taxation features: TDS and GST • Preparing trial balance, financial statements, and reports GST Concepts and Procedures • GSTIN registration • HSN code and input tax credit

	• Composition scheme and returns Bank Reconciliation • Creation of ledgers for bank reconciliation • Methods of transactions Payroll Processing Inventory Management System • Hands-on Exercises • Case Studies Any other item as required
Qualified Instructors	• Instructors with experience in Computerized Accounting. • Certifications or relevant qualifications in Computerized Accounting

Paper Title		: Computerized Accounting-III							
CODE		:VTC: 363.3							
Number of Credits		: 4							
Semester		:VI							
No. of Theory Hours Per Week		: One (1 hour)							
No. of Practical Hours per Week		: Three (3 Hours)							
Outline of the Paper:									
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)				
Computerized Accounting-III	Unit-I Theory (25 Marks)	15	4	100	In-Semester		End-Semester		
					Theory	Practical	Theory	Practical	
	Unit-II to IV Theory (75 Marks)	90					25		
						15		60	
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60							
Course Objectives		To enable students professionally efficient to use accounting software and generate financial reports using computerized accounting software.							
Course Learning Outcome		At the end of the course students will able to: 1. Gain proficiency in using Accounting Software for Accounting and Financial Managementtasks. 2. Acquire knowledge of taxation process and learn to handle GST compliance within TallyPrime 3. Manage inventory efficiently using Tally Prime, including stock entries and stock valuations. 4. Develop skills to generate various financial reports such as balance sheet, profit and lossstatement cash flow statement. 5. To generate Inventory Reports, Accounting Reports, Tally Audit Reports, Exceptional 6. Reports, Statutory Reports. design and analyse various road emission testing of petrol and diesel vehicles for PUC/RTO.							
Unit I: (Theory) 15 Hours		• Advanced Features of Accounting Software • Advanced Usage of Function Keys • Budgeting and Forecasting • Audit using computerized Software • Data Security and Backup.							
UNIT-II: (Practical)		Creation of Company with GST enabled features, F11 and their							

30 Hours	features, Accessing companies through Networks, Voucher entry with GST: Purchase , Sale, debit Note and Credit Note Masters, Ledgers (with GST), Creation of Inventory Masters with GST and UQC, Preparation of GST returns using accounting software for different types of dealers, preparation of memorandum vouchers, E-way bill generation.
UNIT-III: (Practical) 30 Hours	Stock Journals and Godown, Opt Vouchers and Journal Vouchers with Adjustment Entries, Reverse Journal, Post Dated Vouchers and relate them to Scenario, Point of Sale (POS), Creation of Budgets,,Creation of Multiple Budgets, Budget Variances Basic concept of TDS/TCS, Configuring TDS/TCS, Creation of Masters, Entering Transactions, TDS/TCS reports
UNIT-IV: (Practical) 30 Hours	Tally Audit: Features (Activation) and Statutory Audit, Activating Security Control; Users and Password, Application Of Tally Vault, Backup Procedures, Inventory Reports: Specifying Closing Stock values, Accounting Reports, Tally Audit Reports, Exceptional Reports, Reports Generation: Statutory Reports, GSTR 1, 2 and 3B. Pending Bills, Outstanding Orders, Stock related to Individual Godown and Location, Stock Summary, MIS Reports, Tax and Return
Suggested Readings	1. Agrawal Gaurav, Learn Tally Prime with GST, Digital Muneem Ji Publication 2. Bhaderia, Gagan, Tally Prime: Advanced Notes with QR Code, Notion Press 3. Mishra, V, Tally Prime with GST, TBP Publications 4. Nadhani, K Asok, Mastering Tally Prime, BPB Publications 5. Prime, BPB Publications 6. Sangwan, Rakesh, Tally Workbook using Tally Prime, Ascent Prime Publications 7. Tally Education Private Limited, Official Guide to Managing your Business using Tally 8. Tally India, Official Guide to Financial Accounting using Tally Prime, BPB Publications
Requirements	Accounting Software • Types of Accounting Packages Tally Accounting Software • Interface and Navigation • Masters Management Voucher Entry • Single entry and double entry accounting • Types of vouchers: Contra, receipt, payment, journal,

	memorandum, and reversing journals Report Generation • Vouchers entry • Accounting and inventory features • Statutory and taxation features: TDS and GST • Preparing trial balance, financial statements, and reports GST Concepts and Procedures • GSTIN registration • HSN code and input tax credit • Composition scheme and returns Bank Reconciliation • Creation of ledgers for bank reconciliation • Methods of transactions Payroll Processing Inventory Management System • Hands-on Exercises • Case Studies Any other item as required
Qualified Instructors	• Instructors with experience in Computerized Accounting and teaching. • Certifications or relevant qualifications in Computerized Accounting

Syllabus on Vocational Education and Training Course (VTC)

Paper Title		: Desktop Publishing - I						
CODE		: VTC: 243.2						
Number of Credits		: 4						
Semester		: III						
No. of Theory Hours Per Week		: One (1 hour)						
No. of Practical Hours per Week		: Three (3 Hours)						
Outline of the Paper:								
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)			
Desktop Publishing - I					In-Semester		End-Semester	
					Theory	Practical	Theory	Practical
	Unit-I Theory (25 Marks)	15	4	100	25			
Unit-II to IV Theory (75 Marks)	90				15		60	
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60						
Course Objectives		1. To describe the fundamental concepts of computer hardware and software. 2. To explain the proficiency in working with Graphical User Interface (GUI) based operating systems. 3. To use word processing, spreadsheets, and presentation efficiently. 4. To Recognize the basic functions and features of word processing, spreadsheets, and presentation software. 5. To efficiently produce, edit, format, and manage documents, spreadsheets, and presentations. 6. Enhance productivity through the use of advanced features and techniques within each Office application.						
Course Learning Outcome		At the end of the course students are able to: 1. create, format, and edit documents with proficiency and utilise the advanced formatting tools, incorporate tables, images, and graphics. 2. specify master document collaboration, use reviewing features and mail merge. 3. develop spreadsheets for data analysis, calculation, and data visualisation using charts and graphs. 4. apply formulas and functions to perform calculations efficiently and explore data analysis tools such as pivot tables and filters. 5. design engaging and professional presentations using multimedia elements. 6. combine content effectively with slides, layouts, and themes and employ animations & transitions to enhance presentation delivery.						
Unit I: (Theory) 15 Hours		Computer fundamentals: • Computer, block diagram of a computer, functions of the						

	Different Units, Input and Output device, Memory hierarchy (Registers, Cache Memory, Primary Memory, Secondary Memories), • Concepts of Hardware and Software, Types of software - system software, application software, utility software, Open source, freeware and proprietary software. Programming language, compiler, interpreter and translator. • Concept of Computing, Units of Memory (Bits, Bytes), Operating System, types of Operating System, • Functions of Operating System. Networking Concept (LAN, MAN, WAN), Internet.
UNIT-II: (Practical) 30 Hours	Operating Systems: • Graphical User Interface, Basics of (MS-WINDOWS/LINUX), Desk Top, Task Bar, Start Up Menu Working with programs and icons-Adding, removing, starting and quitting programs and icons. • Working with files and folders-creating, deleting, opening, finding, copying, moving and renaming files and folders. • Control Panel, setting, My Computer, Recycle bin, Desktop & its terminology, Set up using Control panel, accessories, File Management. Word Processor: • Overview of Word Processing, parts, types of menus, opening, creating, saving, cut, copy, paste, paste especial, print and print preview, Find and Replace. • Character and paragraph formatting. Bullets & Numbering, spelling and grammar, Auto Correct, symbols, equations, page number, footnote, end note, Header/Footer, Clip Art, Smart Art. Border and shading, Table handling, Hyperlink, Bookmark, Cross reference, Mail merge, Label & Envelope and important shortcut keys.
UNIT-III: (Practical) 30 Hours	• Spreadsheet – Overview, Opening, creating, saving worksheet and workbook. Copy & paste, insert rows/columns, cell, range, fill series, print and print preview. Formatting Cells; Selecting Cells, Entering Text and Numeric Data into the Cells, Applying Fonts and Background Colour, Aligning Data, Merging Cells, Text Wrapping, Number Formatting – Text, Percentage, Currency, Dates. • Formulas and Functions – Performing Basic Mathematical Operations using Formula, Applying Formulas using Cell Names and Range, Performing Calculation using basic Numerical and Mathematical Functions. If and nested if function, Logical Functions-AND, OR, NOT. • Filters, Grouping and Charts- Sort, filter, advance filter, graphs, charts, conditional formatting rules, data

	validation, Introduction to Pivot Tables and Pivot Charts.
UNIT-IV: (Practical) 30 Hours	• Presentation: Overview, slides, designing slides, background design, auto content wizard, themes and styles. Animations, slide transition and build effects, action buttons and rehearse timing and slideshow. Sound effects, charts, graphs, smart art, media clips, objects, tables, slide view, master Slide.
Assignments	1. Customize the desktop background, add/remove icons, and organize the taskbar. Demonstrate the use of the Start Menu to open programs and access settings. 2. Create, delete, open, find, copy, move, and rename files and folders using both the graphical interface and command line (where applicable). 3. Open a new document, type text, use cut, copy, paste, and paste special functions to paste in a different folder 4. Create a text document and save it under different names using save as use character and paragraph formatting, apply bullets and numbering, check spelling and grammar 5. In the above created document insert symbols, equations, page numbers, footnotes, and endnotes 6. In a document create and format tables, insert hyperlinks, bookmarks, and cross references 7. Open, create, and save worksheets and workbooks. Copy and paste data, insert and delete rows/columns, and apply print and print preview settings. 8. Format cells by selecting cells, entering text and numeric data, applying fonts and background colors, aligning data, merging cells, and text wrapping. Use number formatting for text, percentage, currency, and dates 9. Perform basic mathematical operations using formulas, apply formulas using cell names and ranges, and use basic numerical and mathematical functions. Implement IF and nested IF functions along with logical functions 10. Sort and filter data, use advanced filter options, create graphs and charts, and apply conditional formatting rules. Explore data validation techniques and create pivot tables and pivot charts. 11. Create a new presentation, design slides, apply background designs, use auto content wizard, and apply themes and styles. 12. Add animations to slide elements, use slide transitions, and build effects. Include action buttons and rehearse timing for the slideshow.

Suggested Readings	1. Curtis, F. L. Joan , Microsoft Office Step by Step (Office 2021 and Microsoft 365), Pearson Education ; 1st edition, 2022. 2. Gurdy, L. F. Ellen and L. Mary , OpenOffice.org For Dummies, John Wiley & Sons publication, 2004 3. Kevin,W. Essential Office 365 Third Edition: The Illustrated Guide to Using Microsoft Office (Computer Essentials)”, Elluminet Press, 2018. 4. Matt ,V. Microsoft Office 365:A Complete Guide to Master Word, Excel and PowerPoint 365 for Beginners and Pro, Kindle Edition, 2021. 5. Sinha P. and P. K. Sinha, Computer Fundamentals, (Eight Edition) New Delhi: BPB Publications, 2004. 6. Steinberg,J. Open Office Basic: An Introduction, Createspace Independent Publication, 2012.
Requirements	Name of the Tools and Equipment with Specification • CPU: 32/64 Bit, 7th Generation or higher, i3 or latest processor, Speed: 3 GHz or Higher. • RAM:- 8 GB or higher, 1TB HDD/SDD, Wi-Fi Enabled. • Network Card: Integrated Gigabit Ethernet, with USB Mouse, USB • Keyboard and Monitor (as available in the market). Or All in one PC (As per above configuration) Licensed Operating System and Antivirus compatible with trade related software • Wi-Fi RouterWith wireless connectivity • Broadband connection with min.2 mbps speed/Optical Fibre Software Requirement (Latest Version) • MS Office 2010 or the latest version available at the time of procurement • Antivirus or Total security for – clients/workstations in profile • Adobe Creative Suite • Corel Graphic Suite • Regional Language Software Any other item as required
Qualified Instructors	• Instructors with experience in Desktop Publishing and teaching. • Certifications or relevant qualifications in Desktop Publishing

Paper Title		: Desktop Publishing -II							
CODE		: VTC: 263.2							
Number of Credits		: 4							
Semester		: IV							
No. of Theory Hours Per Week		: One (1 hour)							
No. of Practical Hours per Week		: Three (3 Hours)							
Outline of the Paper:									
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)				
Desktop Publishing-II	Unit-I Theory (25 Marks)	15	4	100	In-Semester		End-Semester		
		Theory			Practical	Theory	Practical		
	Unit-II to IV Theory (75 Marks)	90							60
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60							
Course Objectives		1. To understand the basics of desktop publishing. 2. Introduction to computer networks, internet 3. Installation and usage of printer and scanner. 4. Learn to use photoshop and PageMaker.							
Course Learning Outcome		At the end of the course students are able to” 1. perform desktop publishing 2. identify networking concepts and applications 3. make use of mails, attachments and social networking 4. install and use printers and scanners in the network 5. describe and work with Photoshop and PageMaker 6. apply it to text, images, graphics and animated gifs							
Unit I: (Theory) 15 Hours		• Introduction to DeskTop Publishing, • Merits and Demerits. Typography, Types(Fonts) Type sizes, Different families(Style). • Point system and other systems of measuring, Casting off, Proofreading and its marks, House style, Composing Process • Introduction of various methods of composing Computer to plate, Paper Introduction and preparation. Various paper sizes, Various paper calculations.							
UNIT-II: (Practical) 30 Hours		• Introduction to Computer Networks: Install network printer. Use of file and printer sharing in peer-to-peer connection. • Browse the Internet for information (use at least 3 popular browsers). • Practise to create and use e-mail for communication with							

	attachment, priority setting, address book. • Communicate with text, video chatting and social networking sites. • Use an online dictionary, translation software, storage space, share files with e-mail links. Scanner, • How to scan on a Windows computer, Different settings of scanner. Scan the file and save to the desired destination on the computer. • Load photo paper into the main input tray. Print the photo, Page setup. Different settings of printer.
UNIT-III: (Practical) 30 Hours	• Getting Acquainted with Photoshop, • Basic Image Manipulation, Colour Basic Painting Tools, Brush Settings, Making Selections, Filling and stroking, Layers, Advanced Layers, • Text, Drawing, Using Channels and Masking, Manipulating images, Getting to know the work area, Using Adobe Bridge, • Basic Photo Corrections, Retouching and Repairing, Working with selections, • Layer Basics, Masks and channels, Correcting and enhancing digital photographs, • Topographic design, Vector drawing techniques, Advanced Layer techniques, • Vector Composting, Creating Links within an image, • Creating rollover web visuals, Animating GIF images for the web, Producing and printing consistent colour.
UNIT-IV: (Practical) 30 Hours	• Getting Started with PageMaker, PageMaker Interface, • Creating a New Document, Managing Document Layer, Creating & Editing Text, Working with Edit Story, • Managing Text as an Object, Working with Text and Graphics, Using Graphics, • Applying Colours to Graphics, Framing Graphics, Cropping and masking Graphics, • Working with Layers, Working with Master pages, Working with Plug-ins, Using Text Wrap, Using Advanced Features, Creating a PDF Document in PageMaker, • Working with Data Merger, Using Scripts, Using Object Linking and Embedding Colour Separation Capabilities, Printing.
Suggested Practical Assignments:	1. Network Printer Installation: • Install a network printer on a Windows computer. • Configure printer settings and test print a document. 2. File and Printer Sharing: • Set up file sharing between two computers on a

	peer-to-peer network. • Enable printer sharing on a network. 3. Internet Browsing: • Browse the Internet using three different browsers (e.g., Chrome, Firefox, Edge). • Compare the features and performance of each browser. 4. Email Communication: • Create an email account. • Send emails with attachments, set email priorities, and manage the address book. • Use email to send links for shared files and practice organizing emails into folders 5. Basic Image Manipulation in Photoshop: • Open an image and perform basic manipulations (crop, resize, rotate). • Use basic painting tools and brush settings to modify the image. 6. Selections and Layers in Photoshop: • Create and modify selections using different selection tools. • Work with layers: create, arrange, and apply basic transformations. 7. Text and Drawing in Photoshop: • Add and format text in an image. • Use drawing tools to create shapes and lines. 8. Channels and Masking in Photoshop: • Use channels and masks to isolate parts of an image and apply adjustments. 9. Photo Corrections in Photoshop: • Perform basic photo corrections (brightness, contrast, color balance). • Retouch and repair parts of an image using tools like the healing brush and clone stamp. 10. Advanced Techniques in Photoshop: • Use vector drawing techniques and advanced layer techniques (e.g., layer styles, blending modes). • Create web visuals, animate GIFs, and produce consistent color prints. 11. Text and Graphics Management in Pagemaker: • Create and edit text blocks using the Edit Story feature. • Import and manipulate graphics, apply colors, and use text wrapping. 12. Layers and Master Pages in Pagemaker: • Work with layers and master pages to manage document structure. • Use advanced features like plug-ins and scripts.
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	13. PDF Creation and Data Merger in Pagemaker: • Create a PDF document from a PageMaker file. • Use the Data Merger feature to merge external data into the document. 14. Object Linking and Embedding in Pagemaker: • Use OLE to embed and link objects between applications. • Practice color separation and printing settings for final output.
Suggested Readings	1. Bangia, R. Learning Desktop Publishing, Khanna Publishers, 2nd Edition, 2016 2. Behera, S. R. Smart DTO Course, B. K. Publications Pvt Ltd, 2nd Edition, 2019 3. C. M. Connally, The Complete reference PageMaker V.7, Osborne/McGraw-Hill, 2002 3. Faulkner, A. C. Chavez, Adobe Photoshop CC Classroom in a Book , First Edition , Pearson Education, 2018 4. Jain, S. and M. Geeta, Desktop Publishing Training Guide, BPB Publication, 2015 5. Mittal, A. and A. Rana, Mastering Pc Hardware and Networking, 1st Edition, Khanna Publishers, 2023 6. Singh, V. P. DTP Course Book, 4th Revised Edition, Asian Books
Requirements	Name of the Tools and Equipment with Specification • CPU: 32/64 Bit, 7th Generation or higher, i3 or latest processor, Speed: 3 GHz or Higher. • RAM:- 8 GB or higher, 1TB HDD/SDD, Wi-Fi Enabled. • Network Card: Integrated Gigabit Ethernet, with USB Mouse, USB • Keyboard and Monitor (as available in the market). Or All in one PC (As per above configuration) Licensed Operating System and Antivirus compatible with trade related software • Wi-Fi Router With wireless connectivity • Broadband connection with min.2 mbps speed/Optical Fibre Any other item as required
Qualified Instructors	• Instructors with experience in Desktop Publishing and teaching. • Certifications or relevant qualifications in Desktop Publishing

Paper Title		: Desktop Publishing -III							
CODE		: VTC: 363.2							
Number of Credits		: 4							
Semester		:VI							
No. of Theory Hours Per Week		: One (1 hour)							
No. of Practical Hours per Week		: Three (3 Hours)							
Outline of the Paper:									
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)				
Desktop Publishing -III					In-Semester		End-Semester		
					Theory	Practical	Theory	Practical	
	Unit-I Theory (25 Marks)	15	4	100	25				
Unit-II to IV Theory (75 Marks)	90				15		60		
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60							
Course Objectives		1. Introduction of Cloud storage and it types 2. Understanding and working with Corel Draw 3. Understanding different kinds of publishing contents and types of Printing Technology. 4. Understanding of Image Editing and Optimization 5. Understanding of Creating Effective Layouts.							
Course Learning Outcome		At the end of the course students are able to: 1. explain the process of cloud computing concepts and ability to deploy and manage virtual servers and resources on major cloud platforms like AWS, Azure 2. create and manage storage resources like bucket or blob storage 3. identify the workspace, toolbars, and panels 4. make use of skills from Illustrator to CorelDRAW 5. utilise internet toolbar, setting up web pages, exporting files, and creating buttons with rollover effects.							
Unit I: (Theory) 15 Hours		• Introduction to cloud computing.What are Cloud servers and types of cloud serve. • Create an instance on cloud on amazon/azure/google. Create bucket/ storage space on cloud (amazon / azure / google). • Install apache server & IIS server, configure apache server and IIS server • Perform Domain registration, c panel management. Perform Domain registration of any domain name • Configure domain name to hosting accounts.							

	• Host your web pages.
UNIT-II: (Practical) 30 Hours	• Getting started with Corel Draw, Introduction to Corel Draw, Features of Corel Draw, CorelDraw Interface, Tool Box, Moving from Adobe Illustrator to Corel Draw, Common Tasks, Drawing and Colouring, • Selecting Objects, Creating Basic Shapes, Reshaping Objects, Organizing objects, Applying colour fills and Outlines Mastering with Text, Text Tool Artistic and paragraph text, Formatting Text, Embedding Objects into text, Wrapping Text around Object, Linking Text to Objects, • Applying Effects, Power of Blends Distortion, Contour Effects, Envelopes, Lens effects, Transparency, Creating Depth Effects, Power Clips, • Working with Bitmap Commands, Working with Bitmaps, Editing Bitmaps, Applying effects on Bitmaps, Printing Corel Draw- Web resources, Internet Toolbar, Setting your webpage, Exporting files, Creating buttons with Rollover effects
UNIT-III: (Practical) 30 Hours	• Requirement of publishing content Solve requirement related issues by contacting key people in Publishing, Pre-production, and Production teams. • Summaries the consequences of publishing incorrect versions of content. • Determine, if you have the correct versions of all content for publications. • Demonstrate methods of establishing publication requirements. • Perform recommended techniques of establishing requirements in Requirement of publishing content Categories content that requires publishing. • Classify all requirements of the publication content. Different kinds of publishing contents, Types of Printing technology. (Letterpress, Offset lithography, Screen printing, Gravure printing, Flexography printing) • Digital printing Technology Discuss issues, if any, concerning requirements. • Summaries the consequences of publishing incorrect versions of content. • Desktop Publishing Operator standard templates and formats
UNIT-IV: (Practical) 30 Hours	• Publishing contents in Bilingual software Use standard templates and tools while converting content into draft publications. • Practice escalating design-related issues to the supervisor. • Solve design-related issues by incorporating the requester's/user's feedback/inputs. • Design and format content as per established requirements. Modify designed and formatted content as per client's review. • Convert designed, formatted, and validated content, into draft

	publication, after incorporating feedback from the Quality Assurance team (Prepress department) • Demonstrate standard methods for publishing content. • Produce publication outputs in specific formats required by production teams. • Combine the latest publications to update the organisation's database. • Comply with the industrial standards while publishing content.
Suggested Practical Assignments:	1. Use Coreldraw to create basic shapes (e.g., rectangles, circles), select objects, and apply color fills and outlines. 2. Create and reshape objects using tools such as shape, node, and interactive tools. Organize objects by aligning, grouping, and layering. 3. Use the Text Tool to create artistic and paragraph text, format the text, and embed objects into text. Wrap text around objects and link text to objects. 4. Apply effects such as blends, distortions, contours, envelopes, lens effects, and transparency to objects. 5. Import and edit bitmaps, apply effects to bitmaps, and use bitmap editing tools within Corel Draw. 6. Use depth effects and power clips to create intricate designs. Practice embedding objects within other objects. 7. Set up print settings, prepare documents for printing, and explore different output formats. 8. Create a basic LaTeX document using the article class. Include sections, subsections, and different text formatting (bold, italic, lists). Save and compile the document. 9. Create a document that includes various mathematical expressions, equations, and align environments. Include examples of fractions, integrals, summations, and matrices. 10. Create a LaTeX document that includes multiple figures and tables. Use the graphicx package to insert images and the tabular environment to create tables. Format the tables to include borders, captions, and labels. 11. Create a research paper layout with title page, abstract, sections, and references. Customize headers and footers, and format the document according to a specific citation style (e.g., APA or IEEE). Use BibTeX for managing references. 12. Design a presentation using the Beamer class. Include title slides, section slides, bullet points, and graphics. Apply different themes and color schemes to the presentation
Suggested Readings	1. Bangia,R. Learning Desktop Publishing, Khanna Publishing 2. Behera,S. R. Smart DTP Course, BK 3. Jain, S. and M Geetha, Desktop Publishing, BPB Publications 4. Kumar L. S. and M Ilayaraja, Desktop publishing, Notion Press 5. Kumar L. S. and M. Ilayaraja, Desktop Publishing, 2019 6. Mishra, P. Cloud Computing with AWS: Everything You Need to Know to be an AWS Cloud Practitioner, 2023

	7. Singh,V. P “Simplified DTP Course Book, Asian Publishers 8. Singh,V. P. DTP Course Book, Asian Publishers
Requirements	Name of the Tools and Equipment with Specification • CPU: 32/64 Bit, 7th Generation or higher, i3 or latest processor, Speed: 3 GHz or Higher. RAM:- 8 GB or higher, 1TB HDD/SDD, Wi-Fi Enabled. Network Card: Integrated Gigabit Ethernet, with USB Mouse, USB Keyboard and Monitor (as available in the market). Or All in one PC (As per above configuration) Licensed Operating System and Antivirus compatible with trade related software • Wi-Fi Router With wireless connectivity • Broadband connection with min.2 mbps speed/Optical Fibre Any other item as required
Qualified Instructors	• Instructors with experience in Desktop Publishing and teaching. • Certifications or relevant qualifications in Desktop Publishing

Syllabus on Vocational Education and Training Course (VTC)

Paper Title	: Drums -I							
CODE	: VTC: 245.1							
Number of Credits	: 4							
Semester	: III							
No. of Theory Hours Per Week	: One (1 hour)							
No. of Practical Hours per Week	: Three (3 Hours)							
Outline of the Paper:								
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)			
Drums-I					In-Semester		End-Semester	
					Theory	Practical	Theory	Practical
	Unit-I Theory (25 Marks)	15			25			
	Unit-II to IV Theory (75 Marks)	90	4	100		15		60
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60						
Course Objectives		1. To familiarize the students with the drum set used in western music and its different parts so that they can have an understanding of drum groove, rhythm, beat and pulse. 2. It will enable them to assemble, tune and manage the set.						
Course Outcome	Learning	At the end of the course students will be able to: 1. play the basic drumming signatures, 2. to count the beats and produce cohesive drum patterns and grooves 3. equip themselves with foundational knowledge and skills necessary in a musical context.						
Unit I: (Theory) 15 Hours	Introduction • Bass Drum • Snare • High Tom or 1st Tom • Mid Tom or 2nd Tom • Floor Tom • Hi-hats • Cymbal (Crash, Ride etc...)							
UNIT-II: (Practical) 30 Hours	Rudiments & Groove • Playing single stroke on the snare • Playing single stroke around the drums • Playing groove with single stroke							

	• Adding fills with single stroke
UNIT-III: (Practical) 30 Hours	Learning Eighth Note(1+2+3+4) • Playing eighth note on the snare • Playing eighth note around the drums • Playing groove with eighth note • Adding fills with eighth note.
UNIT-IV: (Practical) 30 Hours	Learning Sixteenth Note (1e+a2e+a3e+a4e+a) • Playing sixteenth note on the snare • Playing sixteenth note around the drums • Playing groove with sixteenth note • Adding fills with sixteenth note.
Suggested Readings	1. Daryl Ingleton, Learn to Play Drums: The Complete Drum Method Volume One 2. Glenn Ceglia with Dom Famularo Eighth-Note Rock and Beyond 3. Peter Erskine Drum set Essentials Part 1 4. Peter Erskine Drum set Essentials Part 2 5. Rick Considine Rudiment Grooves for Drum Set
Requirements	Drum Kits Complete Drum Sets Bass Drum • Snare Drum • High Tom or 1st Tom • Mid Tom or 2nd Tom • Floor Tom • Hi-hats • Crash Cymbal • Ride Cymbal. Practice Pads • Snare Drum Practice Pads • Sticks and Accessories • Drumsticks • Metronomes

	• Music Stands • Percussion Instruments Recording Equipment Microphones: For recording drum practice sessions. • Audio Interface and Computer • Software: DAWs (Digital Audio Workstations) like Pro Tools, Logic Pro, or Ableton for recording and analysis. Interactive Learning Tools • Electronic Drum Kits • Music Notation Software Any other item as required
Qualified Instructors	• Experienced Drum Teachers: With a background in both theory and practical drumming. • Guest Lecturers/Artists: Periodically, to provide master classes and workshops.
Technical Support	• Sound Technicians: For maintaining the sound systems and recording equipment

Paper Title		: Drums -II						
CODE		: VTC: 265.1						
Number of Credits		: 4						
Semester		: IV						
No. of Theory Hours Per Week		: One (1 hour)						
No. of Practical Hours per Week		: Three (3 Hours)						
Outline of the Paper:								
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)			
Drums-II					In-Semester		End-Semester	
					Theory	Practical	Theory	Practical
	Unit-I Theory (25 Marks)	15	4	100	25			
Unit-II to IV Theory (75 Marks)	90				15		60	
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60						
Course Objectives		1. Students would be guided to have a thorough understanding of drums and parts of the drums to bring out musical elements including notes, scales, pitch, rhythm, and time signatures.						
Course Learning Outcome		At the end of the course students will be able to: 1. To enable students to demonstrate different rhythms based on notation including sticking patterns and drum strokes.						
Unit I: (Theory) 15 Hours		Learning Triplet and the Shuffle (1+a 2+a 3+a 4+a) • Understanding Triplet as three notes in one beat • Learning a Triplet groove • Adding fills with Triplets • Playing Shuffle with Triplets • Jamming along a Shuffle track						
UNIT-II: (Practical) 30 Hours		Learning Paradiddle • Learning the sticking pattern (RLRR LRLL) • Applying Paradiddle as fills • Grooving with Paradiddle						
UNIT-III: (Practical) 30 Hours		Learning Double Stroke • Sticking Pattern (RRLL RRLL) • Playing around the drums						

	Applying as groove or compliment: Different groove with Double Stroke.
UNIT-IV: (Practical) 30 Hours	Rudiments & Exercise for Stick Control and Speed - Single Stroke (8th Note & 16th Note) - Double Stroke (8th Note & 16th Note) - Triplets - Paradiddle
Suggested Readings	- Carlos Toranna Beat3beaT: Triplets, Rudiments & Jazz - Hal Leonard ,Drumset Method - Complete Edition: Books 1 and 2 - Serkan Suer 200 Paradiddle Exercises for Drums - Tony Coleman, Authentic Blues Drumming: Learn Shuffles, Fills, Concepts, Tips and More from a Blues Master (Drum Instruction) - Zoro, The Commandments of the Half-Time Shuffle: For Zor Drumset
Requirements	Complete Drum Sets: - Bass Drum - Snare Drum - High Tom or 1st Tom - Mid Tom or 2nd Tom - Floor Tom - Hi-hats - Crash Cymbal - Ride Cymbal Quality Brands: Yamaha, Pearl, DW, or Tama. Practice Pads - Snare Drum Practice Pads - Sticks and Accessories - Drumsticks: Multiple pairs, considering wear and tear. - Metronomes - Music Stands: For reading sheet music. - Percussion Instruments Auxiliary Percussion: Such as cowbells, tambourines, and shakers for added practice variety.

	Recording Equipment • Microphones: For recording drum practice sessions. • Audio Interface and Computer: For recording and playback analysis. • Software: DAWs (Digital Audio Workstations) like Pro Tools, Logic Pro, or Ableton for recording and analysis. Interactive Learning Tools • Electronic Drum Kits: As an alternative to acoustic drums, useful for quieter practice. • Music Notation Software: For creating and distributing practice sheets. Books and Sheets • Drumming Method Books: Covering rudiments, grooves, fills, and note values (e.g., books by George Lawrence Stone or Ted Reed). • Sheet Music: Various styles and complexities to match the course progression. Multimedia Resources • Instructional Videos: Pre-recorded lessons from professional drummers. • Play-along Tracks: For practicing grooves and fills with music. Any other item as required
Qualified Instructors	• Experienced Drum Teachers: With a background in both theory and practical drumming. • Guest Lecturers/Artists: Periodically, to provide master classes and workshops.
Technical Support	• Sound Technicians: For maintaining the sound systems and recording equipment

Paper Title	: Drums -III							
CODE	: VTC: 365.1							
Number of Credits	: 4							
Semester	:VI							
No. of Theory Hours Per Week	: One (1 hour)							
No. of Practical Hours per Week	: Three (3 Hours)							
Outline of the Paper:								
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)			
Drums III					In-Semester		End-Semester	
					Theory	Practical	Theory	Practical
	Unit-I Theory (25 Marks)	15			25			
	Unit-II to IV Theory (75 Marks)	90	4	100		15		60
Marks Distribution	: Internal Assessment: 40 : External Assessment: 60							
Course Objectives	1. To acquaint the students with different drum rolls and orchestration including strokes and patterns.							
Course Learning Outcome	At the end of the course students are able to: 1. become proficient in playing different drum patterns including orchestration							
Unit I: (Theory) 15 Hours	Orchestration Splitting rudiments between different parts of the drum. Creating drum fills.							
UNIT-II: (Practical) 30 Hours	Dynamics - Accenting the first note of each fill. - Accenting the second and third note while playing the rest of the notes as grace notes.							
UNIT-III: (Practical) 30 Hours	Introduction to Stroke Rolls. - Five Strokes, six Strokes, seven Strokes - Nine Strokes, ten Strokes, eleven Strokes, - Thirteen Strokes, fifteen Strokes, seventeen Strokes.							
UNIT-IV: (Practical) 30 Hours	Introduction to Paradiddle - Learning the sticking pattern (RLRLL LRLRR) - Double Paradiddle (RLRLRR LRLLL) - Triple Paradiddle (RLRLRLRR LRLRLLL)							

Suggested Readings	1. Serkan Suer Groove and fills - Rock drumming by andygriffiths200 paradiddles 2. D mark agostinelli Drum roll stroke / Triplet 3. Rob and Mike Silverman21st century drumset 4. Roy BurnsAdvanced Rock Drumming 5. Casey Scheuerell Stickings& Orchestrations for Drum Set
Requirements	Complete Drum Sets: Each practice room should be equipped with a full drum kit including: • Bass Drum • Snare Drum • High Tom or 1st Tom • Mid Tom or 2nd Tom • Floor Tom • Hi-hats • Crash Cymbal Ride Cymbal Practice Pads • Snare Drum Practice Pads. • Sticks and Accessories • Drumsticks • Metronomes • Music Stands. • Additional Percussion Instruments • Auxiliary Percussion Recording Equipment • Microphones • Audio Interface and Computer • Software: DAWs (Digital Audio Workstations) like Pro Tools, Logic Pro, or Ableton for recording and analysis. Interactive Learning Tools • Electronic Drum Kits: As an alternative to acoustic drums, useful for quieter practice. • Music Notation Software: For creating and distributing practice sheets.

	Books and Sheets • Drumming Method Books: Covering rudiments, grooves, fills, and note values (e.g., books by George Lawrence Stone or Ted Reed). • Sheet Music: Various styles and complexities to match the course progression. Any other item as required
Qualified Instructors	• Experienced Drum Teachers: With a background in both theory and practical drumming. • Guest Lecturers/Artists: Periodically, to provide masterclasses and workshops.
Technical Support	• Sound Technicians: For maintaining the sound systems and recording equipment

Syllabus on Vocational Education and Training Course (VTC)

Paper Title	: Electrical -I							
CODE	: VTC: 242.2							
Number of Credits	: 4							
Semester	: III							
No. of Theory Hours Per Week	: One (1 hour)							
No. of Practical Hours per Week	: Three (3 Hours)							
Outline of the Paper:								
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)			
Electrical - I					In-Semester		End-Semester	
					Theory	Practical	Theory	Practical
	Unit-I Theory (25 Marks)	15			25			
	Unit-II to IV Theory (75 Marks)	90	4	100		15		60
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60						
Course Objectives		1. To enable students to describe the electrical safety tools and electrical symbols. 2. To enable students to explain the concepts of electrical network elements and associated laws of electrical circuits 3. To enable students to detect the fundamental skills for fault detection, repairing of electrical equipment and PCB circuit design.						
Course Learning Outcome		At the end of the course students will be able to: 1. explain the concepts of electrical circuits. 2. demonstrate of working & operating principles of electronic circuits & equipment. 3. make use of skills related to fault analysis and diagnosis of electronic equipment, repair & replacement of faulty parts. 4. examine schematic layouts wiring diagrams and product details. 5. apply safety precautions and knowledge of entrepreneurship activities.						
Unit I: (Theory) 15 Hours		• Basics of Electrical: Electrical Symbols, Electrical safety, Tool Kit, Basic Electrical Terms, Basic Networks; • Electrical Laws: Ohm's law, effect of temperature on resistance, resistance temperature coefficient, insulation resistance, Kirchhoff's law, ideal and practical voltage and current sources; • Electrical Components: Passive Components, Active Components, PCB and Soldering; • Electrostatics: Electrostatic field, electric flux density, electric field strength, absolute permittivity, relative permittivity and capacitance, composite dielectric						

	capacitors, capacitors in series and parallel, energy stored in capacitors, charging and discharging of capacitors and concept of time constant.
UNIT-II: (Practical) 30 Hours	• Prepare drawing sheet of electrical symbols • Prepare drawing sheet of tools used in the electronics lab. • Enlist the Safety precautions to be taken in the Electronics Laboratory.
UNIT-III: (Practical) 30 Hours	• Verification of Ohm's Law. • Verification of Kirchhoff's Current Law and Voltage Law. • Enlist different voltage sources in the laboratory and note their specifications.
UNIT-IV: (Practical) 30 Hours	• Prepare drawing sheet of Active and passive components. • Identification and testing of Active and Passive components • Familiarization and use of Ammeter, Voltmeter and Multimeter • Prepare layout and PCB of simple circuit like bridge rectifier.
Suggested Readings	1. Fitzgerald, E. Arvin Gabel, David E. Higginbotham, Textbook of Basic Electrical Engineering, TMH Publishing Co. 2. Kothari, D P I J Nagrath, Basic Electrical Engineering, TMH Publishing Co. Ltd. References: 3. Mehta K Rohit Mehta, Basic electronics, S. Chand & Co. 4. Patel, A Textbook of Elements of Electrical Engineering, Mahajan Publishing House, Ahmedabad. 5. Theraja, B. L. A.K. Theraja, Textbook of Electrical Technology, Volume I, S. Chand Co.
Requirements	• Multimeter- Analog and Digital • Cathode Ray Oscilloscope (CRO) • Function Generator • Soldering Iron- 25 to 50 Watts • Solder Wire, Flux Bread Board • DC Power Supply Variable Type-1-30 V • Hook Up Wires • Soldering Station • Long Nose Pliers, Tweezers • Screw Driver set (various size) • Wires Stripper • Crocodile Clip • Capacitance Bridge Meter • Desoldering Pump, • Wick for removing solder

	• Wheat Stone Bridge Meter • Any other item as and when required
Qualified Instructors	• Instructors with experience in Electrical Repairing and teaching. • Certifications or relevant qualifications in Electrical Repairing

Paper Title	: Electrical -II
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CODE	: VTC: 262.2							
Number of Credits	: 4							
Semester	: IV							
No. of Theory Hours Per Week	: One (1 hour)							
No. of Practical Hours per Week	: Three (3 Hours)							
Outline of the Paper:								
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)			
Electrical II					In-Semester		End-Semester	
					Theory	Practical	Theory	Practical
	Unit-I Theory (25 Marks)	15			25			
	Unit-II to IV Theory (75 Marks)	90	4	100		15		60
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60						
Course Objectives		1. To explain to students the knowledge and skills necessary to understand the magnetic circuits with basic laws. 2. To analyze the fundamentals of DC and AC electrical circuits. 3. To describe the knowledge of single phase and poly phase AC circuits with various possible connections of electrical components. 4. To demonstrate the uses of switches, relays, connectors, IC's and measuring instruments.						
Course Outcome	Learning	At the end of the course students are able to: 1. explain the foundation regarding electrical and magnetic circuits and the associated laws of it 2. apply nodal analysis, mesh analysis and source transformation in electrical circuit 3. describe the fundamentals of single phase and poly phase AC circuits with the concept of resonance, impedance and admittance 4. analyze various switches, relays, connectors and pin configuration of IC's 5. demonstrate how to handle PMMC Galvanometer, Ammeter and Voltmeter						
Unit I: (Theory) 15 Hours		• Magnetism and Electromagnetism: Magnetic effect of electrical current cross and dot convention, right hand thumb rule and cork screw rule, nature of magnetic field of long straight conductor, concepts of solenoid and torrid, Concepts of MMF, flux, flux density, reluctance, permeability and field strength, their units and relationship, Simple series and parallel magnetic circuits, Fleming's left hand rule, Faraday's law; • D. C. Circuits: Mesh and Nodal analysis (Super node and						

	super mesh excluded, Source transformation, Star delta transformation; • Single phase AC Circuits: Sinusoidal voltage and currents, Rectangular and polar representation of phasors., Study of A.C circuits of pure resistance, inductance and capacitance and corresponding voltage-current phasor diagrams, voltage- current and power waveforms, Study of series and parallel R-L, R-C, R-L-C circuits, concept of impedance and admittance for different combinations, wave form and relevant voltage current phasor diagrams, Concept of active, reactive, apparent, complex power and power factor, resonance in series and parallel RLC circuit, Q-factor and bandwidth; • Polyphase AC circuits: Concept of three phase supply and phase sequence, Balanced and unbalanced loads voltage current and power relations in three phase balance star and delta loads and their phasor diagrams.
UNIT-II: (Practical) 30 Hours	• Study of different types of Switches, Relays and Connectors. • Identify and draw Pin Configuration of IC's 555,741, 74XX, etc. • Study charging and discharging of capacitor through resistor.
UNIT-III: (Practical) 30 Hours	• Study of series and parallel resistive circuits. • Demonstrate solenoid as Electro-magnet. • Prepare chart for typical sinusoidal waves for Amplitude, frequency, time period, Peak value, Average value, RMS value.
UNIT-IV: (Practical) 30 Hours	• Study of PMMC galvanometer • Conversion of PMMC into Ammeter • Conversion of PMMC into Voltmeter. • Project, Industrial Visit
Suggested Readings	1. Robert T. Paynter, Introducing Electronic Devices & Circuit, Pearson Education. 2. Salivahanan, S. N. Suresh Kr., A. Vallavara, Electronic Devices & Circuit, Tata McGraw Hill. Reference Books: 3. Singh, S.N. Basic Electrical Engineering, PHI. 4. Uppal, S.L. and G.C. Garg, Electrical Wiring Estimating & Costing, Khanna Publishers. 5. William Hayt, Engineering Circuit Analysis, TMH. 2. Electronic Devices and Circuits- McGraw Hill Millman, Halkias and Jit
Requirements	• Multimeter- Analog and Digital • Cathode Ray Oscilloscope (CRO)

	• Function Generator • Soldering Iron- 25 to 50 Watts • Solder Wire, Flux Bread Board • DC Power Supply Variable Type-1-30 V • Hook Up Wires • Soldering Station • Long Nose Pliers, Tweezers • Screw Driver set (various size) • Wires Stripper • Crocodile Clip • Capacitance Bridge Meter • Desoldering Pump, • Wick for removing solder • Wheat Stone Bridge Meter • IC Testers • PMMC Galvanometer • Heat sink • Magnifying Glass or Microscope • Any other item as and when required
Qualified Instructors	• Instructors with experience in Electrical Repairing and teaching. • Certifications or relevant qualifications in Electrical Repairing

Paper Title		: Electrical -III							
CODE		: VTC: 362.2							
Number of Credits		: 4							
Semester		:VI							
No. of Theory Hours Per Week		: One (1 hour)							
No. of Practical Hours per Week		: Three (3 Hours)							
Outline of the Paper:									
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)				
Electrical III					In-Semester		End-Semester		
					Theory	Practical	Theory	Practical	
	Unit-I Theory (25 Marks)	15	4	100	25				
Unit-II to IV Theory (75 Marks)	90				15		60		
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60							
Course Objectives		1. To describe the fundamentals of semiconductors, diodes, rectifiers and filters. 2. To explore the details of various types of amplifiers and oscillators. 3. To analyze the application of diodes in electronics circuits. 4. To explain the knowledge regarding different configurations of transistors. 5. To develop skills for performing the project works and industrial visit.							
Course Learning Outcome		At the end of the course students are able to: 1. identify semiconductors, diodes and its application on electronic circuits 2. explain the concepts of amplifiers and oscillators 3. apply the knowledge of voltage regulators in ICs 4. design and analyze various configurations of transistors.							
Unit I: (Theory) 15 Hours		• Semiconductors: Atomic structure, Semiconducting material; Special semiconductor diodes: P-N Junction, Special Diodes; • Power Supplies: Rectifiers, Filters, Characteristics, Regulators; • Amplifiers: Transistor, Amplifiers, Multistage amplifiers, Feed backs in Amplifier, Differential Amplifier; • Oscillators: Basic of oscillator, LC oscillator, RC oscillator, Crystal							
UNIT-II: (Practical) 30 Hours		• Identification of different types of diodes (LED, PHOTO, PN-junction, ZENER, etc) • Testing of diode using analog and digital multimeter. • Study of V-I characteristics of PN junction diode.							

	• Construct and test Halfwave or Fullwave rectifier. • Construct and test Bridge rectifier
UNIT-III: (Practical) 30 Hours	• Study of LC filter and its ripple factor. • Find Line and Load regulation of unregulated power supply. • Construct and test Zener diode as voltage regulator. • Study of Fixed voltage regulator (using IC-7805/7809/7912 etc) • Identification of different types of transistors (UJT, BJT, FET, Power)
UNIT-IV: (Practical) 30 Hours	• Study input characteristics of CE transistor configuration. • Study output characteristics of CE transistor configuration. • Construct Hartley or Colpitt's oscillator using transistor. • Construct phase shift oscillator using transistor. • Project, Industrial Visit
Suggested Readings	1. Halkias, Millman, Electronic Devices and Circuits, McGraw Hill 2. Hayt, William Engineering Circuit Analysis, TMH. 3. Paynter, Robert T. Introducing Electronic Devices & Circuit, Pearson Education. 4. M. L Anwani, Electrical Motor Winding & Repair, R. B. Publications 4. Salivahanan, S. N. Suresh Kr., A. Vallavara, Electronic Devices & Circuit, Tata McGraw Hill. 5. Singh, S.N. Basic Electrical Engineering, PHI 6. Uppal S.L. and G.C. Garg, Electrical Wiring Estimating & Costing, Khanna Publishers.
Requirements	• Multimeter- Analog and Digital • Cathode Ray Oscilloscope (CRO) • Function Generator • Soldering Iron- 25 to 50 Watts • Solder Wire, Flux Bread Board • DC Power Supply Variable Type-1-30 V • Hook Up Wires • Soldering Station • Long Nose Pliers, Tweezers • Screw Driver set (various size) • Wires Stripper • Assorted Electronic Components: Diodes: PN-junction, Zener, LED, Photo diode; Transistors: UJT, BJT, FET, power transistors.; Resistors, Capacitors, Inductors: Various values for constructing filters and regulators; IC Voltage Regulators: 7805, 7809, 7912, etc. Oscillator Components: Inductors, capacitors, transistors for Hartley and Colpitt's oscillators. • Crocodile Clip • Capacitance Bridge Meter • Desoldering Pump, Wick for removing solder

	• Wheat Stone Bridge Meter • IC Testers • PMMC Galvanometer • Heat sink • Magnifying Glass or Microscope • Any other item as and when required
Qualified Instructors	• Instructors with experience in Electrical Repairing and teaching. • Certifications or relevant qualifications in Electrical Repairing

Syllabus on Vocational Education and Training Course (VTC)

Paper Title	: Electronic Repairing - I							
CODE	: VTC: 242.3							
Number of Credits	: 4							
Semester	: III							
No. of Theory Hours Per Week	: One (1 hour)							
No. of Practical Hours per Week	: Three (3 Hours)							
Outline of the Paper:								
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)			
Electronic Repairing-I					In-Semester		End-Semester	
					Theory	Practical	Theory	Practical
	Unit-I Theory (25 Marks)	15			25			
	Unit-II to IV Theory (75 Marks)	90	4	100		15		60
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60						
Course Objectives		1. To recognise various electrical symbols 2. To explain the electrical safety and precautions 3. To understand various tool kits used in electrical and electronic repairing 4. To describe various passive electronic passive and active components 5. To explain various test and measurement instruments used in electronic repairing						
Course Outcome	Learning	At the end of the course students are able to: 1. identity various electrical and electronic symbols 2. describe and take necessary safety precautions at the workplace 3. explain various electronics and electrical tools kits used in electrical and electronic repairing 4. identify the functions of various active and passive electronics components and circuits 5. use of various test and measurement instruments, such as analog and digital multimeters						
Unit I: (Theory) 15 Hours		Electrical Safety and Tools • Electrical Symbols • Electrical safety • Tool Kit Fundamentals of Electrical Technology • Passive Components: Resistor, Capacitor, Inductor, Connectors, Fuses- CircuitSymbol, Working principle, Types, Specification, Application. • Batteries: Battery Chemistry, Circuit Symbol, Working						

	principle, Types and Specification. • Cables: Twisted pair cable, Co-axial cable, fibre optic cable- Specification, Applications. • Switches: Circuit Symbol, Working principle, Types, specification, Application. • Relays: Circuit Symbol, Working principle, Types, Specification, Application. • Test & Measuring Instruments: Moving Coil Galvanometer, Voltmeter, Ammeter, Digital meter, Multimeter, Tachometer, Earth resistance tester: Megger, Wattmeter, Energy meter Electrical Appliances-I: • Testing Equipment • Basic Control Equipment
UNIT-II: (Practical) 30 Hours	• Hands-on training on Multimeter: Analog & Digital. 30 Hours • Experiments on Passive Components: Resistor, Capacitor, Inductor, Connectors, Cables & Fuses. • Experiments on switches and Relays: Mechanical, Electronic & Electro-mechanical. • Hands-on training on Batteries: Physical (Solar & Thermal), • Hands-on training on Chemical Batteries (Fuel cell, Rechargeable, Non-Rechargeable)
UNIT-III: (Practical) 30 Hours	• Hands-on- use of Voltmeter & Ammeter. • Experiments on Earth resistance tester. • Experiments on Electrical Energy Meter. • Hands-on training on Line tester, MCB (Miniature Circuit Breaker), • Hands-on training on ELCB (Earth Leakage Circuit Breaker).
UNIT-IV: (Practical) 30 Hours	• Dismantling and reassembling of basic home appliances • Testing and repairs of basic home appliances. • Testing and repairing of Switches • Testing and repairing of various types of Fuses. • Visit the Electrical appliances service and repair shop.
Suggested Readings	• Balasubramanyam M. Business Communication. Vani Educational Books, New Delhi, 1985. • Bhatiya, K. B. Study of Electrical Appliances and Devices. Khanna, 1983. • Brook P.T. Woll Jr., Small Appliance Servicing. McGraw-Hill, 1957. • Fitzgerald, E. Arvin Grabel, David E. Higginbotham,

	Textbook of Basic Electrical Engineering. TMH Publishing Co.
Requirements	• Multimeter (Analog and Digital) • Cathode Ray Oscilloscope (CRO) • Function Generator • Soldering Iron (25-50 Watts) • Solder Wire and Flux • Breadboard • DC Power Supply (Variable, 1-30V) • Hook-Up Wires • Soldering Station • Long Nose Pliers and Tweezers • Screwdriver Set (Various Sizes) • Wire Stripper • Crocodile Clip • Capacitance Bridge Meter • Desoldering Pump and Wick • Wheatstone Bridge Meter Any other item as required
Qualified Instructors	• Instructors with experience in Electronic Repairing and teaching. • Certifications or relevant qualifications in Electrical Repairing

Paper Title	: Electronic Repairing-II							
CODE	: VTC: 262.3							
Number of Credits	: 4							
Semester	: IV							
No. of Theory Hours Per Week	: One (1 hour)							
No. of Practical Hours per Week	: Three (3 Hours)							
Outline of the Paper:								
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)			
Electronic Repairing-II					In-Semester		End-Semester	
					Theory	Practical	Theory	Practical
	Unit-I Theory (25 Marks)	15	4	100	25			
	Unit-II to IV Theory (75 Marks)	90				15		60
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60						
Course Objectives		1. To recognize electrical shock treatments and use first aid methods 2. To use electrical tools used in electrical repairing 3. To demonstrate soldering and domestic wiring 4. To describe various power supplies, rectifiers, and regulators 5. To repair various electrical home appliances						
Course Learning Outcome		At the end of the course the students are able to: 1. use safety precautions and apply shock treatment wherever needed 2. use and explain various utilizations of electrical tool kits 3. make use of simple house wiring, design half-wave and full wave rectifier circuits 4. describe the functions of various active and passive electronic components and circuits. 5. explain the working principles of air coolers, fans, mixers, microwave ovens etc 6. repair domestic home appliances, including induction stoves, washing machine						
Unit I: (Theory) 15 Hours		Electrical Wiring • Safety precautions and shock treatment: Workplace Discipline, Electrical shocks, and procedures for separating the person from contact with a live wire, First Aid, different methods of artificial respiration, Electric fire, and Fire extinguishers. • Electrical Tools: Pliers, combination, side cutting, round nose, long nose, Screwdrivers, connectors, electrical knife, neon tester, test lamp, Symbols used in electrical technology, reading of electrical drawing.						

	• DC Circuits: Series circuit, Parallel circuit, Ohm's law, Kirchhoff's current and voltage law. • Soldering: Introduction, equipment, precautions & technique. • Common electrical wiring accessories. • Domestic wiring (house wiring): Introduction of wiring, selection of wiring, types of wiring, I.E.(Indian Electricity) rules of domestic wiring, testing and installation of domestic wiring, and Earthing formats for electrical connections. Power Supplies • Rectifier Circuits: Half wave, Full wave, Bridge, Merits, Demerits. • Filters: Reactance, Capacitor, Inductor, RC, RL, RLC, and their types. • Spike Guard: Principle & Working. • Zener Regulator: Avalanche breakdown, Zener breakdown, Zener Characteristics. • Power Supply: Block diagram, line regulation, load regulation, series & shunt regulation. • Stabilizer: Block diagram, Principle, working, specification, Maintenance, and troubleshooting • Power Transistor: Symbol, Construction, working, and their types. • Inverter: Principle & block diagram, UPS-Online, offline. Electrical Appliances-II: • Water purifier • Air Cooler • Fan • Blender • Mixer • Induction stove • Microwave Oven • Washing Machine • Drill Machine.
UNIT-II: (Practical) 30 Hours	• Experiments on Safety precautions while working on electrical installations & necessity of earthing (Grounding). • Hands-on training on Personal protection, basic injury prevention, symbols & signs for danger, warning & caution, and elementary first aid. • Artificial respiration techniques of separating person in contact with live wire. • Demonstration of the use of Fire Extinguishers • Demonstration and use of electrical tools and different types of wires. • Experiments on Series circuits, Parallel circuits, and

	voltage law. • Experiments on PCB and its testing • Experiments on f soldering techniques. • Experiments on Domestic Electrical Wiring.
UNIT-III: (Practical) 30 Hours	• Rectifier diode characteristic (Forward and Reverse). • Experiment on Half wave rectifier. • Experiment on Full Wave / Bridge Rectifier. • Experiment with passive filters. 5. Experiment on Zener diode characteristics • Hands-on-training on 1) Line Regulation 2) Load Regulation in laboratory power supply. • Hands-on training on testing of Inverter. • Hands-on training on UPS.
UNIT-IV: (Practical) 30 Hours	• Dismantling, reassembling, testing, and repairing water purifier, air cooler, fan, blender, induction stove • Hands-on training on drill machine. • Hands-on training on the microwave oven and washing machine • Dismantling, reassembling, testing, and repairs of domestic flour mill. • Hands-on training on inverters • Visit to Shop and Market Survey.
Suggested Readings	1. Bharocha Nausheer .Guide to the Electricity Laws. LexisNexis, India, 2018 2. Brook Woll Jr. P.T. Small-appliance servicing. McGraw-Hill, 1957. 3. Darr, Jack How to repair small Appliances. Hassell Street Press, 2021. 4. Gupta , J. D. Business Communication. Vani Educational Books, New Delhi, 1985. 5. Lal R. B. Maintenance and Safety of Domestic Electrical Appliances During Pandemic Covid-19. (2020) SOET, IGNOU, 2020. 6. Millman, Halkias, and Jit, Electronic Devices and Circuits. McGraw-Hill Book Co, 1967
Requirements	• Multimeter (Analog and Digital) • Cathode Ray Oscilloscope (CRO) • Function Generator • Soldering Iron (25-50 Watts) • Solder Wire and Flux • Breadboard • DC Power Supply (Variable, 1-30V) • Hook-Up Wires • Soldering Station

	• Long Nose Pliers and Tweezers • Screwdriver Set (Various Sizes) • Wire Stripper • Crocodile Clip • Capacitance Bridge Meter • Desoldering Pump and Wick • Wheatstone Bridge Meter • Any other item as and when required
Qualified Instructors	• Instructors with experience in Electronic Repairing and teaching. • Certifications or relevant qualifications in Electrical Repairing

Paper Title	: Electronic Repairing-III							
CODE	: VTC: 362.3							
Number of Credits	: 4							
Semester	:VI							
No. of Theory Hours Per Week	: One (1 hour)							
No. of Practical Hours per Week	: Three (3 Hours)							
Outline of the Paper:								
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)			
Electronic Repairing-III					In-Semester		End-Semester	
					Theory	Practical	Theory	Practical
	Unit-I Theory (25 Marks)	15	4	100	25			
	Unit-II to IV Theory (75 Marks)	90				15		60
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60						
Course Objectives		1. To identify the working principle of amplifiers and oscillators 2. To explain the working principle and block diagram of color TV 3. To describe the working principle of refrigerators 4. To illustrate the working principle of air-conditioners 5. To demonstrate the working principle of DC and AC motors						
Course Outcome	Learning	At the end of the course students are able to: 1. identity various amplifiers and oscillator circuits used in the circuits and appliances 2. demonstrate Minor repairing and installation of various apps used in modern color TV 3. illustrate Minor repairing of refrigerators and air-conditioners 4. describe the functions of various DC motors and starters 5. explain the working principles of single-phase transformer, single-phase AC motors						
Unit I: (Theory) 15 Hours		Consumer Electronics • Amplifiers & Oscillators: Amplifiers: History, Principle, Types: Poweramplifier, operational amplifier, distributed amplifier, Oscillators: Construction and working, Basic oscillators. • Speakers (Introduction, History, Drive design, Driver types) and Car mp3 players (Various types of m/c, Various Audio systems, Standard specification of Audio system, mp3 players used in cars). • Colour TV. System: Colour TV Block diagram.						

	various sections of color TV - Modern Colour TV's: Various new types (except CRT type). Refrigerator and Air Conditioning - Introduction to Refrigeration: Definition of Refrigeration, method of refrigeration, laws of refrigeration, principles of refrigeration, unit of refrigeration, coefficient of performance, reversed Carnot cycle, rating of refrigeration machine. - Vapour compression refrigeration System. - Refrigerants: Properties and applications of commonly used refrigerants - Introduction to Air conditioning: Definition of air conditioning, troubleshooting, and application of air conditioning. - Types of Air Conditioning Systems: Room air conditioners, central air conditioning systems, split air conditioner systems. Electrical Workshop - Electromagnetism: Introduction, types of magnets, basic magnetic terms, electromagnet, the difference between the permanent magnet and electromagnet. - D.C. motor: Introduction of D.C. motor, working principle, construction, types of D.C. motors, necessity of starters, types of starters. - Single phase transformer: Introduction, types of transformers, transformation ratio, rewinding, transformer testing. - Single Phase A.C. Motor: Introduction, types of single-phase motor winding, fundamental definitions, winding tools and types of equipment, winding materials, single phase motor winding. - Single phase A.C. motor and rewinding, winding: Introduction, working principle, types, construction, speed control and change of DOR (direction of rotation), testing, fault finding, Maintenance, lubricants.
UNIT-II: (Practical) 30 Hours	- Experiments on Temperature Sensor. - Hands-on-training in Testing Pressure and Piezoelectric Sensor. - Experiments on Displacement Sensor. - Experiments on IR sensor. - Testing and repairing of Amplifier, speaker, microphone, MP3 player, TV (LED). - Visit to Shop & Market Survey.
UNIT-III: (Practical)	Hands-on training on Domestic or Household

30 Hours	Refrigerator. • Hands-on training on tools used in the refrigeration Lab. • Trial on Air Conditioning Test Rig. • Installation of Air Conditioner. • General Maintenance and repair of refrigerator. • General Maintenance and repair of air conditioner. • Technical report on visit to Refrigeration and Air Conditioning establishments (shop/showroom).
UNIT-IV: (Practical) 30 Hours	• Wiring of a calling bell/ buzzer. • Wiring of lighting circuit for a go-down wiring. • Wiring the consumer's main board with ICDP & distribution fuse box and LCB / MCB • Calculation of Fuel value of wood/charcoal. • Calculation of Efficiency and fill factor of solar cells. • Experiments on Electrical power generation using Solar panels.
Suggested Readings	1. Anderson, E. P. ,Audels Home Appliance Service Guide. T. Audel, Indianapolis, 1971. 2. Anwani, I. M. Electric Motor Repair: A Practical Book on the Winding, Repair, and Troubleshooting of A-C and D-C Motors and Controllers. 3. Bhatiya, K. B. Practical A.C. and D.C. Motor Winding. Standard Publishers Distributors, 2002 4. Lal, R. B., Maintenance and Safety of Domestic Electrical Appliances During Pandemic Covid-19. SOET, IGNOU, 2020. 5. Millman, J., Halkias, C. C., & Jit, S, Integrated Electronics, McGraw-Hill Book Co., New York, 2017. 6. Robert Rosenberg, Electric Motor Repair: A Practical Book on the Winding, Repair, and Troubleshooting of A-C and D-C Motors and Controllers, Volumes 1-2,Holt, Rinehart and Winston, 1970.
Requirements	• Multimeter (Analog and Digital) • Cathode Ray Oscilloscope (CRO) • Function Generator • Soldering Iron (25-50 Watts) • Solder Wire and Flux • Breadboard • DC Power Supply (Variable, 1-30V) • Hook-Up Wires • Soldering Station • Long Nose Pliers and Tweezers • Screwdriver Set (Various Sizes)

	• Wire Stripper • Crocodile Clip • Capacitance Bridge Meter • Desoldering Pump and Wick • Wheatstone Bridge Meter • Any other item as and when required
Qualified Instructors	• Instructors with experience in Electronic Repairing and teaching. • Certifications or relevant qualifications in Electrical Repairing

Syllabus on Vocational Education and Training Course (VTC)

Paper Title		: Event Management- I						
CODE		: VTC: 244.2						
Number of Credits		: 4						
Semester		: III						
No. of Theory Hours Per Week		: One (1 hour)						
No. of Practical Hours per Week		: Three (3 Hours)						
Outline of the Paper:								
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)			
Event Management -I					In-Semester		End-Semester	
					Theory	Practical	Theory	Practical
	Unit-I Theory (25 Marks)	15	4	100	25			
Unit-II to IV Theory (75 Marks)	90				15		60	
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60						
Course Objectives		1. To familiarize the students with the basics and foundations of event management.						
Course Learning Outcome		At the end of the course students are able to: 1. define an overview on events and concept, nature, typologies and practices of event management, particularly sustainable and green event practices which are most relevant in the field of event management 2. classify events and its typologies and understand their importance in destination marketing and branding 3. identify different marketing strategies for events, including social media marketing, traditional advertising, public relations, and influencer partnerships.						
Unit I: (Theory) 15 Hours		• Introduction to Events and Event Management, Meaning and Definition of Event Management, Significance, Size & Typologies of Events, Scope and opportunities in the field of Event Management, • Role of the event manager. • Event Planning & Design, Team Building and Leadership. • Team Management & its significance in Event Planning, Event Budgeting, Event SWOT Analysis, Event Marketing and Sponsorship, Event Impacts and Sustainability.						
UNIT-II: (Practical) 30 Hours		• Classify Size and Typologies of events of North East India. • Develop SMART Approach for Events. • Study the impact of organizing Local Events in your area. • Estimate thebudget of collage freshers or farewells party						

	for 60 students. • Planning and design a sport event 'Football Match Tournament' in your city.
UNIT-III: (Practical) 30 Hours	• Study of feasibility of organizing business events in Meghalaya. • Examine the role of the event manager for organising education fair in your university. • Identify the key skills required for successful event management. • Formation of event team for conducting Mega Events. • Estimation of cost for decoration for the big convention hall in your city.
UNIT-IV: (Practical) 30 Hours	• Develop marketing and promotional strategies for the local festival of Meghalaya. • Prepare budget high tea and refreshment for 100 visitors in Trade Expo. • Plan sponsorship activities for conducting Annual Day function. • Develop a study of sustainable event practices in Meghalaya. • Study the feasibility of events in rural area of Meghalaya
Suggested Readings	1. Avrich, B. (2003). Event and Entertainment Marketing. Vikas Publishing House. 2. Bladen, C., Kennell, J., Abson, E., & Wilde, N. (2022). Event Management: An Introduction. Routledge. 3. Sharma, A., & Arora, S. (2018). Event Management and Marketing: Theory, Practical Approaches, and Planning. Bharti Publication. Semester IV 4. Shone, A., & Parry, B. (2004). Event Successful Management. Cengage Learning. 5. Van Der Wagen, L. (2018). Event Management for Tourism, Cultural, Business and Sporting Events. Pearson Education.
Requirements	Basic Materials Needed: • Event classification frameworks (examples of different event types, sizes, and their characteristics). • SMART goal setting templates and guidelines. • Case studies or surveys on local event impacts. • Budgeting templates for event planning. • Event planning templates for sport events. • Budget templates, feasibility study frameworks, SMART goal templates, marketing strategy templates, etc. • Software tools for budgeting, project management, and feasibility analysis.

	• Any other item as and when required
Qualified Instructors	• Instructors with experience in event management and teaching. • Certifications or relevant qualifications in event management

Paper Title		: Event Management -II							
CODE		: VTC: 264.2							
Number of Credits		: 4							
Semester		: IV							
No. of Theory Hours Per Week		: One (1 hour)							
No. of Practical Hours per Week		: Three (3 Hours)							
Outline of the Paper:									
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)				
Event Management-II		15	4	100	In-Semester		End-Semester		
					Theory	Practical	Theory	Practical	
	Unit-I Theory (25 Marks)	90			25				
Unit-II to IV Theory (75 Marks)					15		60		
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60							
Course Objectives		1. To acquaint the students with the concepts and practicalities of events in tourism							
Course Learning Outcome		At the end of the course students are able to: 1. apply the knowledge of event tourism to manage cultural events, festivals, business events and sports events with travel & tourism, hospitality management 2. apply event technology skills for effective communication and organizing seamless event activities in a cost effective and profitable manner.							
Unit I: (Theory) 15 Hours		• Emergence of Event Tourism, Nature, Scope, • Significance and Typologies of Event Tourism • Planned Events in Tourism, Core Propositions of Event Tourism, The destination perspective on event tourism, • Event Portfolio Model, Economic, Social, Cultural, Political and Environmental Outcomes and Event Tourism, Career Paths of Event Tourism.							
UNIT-II: (Practical) 30 Hours		• To study business potentials and business environment of local destinations • Prepare essential check lists for pre-conference and post conference • To find the key potentials of meetings, incentives, conferences and exhibitions of North east India. • To study specific role of a DMO (destination marketing organization) is generally to promote tourism both business and leisure. Analyse the problems, prospects and challenges of physical meeting, online meeting and hybrid events.							

	Survey of business events centres or venues in your local areas and identify four sources of revenue for convention.
UNIT-III: (Practical) 30 Hours	- Planning and designing of cultural events and festivals. - Study the significance host-guest interactions during the tourism festival at local destination. - Find the role of Music Festivals or concerts and Regional Development in Meghalaya. - Examined importance of festivals in other forms of special-purpose tourism in the context of fashion, food and wine, local handmade handicrafts, black pottery and promote rural economy. - Prepare a report after visiting of two indigenous festivals of the Meghalaya.
UNIT-IV: (Practical) 30 Hours	- Study the about the entertainment events through the light on film, theatre, theme parks, gambling, museums, shopping prospects in Shillong and near about. - Measuring the economic impact of visitors to sports tournaments and special events. - The economic importance of major sports events of the Meghalaya. - Develop profile of Sport Events potential of Meghalaya. - Field visit to four major sport stadiums and assess the spectators/visitor's friendly facilities there.
Suggested Readings	- Getz, D. (2013). Event Tourism: Concepts, International Case Studies, and Research. Cognizant Communication Corporation. - Quinn, B. (2015). Festival and Special Event Management (5th ed.). John Wiley & Sons. - Randell, J. (2011). Event Tourism. Discovery Publishing Pvt. Ltd. - Sharma, A., Kumar, J., Turaev, B., & Mohanty, P. (2022). Festival and Event Tourism: Building Resilience and Promoting Sustainability. CABI.
Requirements	- Event classification frameworks (examples of different event types, sizes, and their characteristics). - SMART goal setting templates and guidelines. - Case studies or surveys on local event impacts. - Budgeting templates for event planning. - Event planning templates for sport events. - Budget templates, feasibility study frameworks, SMART goal templates, marketing strategy templates, etc. - Software tools for budgeting, project management, and feasibility analysis. Any other item as and when required

Qualified Instructors	• Instructors with experience in event management and teaching. • Certifications or relevant qualifications in event management
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Paper Title		: Event Management -III							
CODE		: VTC: 364.2							
Number of Credits		: 4							
Semester		:VI							
No. of Theory Hours Per Week		: One (1 hour)							
No. of Practical Hours per Week		: Three (3 Hours)							
Outline of the Paper:									
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)				
Event Management-III	Unit-I Theory (25 Marks)	15	4	100	In-Semester		End-Semester		
					Theory	Practical	Theory	Practical	
	Unit-II to IV Theory (75 Marks)	90					25		
						15		60	
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60							
Course Objectives		1. To introduce to the students the basics of entrepreneurship in the context of holding and running an event-oriented business enterprise							
Course Learning Outcome		At the end of the course students are able to: 1. apply good business ethics and management principles and techniques of event management and to assure quality for higher studies/event entrepreneurship 2. design innovative and experiential events, most creative and professional manners that would support their career as event entrepreneurs to establish event start-ups							
Unit I: (Theory) 15 Hours		• Event Entrepreneurship: An Emerging Global Business, • The Essential Steps to Starting an Event Management Business, Role of incubators framework, Qualities of an Event Entrepreneur; Women-owned event enterprises, PRIME – Promotion and Incubation of Market Driven Enterprises, Government of Meghalaya, • Case Study of Successful Event Managers, Wedding planners, Decorators, Musicians, Meeting Planners in the Meghalaya, • Legal Provisions for event management business in Meghalaya & India.							
UNIT-II: (Practical) 30 Hours		• Visit and interact with event managers in their offices or establishment nearby your locations /city and develop a report on the base of evaluation. • Invite event’s entrepreneurs as a resource person to share their experiences related with event management and evaluation based on report writing on the same.							

UNIT-III: (Practical) 30 Hours	• Internship at an event business establishment and evaluation based on the assessment by the establishment authorities for two weeks.
UNIT-IV: (Practical) 30 Hours	• Design an Event Business Start-up idea and event business feasibility study, and evaluation based on a potential event business model in Meghalaya.
Suggested Readings	1. Allen, J. (2017). Event Planning: The Ultimate Guide to Successful Meetings, Corporate Events, Fundraising Galas, Conferences, Conventions, Incentives, and Other Special Events. John Wiley & Sons. 2. Hougaard, S. (2004). The Business Idea: The Early Stages of Entrepreneurship. Springer. 3. Morrison, A. M., O’Gorman, K. D., & O’Reilly, J. (2013). Entrepreneurship in Tourism and Hospitality: A Global Perspective. Goodfellow Publishers Ltd. 4. O’Toole, W. J., & Mikolaitis, P. G. (2016). Event Management: A Professional & Developmental Approach. Kendall Hunt Publishing. 5. Page, S. J., & Connell, J. (2014). Tourism: A Modern Synthesis (3rd ed.). Cengage Learning.
Requirements	• Event classification frameworks (examples of different event types, sizes, and their characteristics). • SMART goal setting templates and guidelines. • Case studies or surveys on local event impacts. • Budgeting templates for event planning. • Event planning templates for sport events. • Budget templates, feasibility study frameworks, SMART goal templates, marketing strategy templates, etc. • Software tools for budgeting, project management, and feasibility analysis. • Any other item as and when required
Qualified Instructors	• Instructors with experience in event management and teaching. • Certifications or relevant qualifications in event management

Syllabus on Vocational Education and Training Course (VTC);

Paper Title				: Fashion Design -I				
CODE				:VTC: 247.3				
Number of Credits				: 4				
Semester				: IV				
No. of Theory Hours Per Week				: One (1 hour)				
No. of Practical Hours per Week				: Three (3 Hours)				
Outline of the Paper:								
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)			
Fashion Design - I					In-Semester		End-Semester	
					Theory	Practical	Theory	Practical
	Unit-I Theory (25 Marks)	15	4	100	25			
Unit-II to IV Theory (75 Marks)	90				15		60	
Marks Distribution			: Internal Assessment: 40 : External Assessment: 60					
Course Objectives			The course is designed to familiarize the students to the concept and practice of fashion design by encouraging them to explore their imagination, creativity and fashion sense.					
Course Learning Outcome			After the completion of the course the students are able to make use of the learnt experiences and artistry to come up with designs and innovations which is necessary in the realm of clothing and fashion design.					
Unit I: (Theory) 15 Hours			Elements of Design: Primary Colours, Secondary Colours, Colour Wheel, Tints & Shades, Shapes (Line & Form), Colour Interaction, Motif, Repeats, Texture (2-2D & 3-3D), Paper Craft (Quilling, Layering, Rolling, Coiling & Exploration). Lab Sessions.					
UNIT-II: (Practical) 30 Hours			Fashion Illustration:Front Block Figure, Front Flesh Figure, Side Block Side Figure, Side Flesh Figure, Pose-1, Pose-2, Stylize Figure, Figure with Fabrics Sketch, Figure with Different Medium, Different Types of Garments Silhouette. Lab Sessions.					
UNIT-III: (Practical) 30 Hours			Surfaces Development Technique: Basic Embroidery (Running Stitch, Double Running Stitch, Stem Stitch, Chain Stitch, Feather Stitch, Fly Stitch, Button Hole/ Basket Stitch, Single Satin Stitch, Double Satin Stitch, Lazy Daisy, French Knot, Bullion Knot), Exploration, Traditional Embroidery (Kantha, Phulkari, Kashida, Kasuti, Banjara), Tie & Dye (Ombre, Crunching, Pinching, Folding, Stripes, Titrik, Sunburst, Bulls Eye, Exploration with Natural Dye-5, Mix					

	Media), Knitting & Crochet (Knit & Purl, Cable, Rib, Purl, Knit, Crochet & Exploration), Weaving (Plain, Twill, Basket, Satin & Exploration), Fabric Analysis, Stencil Painting. Lab Sessions.
UNIT-IV: (Practical) 30 Hours	Garment Construction: Understanding the Machine, Basic Line Stitching, Seam Stitching (Plain, French, Flat & Felt, Lapped, Turned & Stitch, Pinked, Pinked & Stitch, Hand Overcast, Overlock, Mock Seam, Seam Binding with Tape, Bias Bound, Hong Kong Bound, Welt, Sloth), Hem Stitching (Blind Hem, Slip Hem, Top Stitch Hem, Narrowed Top Stitch Hem), Pleats (Knife Pleats, Box Pleats, Inverted Box Pleats), Gathers Shirring, Tucks (Pin Tucks, Space Tucks, Blind Tucks, Cross Pin Tucks), Facing (Shape Facing, Bias Facing & Combine Facing), Trims (Velcro, Snap Button, Hook & Eye, Skirt Hook & Eye, Buttons, Zipper). Lab Sessions.
Suggested Readings	1. Arbetter, Lisa. 2003. <i>Secrets of Style: Instyle's Complete Guide to Dressing Your Best Everyday</i>. New York: Hachette Book Group. 2. Bheda, Rajesh. 2006. <i>Managing Productivity in the Apparel Industry</i>. Bengaluru: CBS Publishers. 3. Bliss, Debbie & Peverill, Sue. 1985. <i>"She" Fashion Clothes</i>. London: Ebury Press. 4. Burgo, Fernando. 2002. <i>Il Figurino di Moda</i>. Milan: Istituto Di Moda Burgo. 5. Chijiiwa, Hideaki. 1994. <i>Colour Harmony: A Guide to Creative Colour Combinations</i>. Gloucester: Rockport Publishers. 6. Dwivedi, Sharada. 2000. <i>Abu Jani, Sandeep Khosla: A celebration of style</i>. AJSK Publications. 7. Frings, Gini Stephens. 2008. <i>Fashion: From Concept to Consumer</i>. New Jersey: Pearson Prentice Hall. 8. Ireland, Patrick John. 2006. <i>Fashion Design Drawing and Presentation</i> (Fourth Edition). London: Batsford Ltd. 9. Jaffe, Hilde & Relis, Nurie. 2011. <i>Draping for Fashion Design</i> (Fifth Edition). New Jersey: Pearson. 10. Lorenz, Joanna. 2000. <i>The Complete Book of Papercrafts: A Truly Comprehensive Collection of Papercraft Ideas, Designs and Techniques, with over 300 Projects</i>. Pennsylvania: Hermes House. 11. Peacock, John. 1993. <i>20th Century Fashion</i>. London: Thames & Hudson Ltd. 12. Portas, Mary. 1999. <i>Windows: The Art of Retail Display</i>. London: Thames & Hudson Ltd. 13. Pugh-Gannon, JoAnn. 1999. <i>Making the Most of Your Sewing Machine & Serger Accessories</i>. New York: Sterling Pub Co Inc. 14. Sodhia, Manmeet & Chatley, Pooja. 2003. <i>Fashion Marketing And Merchandising</i>. Ludhiana: Kalyani Publishers.
Requirements	Fashion Illustration

	• Figures (Block & Flesh): Sketchpads, pencils, erasers • Poses: Fashion illustration templates, sketchpads • Stylize Figure: Markers, coloured pencils, watercolours • Figure with Fabrics Sketch: Fabric swatches, glue, sketchpads • Different Mediums: Markers, watercolours, pastels • Garment Silhouettes: Templates, sketchpads Surface Development Techniques • Basic Embroidery: Embroidery hoops, needles, threads, fabric • Traditional Embroidery: Kantha, Phulkari, Kashida, Kasuti, Banjara threads and fabrics • Tie & Dye: Fabrics, dyes, rubber bands, gloves • Knitting & Crochet: Knitting needles, crochet hooks, yarn • Weaving: Looms, various threads, yarns • Fabric Analysis: Magnifying glass, fabric swatches • Stencil Painting: Stencils, fabric paints, brushes Garment Construction • Machine Understanding: Sewing machines, manuals • Basic Line Stitching: Sewing machine, threads, fabric scraps • Seam Stitching: Threads, fabric, needles, sewing machines • Hem Stitching: Threads, fabric, sewing machines • Pleats & Gathers: Fabric, sewing machines • Tucks: Fabric, sewing machines • Facing: Fabric, interfacing materials • Trims: Velcro, snaps, hooks, eyes, buttons, zippers Lab Sessions • Hands-on Practice: Materials listed above for practical application in each category. • Fashion Show & Exhibition Preparation: Mannequins, fabric, design boards, sewing machines, lighting, runway setup. Any other item as required
Qualified Instructors	• Instructors with experience in Fashion Design • Certifications or relevant qualifications Fashion Design

Paper Title	: Fashion Design-II							
CODE	:VTC: 267.3							
Number of Credits	: 4							
Semester	:IV							
No. of Theory Hours Per Week	: One (1 hour)							
No. of Practical Hours per Week	: Three (3 Hours)							
Outline of the Paper:								
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)			
Fashion Design - II					In-Semester		End-Semester	
					Theory	Practical	Theory	Practical
	Unit-I Theory (25 Marks)	15	4	100	25			
	Unit-II to IV Theory (75 Marks)	90				15		60
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60						
Course Objectives		The course is tailored to guide the students in understanding fabric, textile and clothing material through an engagement with stitching, pattern-making, colour-blending and styling.						
Course Learning Outcome		After completion of the course students are able to develop the necessary skills and sense to help in the design and production of clothing and fashion accessories.						
Unit I: (Theory) 15 Hours		Pattern Making & Fashion Styling: Women's Basic Bodice, Basic Sleeve, Basic Skirt, Basic Pants, Collars (3 Types of Collars), Cuff, Plackets (Continuous Placket, Diamond Placket, Continuous Shirt Placket, Shirt Placket), Women's Top, Women's Pant Variation, Kids Garment (Any). Fashion Makeover, Theme Styling (Create & Style an Onsome drawing inspiration from any theme). Lab Sessions.						
UNIT-II: (Practical) 30 Hours		Final Products: Collection Boards (7 Boards), One Complete Onsome – 1 Theme. Lab Sessions						
UNIT-III: (Practical) 30 Hours		Portfolio Development: Creation of a professional portfolio showcasing the fashion design work of the student. Presenting designs to make them visually appealing. Design aesthetic communication. Lab Sessions						
UNIT-IV: (Practical) 30 Hours		Internship / Apprenticeship (for 1 semester): Assisting Designers. Support Production. Marketing & PR Support. Research & Trend Analysis. Administrative Tasks. Networking Opportunities.						
Suggested Readings		- Arbetter, Lisa. 2003. <i>Secrets of Style: Instyle's Complete Guide to Dressing Your Best Everyday</i>. New York: Hachette Book Group. - Bheda, Rajesh. 2006. <i>Managing Productivity in the Apparel Industry</i>. Bengaluru: CBS Publishers.						

	3. Bliss, Debbie & Peverill, Sue. 1985. <i>"She" Fashion Clothes</i>. London: Ebury Press. 4. Burgo, Fernando. 2002. <i>Il Figurino di Moda</i>. Milan: Istituto Di Moda Burgo. 5. Chijiiwa, Hideaki. 1994. <i>Colour Harmony: A Guide to Creative Colour Combinations</i>. Gloucester: Rockport Publishers. 6. Dwivedi, Sharada. 2000. <i>Abu Jani, Sandeep Khosla: A celebration of style</i>. AJSK Publications. 7. Frings, Gini Stephens. 2008. <i>Fashion: From Concept to Consumer</i>. New Jersey: Pearson Prentice Hall. 8. Ireland, Patrick John. 2006. <i>Fashion Design Drawing and Presentation</i> (Fourth Edition). London: Batsford Ltd. 9. Jaffe, Hilde & Relis, Nurie. 2011. <i>Draping for Fashion Design</i> (Fifth Edition). New Jersey: Pearson. 10. Lorenz, Joanna. 2000. <i>The Complete Book of Papercrafts: A Truly Comprehensive Collection of Papercraft Ideas, Designs and Techniques, with over 300 Projects</i>. Pennsylvania: Hermes House. 11. Peacock, John. 1993. <i>20th Century Fashion</i>. London: Thames & Hudson Ltd. 12. Portas, Mary. 1999. <i>Windows: The Art of Retail Display</i>. London: Thames & Hudson Ltd. 13. Pugh-Gannon, JoAnn. 1999. <i>Making the Most of Your Sewing Machine & Serger Accessories</i>. New York: Sterling Pub Co Inc. 14. Sodhia, Manmeet & Chatley, Pooja. 2003. <i>Fashion Marketing And Merchandising</i>. Ludhiana: Kalyani Publishers.
Requirements	Fashion Illustration • Figures (Block & Flesh): Sketchpads, pencils, erasers • Poses: Fashion illustration templates, sketchpads • Stylize Figure: Markers, coloured pencils, watercolours • Figure with Fabrics Sketch: Fabric swatches, glue, sketchpads • Different Mediums: Markers, watercolours, pastels • Garment Silhouettes: Templates, sketchpads Surface Development Techniques • Basic Embroidery: Embroidery hoops, needles, threads, fabric • Traditional Embroidery: Kantha, Phulkari, Kashida, Kasuti, Banjara threads and fabrics • Tie & Dye: Fabrics, dyes, rubber bands, gloves • Knitting & Crochet: Knitting needles, crochet hooks, yarn • Weaving: Looms, various threads, yarns • Fabric Analysis: Magnifying glass, fabric swatches • Stencil Painting: Stencils, fabric paints, brushes

	Garment Construction • Machine Understanding: Sewing machines, manuals • Basic Line Stitching: Sewing machine, threads, fabric scraps • Seam Stitching: Threads, fabric, needles, sewing machines • Hem Stitching: Threads, fabric, sewing machines • Pleats & Gathers: Fabric, sewing machines • Tucks: Fabric, sewing machines • Facing: Fabric, interfacing materials • Trims: Velcro, snaps, hooks, eyes, buttons, zippers Lab Sessions • Hands-on Practice: Materials listed above for practical application in each category. • Fashion Show & Exhibition Preparation: Mannequins, fabric, design boards, sewing machines, lighting, runway setup. Any other item as required
Qualified Instructors	• Instructors with experience in Fashion Design • Certifications or relevant qualifications Fashion Design

Paper Title		: Fashion Design-III						
CODE		: VTC: 367.3						
Number of Credits		: 4						
Semester		:VI						
No. of Theory Hours Per Week		: One (1 hour)						
No. of Practical Hours per Week		: Three (3 Hours)						
Outline of the Paper:								
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)			
Fashion Design III					In-Semester		End-Semester	
					Theory	Practical	Theory	Practical
	Unit-I Theory (25 Marks)	15	4	100	25			
Unit-II to IV Theory (75 Marks)	90				15		60	
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60						
Course Objectives		The course is designed to familiarize the students with fashion history, trends and fashion economics including shows and pageants.						
Course Learning Outcome		After completion of the course students are able to make use of with substantial information and knowledge about fashion trends, their cultural dimensions including the relationship with performance.						
Unit I: (Theory) 15 Hours		Fashion History & Theory: History of fashion and its evolution over time. Social, Cultural & Economic factors that have influenced fashion trends throughout history. Lab Sessions.						
UNIT-II: (Practical) 30 Hours		Fashion Marketing & Merchandising: Business aspects of fashion design. Fashion marketing strategies, retail operations and branding. Lab Sessions.						
UNIT-III: (Practical) 30 Hours		Fashion Production: Manufacturing process and production techniques used in the fashion industry. Quality control and production management. Lab Sessions.						
UNIT-IV: (Practical) 30 Hours		Fashion Sustainability: Environmental and social impact of the fashion industry. Sustainable design practices, Ethical manufacturing and responsible consumption. Lab Sessions. Fashion Show & Fashion Exhibition						
Suggested Readings		1. Arbetter, Lisa. 2003. <i>Secrets of Style: Instyle’s Complete Guide to Dressing Your Best Everyday</i> . New York: Hachette Book Group. 2. Bheda, Rajesh. 2006. <i>Managing Productivity in the Apparel Industry</i> . Bengaluru: CBS Publishers. 3. Bliss, Debbie & Peverill, Sue. 1985. “ <i>She</i> ” <i>Fashion Clothes</i> . London: Ebury Press. 4. Burgo, Fernando. 2002. <i>Il Figurino di Moda</i> . Milan: Istituto Di						

	Moda Burgo. - Chijiwa, Hideaki. 1994. <i>Colour Harmony: A Guide to Creative Colour Combinations</i>. Gloucester: Rockport Publishers. - Dwivedi, Sharada. 2000. <i>Abu Jani, Sandeep Khosla: A celebration of style</i>. AJSK Publications. - Frings, Gini Stephens. 2008. <i>Fashion: From Concept to Consumer</i>. New Jersey: Pearson Prentice Hall. - Ireland, Patrick John. 2006. <i>Fashion Design Drawing and Presentation</i> (Fourth Edition). London: Batsford Ltd. - Jaffe, Hilde & Relis, Nurie. 2011. <i>Draping for Fashion Design</i> (Fifth Edition). New Jersey: Pearson. - Lorenz, Joanna. 2000. <i>The Complete Book of Papercrafts: A Truly Comprehensive Collection of Papercraft Ideas, Designs and Techniques, with over 300 Projects</i>. Pennsylvania: Hermes House. - Peacock, John. 1993. <i>20th Century Fashion</i>. London: Thames & Hudson Ltd. - Portas, Mary. 1999. <i>Windows: The Art of Retail Display</i>. London: Thames & Hudson Ltd. - Pugh-Gannon, JoAnn. 1999. <i>Making the Most of Your Sewing Machine & Serger Accessories</i>. New York: Sterling Pub Co Inc. - Sodhia, Manmeet & Chatley, Pooja. 2003. <i>Fashion Marketing And Merchandising</i>. Ludhiana: Kalyani Publishers.
Requirements	Fashion Illustration Figures (Block & Flesh): Sketchpads, pencils, erasers Poses: Fashion illustration templates, sketchpads Stylize Figure: Markers, coloured pencils, watercolours Figure with Fabrics Sketch: Fabric swatches, glue, sketchpads Different Mediums: Markers, watercolours, pastels Garment Silhouettes: Templates, sketchpads Surface Development Techniques Basic Embroidery: Embroidery hoops, needles, threads, fabric Traditional Embroidery: Kantha, Phulkari, Kashida, Kasuti, Banjara threads and fabrics Tie & Dye: Fabrics, dyes, rubber bands, gloves Knitting & Crochet: Knitting needles, crochet hooks, yarn Weaving: Looms, various threads, yarns Fabric Analysis: Magnifying glass, fabric swatches Stencil Painting: Stencils, fabric paints, brushes Garment Construction Machine Understanding: Sewing machines, manuals Basic Line Stitching: Sewing machine, threads, fabric scraps Seam Stitching: Threads, fabric, needles, sewing machines Hem Stitching: Threads, fabric, sewing machines Pleats & Gathers: Fabric, sewing machines Tucks: Fabric, sewing machines Facing: Fabric, interfacing materials

	• Trims: Velcro, snaps, hooks, eyes, buttons, zippers Lab Sessions • Hands-on Practice: Materials listed above for practical application in each category. • Fashion Show & Exhibition Preparation: Mannequins, fabric, design boards, sewing machines, lighting, runway setup. Any other item as required
Qualified Instructors	• Instructors with experience in Fashion Design • Certifications or relevant qualifications Fashion Design

Syllabus on Vocational Education and Training Course (VTC)

Paper Title		: Fish Farming -I						
CODE		: VTC: 240.2						
Number of Credits		: 4						
Semester		: III						
No. of Theory Hours Per Week		: One (1 hour)						
No. of Practical Hours per Week		:Three (3 Hours)						
Outline of the Paper:								
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)			
Fish Farming-I					In-Semester		End-Semester	
					Theory	Practical	Theory	Practical
	Unit-I Theory (25 Marks)	15	4	100	25			
Unit-II to IV Theory (75 Marks)	90				15		60	
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60						
Course Objectives		1. To introduce the learner to different types of freshwater fishes and the significance of Fisheries in the region of study 2. To study the Biological and Morphological features of 3. To provide the knowledge on the anatomy of the gut and its relevance to fish culture 4. To allow the learner to get exposed to the different diseases affecting the fishes 5.						
Course Outcome	Learning	At the end of the course students will able to: 1. describe the types and morphology of fish 2. explain the meristic and morphometric analysis of fishes and its significance 3. identify the possible diseases affecting the fish of the region						
Unit I: (Theory) 15 Hours		• Introduction to Fish, Types of Fish, Small Indigenous Fish species, Air breathing Fishes, Snake heads etc. and Fisheries: Its importance, Types of fisheries. Present status of Fresh Water Fisheries in the World, India, North East and the state and Scope of Fisheries in the region. Morphology of some commonly available Fish, Meristic and Morphometric analysis of Fish and its significance, Importance of growth and age studies. Classification of fish based on food and feeding habits, Digestive system and process of digestion, Gut analysis and Gastrosomatic Index and its relevance. Diseases of fish with special reference to the diseases in the region and its management. Use of herbal medicine in fish disease management.						

UNIT-II: (Practical) 30 Hours	1. Handling of Microscope. 2. Collection and identification of indigenous fish from local water bodies and fish from market in the place of study and maintain a diagrammatic record in the lab manual with significant features of specimen collected. 3. Collection of data from relevant sources (Fisheries dept., Govt. websites etc. on the status of fisheries in the state and make a report on the data collected. 4. Visit to fish farms either locally or outside and take note of the production per year and problems faced by the fish farmers 5. Study of fish landing and preservation by visiting a local market
UNIT-III: (Practical) 30 Hours	1. Preparation of alcohol grades and stains. 2. Permanent slide Preparation of scales (Cycloid and Ctenoid). 3. Study the age of fish from the lines of growth in scales/otoliths 4. Meristic analysis of fish available in the local markets and indigenously. 5. Morphometric analysis of fish available in the local markets and indigenously.
UNIT-IV: (Practical) 30 Hours	1. Dissection of digestive system of a fish. 2. RLG value of gut content and analysis of gut content by qualitative and quantitative methods. 3. Study of diseases of fishes (protozoan, helminthic, bacterial, viral etc.) from permanent slides and museum specimens. 4. W/M preparation of fish parasites. 5. Preparation of bacterial smears and identification of strains.
Suggested Readings	1. Ayyappan, S. J.K. Jena, A. Gopalakrishnan and A.K. Pandey, Indian Council of Agricultural Research. Handbook of fisheries and aquaculture, 1st edition, 2006. Publisher Directorate of Information and Publications of Agriculture, Indian Council of Agricultural Research, 2006. 2. Biswas, K.P. Prevention and control of fish and Prawn diseases. 3. Khanna.S.S. An introduction to fishes. 4. Lagler.K.G. Ichthyology 5. Manuals from state Govt on the status of Fish and Fisheries of Meghalaya 6. Mishra, B.K. P. Swain, P.K. Sahoo, B.K. Das, N. Sarangi. Disease management in FW Pisciculture 7. Moyle, P.B. and Cech, J.J. Fishes – An Introduction to Ichthyology Norman, J.R. A History of Fishes. 8. Ricker, W.E. 1984. Methods for assessment of fish production in freshwaters. Blackwell Publications. 9. Roberts R.J. Fish Pathology 10. Srivastava, C.B.L., 1985. Textbook of Fishery Science and Indian Fisheries. Kutub Mahal Publications, Allahabad Yadav, B.N. Fish and Fisheries. Daya

	Publishing House Web Resources FAO http://www.fao.org/fishery/topic/4340/en Fish farming http://www.fishfarming.com/ ICAR http://www.icar.org.in/indiafishvoice/intro.htm CIFA http://www.cifa.in/tech.htm
Requirements	• Aquaculture Systems: Install necessary aquaculture systems such as tanks, ponds, recirculating aquaculture systems (RAS), and raceways for practical training. • Aquaculture Equipment: Procure essential equipment like aerators, pumps, filters, feeding systems, and water quality monitoring devices. • Fish Stock: Obtain various species of fish for practical farming exercises, ensuring a diversity that includes both freshwater and marine species. • Any other item as required
Qualified Instructors	Instructors with experience in Fish Farming Certifications or relevant qualifications in Fish Farming

Paper Title		: Fish Farming-II							
CODE		: VTC: 260.2							
Number of Credits		: 4							
Semester		: IV							
No. of Theory Hours Per Week		: One (1 hour)							
No. of Practical Hours per Week		: Three (3 Hours)							
Outline of the Paper:									
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)				
Fish Farming-II					In-Semester		End-Semester		
					Theory	Practical	Theory	Practical	
	Unit-I Theory (25 Marks)	15	4	100	25				
Unit-II to IV Theory (75 Marks)	90				15		60		
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60							
Course Objectives		1. To make the learner have the expertise in identifying the sex determination in fishes and then to introduce the techniques of breeding in fishes. 2. To develop the different types of ponds required in fish farming. 3. To capacitate the learner on the water quality parameters analysis important for Fisheries.							
Course Learning Outcome		After completion of the course students are able to: 1. identify the knowledge of hypophysation techniques for Induced breeding 2. explain the concept of pond management for fisheries 3. test different water bodies on physicochemical and biological parameters useful to fish farming							
Unit I: (Theory) 15 Hours		• Reproductive organs of fishes, Morphological Differentiating features of Males and Female fishes, Breeding Cycles, Gonado-Somatic index, maturation of Gonads. Induced Breeding by Hypophysation technique. Selecting of Broods, Collection, Transportation and Rearing of brood fish. Wet and Dry Bundh methods for Induced breeding of Carps. Pond management: Hatchery, Nursery, Rearing and Stocking Pond construction. Application of lime and Fertilizers in the different units, weeds in the pond and their control. Physicochemical and biological Characteristics of Pond: Significance of physical parameters in fish farming. Chemical parameters and biological parameters for fish rearing. Biological Oxygen Demand (BOD) and primary productivity in water and their relevance to fish cultivation.							
UNIT-II: (Practical) 30 Hours		• 1. Dissection of both male and female reproductive							

	organs of fish. 2. Detection of male and Female brood fish by abdominal observation and measurement of Gonado-Somatic Index. 3. Dissection, Removal and Preservation of Pituitary Gland from Carp/Air Breathing Fish. 4. Complete technique of Induced breeding (Hypophysation) in Carps/Air Breeding Fishes. 5. In-vitro technique of post larval development of fish
UNIT-III: (Practical) 30 Hours	1. Designing of fish farm by models (clay/acrylic/resin). 2. Identification of different weeds in water bodies and their characteristics. 3. Study of Different Physical parameters in water a. Temperature b. pH c. Turbidity d. Conductivity
UNIT-IV: (Practical) 30 Hours	1. Estimation of free Carbon Dioxide and dissolved oxygen (Winkler method) in water. 2. Estimation of Total Hardness and Alkalinity of water 3. Qualitative and Quantitative (Shannon – Weiner and Sorensen's Index) analysis of Planktons in water (comparison between at least two water bodies) 4. Analysis of BOD for two types of water (polluted water and clean water) 5. Estimation of Primary Productivity by Light and dark Bottle method
Suggested Readings	1. Biswas K.P. A text book of fish, fisheries and technology 2. Boyd, C. E. and Tucker, C. S. 1992. Water Quality and Pond Soil Analyses for Aquaculture, Alabama Agricultural Experimental Station, Auburn University 3. Fernandes R. Microbiology Handbook: Fish and Seafood. Leatherhead Food Research Association; 2nd New edition edition 4. ICAR. latest edition. Hand Book of Fisheries and Aquaculture. ICAR. 5. Jayaram, K. C. (2002), The Freshwater Fishes in India – A Hand Book, Zoological Survey of India 6. Mishra, B.K. P. Swain, P.K. Sahoo, B.K. Das, N. Sarangi. Disease management in FW Pisciculture 7. Parihar, R P (2004). A Text Book of Fish Biology and Indian Fisheries. Central Publishing House. Allahabad 8. Pawar and Diganawala- General Microbiology – Vol. I and Vol. II 9. Pillay TVR & Kutty MN. 2005. Aquaculture- Principles and Practices. Blackwell. 10. Pillay TVR. 1990. Aquaculture: Principles and Practices. Fishing News Books, Cambridge University Press, Cambridge. 11. Sandhu, G. S. (2005). A Text Book of Fish and Fisheries, Daya Publishing House, New Delhi – 35 12. Sharma P.D.- Ecology And Environment. Rastogi Publications 13. Singh H.R. and Lakra W.S. Coldwater Aquaculture and

	Fisheries. Narendra Publishing House 14. Srivastava C.B.L. (2014). Fishery Science and Indian Fisheries. 15. Yadav, B N (2002). Fish and Fisheries. 2nd Edition, Daya Publishing House, New Delhi – 35
Requirements	Infrastructure and Facilities • Aquaculture Systems: Install necessary aquaculture systems such as tanks, ponds, recirculating aquaculture systems (RAS), and raceways for practical training. • Aquaculture Equipment: Procure essential equipment like aerators, pumps, filters, feeding systems, and water quality monitoring devices. • Fish Stock: Obtain various species of fish for practical farming exercises, ensuring a diversity that includes both freshwater and marine species. • Any other item as required
Qualified Instructors	• Instructors with experience in Fish Farming • Certifications or relevant qualifications in Fish Farming

Paper Title		: Fish Farming-III						
CODE		:VTC: 360.2						
Number of Credits		: 4						
Semester		:VI						
No. of Theory Hours Per Week		: One (1 hour)						
No. of Practical Hours per Week		: Three (3 Hours)						
Outline of the Paper:								
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)			
Fish Farming-III					In-Semester		End-Semester	
					Theory	Practical	Theory	Practical
	Unit-I Theory (25 Marks)	15	4	100	25			
Unit-II to IV Theory (75 Marks)	90				15		60	
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60						
Course Objectives		1. Knowledge of the different types of Integrated Fish Farming practices. 2. To learn about the different feeds and feeding for culture fisheries 3. A thorough knowledge of the mechanism of preservation and processing of fish. 4. To learn about the Bio Floc Fish farming.						
Course Learning Outcome		After completion of the course students are able to: 1. The trainees would acquire knowledge on the process of Integrated Fish Farming and also feed and feeding to be applied in fisheries 2. At the end of the course the learner would have derived the knowledge of Biofloc technology for further study and practice. 3. The learner would derive the knowledge on fish preservation and processing.						
Unit I: (Theory) 15 Hours		• Integrated Fish farming- Agro Based and Livestock based. Composite Fish culture and its benefits. Floating, semi-floating, sinking and stable feeds for aquaculture, Feed making methods. High energy feeds, Alternative protein sources for feeds, maturation diets to enhance breeding efficiency, Larval feeds. Nutritional requirements of cultivable fishes, feed formulation. Commonly used feed ingredients. Novel feed ingredients, estimation of quality of feed ingredients. Selection of ingredients, formulation of feeds, feed processing and making. Biofloc in fisheries and Fish Products. Nutritional value and advantages of Biofloc, Species suitable for Biofloc. Principles of fish preservation and processing. Processing of fish by						

	traditional methods – salting, sun drying, smoking, marinading and fermentation. Drying and dehydration-theory, importance of water activity in relation to microbial growth. Fish aquarium. Use of Artificial Intelligence and ICT in fish farming.
UNIT-II: (Practical) 30 Hours	• Development and maintenance of any agro-based or/and livestock-based fish farming. • . Development and maintenance of a pond for composite fish culture. • Visit to farm practicing Integrated Fish Farming and make a detailed report
UNIT-III: (Practical) 30 Hours	• Preparation of Inoculum • Preparation of Biofloc tanks for demonstration purposes • Preparation of salted fish, dried fish and smoked fish. • Quality assessment of salted, dried and smoked fish. • Preparation of fish pickles and preparation of fermented fish sauce and marinaded products.
UNIT-IV: (Practical) 30 Hours	• Identification of live feed. • Proximate composition analysis of feed ingredients and feeds. • Preparation of supplementary feeds with locally available ingredients. • Feed calculation and daily ration • Estimation of FCR.
Suggested Readings	1. Ali SA. 2018. Nutritional feeding of fish and shrimps in India. MJP Publ. 2. Avnimelech Y. 2015. Biofloc Technology- a Practical Guidebook. 3rd edition. World Aquaculture Society 3. Balachandran KK. 2001. Post-harvest Technology of Fish and Fish Products. Daya Publ. House 4. Bardach EJ, Rhyther JH and Mc Larney WO. 1972. Aquaculture the Farming and Husbandry of Freshwater and Marine Organisms. John Wiley and Sons 5. Clucas IJ. 1981. Fish Handling, Preservation and Processing in the Tropics. Parts I, II. FAO 6. Ganguly S. 2014. Potential and recommended feed additives for sustainable aquaculture, livestock and poultry farming practices. Narerndra Pub. 7. Gopakumar K. (Ed.). 2002. Text Book of Fish Processing Technology. ICAR 8. Santhanam, R. et. Al. A Manual of Freshwater Aquaculture. Oxford & IBH Publishing Co. Pvt. Ltd., 1987. 9. Strasbourg LK. 2013. Fish feeding in integrated fish farming. Random Exports

	10. Syda Rao G, Imelda-Joseph, Philipose KK and Suresh Kumar M, 2013. Cage aquaculture in India. CMFRI Publ 11. Wiley Blackwell. Ninawe AS and Khedkar GD. 2009. Nutrition in aquaculture. Narendra Publ 12. Yoram Avnimelech. Biofloc technology Practical and Guide Book: Biofloc Fish Framing Full Training
Requirements	• Aquaculture Systems: Install necessary aquaculture systems such as tanks, ponds, recirculating aquaculture systems (RAS), and raceways for practical training. • Aquaculture Equipment: Procure essential equipment like aerators, pumps, filters, feeding systems, and water quality monitoring devices. • Fish Stock: Obtain various species of fish for practical farming exercises, ensuring a diversity that includes both freshwater and marine species. • Any other item as required
Qualified Instructors	• Instructors with experience in Fish Farming • Certifications or relevant qualifications in Fish Farming

Syllabus on Vocational Education and Training Course (VTC)

Paper Title		: Floriculture and Landscaping -I							
CODE		: VTC: 241.1							
Number of Credits		: 4							
Semester		: III							
No. of Theory Hours Per Week		: One (1 hour)							
No. of Practical Hours per Week		: Three (3 Hours)							
Outline of the Paper:									
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)				
Floriculture and Landscaping - I					In-Semester		End-Semester		
					Theory	Practical	Theory	Practical	
	Unit-I Theory (25 Marks)	15	4	100	25				
	Unit-II to IV Theory (75 Marks)	90				15		60	
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60							
Course Objectives		1. To acquaint the students with the fundamentals of flower cultivation, its importance and different components 2. To acquire knowledge and understanding on the importance and cultivation aspects of ornamental plants 3. To familiarize with principles and practices of propagation and nursery management for ornamental plants. 4. To identify the ornamental plants and develop skills in different methods of the plant propagation, nursery management, bonsai and flower arrangement. 5. To provide information about employment, business opportunities and other avenues in the Floriculture sector							
Course Learning Outcome		After the completion of the course the students are able to: 1. describe the basics of ornamental horticulture and its cultivation aspects 2. use techniques of propagation and nursery management of ornamental plants 3. develop skills on flower arrangement, bonsai making 4. identify tools and equipment used in gardening							
Unit I: (Theory) 15 Hours		• Definitions, scope and importance of ornamental horticulture. • Floriculture industry and its components, area and production, acquaintance with different types of ornamental plants, its							

	classification, design values and general cultivation aspects viz. annuals, biennials, trees, shrubs, climbers, indoor plants, cacti and succulents, herbaceous perennials, grasses and bulbous ornamentals, propagation and nursery management, growing media. • Importance of flower arrangement, its different styles and type, selection of flowers and cut foliage for arrangement, study of roof garden, water garden, vertical garden, bottle garden, terrariums, dish garden, indoor garden, butterfly garden. • Bonsai- concepts, techniques and maintenance
UNIT-II: (Practical) 30 Hours	• Identification and description of annuals, biennials, trees, shrubs, climbers, indoor plants, cacti and succulents, herbaceous perennials, grasses and bulbous ornamentals. • General cultivation aspects and uses of ornamental plants • Study and identification of various tools and implements
UNIT-III: (Practical) 30 Hours	• Practices of various propagation techniques viz. cuttings, budding, grafting, layering, etc. • Planning and layout of nursery • Preparation of nursery beds and raising of ornamental plants • Identification of growing media and preparation of media for raising ornamental plants • Visit to commercial nursery units
UNIT-IV: (Practical) 30 Hours	• Identification and selection of flowers, containers for floral arrangement • Practices on preparation of different types/styles of flower arrangement • Techniques of bonsai making and its cultural practices • Projectwork on any topic mentioned above
Suggested Readings	1. Arora, J.S. 2006. Introductory Ornamental Horticulture. Kalyani Publishers, Ludhiana 2. Bose, Chowdhury and Sharma. 1991. Tropical Garden Plants in colour. Horticulture and allied publishers, 3D Madhab Chatterjee street Kolkata. 3. Bose, T.K. Mukherjee, D. 2004. Gardening in India. Oxford & IBH Publishers.

	4. Chadha, K.L. and Chaudhary, B. 1986. Ornamental Horticulture in India. Publication and Information division. ICAR, New Delhi. 5. Chowdhury Bimal Das and Balai Lal Jana.2014.Flowering Garden trees. Pointer publishers, Jaipur. India. 6. Peter.K.V. 2009.Ornamental plants. New India publishing agency, Pitampura, New Delhi. 7. Randhawa, G.S. Amitabha Mukhopadhyay, 2004. Floriculture in India. Allied Publishers Pvt. Ltd., New Delhi. 8. Tiwari A.K. and R. Kumar. 2012. <i>Fundamentals of ornamental horticulture and landscape gardening</i>. New India
Requirements	1. Nursery and Greenhouse 2. Gardens 3. Propagation Unit 4. Floral Arrangement Workshop 5. Bonsai Studio Tools and Equipment 1. Horticultural Tools 2. Planting Equipment 3. Growing Media 4. Floral Arrangement Supplies Additional Facilities 1. Computer Lab 2. Field Visit Arrangements 3. Administrative Office 4. Safety and First Aid Any other item as required
Qualified Instructors	• Instructors with experience in Floriculture and Landscaping and teaching. • Certifications or relevant qualifications in Floriculture and Landscaping

Paper Title	: Floriculture and Landscaping -II							
CODE	: VTC: 261.1							
Number of Credits	: 4							
Semester	: IV							
No. of Theory Hours Per Week	: One (1 hour)							
No. of Practical Hours per Week	: Three (3 Hours)							
Outline of the Paper:								
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)			
Floriculture and Landscaping - II					In-Semester		End-Semester	
					Theory	Practical	Theory	Practical
	Unit-I Theory (25 Marks)	15	4	100	25			
	Unit-II to IV Theory (75 Marks)	90				15		60
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60						
Course Objectives		1. To impart basic knowledge about the importance and management of commercial flowers grown in India. 2. To explain the principles, theoretical aspects and developing skills in protected cultivation of flower crops 3. To train manpower in acquiring skills of value addition in flowers.						
Course Learning Outcome		After completion of the course students are able to: 1. develop the required skills on production and management of commercial flower crops 2. explain the process of production and post-harvest management of commercial flowers. 3. identify on protected structures, cultivation of crops under protection and its management 4. develop practical skills on the preparation of various value-added products from flower crops 5. design, prepare and apply appropriate combinations of plants and methods of cultivation for commercial setup						
Unit I: (Theory) 15 Hours		• Scope and importance of commercial floriculture in India. Commercial cultivation of the rose, marigold, chrysanthemum, gladiolus, tuberose, orchid, carnation, gerbera, anthurium, bird of paradise, liliun, china aster for domestic and export market, plant protection, postharvest management and handling. • Protected cultivation- its classification, types, design and erection of structures, management and manipulation of environment in protected structures. • Drying and dehydration of flowers; preparation of value-added products from flowers						

UNIT-II: (Practical) 30 Hours	• Identification of commercially important floricultural crops. • Special horticultural practices in commercial crops. • Determination of harvest indices and harvesting methods, postharvest handling, packing methods
UNIT-III: (Practical) 30 Hours	• Study of various protected structures and practices in design, layout and erection of different types of structures • Microclimate management: different methods to control temperature, carbon dioxide and light • Visit to commercial nurseries, cut flower production enterprises, flower shows, flower markets.
UNIT-IV: (Practical) 30 Hours	• Identification and study of plants suitable for drying and dehydration • Practices on drying and dehydration of flowers by different techniques • Preparation of value-added products from fresh flowers, dried flowers, processed products, etc.
Suggested Readings	1. Arora JS. 2010. Introductory Ornamental Horticulture. Kalyani Publishers. 6th edition, pp. 230. 2. Bhattacharjee SK. 2018. Advances in Ornamental Horticulture. Vols. I-VI. Pointer Publ. Reprint, pp. 2065. 3. Bose TK and Yadav LP. 1989. Commercial Flowers. Naya Prokash, Kolkata, India. 4. Bose TK, Maiti, RG, Dhua RS and Das P. 1999. Floriculture and Landscaping. Prokash, Kolkata, India. 5. Chadha KL and Bhattacharjee SK. 1995. Advances in Horticulture: Ornamental Plants. Vol. XII, Parts 1 & 2. pp. 533, pp. 574. Malhotra Publ. House, New Delhi, India. 6. Chadha KL and Chaudhury B. 1992. Ornamental Horticulture in India. ICAR, New Delhi, India. 7. Larson RA. 1980. Introduction to Floriculture. New York Academic Press. pp. 628. 8. Laurie A and Rees VH. 2001. Floriculture-Fundamentals and Practices. Agrobios Publications, Jodhpur. pp.534. 9. Prasad S and Kumar U. 2003. Commercial Floriculture. Agrobios Publications, Jodhpur. 10. Randhawa GS and Mukhopadhyay A. 2001. Floriculture in India. Allied Publ. pp 660. 11. Reddy S, Janakiram T, Balaji Kulkarni S and Misra

	RL. 2007. Hi- Tech Floriculture. Indian Society of Ornamental Horticulture, New Delhi, India. 12. Singh AK. 2006. Flower Crops: Cultivation and Management. New India Publ. Agency, New Delhi, India
Requirements	Floriculture Lab Greenhouse and Protected Cultivation Facilities: 1. Greenhouses/Polyhouses 2. Climate Control Systems. Field Facilities: 1. Cultivation Plots 2. Nurseries Postharvest Handling and Processing Facilities: 1. Processing Units 2. Packaging Units Supporting Facilities: 1. Storage Rooms 2. Tool Rooms 3. Library IT and Digital Facilities: • Computer Labs • Internet Access Any other item as required
Qualified Instructors	• Instructors with experience in Floriculture and Landscaping and teaching. • Certifications or relevant qualifications in Floriculture and Landscaping

Paper Title	: Floriculture and Landscaping -III							
CODE	: VTC: 361.1							
Number of Credits	: 4							
Semester	:VI							
No. of Theory Hours Per Week	: One (1 hour)							
No. of Practical Hours per Week	: Three (3 Hours)							
Outline of the Paper:								
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)			
Floriculture and Landscaping III					In-Semester		End-Semester	
					Theory	Practical	Theory	Practical
	Unit-I Theory (25 Marks)	15	4	100	25			
	Unit-II to IV Theory (75 Marks)	90				15		60
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60						
Course Objectives		1. To teach students the basic knowledge required to develop entrepreneurship skills in the development of nursery, gardening and landscaping 2. To familiarize with principles and practices of landscaping and ornamental gardening. 3. To build human resources as landscape designers, supervisors, gardeners and entrepreneurs in the area of landscaping						
Course Learning Outcome		After completion of the course students are able to: 1. explain basic constituents of grape, wine and their storage stability 2. demonstrate the Microbial techniques for wine 3. evaluate the quality of wine						
Unit I: (Theory) 15 Hours		Landscape Gardening • History of gardening, Styles of gardening-formal, informal, free style and wild gardens. • Steps in preparation of garden design. • Use of Auto CAD and Arch CAD in designing gardens. Principles and elements of landscape design. Importance, design and establishment of garden features/components. • Importance of garden adornments. • Bio aesthetic planning, avenue planting, urban landscaping, landscaping for important public places. • Specialized gardens- rock garden, bog garden, sunken garden, clock garden, sacred groves, etc						
UNIT-II: (Practical) 30 Hours		• Identification and selection of ornamental plants • Study of graphic symbols and notations in landscaping designing and use of drawing equipment • Layout and planning for styles of gardening						

	Practices in preparing design for home gardens, institutional gardens, public places, etc.
UNIT-III: (Practical) 30 Hours	- Study of the garden components/features and garden adornments - Practices in planning and planting of special types of garden – rock garden, sunken garden, bog garden, dish garden, terrariums, etc. - Identification of different types of lawn grasses - Practices in laying out a lawn
UNIT-IV: (Practical) 30 Hours	- Concept and Application of Computer aided Designing (CAD) for landscape designing - Preparation of landscape designs for school and college using CAD technology - Visit to parks and botanical gardens
Suggested Readings	- Arora, J.S. 2006. Kalyani publishers, Ludhiana. Introductory Ornamental Horticulture. Kalyani publishers, Ludhiana. - Bose, T.K. Malti, R.G. Dhua, R.S. & Das, P. 2004. Nayaprakash, Calcutta. Floriculture and Landscaping - De, L.C. 2012. Handbook of Gardening, Aavishkar Publishers, Jaipur - De, L.C.. Nursery and landscaping. 2013. Pointer publishers, Jaipur India. - Grewal H.S. and Parminder Singh. 2014. Landscape designing and ornamental plants - Randhawa GS & Mukhopadhyay A. 1986. Floriculture in India. Allied Publishers. - Randhawa, G.S. and Amitabha Mukhopadhyay 2004. Floriculture in India. Allied Publishers Pvt. Ltd., New Delhi. - Roy R.K. Fundamentals of Garden designing. 2013. New India publishing agency, Pitampura, New Delhi. - Sabina GT & Peter KV. 2008. Ornamental Plants. New India Publishing Agency, New Delhi. - Srivastava. Rajesh 2014. Fundamentals of Garden designing. Agrotech press, Jaipur, New Delhi. - Sundaram, v. 2016. Textbook on Commercial flowers and Ornamental Gardening. Kalyani Publishers - Syamal, M.M. 2014. Commercial Floriculture. Jaya Publishing House, New Delhi - Tiwari A.K. and R. Kumar. 2012. Fundamentals of ornamental horticulture and landscape gardening. New India.
Requirements	Classroom Facilities

	• CAD Labs: Computer labs with AutoCAD, ArchiCAD, and other relevant landscape design software. Laboratory and Workshop Facilities: 1. Landscape Design Lab 2. Horticulture Lab Outdoor Facilities: 1. Demonstration Gardens 2. Specialized Gardens Practical Training Facilities: 1. Garden Components and Features Area 2. Lawn Areas 3. Avenue Planting and Urban Landscaping Zones Supporting Facilities: 1. Tool and Equipment Storage. 2. Plant Protection and Care Facilities IT and Digital Facilities: 1. High-Speed Internet Access 2. Printing and Plotting Equipment Field Visit Arrangements: 1. Transportation 2. Partnerships with Local Parks and Gardens Any other item as required
Qualified Instructors	• Instructors with experience in Floriculture and Landscaping and teaching. • Certifications or relevant qualifications in Floriculture and Landscaping

Syllabus on Vocational Education and Training Course (VTC)

Paper Title		: Food and Beverage Services - I							
CODE		: VTC: 244.1							
Number of Credits		: 4							
Semester		: III							
No. of Theory Hours Per Week		: One (1 hour)							
No. of Practical Hours per Week		: Three (3 Hours)							
Outline of the Paper:									
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)				
Food and Beverage Services - I	Unit-I Theory (25 Marks)	15	4	100	In-Semester		End-Semester		
					Theory	Practical	Theory	Practical	
	Unit-II to IV Theory (75 Marks)	90					25		
						15		60	
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60							
Course Objectives		1. To familiarize students with the Food & Beverage industry, its core/ancillary Departments, and the basic technical skills needed to work.							
Course Learning Outcome		At the end of the course students are able to: 1. describe an overview of food and beverage service and its ancillary departments. 2. identify the organizational structure of the Food and Beverage Department 3. assess the working procedures and use the skills required in managing these departments. 4. devise food and beverage service operations.							
Unit I: (Theory) 15 Hours		The Hotel & Catering Industry: • Introduction to the Hotel Industry • Role of catering establishment in the travel/tourism industry • Introduction to the Food and Beverage Industry • Types of catering establishments							
UNIT-II: (Practical) 30 Hours		Departmental Organization and Staffing: • Introduction to Food & Beverage Operations • Organization of F&B department of hotel • Job Descriptions & Job Specifications of F& B Service Staff • Competencies and Basic Etiquette of F& B Service Staff • Attitude & Attributes of Food & Beverage Personnel • Inter-departmental coordination							
UNIT-III: (Practical) 30 Hours		Food & Beverage Service and Ancillary Departments • Food Service areas – Induction & Profile of the areas • Ancillary F&B Service areas – Induction & Profile of the areas • Restaurant, Coffee Shop, Room Service, Bars, Banquets,							

	Discotheques • Still Room, Pantry, Grill Room, Snack Bar, executive lounges, business centers & Night Clubs etc. • Mise -en- scene & Mise-en-place: Dusting, vacuuming, arranging tables and chairs • Linen replenishment, accompaniments, condiments, sideboard • Usage and understanding of French hospitality terminology
UNIT-IV: (Practical) 30 Hours	Basic Technical Skills: • Holding Service Spoon & Fork, Carrying a Tray / Salver, Laying a Table Cloth, Changing a Table Cloth during service, Welcoming and seating of Guest, Interaction with guest on arrival at the restaurant, Placing meal plates & Clearing soiled plates, • Stocking Sideboard, Using Service Plate & Crumbing Down, • Practice of different serviette folds. • Service of Water
Suggested Readings	1. Andrews, Sudhir, Food & Beverage Service Training Manual, Tata McGraw Hill, New Delhi. 2. Cousins John A. & Andrew Durkan, The Beverage Book, Hodder Arnold H&S Publication. 3. Dhawan, Vijay, Food & Beverage Service, Frank Bros Publication, New Delhi. 4. Lillicrap Dennis, Cousins John & Smith Robert, Food & Beverage Services, Hodder & Stoughton Educational, London.
Requirements	• Food & Beverage (F&B) Training Lab • Computer Lab • Demonstration Area • Service Areas • Ancillary Areas • Housekeeping Tools • Skill Development Stations • Mock Restaurant • Setup Resources • Practice Equipment: Trays, salvers, tablecloths, service plates, and cutlery for hands-on practice. • Instructional Videos: Visual guides demonstrating proper techniques for various service skills. • Serviette Folding Samples: Examples of different serviette folds for students to practice and master. • Any other item as required
Qualified Instructors	• Experienced professionals from the hotel and catering industry to provide both theoretical knowledge and

	practical training • Collaborations with local hotels and catering companies for internships, field visits, and hands-on training opportunities.
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Paper Title		: Food and Beverage Services -II							
CODE		: VTC: 264.1							
Number of Credits		: 4							
Semester		: IV							
No. of Theory Hours Per Week		: One (1 hour)							
No. of Practical Hours per Week		: Three (3 Hours)							
Outline of the Paper:									
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)				
Food and Beverage Services - II					In-Semester		End-Semester		
					Theory	Practical	Theory	Practical	
	Unit-I Theory (25 Marks)	15	4	100	25				
	Unit-II to IV Theory (75 Marks)	90				15		60	
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60							
Course Objectives		1. To acquaint students with the Food & Beverage Services methods, equipment, and table/trolley laying procedures.							
Course Learning Outcome		At the end of the course students are able to: 1. identify and maintain different types of equipment used in food and beverage service 2. describe the different methods of care and maintenance of Food and Beverage Service Equipment 3. identify the types of meals, service and table layout. 4. demonstrate the table/ tray and trolley cover set up.							
Unit I: (Theory) 15 Hours		Food & Beverage Service Equipment • Cutlery • Crockery • Glassware • Flatware • Hollowware • Other equipment used in F&B Service							
UNIT-II: (Practical) 30 Hours		Care & Maintenance of F&B Equipment • Cleaning/polishing of EPNS items by: - Plate Powder method - Polivit method - Silver Dip method - Burnishing Machine • Cleaning & polishing glassware • Cleaning & polishing brassware							
UNIT-III: (Practical) 30 Hours		Food & Beverage Service Methods • Types of Meals • Brunch, Lunch, Afternoon tea, Hi-Tea, Dinner, Supper							

	and others. • Table Service-Silver/English, Family, American, • Butler/French, Russian, Self Service-Buffer & Cafeteria, • Specialized Service-Gueridon, Tray, Trolley, Lounge, Room, etc., • Single Point Service-Take Away Vending, Kiosks, Food Courts & Bars, Automates • Tea & Coffee– Preparation & Service • Service of Dessert (Fresh Fruit & Nuts) • Types of Table layouts for banquets
UNIT-IV: (Practical) 30 Hours	Table Lay-Up and Service • Task-01: A La Carte Cover • Task-02: Table d' Hote Cover T • Task-03: English Breakfast Cover • Task-04: American Breakfast Cover • Task-05: Continental Breakfast Cover • Task-06: Indian Breakfast Cover • Task-07: Afternoon Tea Cover • Task-08: High Tea Cover Tray/Trolley Set-Up & Service • Task-9: Trolley Tray Breakfast set up and service for rooms • Task-10: Room Service Trolley Setup • Task-11: Room Service Amenities Set-up In Rooms
Suggested Readings	1. Andrews, Sudhir, Food& Beverage Service Training Manual, Tata McGraw Hill, New Delhi. 2. Dhawan, Vijay, Food & Beverage Service, Frank Bros Publication, New Delhi. 3. John A. Cousins & Andrew Durkan, The Beverage Book, Hodder Arnold H&S Publication. 4. Lillicrap Dennis, Cousins John & Smith Robert, Food & Beverage Services, Hodder & Stoughton Educational, London.
Requirements	Classroom Facilities: • Training and Service Manuals • Recipe Books • Instructional Videos • Display Room • Equipment Lab • Cleaning Stations • Cleaning Supplies • Mock Restaurant • Specialized Service Stations • Table Setup Area • Room Service Setup • Cover Layout Guides

	• Trolley and Tray Equipment Any other as and when required Industry Partnerships • Collaborations with local hotels and catering businesses for internships, field trips, and hands-on training.
Qualified Instructors	• Instructors with experience in Food and Beverage Services and teaching. • Certifications or relevant qualifications in Food and Beverage Services

Paper Title	: Food and Beverage Services -III							
CODE	: VTC: 364.1							
Number of Credits	: 4							
Semester	:VI							
No. of Theory Hours Per Week	: One (1 hour)							
No. of Practical Hours per Week	: Three (3 Hours)							
Outline of the Paper:								
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)			
Food and Beverage Services - III					In-Semester		End-Semester	
					Theory	Practical	Theory	Practical
	Unit-I Theory (25 Marks)	15	4	100	25			
	Unit-II to IV Theory (75 Marks)	90				15		60
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60						
Course Objectives		1. To acquaint students with menu planning, room service, and service of alcoholic and non-alcoholic beverages.						
Course Learning Outcome		At the end of the course students are able to: 1. plan a menu planning, cover, accompaniments & food and beverage service 2. explain the principles, layout, and setup of room service 3. create services for non-alcoholic beverages 4. devise services for alcoholic beverages.						
Unit I: (Theory) 15 Hours		Menu Planning • Origin of Menu, Objectives of Menu planning • Types of Menu, Courses of French Classical Menu-Sequence, Examples from each course, Cover of each course, French Names of dishes • Classical Foods & its Accompaniments with Cover • Special Food Service - Cover, Accompaniments & Service • Necessity and functions of a control system, F&B Control cycle & monitoring • Practice of menu compilation in French						
UNIT-II: (Practical) 30 Hours		Room Service • Introduction, General principles, Pitfalls to be avoided, Cycle of Service, Scheduling and staffing, Room service menu planning, Forms & formats, Order taking, Thumbrules, Suggestive selling, Breakfast cards • Layout and setups of common meals • Use of technology for better room service and time management • Billing methods- Duplicate & Triplicate System, KOTs &						

	BOT's. Computerized KOT's • Preparing KOT and presenting Bill to the guest • Procedure for Service of a Meal
UNIT-III: (Practical) 30 Hours	Non- Alcoholic Beverages • Classification (Nourishing, Stimulating and Refreshing beverages), • Tea- Origin & Manufacture, Types & Brands, • Coffee-Origin & Manufacture, Types & Brands, • Juices and Soft Drinks, Mocktails& Recipe of popular mocktails • Cocoa & Malted Beverages - Origin & Manufacture • Service of Juices, Soft Drinks, and Mocktails • Service of Cocoa & Malted Beverages
UNIT-IV: (Practical) 30 Hours	Alcoholic Beverage • Introduction and definition • Classification • Beer • Spirits (Whisky, Rum, Gin, Brandy, Vodka, Tequila) • Wines • Identification of different types of glassware and wine bottles from different regions. • Practicing menu compilation with wines to match the course and service of the same • Service of white, sparkling, old red, and rose wine. • Reading a wine label
Suggested Readings	1. Andrews, Sudhir, Food& Beverage Service Training Manual, Tata McGraw Hill, New Delhi. 2. Dhawan, Vijay, Food & Beverage Service, Frank Bros Publication, New Delhi. 3. John A. Cousins & Andrew Durkan, The Beverage Book, Hodder Arnold H&S Publication. 4. Lillicrap Dennis, Cousins John & Smith Robert, Food & Beverage Services, Hodder & Stoughton Educational, London.
Requirements	Room Service • Room Service Training Lab. • Computer Lab Resources: • Room Service Manuals • Technology Tools • Billing Systems • Role-Playing Materials Non-Alcoholic Beverages • Beverage Lab. • Demonstration Area

	• Beverage Manuals • Recipe Books • Service Equipment Alcoholic Beverages • Bar Training Lab • Wine Cellar • Alcoholic Beverage Manuals • Glassware and Bottle Identification • Wine Pairing Guides • Role-Playing Materials Any other item as required
Qualified Instructors	• Experienced professionals from the food and beverage industry to provide expert guidance and training. • Certifications or relevant qualifications in Food and Beverage Services

Syllabus on Vocational Education and Training Course (VTC)

Paper Title			: Food Processing -I					
CODE			: VTC: 246.2					
Number of Credits			: 4					
Semester			: III					
No. of Theory Hours Per Week			: One (1 hour)					
No. of Practical Hours per Week			: Three (3 Hours)					
Outline of the Paper:								
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)			
Food Processing-I					In-Semester		End-Semester	
					Theory	Practical	Theory	Practical
	Unit-I Theory (25 Marks)	15	4	100	25			
Unit-II to IV Theory (75 Marks)	90				15		60	
Marks Distribution			: Internal Assessment: 40 : External Assessment: 60					
Course Objectives			1. To explain the concept of food processing 2. To illustrate on various preservation techniques 3. To describe how to apply food processing methods in development of skill in food processing sector.					
Course Learning Outcome			After the completion of the course the students are able to: 1. relate the processing of different food ingredients 2. infer the extrusion process and its working principles 3. demonstrate through an experiment using whole grain and legume processing 4. compare the different types of processing related equipment in operator. 5. Prepare different cereals and pulse products with quality assurance					
Unit I: (Theory) 15 Hours			• Preservation by Low Temperature - Concept, History – • Types of preservation methods by low temperature - Different equipment used for preservation by low temperature - Treatments prior to freezing. • Preservation by using Preservatives - Definition and Concept - Types of preservatives-Natural and Artificial - Mode of action of different preservatives. • Preservation by Irradiation Process - Meaning and Concept - Irradiation methods - Sources of radiation – • Level of dose and their effect on food. • Modern Techniques in Food Preservation - Use of pulsed electric field - High hydrostatic Pressure					

	Hurdle technology
UNIT-II: (Practical) 30 Hours	• Introduction to freezing equipment • Preservation by using chemical preservatives • Preparation of product by using salt as preservative • Preparation of product by using sugar as preservative • Preparation of product by using oil as preservative • Preparation of food product by Freeze drying to food preservation
UNIT-III: (Practical) 30 Hours	• Preparation of malt • Determination of gluten content in wheat flour • To study the cooking quality of rice using water uptake method. • To study the methods of extraction of oil from oilseeds • Determination of under milled grains from polished rice • Preparation of quick cooked rice • Determination of specific gravity of grains • Parboiling of rice • Visit to working rice, pulse and oil mill
UNIT-IV: (Practical) 30 Hours	• Examine the processing of different food ingredients. • Explore extrusion processing and its working principles • Learn and understand whole grain cereals and legumes processing • Handling the different food related equipment in operation • Make different Cereals & pulses products with quality assurance. • To study dextrinization in foods. • To study gelatinization behavior of various starches • Qualitative tests for hydrogenated fats, butter, and ghee • Determine the organoleptic characteristics of food.
Suggested Readings	1. Barbosa-Cánovas, G. V., Tapia, M. S., & Cano, M. P. (Eds.). (2004). Novel food processing technologies. CRC press, United States. 2. Chakravarty, A. (1988). Post harvest technology of cereals, pulses and oilseeds. Oxford and IBH Publishing Co, Calcutta. 3. Potter, N. N., & Hotchkiss, J. H. (2012). Food science. Springer Science & Business

	Media.Latest, United States. 4. Ramaswamy, H. S., & Marcotte, M. (2005). Food processing: principles and applications. CRC Press, United States. 5. Ranganna, S. (1986). Handbook of analysis and quality control for fruit and vegetable products. Tata McGraw-Hill Education. 6. Sadasivam, S., & Manickam, A. (1996). Biochemical methods, New age international (P) Ltd. Publishers, New Delhi. Page 4 of 9 7. Sahay, K. M., & Singh, K. K. (1996). Unit operations of agricultural processing (pp. xii+ 340). Vikas Publishing House Pvt. Ltd., New Delhi. 8. Serna-Saldivar, S. O. (Ed.). (2018). Corn: chemistry and technology. Elsevier, Amsterdam.
Requirements	Preservation Equipment: • Freezers, blast freezers, cryogenic freezing units. • Freeze dryers. • Gamma irradiators, electron beam irradiators. • Pulsed electric field processors, high hydrostatic pressure equipment. Processing and Production Equipment: • Brining tanks, pickling vats, oil preservation vats. • Rice polishers, wheat flour mills. • Oil expellers, presses. • Parboiling units. Quality Control Instruments: • pH meters, spectrophotometers, refractometers. • Chromatography setups (TLC, HPLC). • Instruments for gluten content, specific gravity, and cooking quality testing. Any other item as and when required
Qualified Instructors	• Instructors with experience in food science, technology, and processing. • Certifications or relevant qualifications in Food Processing

Paper Title		: Food Processing -II						
CODE		: VTC: 266.2						
Number of Credits		: 4						
Semester		: IV						
No. of Theory Hours Per Week		: One (1 hour)						
No. of Practical Hours per Week		: Three (3 Hours)						
Outline of the Paper:								
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)			
Food Processing - II					In-Semester		End-Semester	
					Theory	Practical	Theory	Practical
	Unit-I Theory (25 Marks)	15	4	100	25			
Unit-II to IV Theory (75 Marks)	90				15		60	
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60						
Course Objectives		1. To explain to students on the knowledge on confectionary . 2. To describe how manufacturing technology of Confectionary products are being utilized. 3. To demonstrate the strategies for skill development to meet the demands from ongoing innovations in the field.						
Course Outcome	Learning	After completion of the course students are able to: 1. relate the market trends and consumer preferences related to processed fruits and vegetables, helping in decision-making for product development. 2. classify the composition and nutritional value of various fruits and vegetables 3. identify recent advances in processing technology and applications in fruits and vegetables 4. distinguish between processed foods from fruits and vegetables 5. assess sustainable practices in processing, waste reduction, and environmental impact.						
Unit I: (Theory) 15 Hours		• Current trends in fruits and vegetable processing - Structural, compositional and nutritional aspects. • Quality requirements of raw materials for processing- preparation of raw material, primary processing-grading, sorting, cleaning, washing, peeling, slicing and blanching. • Fruits and Vegetable of processing. Vegetables: Composition, nutritive value and functional properties, Freezing of vegetables.Fruits: Composition, nutritive value and functional properties. Pre- processing of tomatoes. • Preservation of fruits and vegetables - Canning						

	Freezing, Dehydration of Fruits and Vegetables in cabinet drier. • Fruits and Vegetable processing - Recent advances in juice processing technology, application of membrane technology in processing of juices. • Technology of Products: juices & pulps, concentrates & powders, squashes & cordials, nectars, fruit drinks & beverages carbonated and its quality control. Fermented products- Cider, wine, brandy. • Dehydration of fruits and vegetable - Manufacturing process of juice, soup, puree, and paste. Jams, Jellies and marmalades: selection, preparation, production. • Difference between jam and jelly. Theory of jell formation, failure and remedies in jam and jelly making. • General principles and manufacturing processes of preserves, candied fruits, glazed fruits, crystallized fruits. Spices and condiments.
UNIT-II: (Practical) 30 Hours	• Preservation and processing of certain vegetables by drying. • Preparation of tomato ketchup and its preservation. • Preparation of tomato puree and its preservation. • Preparation of pickles. • Preparation of jam • Preparation of jelly • Preparation of marmalades
UNIT-III: (Practical) 30 Hours	• Preparation of squash and cordial • Processing and Preservation of peas by use of high temperatures (Bottling of Peas). • Blanching of a given sample (pea) and assessment of its adequacy. • Enzymatic browning of fruits and vegetables and its control. • Osmotic dehydration of given sample (Carrot/Grapes). • Preparation of amla preserve and dried fruit product (Aam papad, bars) • Quality analysis of spices. • Visit to Vegetables, Fruit and spice processing unit
UNIT-IV: (Practical) 30 Hours	• Influence of pH and heat on pigments from fruits and vegetables. • Determination of Total Soluble Solids (TSS) in different juices using a Brix refractometer • Identification of pigments in fruits and vegetables by Paper Chromatography or TLC. • Studying quality drying/dehydration/freezing. characteristics of foods • Determination of microbial loads in various animal food products. • Field visit to a food packaging industry.

Suggested Readings	1. Desrosier Norman, W. (1970). The technology of food preservation. AVI Publishing Company, Incorporated, United States. 2. Lal, G., Siddappa, G. S., & Tandon, G. L. (1960). Preservation of fruits and vegetables. Indian Council of Agricultural Research, New Delhi. 3. Pruthi, J. S. (2001). Minor spices and condiments: crop management and post-harvest technology, Indian Council of Agricultural Research, New Delhi. 4. Salunkhe, D. K., & Kadam, S. (Eds.). (1995). Handbook of fruit science and technology: production, composition, storage, and processing. CRC press, United States. 5. Srivastava, R. P., & Kumar, S. (1994). Fruit and vegetable preservation principles and practices. CBS Publishers & Distributors Pvt. Limited, New Delhi. 6. Verma, L. R., & Joshi, V. K. (2000). Post harvest technology of fruits and vegetables, Agricultural and Food Sciences, Environmental Science. Indus Publishing Company. New Delhi.
Requirements	Preservation Equipment: • Freezers, blast freezers, cryogenic freezing units. • Freeze dryers. • Gamma irradiators, electron beam irradiators. • Pulsed electric field processors, high hydrostatic pressure equipment. Processing and Production Equipment: • Brining tanks, pickling vats, oil preservation vats. • Rice polishers, wheat flour mills. • Oil expellers, presses. • Parboiling units. Quality Control Instruments: • pH meters, spectrophotometers, refractometers. • Chromatography setups (TLC, HPLC). • Instruments for gluten content, specific gravity, and cooking quality testing. Any other item as and when required
Qualified Instructors	• With expertise in food science, technology, and processing. • Lab Technicians: For maintaining and operating lab equipment. • Support Staff: For administrative and logistical support.

	canning of fish. Smoking - smoke production, smoke components, quality, safety and nutritive value of smoked fish, pre - smoking processes, smoking process control.
UNIT-III: (Practical) 30 Hours	- Meat processing Meat Quality - colour, flavour, texture, Water Holding Capacity (WHC), Emulsification capacity of meat. - Tests for assessment of raw meat - TVN, FFA, PV, Nitrate and nitrite in cured meat. - Preservation of meat -Refrigeration and freezing, thermal processing - canning of meat, dehydration, meat curing.
UNIT-IV: (Practical) 30 Hours	- Egg processing Egg-Composition and nutritive value. Factors affecting egg quality. - Preservation of eggs - Refrigeration and freezing, thermal processing, dehydration, coating. - Products from fish, meat and egg Fishery products: Surimi - Process, traditional and modern production lines, quality of surimi products. - Fish protein concentrates (FPC), fish protein extracts (FPE). - Meat products: Sausages - processing, RTE meat products. - Egg products– Egg powder, frozen egg pulp, designer eggs.
Suggested Readings	- Guerrero-Legarreta, I. (2010). Handbook of poultry science and technology, Volume 2: secondary processing. John Wiley & Sons, Inc., United States. - Hall, G. M. (Ed.). (1997). Fish processing technology. Springer Science & Business Media., United States. - Nollet, L. M., &Toldrá, F. (2006). Advanced technologies for meat processing. CRC Press, United States. - Rao, D. G. (2023). Fundamentals of food engineering. PHI Learning Pvt. Ltd., New Delhi. - Sams, A. R., Alvarado, C., & Owens, C. M. (Eds.). (2001). Poultry meat processing (Vol. 7). Boca Raton, FL: CRC Press, United States. - Toldrá, F. (Ed.). (2010). Handbook of meat processing. John Wiley & Sons., United States.
Requirements	Preservation Equipment: - Freezers, blast freezers, cryogenic freezing units. - Freeze dryers. - Gamma irradiators, electron beam irradiators. - Pulsed electric field processors, high hydrostatic pressure equipment. Processing and Production Equipment:

	• Brining tanks, pickling vats, oil preservation vats. • Rice polishers, wheat flour mills. • Oil expellers, presses. • Parboiling units. Quality Control Instruments: • pH meters, spectrophotometers, refractometers. • Chromatography setups (TLC, HPLC). • Instruments for gluten content, specific gravity, and cooking quality testing. Any other item as and when required
Qualified Instructors	• With expertise in food science, technology, and processing. • Lab Technicians: For maintaining and operating lab equipment. • Support Staff: For administrative and logistical support.

Syllabus on Vocational Education and Training Course (VTC)

Paper Title		: Guitar -I						
CODE		: VTC: 245.3						
Number of Credits		: 4						
Semester		: III						
No. of Theory Hours Per Week		: One (1 hour)						
No. of Practical Hours per Week		: Three (3 Hours)						
Outline of the Paper:								
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)			
Guitar-I					In-Semester		End-Semester	
					Theory	Practical	Theory	Practical
	Unit-I Theory (25 Marks)	15	4	100	25			
Unit-II to IV Theory (75 Marks)	90				15		60	
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60						
Course Objectives		1. This course is designed to help students understand, handle and learn to play the instrument.						
Course Learning Outcome		At the end of the course students will be able to handle and control the instrument for its effective use with necessary knowledge, skills and understanding developing their proficiency and creativity.						
Unit I: (Theory) 15 Hours		Introducing the Nashville Numbering System - Naming and numbering the scale degree. (whole step and half step). - Learning the primary chords I IV V (open and barre chords) in the key of A B C D E F G both in major and minor. - Learning the diatonic chord sequence i.e. I ii iii IV V vi vii in natural keys both major and minor.						
UNIT-II: (Practical) 30 Hours		The Basics of Harmony and Common Chord Progressions with Ear Training - The relationship between major and minor i.e tonic, predominant and dominant. - Common chord progression in rock, pop, blues and jazz. (I IV V, ii V I, iii vi ii V I, I IV ii V, I V vi IV) etc. - Ear training: Chord recognition.						
UNIT-III: (Practical) 30 Hours		Time Signatures and Key Signatures.						

	• Playing in common time signatures like 4/4, 3/4 and 2/2 • Understanding the circle of fifths. (Order of Sharps # and Flats b)
UNIT-IV: (Practical) 30 Hours	Borrowed Chords, Secondary Dominants and Rhythm Sight-Reading. • (Notes and rests) Whole note, half note, triplets, quarter note, eighth note, sixteenth note and dotted notes for rhythm sight-reading
Suggested Readings	1. Bill Keis The Basics of Harmony 2. Chas Williams, The Nashville Number System Book 3. Pete Ford, Practical Music Theory – Part 1 4. Pete Ford, Practical Music Theory – Part 2 5. Ted Greene, Chord chemistry
Requirements	• Classroom Space • Individual Practice Rooms • Guitar • Audio Systems • Projector and Screen • Computers and Software • Headphones • Sheet Music • Music Theory Books • Online Resources Any other item as required
Qualified instructors	• Qualified instructors with expertise in Guitar and related fields. • Support staff for maintaining equipment and facilities

Paper Title		: Guitar -II						
CODE		: VTC: 265.3						
Number of Credits		: 4						
Semester		: IV						
No. of Theory Hours Per Week		: One (1 hour)						
No. of Practical Hours per Week		: Three (3 Hours)						
Outline of the Paper:								
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)			
Guitar-II					In-Semester		End-Semester	
					Theory	Practical	Theory	Practical
	Unit-I Theory (25 Marks)	15	4	100	25			
	Unit-II to IV Theory (75 Marks)	90				15		60
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60						
Course Objectives		1. The course would facilitate a thorough understanding of fundamental musical elements including notes, scales, pitch, rhythm, and time signatures. It would also enable the students to analyze music notation, identify key tones and octaves.						
Course Learning Outcome		At the end of the course students are able to: 1. display skills to use notes, scales, pitch, rhythm, and key signatures. 2. apply this knowledge to analyze and interpret musical scores accurately.						
Unit I: (Theory) 15 Hours		Introducing the Major and Minor Scale - Major and minor scale formulas in all positions - Chromatic Scale - Pentatonic Scale, Blues Scale						
UNIT-II: (Practical) 30 Hours		Scale and Chord Exercises - Alternate picking and legato. - Finger picking						
UNIT-III: (Practical) 30 Hours		Chord Formation - Triads. (major, minor, suspensions, diminished and augmented). - Inversions of major and minor chords - Arpeggios						
UNIT-IV: (Practical) 30 Hours		Song Composition - Applying inversions over a chord progression - Playing arpeggios over a chord progression						

Suggested Readings	1. Terry B Edwell, Music Fundamentals 1: Pitch and Major Scales 2. Peter Vogl, The Guitarist's Scale Book: Over 400 Guitar Scales & Modes 3. Forrest W Lineberry, Scale Patterns for Guitar: 134 Melodic Sequences for Mastering the Guitar Fretboard (Playing Guitar) 4. Joseph Alexander, The First 100 Picking Patterns for Guitar: The Beginner's Guide to Perfect Fingerpicking on Guitar 5. Chris Brooks, Pentatonic Speed Strategies For Guitar: Unleash the Power of Pentatonic Scale Soloing With Proven Speed Technique Exercises 6. Joseph Alexander, The Complete Guide to Playing Blues Guitar: Beyond Pentatonics See less
Requirements	1. Classroom Space 2. Individual Practice Rooms 3. Guitars 4. Audio Systems 5. Projector and Screen 6. Computers and Software 7. Headphones Learning Materials and Resources 1. Sheet Music 2. Music Theory Books 3. Online Resources 4. Recording Studio 5. Production Equipment Any other item as required
Qualified instructors	• Qualified instructors with expertise in Guitar and related fields. • Support staff for maintaining equipment and facilities

Paper Title	: Guitar -III							
CODE	: VTC: 365.3							
Number of Credits	: 4							
Semester	:VI							
No. of Theory Hours Per Week	: One (1 hour)							
No. of Practical Hours per Week	: Three (3 Hours)							
Outline of the Paper:								
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)			
Guitar-III					In-Semester		End-Semester	
					Theory	Practical	Theory	Practical
	Unit-I Theory (25 Marks)	15	4	100	25			
	Unit-II to IV Theory (75 Marks)	90				15		60
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60						
Course Objectives		- The course is designed to provide an understanding of advance musical elements, - To Analyze music notation, identify key tones, octaves, and degrees within scales.						
Course Learning Outcome		At the end of the course students are able to demonstrate a deep understanding of music theory and practical and will be proficient in playing this musical instrument						
Unit I: (Theory) 15 Hours		Seventh Chords - Major 7th Chords - Minor 7th Chords - Dominant 7th Chords - Diminished Chords						
UNIT-II: (Practical) 30 Hours		Inversions of the Seventh Chords - Inversions of Major, Minor, Dominant and Diminished 7th Chords - Arpeggios over the Seventh Chords						
UNIT-III: (Practical) 30 Hours		The V Chord. - The functional V chord concept - Blues and Jazz concept						
UNIT-IV: (Practical) 30 Hours		Modes of the Major Scale Ionian, Dorian, Phrygian, Lyndian, Mixolydian, Aeolian and Locrian						

	• Modal playing, Scales over the V chord, Superimposition of Scales
Suggested Readings	1. Peter Vogl The Guitarist's Scale Book: Over 400 Guitar Scales & Modes 2. Rick Peckham Berklee, Jazz Guitar Chord Dictionary 3. Chad J. Johnson, Jazz Guitar Chords: Learn the Essential Chords You Need to Start Playing Jazz Guitar Now! Book 4. Joe Pass, Guitar Chords 5. Guitar Grimoire, The -Scales & Modes 6. Steve Hall and Ron Manus, Scales and Modes for Guitar 7. Jody Fisher, Modal Soloing Strategies for Guitar (Improv)
Requirements	1. Classroom Space 2. Individual Practice Rooms 3. Guitar 4. Audio Systems 5. Projector and Screen 6. Computers and Software 7. Headphones Learning Materials and Resources 1. Sheet Music 2. Music Theory Books 3. Online Resources 4. Recording Studio 5. Production Equipment
Qualified instructors	• Qualified instructors with expertise in Guitar and related fields. • Support staff for maintaining equipment and facilities

Syllabus on Vocational Education and Training Course (VTC);

Paper Title			: Khasi Traditional Music -I					
CODE			: VTC: 245.5					
Number of Credits			: 4					
Semester			: IV					
No. of Theory Hours Per Week			: One (1 hour)					
No. of Practical Hours per Week			: Three (3 Hours)					
Outline of the Paper:								
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)			
Khasi Traditional Music- I					In-Semester		End-Semester	
					Theory	Practical	Theory	Practical
	Unit-I Theory (25 Marks)	15	4	100	25			
	Unit-II to IV Theory (75 Marks)	90				15		60
Marks Distribution			: Internal Assessment: 40 : External Assessment: 60					
Course Objectives			1. This course will introduce the students to the basic understanding of Khasi Music. 2. It will train them to develop professional skills in handling Khasi membrane musical instruments and learn the rhythmic patterns of different Skits.					
Course Learning Outcome			After the completion of the course the students are able to play and become proficient in handling Khasi membrane instruments.					
Unit I: (Theory) 15 Hours			Understanding Khasi Music& Khasi Polity (Theory) • Sur Shnong (Music at the Village Level) • Music at the level of “Ka Hima” (Khasi Native State) • Concept of Khasi Rhythmic Pattern (Oral Tradition and Notation)					
UNIT-II: (Practical) 30 Hours			Learning of The Khasi Membrane Musical Instruments (Practical) • Recitation of Drum Syllables • Playing Techniques • Ki Skit: Learning of Ka Lumpaid and Shadwait Tem Beit					
UNIT-III: (Practical) 30 Hours			Learning of the Rhythmic Patterns (Practical) • Ki Skit on Ka KsingShynrang: Ka Shadwait Kynting Dieng and Ka Mastieh • Ksing Kynthei: Rhythm of Ka Padiah Ardieng					
UNIT-IV: (Practical) 30 Hours			Further Training and Learning of other Membrane Musical Instruments (Practical) • Ka Bom: The Rhythmic Patterns of Ka Lumpaid					

	Shadwait and Ka Mastieh • Ka Padiah: Playing of Ka Padiah Ardieng
Suggested Readings	1. Alfred Einstein: <i>A Short History of Music</i>, Illustrated, Edition, London, 1986. 2. All India Radio, Shillong (Archival Collection). 3. Arun Kumar Sen: <i>Indian Concept of Rhythm</i> (Director Bhatkhande Institute of Music and Musicology), Kanishka Publisher & Distributor New Delhi, 1994. 4. Barthakur D.R: <i>The Music and Musical Instruments of North East India</i>, Mittal Publications, New Delhi. 5. David Roy: <i>Principles of Khasi Customs</i>, Shillong, 1934. 6. Deva B.C.: <i>Musical Instruments</i>, National Book Trust, Reprint, 1979. 7. Fr. G Costa: <i>Ka Riti jong ka Ri LaiphewSyiem Vol I(1036) and Vol II (1938)</i>, Don Bosco Press,Shillong. 8. Hamlet Bareh : <i>The History and Culture of the Khasi People</i>, Shillong, 1964. 9. Helen Giri (Ed) :<i>U Myllung ha ki Sur – Thup II</i> (in press) 10. Helen Giri (Ed): <i>KattoKatneshaphang ka Put ka Tem</i>, La Riti Publications. 11. Helen Giri (Ed): <i>Lest We Forget, Published Seven Huts Enterprise</i>, Shillong 1994. 12. Helen Giri(Ed) : <i>U Myllung ha ki Sur – Thup II</i> (Reprint 2016), La Riti Publications. 13. KJWA Publication Cell: <i>Ka Thwet Jingstad</i>. 14. Kyndiah P R (1969): <i>A peep into Khasi and Jaintia Music, Khasi Heritage</i>, Shillong. 15. La Riti Publications. 16. LapynshaiSyiem: <i>The Evolution of Khasi Music: A Study of the Classical Content</i>, La Riti Publications.2005 17. La-Riti Archival Documentation. 18. Mawrie H O : <i>Ka Pyrkhat u Khasi</i>, Shillong, 1973. 19. Mawrie H O : <i>U Khasi ha la ka Niamra</i>, Ri Khasi Press Shillong, 1973. 20. P R T Gurdon: <i>The Khasis</i>, Cosmo Publications, Delhi,1975. 21. Rash Mohan Roy: <i>U Khasi Hyndai</i>, Shillong, 1958. 22. Seng Khasi: <i>Khasi Heritage</i>, Ri Khasi Press, Shillong,1969. 23. Webstar Davies Jyrwa : <i>Phra Tylli ki Essay</i>.

Course Learning Outcome	After completion of the course students are able to make use of skills in Khasi vocal music with proper vocal exercises.
Unit I: (Theory) 15 Hours	Study of Khasi Songs (Theory) • Types of Khasi Songs • Prominent Khasi Composers
UNIT-II: (Practical) 30 Hours	Note Reading and Writing in Tonic Solfa Notation (Practical) • Tune and Time • Natural Scale and Arpeggio Scale • Exercises on the 1st, 3rd and 5th Degree of the Major Scale
UNIT-III: (Practical) 30 Hours	Combined Time and Tune in Music (Practical) • Exercises on the 2nd and 7th degree of the Major Scale • Learning of the Time and Tune in 2, 3 and 4 Pulse Measurement
UNIT-IV: (Practical) 30 Hours	Singing Technique (Practical) • Posture, Breathing Exercises and Voice Training • Learning of Khasi Folk Songs and Khasi Composed Songs composed by the Prominent Composers to be identified by the Teachers
Suggested Readings	1. Birendranath Dutta (Rd.): <i>Traditional Performing Arts of North East India</i>, Assam Academy for Cultural Relation, Guwahati, 1990. 2. Wanswett E B R: <i>Khasi folk Songs of North East India</i>, Jalani Publishers Pvt.Ltd, Shillong, 1995 – 1st Edition. 3. Kharsahnoh E W: <i>Ki Sur Bathiang (Na Thwei ka Dohnud): Sweet Melodies from the Heart</i>. La Riti Publication. 4. Kharsahnoh E W: <i>Ka Intermediate Tonic Solfa Bynta I</i>, Published by Board of Synod Institute of Music, Shillong, 2016. 5. Kharsahnoh E W: <i>Ka Intermediate Tonic Solfa Bynta II</i>, Published by Board of Synod Institute of Music, Shillong, 2009. 6. Kharsahnoh E W: <i>Voice Lesson I & II</i>, Published by Board of Synod Institute of Music, Shillong, 2009. 7. Sainkur S. Syiemlieh : <i>Elementary Tonic Solfa 1&2</i>, Published by Board of Synod Institute of Music, Shillong, 2006. 8. Sainkur S. Syiemlieh: <i>Lamphang Thaw Jingrwai</i>, Published by Board of Synod Institute of Music, Shillong, 1999.

	9. Sainkur S. Syiemlieh: <i>Ki Tynrai Thaw Jingrwai Saw Sur</i>, Staff Music Notation Vol.I, Bynta 1&2, Published by Board of Synod Institute of Music, Shillong, 1998. 10. Sainkur S. Syiemlieh: <i>Ki TynraiJingrwai (Fundamentals of Music)</i>, Staff Notation Edition Vol.I, Bynta 1&2, Published by Board of Synod Institute of Music, Shillong, 1998. 11. Sainkur S. Syiemlieh: <i>Ki TynraiJingrwai (Fundamentals of Music)</i>, Staff Notation Edition Vol.II, Bynta 1&2, Published by Board of Synod Institute of Music, Shillong 1998. 12. David M Lartang: <i>Junior Tonic Solfa Part I</i>, Publications HepmelyneWanniang, West Khasi Hills District, Meghalaya, 2010. 13. David M Lartang: <i>Elementary Tonic Solfa Part II</i>, Publications HepmelyneWanniang, West Khasi Hills District, Meghalaya, 2012. 14. David M Lartang: <i>Intermediate Tonic Solfa Part III</i>, Publications HepmelyneWanniang, West Khasi Hills District, Meghalaya, 2022. 15. Helen Giri (Ed): <i>U Myllung ha ki Sur – Thup II</i> (Reprint 2016), La Riti Publications. 16. Helen Giri(Ed) : <i>U Myllung ha ki Sur–Thup II</i> (in press), La Riti Publications. 17. Kharsyntiew M S: <i>Phawar</i>. 18. KJWA Publication Cell: <i>Khasi Phawar</i>. 19. All India Radio, Shillong (Archival Collection). 20. La-Riti Archival Documentation.
Requirements	1. Music Rooms 2. Instruments 3. Drums (KsingShynrang and KsingKynthei) 4. Bom 5. Padiah 6. String Instruments (Duitara) 7. Craft Workshop 8. Recording Studio 9. Performance Hall 10. IT and Digital Resources Any other item as required
Qualified Instructors	• Instructors with experience in Khasi Traditional MusicCertifications or relevant qualifications in Khasi Traditional Music

Paper Title		: Khasi Traditional Music-III						
CODE		:VTC: 365.5						
Number of Credits		: 4						
Semester		:VI						
No. of Theory Hours Per Week		: One (1 hour)						
No. of Practical Hours per Week		: Three (3 Hours)						
Outline of the Paper:								
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)			
Khasi Traditional Music- III	Unit-I Theory (25 Marks)	15	4	100	In-Semester		End-Semester	
					Theory	Practical	Theory	Practical
	Unit-II to IV Theory (75 Marks)	90						15
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60						
Course Objectives		1. This course will introduce students to the basic understanding of the classification of Khasi Musical Instruments. 2. It will help and improve them in learning and in the training of String Instruments. 3. This course is also designed to enable students to develop skills in crafting of Khasi Musical Instruments.						
Course Learning Outcome		After completion of the course students are able to display skills in using traditional instruments and also in crafting them.						
Unit I: (Theory) 15 Hours		Classification of Khasi Musical Instruments (Theory) • Understanding the classification of Khasi Traditional Musical Instruments: Membranophones/ Chordophones/ Idiophones/ Bamboo Instruments						
UNIT-II: (Practical) 30 Hours		Khasi String Instrument (Duitara)(Practical) • Fingering Position • Rhythm of Ka Skit Lumpaid, Ka Skit Dum Dum • Learning of the Rhythm with scale in Major Scale						
UNIT-III: (Practical) 30 Hours		Learning of More Rhythm and Pieces on Ka Duitara (Practical) • Rhythm of Ka Skit Shadwait • Three pieces to be identified by the Teacher						
UNIT-IV: (Practical)		Crafting of some traditional instruments						

30 Hours	Students shall have to craft at least one musical Instrument (Practical)
Suggested Readings	- Costa. G: <i>Ka Riti jong ka Ri LaiphewSyiem Vol I (1036) and Vol II (1938)</i>, Don Bosco Press, Shillong. - Dilip Bhattacharjee: <i>Musical Instruments of tribal India</i>, Manas - Dkhar E.W.: <i>Ka Mariang ka Kren</i>, B.Dkhar, 1999. - HanabalahunKharbuki: <i>Khasi Traditional Musical Instruments in East Khasi Hills, West Khasi Hills and Ribhoi District in Meghalaya</i>, Unpublished Dissertation. - Helen Giri (Ed): <i>KattoKatneshaphang ka Put ka Tem</i>, La Riti Publications. - KasliwalSuneera (2001): <i>Instruments Matter Craftsmen of Musical Instruments and Masters</i>. - Kharkongor I: <i>U Khasi bad ka Mariang</i>, Mrs.DarkosNongkhlaw, 2005. - Kharsahnoh E W: <i>Ki Sur Bathiang (Na Thwei ka Dohnud): Sweet Melodies from the Heart</i>. La Riti Publication. - Kharsahnoh E W: <i>Voice Lesson I & II</i>, Published by Board of Synod Institute of Music, Shillong, 2009. - Khongsit S.: <i>Ki Dieng bad ka Culture Jongngi</i>, Mrs.S. Khongngain, 2012 (Sienshon Ba ar). - LapynshaiSyiem: <i>The Evolution of Khasi Music: A Study of the Classical Content</i>, La Riti Publications 2005. - Publications, New Delhi, 1999. - Shangpliang J.S.: <i>U Briew bad ka Mariang (Ki SngiJongngi) Ri Khasi Book Agency</i>, 2014. - Webstar Davies Jyrwa: <i>Phra Tylli ki Essay</i>.
Requirements	- Music Rooms: - Instruments: - Drums (KsingShynrang and KsingKynthei) - Bom - Padiah - String Instruments (Duitara): - Craft Workshop: - Recording Studio: - Performance Hall: - IT and Digital Resources: Any other item as required
Qualified Instructors	Instructors with experience in Khasi Traditional MusicCertifications or relevant qualifications in Khasi Traditional Music

Syllabus on Vocational Education and Training Course (VTC)

Paper Title		: Mushroom Cultivation -I						
CODE		: VTC: 241.2						
Number of Credits		: 4						
Semester		: III						
No. of Theory Hours Per Week		: One (1 hour)						
No. of Practical Hours per Week		: Three (3 Hours)						
Outline of the Paper:								
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)			
Mushroom Cultivation-I	Unit-I Theory (25 Marks)	15	4	100	In-Semester		End-Semester	
		Theory			Practical	Theory	Practical	
	Unit-II to IV Theory (75 Marks)	90						
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60						
Course Objectives		1. To enrich the students with basic information of mushrooms, 2. To enable them to identify edible and poisonous mushrooms 3. To provide exposure on various aspects of mushroom cultivation through field visits.						
Course Learning Outcome		At the end of the course students will be able to: • identify edible and poisonous mushrooms • demonstrate the aspects of production and processing of mushrooms.						
Unit I: (Theory) 15 Hours		• Introduction, history and scope of mushroom cultivation; Common edible mushrooms; Other economically important and medicinal mushrooms; • Different parts of a typical mushroom & variations in mushroom morphology; • Characters of edible and poisonous mushrooms; • Mushroom classification based on occurrence, Natural habitats, Colour of spores, Morphology, Structure and texture of fruit bodies; Nutritional and health benefits of mushrooms.						
UNIT-II: (Practical) 30 Hours		• Identification of edible and poisonous mushrooms (specimen/chart). • Study of nutritional profile of common edible mushrooms. • Study of general morphology, distinguishing						

	characteristics, spore germination and life cycle of common edible mushrooms
UNIT-III: (Practical) 30 Hours	• Determination of soil temperature, soil moisture content, soil pH etc • Identification of different parts of mushroom • Classification of mushroom
UNIT-IV: (Practical) 30 Hours	• Visit to mushroom production unit • Visit to mushroom processing unit • Visit to spawn production unit.
Suggested Readings	1. Biswas, Subrata M. Datta, S. V. Ngchan. (2012) Mushrooms: A manual for Cultivation. PHI Learning Pvt Ltd. 2. Gogoi, R. Y. Rathaiah, T.R. Borah. (2006). Mushroom cultivation technology, Scientific Publishers, Jodhpur, India. 3. Kannaiyan S. & Ramasamy K. (1980). A hand book of edible mushrooms, Today & Tomorrows printers & publishers, New Delhi. 4. Nita, B. (2000). Handbook of Mushrooms. Vol 1 & 2. Oxford and IBH Publishing Co. Pvt. Ltd., New Delhi. 5. Pandey, R.K. and Ghosh, S.K. (1996). A handbook of Mushroom Cultivation. Emkey Publication. 6. Som, D. 2021. A Practical Manual on Mushroom Cultivation. P.K. Publisher and Distributor. 7. Tripathi, D.P (2005). Mushroom Cultivation. Oxford & IBH Publishing Co. Pvt. Ltd, New Delhi.
Requirements	• Microscopes • Charts and specimens • Tools for studying nutritional profiles • Growing chambers or areas for cultivating mushrooms. • Soil testing kits (for temperature, moisture content, pH). • Equipment for measuring environmental factors (light, humidity). • Specimens of mushrooms for hands-on identification Any other item as and when required
Qualified instructors	• Qualified instructors with expertise in mushroom cultivation and related fields. • Support staff for maintaining equipment and facilities

Paper Title	: Mushroom Cultivation -II							
CODE	: VTC: 261.2							
Number of Credits	: 4							
Semester	: IV							
No. of Theory Hours Per Week	: One (1 hour)							
No. of Practical Hours per Week	: Three (3 Hours)							
Outline of the Paper:								
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)			
Mushroom Cultivation-II					In-Semester		End-Semester	
					Theory	Practical	Theory	Practical
	Unit-I Theory (25 Marks)	15	4	100	25			
	Unit-II to IV Theory (75 Marks)	90				15		60
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60						
Course Objectives		- To impart knowledge on the different aspects of cultivation of common edible mushrooms - To identify problems encountered during cultivation and management strategies.						
Course Outcome	Learning	At the end of the course students are able to: - create a mushroom cultivation unit. - apply various procedures required for cultivation of common edible mushrooms - detect diseases and pests effectively.						
Unit I: (Theory) 15 Hours		- Principles of mushroom cultivation: Structure and construction of mushroom house (small village unit and large commercial unit), Sterilization of substrates; - Spawn production: culture media preparation, preparation of mother spawn, production of planting spawn, storage and transportation of spawn, criteria for selection of good quality spawn; Cultivation of Button, - Oyster and Straw Mushrooms: Collection of raw materials, compost & composting, spawn & spawning methods —bed method, Polythene bag method, field cultivation; - Casing & case run: importance of casing mixture, quality parameters of casing soil, different types of casing mixtures and commonly used materials; cropping & crop management, picking & packing. - Problems in cultivation - diseases, pests, nematodes, weed moulds and their management strategies.						

UNIT-II: (Practical) 30 Hours	• Preparation of compost using paddy straw and mushroom bed preparation. • Spawning using different methods, spawn running and harvesting. • Preparation of casing mixture, casing and case run. • Sterilization and sanitation of mushroom house, instruments and substrates.
UNIT-III: (Practical) 30 Hours	• Introduction to microbiology laboratory, Laminar air flow, Autoclave etc. • Preparation of mother culture, media, inoculation, incubation and spawn production. • Study of common diseases, pests, nematodes and their management strategies during mushroom cultivation.
UNIT-IV: (Practical) 30 Hours	• Cultivation of Paddy straw mushroom. • Cultivation of Oyster mushroom using paddy straw. • Cultivation of Button mushroom.
Suggested Readings	1. Ahlawat, O.P. R.P. Tewari (2007). Cultivation technology of Paddy straw Mushroom. National Research Centre for Mushroom (ICAR), Chambaghat, Solan, India. 2. Biswas, Subrata M. Datta, S. V. Ngchan. (2012) Mushrooms: A manual for Cultivation. PHI Learning Pvt Ltd. 3. Gogoi, R. Y. Rathaiah, T.R. Borah. (2006). Mushroom cultivation technology, Scientific Publishers, Jodhpur, India. 4. Gupta P. K. Elements of Biotechnology. Rastogi Publications. 5. Som, D. 2021. A Practical Manual on Mushroom Cultivation. P.K. Publisher and Distributor. 6. Tripathi, D.P (2005). Mushroom Cultivation. Oxford & IBH Publishing Co. Pvt. Ltd, New Delhi.
Requirements	1. Mushroom Cultivation Area: 2. Sterilization Facilities: 3. Microbiology Laboratory: 4. Disease Management: Any other item as required
Qualified instructors:	• Qualified instructors with expertise in mushroom cultivation and related fields. • Support staff for maintaining equipment and facilities

Paper Title	: Mushroom Cultivation -III							
CODE	: VTC: 361.2							
Number of Credits	: 4							
Semester	:VI							
No. of Theory Hours Per Week	: One (1 hour)							
No. of Practical Hours per Week	: Three (3 Hours)							
Outline of the Paper:								
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)			
Mushroom Cultivation-III					In-Semester		End-Semester	
					Theory	Practical	Theory	Practical
	Unit-I Theory (25 Marks)	15	4	100	25			
	Unit-II to IV Theory (75 Marks)	90				15		60
Marks Distribution	: Internal Assessment: 40 : External Assessment: 60							
Course Objectives	1. To explain on preparation of various value-added products from mushroom and funding opportunities in Mushroom Cultivation.							
Course Learning Outcome	At the end of the course students are able to: 1. prepare and present proposals on mushroom and spawn production 2. prepare value added products from mushroom. 3. identify the economics of mushroom cultivation. 4. demonstrate the economics of value-added products from mushroom.							
Unit I: (Theory) 15 Hours	• Post-harvest management and processing of mushrooms: Blanching, Steeping, sun drying, canning, pickling, freeze drying; packaging; Storage- short term and long term; Marketing • Economics of mushroom cultivation; Economics of processed products of mushrooms. • Application of Artificial Intelligence in mushroom cultivation.							
UNIT-II: (Practical) 30 Hours	• Sterilization of glasswares, equipments etc. • Blanching, Steeping, sun drying of mushrooms. • Freeze drying of mushrooms. • Packaging of mushrooms.							
UNIT-III: (Practical) 30 Hours	• Pickling of mushrooms. • Study of storage life of processed mushrooms. • Economics of processed products of mushroom.							
UNIT-IV:	• Economics of Mushroom cultivation and spawn production.							

(Practical) 30 Hours	• Visit to various financial funding agencies. • Preparation of project proposal for mushroom cultivation and spawn production.
Suggested Readings	1. Biswas, Subrata M. Datta, S. V. Ngchan. (2012) Mushrooms: A manual for Cultivation. PHI Learning Pvt Ltd. 2. Gogoi, R. Y. Rathaiah, T.R. Borah. (2006). Mushroom cultivation technology, Scientific Publishers, Jodhpur, India. 3. Hand Book of Mushroom Cultivation, Processing and Packaging, Eiri Staff, Engineers India Research Institute (2007) 4. Pathak, V.N. Nagendra Yadav and Maneesha Gaur (2010). Mushroom Production and Processing Technology. Published by Agrobios (India). 5. Rai R.D. and T. Arumuganathan (2008). Post-Harvest Technology of Mushrooms, Technical Bulletin 2008, NRCM, ICAR, Chambaghat, Solan 1731213, (H.P.). 6. Revathy, N. A. Vijayasamundeeswari, V.M. Indumathi, V. Gomathi Mushroom Cultivation (Paperback,), Shanlax Publications, ISBN: 9789390082735, Edition: 1, 2020 7. Som, D. 2021. A Practical Manual on Mushroom Cultivation. P.K. Publisher and Distributor. 8. Tripathi, D.P. (2005). Mushroom Cultivation. Oxford & IBH Publishing Co. Pvt. Ltd, New Delhi.
Requirements	• Microscopes • Charts and specimens • Tools for studying nutritional profiles • Growing chambers or areas for cultivating mushrooms. • Soil testing kits (for temperature, moisture content, pH). • Equipment for measuring environmental factors (light, humidity). • Specimens of mushrooms for hands-on identification • Any other item as and when required
Qualified instructors	• Qualified Instructors with expertise in mushroom cultivation and related fields. • Support staff for maintaining equipment and facilities

Syllabus on Vocational Education and Training Course (VTC)

Paper Title		: Organic Farming -I						
CODE		: VTC: 240.1						
Number of Credits		: 4						
Semester		: III						
No. of Theory Hours Per Week		: One (1 hour)						
No. of Practical Hours per Week		:Three (3 Hours)						
Outline of the Paper:								
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)			
Organic Farming-I					In-Semester		End-Semester	
					Theory	Practical	Theory	Practical
	Unit-I Theory (25 Marks)	15	4	100	25			
Unit-II to IV Theory (75 Marks)	90				15		60	
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60						
Course Objectives		1. To make students understand the concept, principles and practices of organic farming						
Course Learning Outcome		At the end of the course students will able to: 1. explain the concepts and principles of organic farming 2. demonstrate on the preparation and use of organic inputs 3. describe the role of microbes through bio-fertilizer on plant growth promotion						
Unit I: (Theory) 15 Hours		• Organic farming, concept, principles and its scope in India and NE region; prospects and constraints of organic farming in India and NE region; • Organic vs conventional farming; Traditional knowledge on organic management; Organic management of soil-sources of plant nutrients, préparation and uses of different types of composts, FYM, vermicompost, green manures, oil cakes, bio-fertilizers etc						
UNIT-II: (Practical) 30 Hours		• Identification of on-farm and off-farm organic inputs. • . Preparation of FYM. • Preparation of Berkeley Method of Composting. • Preparation of Indore method of composting. • Preparation of Bangalore method of composting.						
UNIT-III: (Practical) 30 Hours		• Identification of natural earth-worms • Study on different oil cakes and nutrient contents • Identification of green manuring crops and its uses • Visit to organic manures production units/farmers.						

	• Preparation of vermicompost and vermi-wash.
UNIT-IV: (Practical) 30 Hours	• Quality analysis of different bio-fertilizers. • Methods of bio-fertilizer application. • Enrichment of FYM/compost/vermicompost. • Visit to the bio-fertilizer production plants.
Suggested Readings	1. Organic Horticulture; Principles, Practices and Technologies, Westville, New Delhi. 2. Palaniappan SP and Annadurai K 2006. Organic Farming: Theory and Practices. Scientific Publishers, Jodhpur, India. 3. Panda SC 2011. Organic Farming for sustainable agriculture. Kalyani Publishers, Jalandhar. 4. Rangathan LS 2006. Vermitechnology. Agrobios, India. 5. Sharma AK 2005. A Handbook of Organic Farming. Agrobios, India. 6. Singh HP and George V Thomas 2014. Singh Y. 2020. Practical manual on Principles of organic farming. Rani Laxmi Bai Central Agricultural University, Jhansi. 7. Thapa U and Tripathy P 2010. Organic Farming in India- Problems and Prospects. Agro Publishing Academy, Udaipur. 8. Walia SS and Narwal RK. 2022. Principles of organic farming. New India Publishing Agency, New Delhi
Requirements	Soil Management • Sources of Plant Nutrients • Preparation and Use of Different Types of Composts, FYM, Vermicompost, Green Manures, Oil Cakes, Bio-Fertilizers Organic Inputs • Identification of On-Farm and Off-Farm Organic Inputs • Preparation Techniques Composting Methods • Farmyard Manure (FYM) • Berkeley Method • Indore Method • Bangalore Method Vermiculture • Identification of Natural Earthworms

	• Preparation of Vermicompost and Vermiwash Green Manuring • Identification of Green Manuring Crops • Uses and Benefits Organic Pest, Disease, and Weed Management • Biological Control of Pests • Biopesticides • Cultural Methods • Integrated Pest Management (IPM) Natural Farming Components • Panchgavya, Beejamrutam, Jeevamrutam, Ghanajeevamrutam, Dravajeevamrutam, Neemastra Bio-Fertilizers and Bio-Pesticides • Quality Analysis • Application Methods • Enrichment Techniques Any other items as and when required
Qualified Instructors	Instructors with experience in Organic Farming Certifications or relevant qualifications in Organic Farming

Paper Title		: Organic Farming-II						
CODE		: VTC: 260.1						
Number of Credits		: 4						
Semester		: IV						
No. of Theory Hours Per Week		: One (1 hour)						
No. of Practical Hours per Week		: Three (3 Hours)						
Outline of the Paper:								
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)			
Organic Farming-II					In-Semester		End-Semester	
					Theory	Practical	Theory	Practical
	Unit-I Theory (25 Marks)	15	4	100	25			
	Unit-II to IV Theory (75 Marks)	90				15		60
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60						
Course Objectives		To impart knowledge on organic ways of pest, disease and weed management, use of different indigenous, cultural and natural methods soil fertility and pest management						
Course Outcome	Learning	After completion of the course students are able to: 1. identify and use different biological pest and disease management techniques 2. demonstrate hands on experience on preparation of bio-fertilizers, bio-control agents and other natural sources of plant nutrition 3. use Indigenous Technical knowledge (ITK) and natural farming components.						
Unit I: (Theory) 15 Hours	• Organic management of pests, diseases and weeds: biological control of pests; biopesticides; cultural methods, crop rotation, mixed farming, trap cropping, companion cropping, smothering crops, bait traps, light traps, bird purchase etc.; • Trichodermamass multiplication technique; soil solarization- types, methods and advantages; • Indigenous formulations for disease and pest management. Bio-pesticides. • Cultural and biological weed control methods. • Role of natural farming components on soil fertility and crop pest management.							
UNIT-II: (Practical) 30 Hours	• Visit to organic clusters and bio-control labs. • Study and maintenance of bio-fertilizer agents.							

	• Methods of application of bio-pesticides. • . Preparation of plant-based pesticides (Neem oil, neem seed kernel, lantana etc.) • Biological weed control agents- multiplication and method of use.
UNIT-III: (Practical) 30 Hours	• Study and maintenance of bio-control agents. • Preparation and use of natural farming components - Panchgavya and beezamrutam. • Preparation and use of natural farming components - Jeevamrutam and Ghanajeevamrutam • Preparation and use of natural farming components - Dravajeevamrutam and Neemastra.
UNIT-IV: (Practical) 30 Hours	• Case studies of Indigenous Technical knowledge (ITK) for nutrient, insect, pest, disease and weed management. • Economic analysis of organic production system. • Study of post-harvest management in organic farming • Visit to organic farms to study the various components and their utilization
Suggested Readings	1. Chandra S, Narayan S, Narayan R, Kumar A and Wani JA. 2023. Natural Farming a rising concept. Satish serial publishing house, New Delhi. 2. Organic Horticulture; Principles, Practices and Technologies, Westville, New Delhi. 3. Palaniappan SP and Annadurai K 2006. Organic Farming: Theory and Practices. Scientific Publishers, Jodhpur, India. 4. Panda SC 2011. Organic Farming for sustainable agriculture. Kalyani Publishers, Jalandhar. 5. Singh Y. 2020. Practical manual on Principles of organic farming. Rani Laxmi Bai Central Agricultural University, Jhansi. 6. Thapa U and Tripathy P 2010. Organic Farming in India-Problems and Prospects. Agro Publishing Academy, Udaipur
Requirements	Soil Management • Sources of Plant Nutrients • Preparation and Use of Different Types of Composts, FYM, Vermicompost, Green Manures, Oil Cakes, Bio-Fertilizers Organic Inputs • Identification of On-Farm and Off-Farm Organic Inputs

	• Preparation Techniques Composting Methods • Farmyard Manure (FYM) • Berkeley Method • Indore Method • Bangalore Method 6Vermiculture • Identification of Natural Earthworms • Preparation of Vermicompost and Vermiwash Green Manuring • Identification of Green Manuring Crops • Uses and Benefits Organic Pest, Disease, and Weed Management • Biological Control of Pests • Biopesticides • Cultural Methods • Integrated Pest Management (IPM) Natural Farming Components • Panchgavya, Beejamrutam, Jeevamrutam, Ghanajeevamrutam, Dravajeevamrutam, Neemastra Bio-Fertilizers and Bio-Pesticides • Quality Analysis • Application Methods • Enrichment Techniques Any other items as and when required
Qualified Instructors	• Instructors with experience in organic Farming • Certifications or relevant qualifications in Organic Farming

Paper Title		: Organic Farming-III							
CODE		:VTC: 360.1							
Number of Credits		: 4							
Semester		:VI							
No. of Theory Hours Per Week		: One (1 hour)							
No. of Practical Hours per Week		: Three (3 Hours)							
Outline of the Paper:									
Type of Course	Units in the VTC		Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)			
Organic Farming-III						In-Semester		End-Semester	
						Theory	Practical	Theory	Practical
	Unit-I Theory (25 Marks)		15	4	100	25			
Unit-II to IV Theory (75 Marks)		90				15		60	
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60							
Course Objectives		To impart knowledge on different aspects of organic animal products, post-harvest management, organic certification, marketing and export.							
Course Learning Outcome		After completion of the course students are able to: 1. describe different aspects of organic animal products 2. explain the post-harvest aspects of organic animal products. 3. examine marketing and economic potential of organic products 4. identify certification agencies and knowledge on certification procedures.							
Unit I: (Theory) 15 Hours		Aspects of Organic milk, fish, eggs and meat production; Initiatives taken by the central Govt., state governments, NGOs and other organizations like APEDA for promotion of organic agriculture in India; Post harvest management of organic products- Processing, labelling, storage and transport; Economic considerations and viability, marketing and export potential of organic products.; Operational structure of NPOP; Certification process and standards of organic farming							
UNIT-II: (Practical) 30 Hours		- Livestock management in organic farm. - Organic fish production procedure and standards. - Organic egg production procedure and standards. - Organic meat production procedure and standards.							
UNIT-III: (Practical) 30 Hours		- Study on regulatory authorities/agencies/organizations for the promotion of organic agriculture in India. - Study of quality parameters of organic produce. - Economic analysis of organic production system. 4. Visit to							

	organic farms to study the various components and their utilization.
UNIT-IV: (Practical) 30 Hours	• Study on processing, labelling, storage and transport of organic products. • . Supply chain and marketing strategies of organic products. • Study on organic certification procedure. • Visit to organic certification agencies.
Suggested Readings	1. Gehlot G. 2005. Organic farming; standards, accreditation certification and inspection. Agrobios, India. 2. Lalal CT. 2018. Marketing of organic food produce. Delve publishing, Canada. 3. Palaniappan SP and Annadorai K. 2003. Organic farming, theory and practice. Scientific publ., India 4. Singh Y. 2020. Practical manual on Principles of organic farming. Rani Laxmi Bai Central Agricultural University, Jhansi. 5. Somasundaram E, Nadhini DU and Meyyapan, N. 2021. Principles of organic farming. CRC press, London.
Requirements	Soil Management • Sources of Plant Nutrients • Preparation and Use of Different Types of Composts, FYM, Vermicompost, Green Manures, Oil Cakes, Bio-Fertilizers Organic Inputs • Identification of On-Farm and Off-Farm Organic Inputs • Preparation Techniques Composting Methods • Farmyard Manure (FYM) • Berkeley Method • Indore Method • Bangalore Method Vermiculture • Identification of Natural Earthworms • Preparation of Vermicompost and Vermiwash Green Manuring • Identification of Green Manuring Crops • Uses and Benefits

	Organic Pest, Disease, and Weed Management • Biological Control of Pests • Biopesticides • Cultural Methods • Integrated Pest Management (IPM) Natural Farming Components • Panchgavya, Beejamrutam, Jeevamrutam, Ghanajeevamrutam, Dravajeevamrutam, Neemastra Bio-Fertilizers and Bio-Pesticides • Quality Analysis • Application Methods • Enrichment Techniques Any other items as and when required
Qualified Instructors	• Instructors with experience in Organic Farming • Certifications or relevant qualifications in Organic Farming

Syllabus on Vocational Education and Training Course (VTC)

Paper Title		: Photography - I						
CODE		: VTC: 249.1						
Number of Credits		: 4						
Semester		: III						
No. of Theory Hours Per Week		: One (1 hour)						
No. of Practical Hours per Week		: Three (3 Hours)						
Outline of the Paper:								
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)			
Photography - I					In-Semester		End-Semester	
					Theory	Practical	Theory	Practical
	Unit-I Theory (25 Marks)	15	4	100	25			
Unit-II to IV Theory (75 Marks)	90				15		60	
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60						
Course Objectives		1. To introduce students to the evolution of photography from the conventional to the digital era. 2. This course aims to provide an understanding of the significance of photography in the world today 3. To recognise photography as one of the most powerful mediums of communication in the world. 4. As part of the theory, students will be taught the history of Photography and various gradations of the visual medium. There would be a practical demonstration of old cameras, flashguns, B&W films, colour negatives, slides, various lenses and an understanding of analogue and digital cameras for their physical features. 5. During practicals, the students will work on old and new photography formats. Also, they would practice and learn to compose a photograph and know the best ways to capture a moment.						
Course Outcome	Learning	After the completion of the course students are able to: 1. explain the history of photography and its journey of development till the present times 2. describe the functions of the camera, lens, flash gun as an artificial light source, the Role of a photographer, the importance of photography, various fields of photography 3. state the principles of exposure, composition, rule of thirds, ISO, Aperture, shutter speed, light metering 4. assess an ethical understanding of photography and also learn the Do's and Don'ts of photography 5. make use of lens and camera for various purposes, along with suitable gadgets like atripod, lens hood, diffuser, monopod light meter, etc.						

Unit I: (Theory) 15 Hours	• Evolution & History of Photography, • Basics of Conventional & Digital Photography and Exposure, • Principles of Composition, Camera, lens and other gadgets.
UNIT-II: (Practical) 30 Hours	Understanding the basics of conventional & digital photography with field exercise • The practical of the unit will sensitise students to understand conventional photography that began with a “Light tight box” and then passed on to various phases of technical development from ‘KODAK BOX’ Camera to modern-day DSLR (Digital Single Lens Reflex) camera.
UNIT-III: (Practical) 30 Hours	Use the parameters of exposure with field exercises. • The practical in the unit will cover one of the most fundamental factors of the art of photography called exposure, which is the amount of light per unit area reaching a frame of photographic film or the surface of an electronic image sensor. • The practicals of the unit will consist of the idea of aperture, shutter speed and ISO, which determine the amount of light necessary to fall on the film plane for a perfect image and then record it for the required purpose. • The importance and theoretical understanding of the use of exposure will be discussed in this module, along with practical.
UNIT-IV: (Practical) 30 Hours	Understanding camera and lenses and its use • The use of various types of cameras – from Box to TLR to SLR to DSL – will be demonstrated to the students using their respective film and print formats. • Students will carry out field practicals on DLSR or Point and shoot cameras for their projects and assignments. • Project on the use of composition with images captured by the students followed by their analysis • The practical is aimed at enhancing the skills of the students to use composition for better image capturing. The practical understanding for students of the effective geometric forms that help add compositional value to mood and moments.

Suggested Readings	1. Michael Freeman, The photographer's eye Remastered 10th Anniversary: Composition and design for better digital photographs, Atlantic Publishers (Date of Publication 15 June 2017) 2. Michael Freeman, The Photography Bible – All you need to know to take perfect photos, Atlantic Publishers (Date of Publication 8 November, 2018) 3. Michael R. Peres (Editor), The Focal Encyclopaedia of Photography, Focal Press (Date of Publication 12 November, 2015) (Updated edition) 4. Sharma, O.P. Practical Photography, Hind Pocket Books (Reprint 1997)
Requirements	Classrooms/Lecture Halls 1. Computer Labs 2. Photography Studio 3. Darkroom (Optional for Conventional Photography) 4. Equipment Room 5. Exhibition/Display Area 6. Field Trip Resources 7. Safety and Compliance Any other item as required
Qualified instructors	• Qualified faculty members with expertise in photography and related fields (such as visual arts, design, or communication) to teach both theoretical concepts and practical skills. • Technical support staff to assist with equipment maintenance

Paper Title		Photography -II							
CODE		: VTC: 269.1							
Number of Credits		: 4							
Semester		: IV							
No. of Theory Hours Per Week		: One (1 hour)							
No. of Practical Hours per Week		: Three (3 Hours)							
Outline of the Paper:									
Type of Course PhotographyII	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)				
					In-Semester		End-Semester		
					Theory	Practical	Theory	Practical	
	Unit-I Theory (25 Marks)	15	4	100	25				
Unit-II to IV Theory (75 Marks)	90				15		60		
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60							
Course Objectives		1. To introduce the journey of photography from B&W to colour and learn the use of various artistic forms and techniques along with filters. 2. To make students comprehend photography as a combination of art and science that helps in visual communication. 3. In theory, the art and science of photography will be discussed from the initial days of photography to the modern era. 4. Students will be assigned work on various techniques for capturing good photographs during practical projects. 5. They will be given hands-on training in photo editing to help them better manage their images.							
Course Outcome	Learning	After completion of the course students are able to : 1. identify of visual artistic communication through the medium of photography. 2. demonstrate the use of filters, black and white and colour as mediums of photography 3. make use of the darkroom for film development and processing 4. use digital lab with having hands-on training in software and editing techniques							
Unit I: (Theory) 15 Hours		Facets of Photography • Understanding Pictorial Photography, • Photographic art along with Basics of Lighting - Natural & Artificial,							

	• Use of filters for Photography, Basics of Black & White Photography & Colour Photography, • Basic ideas in Darkroom, Film Development and Printing, Various kinds of photography Portrait, Nature, Wedding, Portfolio.
UNIT-II: (Practical) 30 Hours	• Basics of Better Photography (How to work on the field) • Art & Science of Black & White and Colour Photography • The practical of unit II will consist of the basic understating of B&W and colour photography with hands-on training.
UNIT-III: (Practical) 30 Hours	• Basic of Photo Editing (Image editing training at the digital lab) • Use of darkroom and laboratory in photography (analogue& digital) • The practical of unit III consist of two parts (Practical 3 & 4): hands-on training in photo editing in the digital lab and use of dark and laboratory in photography.
UNIT-IV: (Practical) 30 Hours	• Projects on various kinds of photography • The practical works in Unit IV for students include various subjective projects of their choice under the guidance of a mentor.
Suggested Readings	1. Bryan Peterson, Learning to see creatively: Design, Colour and Composition in photography, Penguin Random House (Date of Publication 1 October 2003) 2. Maura Mulvihill and National Geographic, National Geographic Dawn to Dark Photographs: The Magic of Light, National Geographic (Year of Publication (Date of Publication 1 October 2013) 3. Michael Freeman, Introduction to Photography, Atlantic Publishers (Date of Publication 1 July 1995) 4. Michael Freeman, The Photographer's Eye: Composition and Design for Better Digital Photos, Ilex Press (Date of Publication 1 June 2007) 5. Tom Ang, How to photograph absolutely everything, DK (www.dk.com)
Requirements	1. Computer Labs 2. Darkroom Facilities 3. Photography Studio 4. Equipment Room 5. Library/Resource Center 6. Exhibition Space 7. Field Trip Resources Safety and Compliance:

	• Ensuring all facilities meet safety standards, especially in areas like the darkroom where chemicals are used. Compliance with copyright laws and ethical guidelines related to photography and image use is also essential.
Qualified instructors	• Experienced faculty members with expertise in photography and related fields (visual arts, design, communication) who can teach both theory and practical skills effectively. • Technical support staff to assist with equipment maintenance, troubleshooting, and safety protocols.

Paper Title	: Photography -III							
CODE	: VTC:369.1							
Number of Credits	: 4							
Semester	:VI							
No. of Theory Hours Per Week	: One (1 hour)							
No. of Practical Hours per Week	: Three (3 Hours)							
Outline of the Paper:								
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)			
Photography - III					In-Semester		End-Semester	
					Theory	Practical	Theory	Practical
	Unit-I Theory (25 Marks)	15			25			
	Unit-II to IV Theory (75 Marks)	90	4	100		15		60
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60						
Course Objectives		1. To teach the various genres of professional photography and its use as a career option. In the modern era, photography has evolved as a lucrative profession. 2. This module will focus on the professional aspects and benefits of choosing photography as a career option. 3. The unit will highlight various genres of photography to give the students a fair idea of the scopes and facilities of photography and help them choose it as a profession or to become a photographic professional. 4. The mentor will train students to work on their photography projects. The students will also be guided on the scope of the photography business by field professionals who will highlight the pros and cons of photography as a business.						
Course Learning Outcome		At the end of the course students are able to: 1. identify the fields of photography, such as commercial photography, photo documentation, pictorial photography, sports photography, personality and kids" photography and wedding photography, among other career options in photography 2. describe the process of management and use of equipment and gadgets 3. choose photography as a career option.						
Unit I: (Theory) 15 Hours		Genres of Photography • Commercial, Sports Photography and other types. • Care and management of photographic equipment, Photojournalism • Various fields of professional photography- managing photography as a business.						

UNIT-II: (Practical) 30 Hours	Capturing images professionally using the tools and techniques of the medium while working on the medium in various professional fields as assignments & project-based works.
UNIT-III: (Practical) 30 Hours	- Project on commercial photography - Demonstration and physical understanding of equipment care & management
UNIT-IV: (Practical) 30 Hours	Project on “Photography Business Idea” by the students.
Suggested Readings	- Kenneth Kobre, Photojournalism: A professionals’ approach, Focal Press (6th Edition 11 February 2008) - Leah Bendavid-Val, National Geographic – The Photographs (National Geographic Collectors Series), National Geographic (Date of Publication 16 September 2008) - Maria Piscopo, The Photographer’s Guide to Marketing and Self –Promotion, Allworth Press (Date of Publication 1 May 1988) - Michael Rosenblum, I phone Millionaire: How to create and sell cutting-edge video, Mc Graw Hill (Date of Publication 16 October 2012) 5. Nathaniel Gaskell and Diva Gujral, Photography in India: A visual history from the 1850s to the present, Prestel (Date of Publication 26 February 2019)
Requirements	1. Classrooms/Lecture Halls: 2. Computer Labs: 3. Photography Studio:. 4. Equipment Room: 5. Darkroom Facilities (Optional): 6. Library/Resource Center: 7. Exhibition and Presentation Space: 8. Field Trip Resources: Access to transportation for field trips to various professional photography settings (commercial studios, sports events, etc.). This provides real-world experience and enhances understanding of professional workflows. Any other item as required
Qualified instructors	- Experienced faculty members with backgrounds in photography, business management, and related fields. - They should be able to guide students through theoretical concepts and practical applications effectively. - Technical support staff for equipment maintenance and troubleshooting is also essential.

Syllabus on Vocational Education and Training Course (VTC)

Paper Title		: Piano -I						
CODE		: VTC: 245.2						
Number of Credits		: 4						
Semester		: III						
No. of Theory Hours Per Week		: One (1 hour)						
No. of Practical Hours per Week		: Three (3 Hours)						
Outline of the Paper:								
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)			
Piano-I					In-Semester		End-Semester	
					Theory	Practical	Theory	Practical
	Unit-I Theory (25 Marks)	15	4	100	25			
Unit-II to IV Theory (75 Marks)	90				15		60	
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60						
Questions to be Set		: Sixteen (Any one question shall be chosen according to the VTC Students have opted)						
Duration of End Semester Examination		: Three Hours						
Course Objectives		1. This course is designed to help students understand, handle and learn to play the instrument.						
Course Learning Outcome		At the end of the course students will be able to handle and control the instrument for its effective use with necessary knowledge, skills and understanding developing their proficiency and creativity.						
Unit I: (Theory) 15 Hours		Introduction to Pitch - Pitch names and Notation - The major scale - Key Signatures - Accidentals						
UNIT-II: (Practical) 30 Hours		Basics of Rhythm and Tempo - Time values - Time signatures - Tempo - Rhythm - Rests - The basis of Simple and Compound Time Notation						
UNIT-III: (Practical) 30 Hours		Scales, Keys and Clefs - Major scales and the Circle of Fifths - Minor scales and keys						

	Relative Major/minor Keys
UNIT-IV: (Practical) 30 Hours	Triads and Chords - Triads - Chords - Learning the Primary chords in the key of A, B, C, D, E, F, G both in major and minor. - Common chord progressions in pop, rock and blues - Ear training: Chord recognition
Suggested Readings	- Eric Taylor, Introduction to Pitch: The AB Guide to Music Theory I - Raymond Elliot, Basics of Rhythm and Tempo: Fundamentals of Music - Terry B. E. Well, Scales, keys and clefs: Music Fundamentals - Williard A. Palmer, Chords and Cadences: The complete book of Scales, Chords, Arpeggios and Cadences. - William Duckworth, Ear Training: A Creative approach to fundamental music
Requirements	Classroom Space Individual Practice Rooms - Soundproof rooms for individual and small group practice. - Each room should be equipped with basic instruments like keyboards, guitars, etc. Pianos/Keyboards At least one piano or high-quality electronic keyboard Audio Systems - High-quality speakers and audio playback systems for playing music samples and accompaniments. Projector and Screen - For displaying music notation, instructional videos, and interactive learning sessions. Computers and Software - Computers with music notation software (like Sibelius or Finale), DAWs (Digital Audio

	Workstations) like Logic Pro, Ableton Live, etc. Headphones • Good quality headphones for individual practice and ear training sessions. Learning Materials and Resources Sheet Music • Extensive library of sheet music covering various genres and difficulty levels. Music Theory Books • Books and reference materials covering all aspects of music theory as per the syllabus. Online Resources • Subscriptions to online music learning platforms and resource in each classroom and practice room. Any other item as required
Qualified instructors	• Qualified instructors with expertise in Piano and related fields. • Support staff for maintaining equipment and facilities

Paper Title		: Piono -II						
CODE		: VTC: 265.2						
Number of Credits		: 4						
Semester		: IV						
No. of Theory Hours Per Week		: One (1 hour)						
No. of Practical Hours per Week		: Three (3 Hours)						
Outline of the Paper:								
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)			
Piono II					In-Semester		End-Semester	
					Theory	Practical	Theory	Practical
	Unit-I Theory (25 Marks)	15	4	100	25			
Unit-II to IV Theory (75 Marks)	90				15		60	
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60						
Course Objectives		1. The course would facilitate a thorough understanding of fundamental musical elements including notes, scales, pitch, rhythm, and time signatures. It would also enable the students to analyze music notation, identify key tones and octaves.						
Course Learning Outcome		At the end of the course students are able to: 1. display skills to use notes, scales, pitch, rhythm, and key signatures. 2. apply this knowledge to analyze and interpret musical scores accurately.						
Unit I: (Theory) 15 Hours		Continuing with Chords and Cadences • Suspensions, Diminished and Augmented • Inversions of major and minor chords • Arpeggios						
UNIT-II: (Practical) 30 Hours		Tempo, Dynamics and Mood • Tempo • Dynamics • Mood						
UNIT-III: (Practical) 30 Hours		Articulation • The Slur, • Staccato Signs • Phrasing marks						
UNIT-IV: (Practical)		Song Composition						

30 Hours	• Applying inversions over a chord progression • Playing arpeggios over a chord progression
Suggested Readings	1. Eric Taylor, Apply inversions over a chord Progression: The AB Guide to Music Theory II 2. Eric Taylor, Tempo, Dynamics, Mood: The AB Guide to Music Theory I 3. Hilda Ryan, Articulation: Classical Collection of Piano 4. Song Composition 5. Williard A. Palmer, Chords and Cadences: The complete book of Scales, Chords, Arpeggios and Cadences.
Requirements	1. Classroom Space 2. Individual Practice Rooms 3. Pianos/Keyboards 4. Audio Systems 5. Projector and Screen 6. Computers and Software 7. Headphones Learning Materials and Resources 1. Sheet Music 2. Music Theory Books 3. Online Resources 4. Recording Studio 5. Production Equipment Any other item as required
Qualified instructors	• Qualified instructors with expertise in Piano and related fields. • Support staff for maintaining equipment and facilities

Paper Title		: Piano -III						
CODE		: VTC: 365.2						
Number of Credits		: 4						
Semester		:VI						
No. of Theory Hours Per Week		: One (1 hour)						
No. of Practical Hours per Week		: Three (3 Hours)						
Outline of the Paper:								
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)			
Piano III					In-Semester		End-Semester	
					Theory	Practical	Theory	Practical
	Unit-I Theory (25 Marks)	15	4	100	25			
Unit-II to IV Theory (75 Marks)	90				15		60	
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60						
Course Objectives		The course is designed to provide an understanding of advanced musical elements, to Analyze music notation, identify key tones, octaves, and degrees within scales.						
Course Learning Outcome		At the end of the course students are able to demonstrate a deep understanding of music theory and practical and will be proficient in playing this musical instrument						
Unit I: (Theory) 15 Hours		Seventh Chords • Major 7th Chords • Minor 7th Chords • Dominant 7th Chords • Diminished Chords						
UNIT-II: (Practical) 30 Hours		Inversions of the Seventh Chords • Inversions of Major, Minor, Dominant and Diminished 7th Chords • Arpeggios over the Seventh Chords						
UNIT-III: (Practical) 30 Hours		Aspects of Melody • Some definitions • Note Relationships • Melodic sequences • Design in melodies						
UNIT-IV:		Modes of the Major Scale						

(Practical) 30 Hours	• Ionian, Dorian, Phrygian, Lyndian, Mixolydian, Aeolian and Locrian • Modal playing, Scales over the V chord, Superimposition of Scales
Suggested Readings	1. Eric Taylor, Inversion of Seventh: The AB Guide to Music Theory II 2. Jason Martineau, Aspects of Melody: Elements of Music 3. Kevin G Pace, Modalplaying, Scales Over the V Chord, Superimposition of Scales: The comprehensive book of Modes and Scales 4. Kevin G Pace, Modes of the Major Scale:The comprehensive book of Modes and Scales 5. William Barrow, Seventh Chords: Learn and Master Piano
Requirements	1. Classroom Space 2. Individual Practice Rooms 3. Pianos/Keyboards 4. Audio Systems 5. Projector and Screen 6. Computers and Software 7. Headphones Learning Materials and Resources 1. Sheet Music 2. Music Theory Books 3. Online Resources 4. Recording Studio 5. Production Equipment Any other item as required
Qualified instructors	• Qualified instructors with expertise in Piano and related fields. • Support staff for maintaining equipment and facilities

Syllabus on Vocational Education and Training Course (VTC)

Paper Title	: Piggery -I							
CODE	:VTC: 240.4.							
Number of Credits	: 4							
Semester	: III							
No. of Theory Hours Per Week	: One (1 hour)							
No. of Practical Hours per Week	:Three (3 Hours)							
Outline of the Paper:								
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)			
Piggery-I					In-Semester		End-Semester	
					Theory	Practical	Theory	Practical
	Unit-I Theory (25 Marks)	15			25			
	Unit-II to IV Theory (75 Marks)	90	4	100		15		60
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60						
Course Objectives		1. Provide students with opportunities to understand the basics of pig farming and its related technology.						
Course Learning Outcome		At the end of the course students will able to: 1. explain the basic concepts of piggery 2. draw the organization chart of piggery 3. explain the different Indigenous and Exotic breeds of pigs 4. develop a small-scale piggery unit 5. choose the housing requirement of piggery 6. describe the process for scientific care and management of pig farming						
Unit I: (Theory) 15 Hours		• Introduction and scope of swine production in India with special reference to NorthEastern region. Zoological Classification of pigs. • Common terms in relation to pig husbandry. Swine population, Indian and exotic breeds of swine, distribution of swine. Advantages of swine production. Economic traits of swine. • Care and management of breeding boars, gilt/ sows, care at mating. Care and management of pregnant sows/gilts, care at farrowing. Care and management of lactation sows and litters. Care and Management of piglets, colostrum feeding, creep feeding, weaning. Care of growing and finishing swine.						
UNIT-II: (Practical) 30 Hours		• Care and handling of different categories of pigs • Identification of different body parts of pigs • Study about taking data on body weight, temperature,						

	pulse rate and respiration rate of pigs. • Basics of pig housing. • Study on suitable sty design for pig farming.
UNIT-III: (Practical) 30 Hours	• Identification of different indigenous and exotic breeds of pigs. • Study about the economic traits of swine • Visit to pig farm and familiarize with various categories of pigs. • Visit to local slaughterhouses and collection of data • Visit local and improved farmers house and study the existing practices of pig farming.
UNIT-IV: (Practical) 30 Hours	1. Scientific Care and Management of Piggery i. Care of the Sow and litter at farrowing time. ii. Disinfection of pregnant Sow. iii. Bedding of farrowing Pen. iv. Care of the litters during the first 8 weeks. v. Needle Teeth Cutting. vi. Creep Feeding and weaning.
Suggested Readings	1. A Textbook of Animal Husbandry (2015), OXFORD & IBH Publishing Co. Pvt. Ltd. New Delhi. 2. Chauhan et al. 2024. Swine Production and Management: A Practical Manual. Satish Serial Pub. House, New Delhi. 3. Handbook of Animal Husbandry Published by Indian Council of Agricultural Research, New Delhi. 4. Handbook on Pig Farming and Pork Processing (2018) (Feeding Management, Breeding, Housing Management, Sausages, Bacon, Cooked Ham with Packaging) 2nd Revised Edition. 5. Pig Farming Published Director ICAR-Agricultural Technology Application Research Institute Zone-I, PAU Campus, Ludhiana-141004 0161-2401018, 2401092 Email: atari.ludhiana@icar.gov.in, zcu1ldh@gmail.com Website: www.atari1icar.res.in
Requirements	• Classrooms and Laboratories: Equipped with necessary teaching aids and practical tools. • Pig Farms: On-site farm for hands-on training. • Veterinary Facilities: For health management training. • Market Linkages: Exposure to market and processing facilities. • Any other item as required
Qualified Instructors:	Instructors with experience in Piggery Certifications or relevant qualifications in Piggery

Paper Title		: Piggery-II						
CODE		: VTC: 260.4						
Number of Credits		: 4						
Semester		: IV						
No. of Theory Hours Per Week		: One (1 hour)						
No. of Practical Hours per Week		: Three (3 Hours)						
Outline of the Paper:								
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)			
Piggery-II					In-Semester		End-Semester	
	Theory	Practical	Theory	Practical				
	Unit-I Theory (25 Marks)	15	4	100	25			
Unit-II to IV Theory (75 Marks)	90				15		60	
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60						
Course Objectives		To impart students with knowledge on Piggery and acquaint them with the Scientific Breeding, Feeding, Housing, Slaughtering, Marketing and focusing on skill development to meet the demands from ongoing innovations in the field.						
Course Outcome	Learning	After completion of the course students are able to: 1. demonstrate Scientific feeding techniques for pig farming 2. Identify Scientific breeding techniques for pig farming 3. develop Scientific housing management for pig farming 4. maintenance and sanitation in pig farming. 5. identify Symptoms of common diseases of pigs, their prevention and control. 6. explore Marketing of pigs and pork. 7. demonstrate different methods of slaughter.						
Unit I: (Theory) 15 Hours		• Selection of breeding, breeding boars and gilts. System of breeding. • Adverse effects of inbreeding. System of management of swine. • Feeding Pigs economically, creep feeding. Use of unconventional feed resources. • System of housing and housing requirement of swine. Slaughter and preservation of pork. • Marketing of different pig products in India and abroad. Common diseases of pigs, their prevention and control. • Use of herbal medicines for disease management.						
UNIT-II: (Practical) 30 Hours		• Selection of breeding stock. • System of breeding suitable for piggery						

	• Formulation of rations and feeding schedules for various classes of swine. • Feeding schedule for various classes of pigs. • Feed formulation for various classes of pigs.
UNIT-III: (Practical) 30 Hours	• Pig production system. • Design of sty and its various components. • Construction of farrowing pen. • Housing system of pigs. • Hygiene and sanitation maintenance in the housing system
UNIT-IV: (Practical) 30 Hours	• Bacterial diseases of pigs. • Viral diseases of pigs • Fungal diseases and nutritional deficiencies of pigs. • Methods of slaughter and marketing of pork.
Suggested Readings	1. A Textbook of Animal Husbandry (2015), OXFORD & IBH Publishing Co. Pvt. Ltd. New Delhi. 2. Chauhan et al. 2024. Swine Production and Management: A Practical Manual. Satish Serial Pub. House, New Delhi. 3. Handbook of Animal Husbandry Published by Indian Council of Agricultural Research, New Delhi. Handbook on Pig Farming and Pork Processing (2018) (Feeding Management, Breeding, Housing Management, Sausages, Bacon, Cooked Ham with Packaging) 2nd Revised Edition. 4. Pig Farming, Pub. ICAR-Agricultural Technology Application Research Institute Zone-I, PAU Campus, Ludhiana-141004 0161-2401018, 2401092 Email: atari.ludhiana@icar.gov.in, zcu1ldh@gmail.com Website: www.atari1icar.res.in
Requirements	• Classrooms and Laboratories: Equipped with necessary teaching aids and practical tools. • Pig Farms: On-site farm for hands-on training. • Veterinary Facilities: For health management training. • Market Linkages: Exposure to market and processing facilities. • Any other item as required
Qualified Instructors	• Instructors with experience in Piggery • Certifications or relevant qualifications in Piggery

Paper Title		: Piggery-III						
CODE		:VTC: 360.4						
Number of Credits		: 4						
Semester		:VI						
No. of Theory Hours Per Week		: One (1 hour)						
No. of Practical Hours per Week		: Three (3 Hours)						
Outline of the Paper:								
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)			
Piggery-III					In-Semester		End-Semester	
					Theory	Practical	Theory	Practical
	Unit-I Theory (25 Marks)	15			25			
	Unit-II to IV Theory (75 Marks)	90	4	100		15		60
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60						
Course Objectives		To impart basic and applied knowledge on value-added products from piggery and project formulation and funding opportunities in Pig farming.						
Course Learning Outcome		After completion of the course students are able to: 1. demonstrate the skills on piggery farming through various training 2. choose funding schemes on pig farming 3. prepare and present the proposals on pig farming 4. prepare and present different value-added projects 5. plan the Benefit-Cost ratio of pig farming 6. plan Benefit-Cost ratio of value-added products from pork						
Unit I: (Theory) 15 Hours		• Entrepreneurship training programme and skill development programme on “Processing on value added pork products”. • Entrepreneurship Development Scheme under piggery, objectives, eligible beneficiaries, financial institutions eligible for finance and re-finance under various schemes. • Value added products from pork. Economics of pig farming. Use of ICT and artificial intelligence in pig husbandry.						
UNIT-II: (Practical) 30 Hours		• To learn the essential skills of pig farming, health management, and efficient farm management practices. • To attend various skill development training on pig farming • Maintenance of various record for pig farming						

UNIT-III: (Practical) 30 Hours	• Essentials of pig project formulation. • Preparation of model Piggery project for small, marginal, and landless farmers suiting to local condition and availability of market. and analysis of cost benefit ratio. • Estimation of benefit cost ratio in pig farming
UNIT-IV: (Practical) 30 Hours	• Visit to various financial agencies to know about funding on pig farming • Preparation of various value-added products of pork. • Cost benefit ration of value-added products.
Suggested Readings	1. A Textbook of Animal Husbandry (2015), OXFORD & IBH Publishing Co. Pvt. Ltd. New Delhi. 2. Chauhan et al. 2024. Swine Production and Management: A Practical Manual. Satish Serial Pub. House, New Delhi. 3. Handbook of Animal Husbandry. Published by Indian Council of Agricultural Research, New Delhi. 4. Handbook on Pig Farming and Pork Processing (2018) (Feeding Management, Breeding, Housing Management, Sausages, Bacon, Cooked Ham with Packaging) 2nd Revised Edition. 5. Pig Farming. Published Director ICAR-Agricultural Technology Application Research Institute Zone-I, PAU Campus, Ludhiana-141004 0161-2401018, 2401092 Email: atari.ludhiana@icar.gov.in, zcu1ldh@gmail.com Website: www.atari1icar.res.in
Requirements	• Classrooms and Laboratories: Equipped with necessary teaching aids and practical tools. • Pig Farms: On-site farm for hands-on training. • Veterinary Facilities: For health management training. • Market Linkages: Exposure to market and processing facilities. • Any other item as required
Qualified Instructors	• Instructors with experience in Piggery • Certifications or relevant qualifications in Piggery

Syllabus on Vocational Education and Training Course (VTC)

Paper Title		: Vocals -I							
CODE		: VTC: 245.4							
Number of Credits		: 4							
Semester		: III							
No. of Theory Hours Per Week		: One (1 hour)							
No. of Practical Hours per Week		: Three (3 Hours)							
Outline of the Paper:									
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)				
Vocals-I					In-Semester		End-Semester		
					Theory	Practical	Theory	Practical	
	Unit-I Theory (25 Marks)	15	4	100	25				
Unit-II to IV Theory (75 Marks)	90				15		60		
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60							
Course Objectives		1. Students will have an understanding of vocal music, timbre and tonality.							
Course Learning Outcome		At the end of the course students will be able to apply this skill and fine tune the voice culture with a comprehensive understanding of vocal music, technical aspects like timbre and tonality and exploring the different expressive dimensions.							
Unit I: (Theory) 15 Hours		Introduction - Definition: Music, Sound, Notes, Scale, Pitch, Key-Tone, Octave, Degree, Mental Effects, Technical Names - Scale: Diatonic Scale & Natural Scale - Tune: 1st, 3rd, 5th^{with} their Octaves - Mental effects and Technical Names of 1st, 3rd, 5thDegrees - Times: Accent, Pulse, Measurement, Braces, Double Bars, Breathing Place, Continued Tones - Times: 2-PulseMeasurement, 4-PulseMeasurement and Forms with Time Names - Pulse Division: ½PulseDivision, ½PulseContinuation & ½ to ½ Pulse Continuation with Time Names - Tunes: 2nd&7thwith Mental Effects and Technical Names - Slurs, Silent Pulse & Corona							
UNIT-II: (Practical) 30 Hours		Sight Singing Tune: 1st, 3rd, 5thwith their Octaves							

	• Time: Measurement 2-Pulse, 4-Pulse and Forms with Time Names • Pulse Division: $\frac{1}{2}$ Pulse Division, $\frac{1}{2}$ Pulse Continuation & $\frac{1}{2}$ to $\frac{1}{2}$ Pulse Continuation with Time Names • Tunes: 2nd & 7th in 2-Pulse & 4-Pulse Measure with $\frac{1}{2}$ Pulse Division • Slurs, Silent Pulse & Corona • Time & Rhythm—Keeping Time—Tapping • Vocalising— LINES
UNIT-III: (Practical) 30 Hours	Aural Test • Tune: 1st, 3rd, 5th • Time: Measurement 2-Pulse—Primary Form • Time: Measurement 4-Pulse—Primary Form • Tunes: 2nd & 7th in 2- Pulse Measurement
UNIT-IV: (Practical) 30 Hours	Voice Lesson • Posture, Position of the Mouth • Breathing and Chest Exercises • Vocalisation • Singing (Art of Producing Good Tone) • Pieces – Hymns & Choruses etc
Suggested Readings	1. Cicely Berry, Your Voice and How to Use it 2. Elizabeth Sabine, Strengthening Your Singing Voice 3. Full voice The Art and Practice of Vocal Presence 4. Jan Schmidt, Basics of Singing 5. Klaus Heizmann, Vocal Warm-Ups: 200 Exercises for Chorus and Solo Singers 6. Samuel W. Cole, Melodia; a comprehensive course in sight-singing (solfeggio); the educational plan 7. Stephen Greenlane, Find Your Own Singing Voice: Vocal Training from Fundamentals to Mastery Techniques to Help You Enjoy Singing More and More See less
Requirements	• Classrooms • Practice Rooms • Performance Hall • Musical Instruments and Equipment • Sound Equipment

	• Technology and Software • Computers and Software • Multimedia Resources • Rehearsal Spaces • Any other item as and when required
Qualified instructors	• Experienced vocal coaches and music theory teachers. • Guest lecturers and visiting artists for workshops and masterclasses

Paper Title		: Vocals -II							
CODE		: VTC: 265.4							
Number of Credits		: 4							
Semester		: IV							
No. of Theory Hours Per Week		: One (1 hour)							
No. of Practical Hours per Week		: Three (3 Hours)							
Outline of the Paper:									
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)				
Vocals- II					In-Semester		End-Semester		
					Theory	Practical	Theory	Practical	
	Unit-I Theory (25 Marks)	15	4	100	25				
	Unit-II to IV Theory (75 Marks)	90				15		60	
Marks Distribution			: Internal Assessment: 40 : External Assessment: 60						
Course Objectives			1. To familiarize the students with aural training and sight singing exercises.						
Course Learning Outcome			At the end of the course students are able to develop the ability to sight-sing and reproduce tunes accurately, focusing on intervals of the 4th and 6th degrees, within the context of various time signatures and pulse divisions.						
Unit I: (Theory) 15 Hours			Introduction • Definition: Duration, Tempo, Timbre, Interval, Rhythm, Hold/Pause/Corona • Scales: Diatonic Scale, Mental Effects, Technical Names, Chart • Tune: 4th, 6th Degree • Pulse Division: Quarter Pulse, 3-Quarter Pulse, Silent Pulse, Silent ½ Pulse with Time-Names • Interval: Major, Minor, Augmented, Diminished, Formula, Inverted Chart • Triads: Primary Triad sofa Major Scale, Triad Technical Names • Dynamics: D.C., D.S., &Fine						
UNIT-II: (Practical) 30 Hours			Sight Singing • Tune: 4th, 6th with Degree • Time: Measurement2-Pulse, 3-Pulse & 4-Pulse (Primary & Secondary Forms) • Pulse Division: Quarter Pulse, 3- Quarter Pulse, Silent Pulse, Silent½ Pulse with Time Names. • Tunes: All Notes (Natural)–Remembering C–Major.						

	• Time & Rhythm–Keeping Time–(Rate of Movement)–Tapping [Remembering–M60]. • Dynamics: D.C, D.S. & Fine, Tempo, Moderato.
UNIT-III: (Practical) 30 Hours	Aural Test • Tune: All Natural Notes • Time: Measurement3- Pulse–Primary Form • Time: Measurement4- Pulse–Primary Form • Tunes: 4th& 6th in 3 and 4 Pulse Measurement • Tunes: All Notes in 3 & 4 Measurement
UNIT-IV: (Practical) 30 Hours	Voice Lesson • Breathing Support and Chest Exercises • Resonation • Art of Singing • Vocalisation • Pieces–Hymns & Choruses etc.
Suggested Readings	1. Cicely Berry, Your Voice and How to Use it 2. Elizabeth Sabine, Strengthening Your Singing Voice 3. Full voice The Art and Practice of Vocal Presence 4. Jan Schmidt , Basics of Singing 5. Klaus Heizmann, Vocal Warm-Ups: 200 Exercises for Chorus and Solo Singers 6. Samuel W. Cole, Melodia; a comprehensive course in sight-singing (solfeccio); the educational plan 7. Stephen Greenlane,.Find Your Own Singing Voice: Vocal Training from Fundamentals to Mastery Techniques to Help You Enjoy Singing More and More See less
Requirements	• Musical Instruments and Equipment • Sound Equipment • Technology and Software • Computers and Software • Multimedia Resources • Rehearsal Spaces • Any other item as and when required
Qualified instructors	• Experienced vocal coaches and music theory teachers. • Guest lecturers and visiting artists for workshops and masterclasses

Paper Title		: Vocals -III							
CODE		: VTC: 365.4							
Number of Credits		: 4							
Semester		:VI							
No. of Theory Hours Per Week		: One (1 hour)							
No. of Practical Hours per Week		: Three (3 Hours)							
Outline of the Paper:									
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)				
Vocals-III					In-Semester		End-Semester		
					Theory	Practical	Theory	Practical	
	Unit-I Theory (25 Marks)	15	4	100	25				
Unit-II to IV Theory (75 Marks)	90				15		60		
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60							
Course Objectives		1. To enable the students to read and sing music notation fluently, focusing on recognizing and reproducing tunes, understanding pulse divisions, and interpreting dynamics. To enhance listening skills through identifying tunes, measuring time signatures, and recognizing notes.							
Course Learning Outcome		At the end of the course students are able to identify and understanding musical elements such as duration, tempo, and dynamics. Students will be able to read and sing music notation accurately, including recognizing tunes, pulse divisions, and dynamics markings							
Unit I: (Theory) 15 Hours		Introduction • Scales: Diatonic Scale, Chromatic Scale, Standard Scale • Intervals: Major, Minor, Perfect, Augmented & Diminished • Construction of Major Scale: Tetra Chord System • Construction of Triads & Chords, Chords Inversion • Modulator 3 Scales, Circle of Fifth • Transition • Dynamics • Construction of Minor Scales • Construction of Triads & Chords of Minor Scale • Technical Names of Minor Scale							
UNIT-II: (Practical) 30 Hours		Sight Singing • A Half & Two Quarters, Two Quarters & a Half, All Natural Notes • Tone (fe) & (ta) with other Notes							

	• Measurement 6-Pulse with 'fe' and 'ta' • Thirds of a Pulse • Memorising 3 Scales (F, C, G) • Transition: 1-#Remove & 1-bRemove • Process of learning a new Song, Remembering C Major • Learn the New Key Tone of 'F' & 'G' based on Key-C
UNIT-III: (Practical) 30 Hours	Aural Test • Tune: All Natural Notes. • Tune: Chromatic Notes of 'fe' & 'ta' • Tune of Minor Scale: l1, d, m • Time: Measurement 2, 3, & 4 Pulse Measurement; Primary & Secondary Forms • Process of Understanding the Up & Down of Beat. 3 & 4 Pulse Measurement
UNIT-IV: (Practical) 30 Hours	Melody Writing With Text • Melody Structure: Khasi Traditional, Modern • Phrasing • Setting Words to Music • Beautifying the Melody: Use of Slurs
Suggested Readings	1. Cicely Berry, Your Voice and How to Use it 2. Elizabeth Sabine, Strengthening Your Singing Voice 3. Find Your Own Singing Voice: Vocal Training from Fundamentals to Mastery Techniques to Help Stephen Greenlane, You Enjoy Singing More and More See less 4. Full voice The Art and Practice of Vocal Presence 5. Jan Schmidt, Basics of Singing 6. Klaus Heizmann, Vocal Warm-Ups: 200 Exercises for Chorus and Solo Singers 7. Samuel W. Cole, Melodia; a comprehensive course in sight-singing (solfege); the educational plan
Requirements	• Musical Instruments and Equipment • Sound Equipment • Technology and Software • Computers and Software • Multimedia Resources • Rehearsal Spaces • Any other item as and when required
Qualified instructors	• Experienced vocal coaches and music theory teachers. • Guest lecturers and visiting artists for workshops and masterclasses

Syllabus on Vocational Education and Training Course (VTC)

Paper Title				: Web Designing -I			
CODE				: VTC: 243.1			
Number of Credits				: 4			
Semester				: III			
No. of Theory Hours Per Week				: One (1 hour)			
No. of Practical Hours per Week				: Three (3 Hours)			
Outline of the Paper:							
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)		
Web Designing - I					In-Semester		End-Semester
	Theory	Practical	Theory	Practical			
	Unit-I Theory (25 Marks)	15	4	100	25		
Unit-II to IV Theory (75 Marks)	90				15		60
Marks Distribution			: Internal Assessment: 40 : External Assessment: 60				
Course Objectives			1. Develop skills in designing and creating websites using essential tools and technologies for web development. 2. Distinguish between front-end and back-end development roles and responsibilities. 3. Implement front-end development techniques using HTML, CSS, and JavaScript to build interactive and visually appealing web pages. 4. Manage server-side processes and database interactions to ensure robust and secure back-end functionality. the front-end.				
Course Learning Outcome			After the completion of the course the students are able to: 1. use fundamental skills to maintain web server services required to host a website 2. select and apply mark-up languages for processing, identifying, and presenting information in web pages 3. use scripting languages and web services to transfer data and add interactive components to web pages 4. create and manipulate the web Employ media objects using editing software 5. combine multiple web technologies to create advanced web components 6. design websites using appropriate security principles, focusing specifically on the vulnerabilities inherent in common web implementations.				

Unit I: (Theory) 15 Hours	Introduction to Web Technology and Web Designing • Web Technology: HTTP; System Architecture of a Web server; Client-side Scripting versus Server-side Scripting. • Introduction to HTML: What is HTML-HTML Documents- Basic structure of an HTML document. CSS: What is CSS, Structure of CSS. Advantages of CSS. • Javascrpts: What is JavaScript? -Client-Side JavaScript -Advantages of JavaScript-Limitations of JavaScript.
UNIT-II: (Practical) 30 Hours	Hyper Text Markup Language (HTML5) 1. HTML5 Basics: Structure of an HTML5 document (<!DOCTYPE html>, <html>, <head>, <title>, <body>), Semantic elements (<header>, <nav>, <section>, <article>, <footer>, etc.) 2. Text and Multimedia: Text formatting (headings, paragraphs, emphasis, etc.), Adding images (tag) and multimedia content (<video>, <audio> tags), Using HTML entities for special characters 3. Links, Lists, and Tables: Creating hyperlinks (<a> tag) and anchor links, Lists (unordered , ordered , and definition <dl> lists), Creating tables (<table>, <tr>, <th>, <td>) 4. Forms and Input Elements: Building forms (<form> tag) with various input types (text, password, email, etc.), Radio buttons, checkboxes, and dropdown lists, Form validation using HTML5 attributes (required, pattern, min/max, etc.) 5. Media and Embedding: Embedding multimedia content (videos, audio) from external sources, Using the <iframe> tag for embedding content from other websites 6. HTML5 APIs : Geolocation API for obtaining user location, Canvas API for drawing graphics and animations, Local Storage and Session Storage for client-side data storage 7. Accessibility and SEO: Importance of semantic HTML for accessibility and SEO, Using ARIA attributes for enhancing accessibility, Optimizing HTML for search engines (meta tags, title tags, alt attributes) 8. Responsive Design and Mobile Compatibility: Creating responsive layouts using HTML5 and CSS3, Meta viewport tag for mobile responsiveness, Mobile-friendly forms and input elements 9. Advanced HTML5 Features: Web components and

	custom elements, Drag and drop functionality, Web storage (local Storage, session Storage)
Suggested Practical Assignment:	1. Create a Web Page Structure: Design a web page structure using HTML5 semantic elements such as <header>, <nav>, <section>, <article>, <footer>, and <aside>. 2. Create a web page for a cake shop to display all the different types of cakes and price to choose from. 3. Multimedia Embedding: Embed an audio or video file using the <audio> or <video> tag with appropriate attributes like controls, autoplay, and loop. 4. Responsive Image Gallery: Build a responsive image gallery using HTML5 <figure> and <figcaption> elements. Ensure that the gallery adjusts smoothly on different screen sizes. 5. Interactive Form Validation: Develop an HTML5 form with input fields like text, email, password, and a submit button. Implement HTML5 form validation using attributes like required, pattern, and min/max. 6. Create a HTML page with controls to take data for a College Admission with all the proper validations in the form. 7. Geolocation API Integration: Implement the HTML5 Geolocation API to display the user's current location on a map or show nearby places based on latitude and longitude. 8. Local Storage Usage: Create a web page that allows users to store data locally using HTML5 localStorage or session Storage. Develop functionality to add, edit, and delete stored items. 9. Create a HTML Page to display the number of the times the web page was visited using local storage. 10. Semantic Markup for SEO: Optimize an existing web page for search engines using semantic HTML5 tags. Use <header>, <nav>, <main>, <article>, <section>, <aside>, and <footer> tags appropriately.
UNIT-III: (Practical) 30 Hours	Cascading Style Sheets (CSS) 1. Introduction to CSS: What is CSS? Importance and benefits, CSS syntax: selectors, properties, and values, External, internal, and inline CSS 2. CSS Selectors and Specificity: Basic selectors: element selectors, class selectors, ID selectors, Combinators: descendant, child, adjacent sibling, general sibling, Pseudo classes and pseudo-elements, CSS specificity and inheritance 3. CSS Box Model: Understanding the box model:

	content, padding, border, margin, Box sizing: content-box vs. border-box, Margin collapsing 4. Layout and Positioning: Display property: block, inline, inline-block, flex, grid, Position property: static, relative, absolute, fixed, sticky, Floats and clearing floats, CSS Grid and Flexbox layouts 5. Typography and Fonts: Font properties: font-family, font-size, font-weight, font-style, line-height, Text properties: color, text-align, text-decoration, text-transform, letter spacing, word-spacing, Google Fonts and custom font usage 6. Colors and Backgrounds :Color values: named colors, hexadecimal, RGB, RGBA, HSL, HSLA, Background properties: background-color, background-image, background repeat, background-position, background-size 7. Responsive Design and Media Queries: Responsive design principles, Media queries syntax and usage, Designing responsive layouts for different screen sizes (mobile-first approach) 8. CSS Transitions and Animations: Transition properties: transition-property, transition duration, transition-timing-function, transition-delay, CSS animations: keyframes, animation properties, animation-duration, animation-timing-function, animation-delay 9. Flexbox and Grid Layouts: Flexbox properties: flex-direction, justify-content, align-items, align-self, flex-grow, flex-shrink, CSS Grid properties: grid-template-columns, grid-template-rows, grid-gap, grid-template-areas 10. CSS Frameworks and Preprocessors: Introduction to CSS frameworks (Bootstrap, Tailwind), Overview of CSS preprocessors (Sass): variables, mixins, nesting, inheritance 11. Advanced CSS Techniques: Transformations: translate, rotate, scale, skew, CSS variables (custom properties), CSS gradients, shadows, and filters, Cross-browser compatibility and vendor prefixes
Suggested Practical on the topics	1. CSS Selectors and Box Model: ○ Create a webpage with different elements styled using basic selectors, class selectors, and ID selectors. Apply different properties such as background color, padding, border, and margin to understand the box model. 2. Layout and Positioning: ○ Design a web page layout using CSS display properties (e.g., flexbox or grid) for header, navigation, content, and footer sections. Use positioning (static,

	relative, absolute) to position elements within the layout. 3. Typography and Fonts: ○ Style text on a webpage with different font families, sizes, weights, styles, colors, and text alignments. Experiment with line height, letter spacing, and text decorations. 4. Colors and Backgrounds: ○ Create a webpage with various background colors, gradients, images, and patterns. Apply different background properties such as background-size, background-position, and background-repeat. 5. Responsive Design with Media Queries: ○ Develop a responsive webpage that adjusts its layout and styling based on different screen sizes using media queries. Test the responsiveness on mobile devices and desktop screens. 6. CSS Transitions and Animations: ○ Add transitions to elements (e.g., hover effects) using CSS transition properties (transition-duration, transition-property, transition-timing-function). simple animations using keyframes and animation properties. 7. Flexbox and Grid Layouts: ○ Design a webpage layout using CSS Flexbox properties (flex-direction, justify content, align-items) for a navigation menu or card-based layout. Create a grid based layout using CSS Grid properties (grid-template-columns, grid-template-rows, grid-gap). 8. Customizing CSS Frameworks: ○ Customize a CSS framework (e.g., Bootstrap) by modifying variables, adding custom styles, and overriding default styles to create a unique design. 9. Advanced CSS Techniques: ○ Implement CSS transformations (translate, rotate, scale, skew) on elements to create interactive effects. Use CSS gradients, shadows, and filters to enhance visual elements. ○ Optimize CSS code by minifying, concatenating, and compressing stylesheets. Use browser developer tools to debug and optimize CSS for performance.
UNIT-IV: (Practical) 30 Hours	Java Scripts 1. JavaScript Basics :JavaScript syntax: variables, data types, operators, expressions, statements, Functions: defining functions, function expressions, arrow functions, Control flow: if statements, switch statements, loops (for, while) 2. Arrays and Objects: Arrays: creating arrays,

	accessing elements, array methods (push, pop, shift, unshift, slice, splice), Objects: creating objects, object properties, methods, constructor functions, prototypes 3. DOM Manipulation: Accessing DOM elements: get Element ById, querySelector, querySelectorAll, Manipulating DOM elements: changing content, styles, attributes, adding/removing elements 4. Events and Event Handling: click, mouseover, keydown, submit, etc. Event listeners: adding event listeners, event propagation (bubbling, capturing) Handling user interactions with events 5. Forms and Validation: Working with HTML forms in JavaScript, Form validation: validating input fields, displaying error messages, preventing default form submission 6. Error Handling: Handling errors in JavaScript: try-catch blocks, Debugging JavaScript code using browser developer tools
Suggested Practical Assignments	1. Basic JavaScript Concepts: ○ Write JavaScript code to declare variables of different data types (string, number, boolean). ○ Implement arithmetic operations, comparison operators, and logical operators in JavaScript. 2. Functions and Control Flow: ○ Create a function to calculate the factorial of a number using recursion. ○ Write a JavaScript program to check if a number is prime or not using a function. ○ Write a Javascript program to print all the perfect numbers from 1 to n. 3. Arrays and Objects: ○ Create an array of numbers and write JavaScript code to find the sum, average, maximum, and minimum value in the array. ○ Define an object representing a person with properties like name, age, and country. Use object methods to display information about the person. 4. DOM Manipulation and Events: ○ Build an HTML form with input fields for username and password. Use JavaScript to validate the form on submission and display appropriate messages. ○ Create a webpage with a button that changes the background color of a div element when clicked using event handling. 5. Project-Based Assignments: ○ Choose a project idea (e.g., interactive quiz, weather app, budget tracker) and implement it using JavaScript. Use concepts learned throughout the syllabus to build the project.

Suggested Readings	1. David Flanagan, "JavaScript: The Definitive Guide" by, O'Reilly Media. 2022. 8th Edition 2. Elizabeth Castro and Bruce Hyslop, "HTML and CSS: Visual QuickStart Guide", Peachpit Press, 9th Edition 3. Jennifer Niederst Robbins, "Learning Web Design: A Beginner's Guide to HTML, CSS, JavaScript, and Web Graphics". 4. Marijn Haverbeke, "Eloquent JavaScript: A Modern Introduction to Programming".
Requirements	• Computers • Software • Internet Access • External Storage • Printers and Scanners • Projector and Screens • Any other item as required
Qualified Instructors	• Instructors with experience in Web Designing and teaching. • Certifications or relevant qualifications in Web Designing

Paper Title	: Web Designing -II							
CODE	: VTC: 263.1							
Number of Credits	: 4							
Semester	:IV							
No. of Theory Hours Per Week	: One (1 hour)							
No. of Practical Hours per Week	: Three (3 Hours)							
Outline of the Paper:								
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)			
Web Designing - II					In-Semester		End-Semester	
					Theory	Practical	Theory	Practical
	Unit-I Theory (25 Marks)	15	4	100	25			
	Unit-II to IV Theory (75 Marks)	90				15		60
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60						
Course Objectives		- The course is designed to impart knowledge and skill to the students to learn and know the principles and techniques of programming for the Web. - This course aims to build in the students a web programming knowledge using PHP and MySQL and Laravel Framework.						
Course Outcome	Learning	After completion of the course students are able to: - Gain a strong foundation in PHP programming language, including variables, data types, operators, control structures, functions, and arrays. - Learn how to handle forms, process user input, validate data, and interact with databases using PHP. - Master the Laravel framework and its key components such as routing, controllers, views, models, migrations, and middleware. - Understand Laravel's MVC (Model-View-Controller) architecture and how to use it to build scalable and maintainable web applications. - Learn how to integrate PHP and Laravel applications with databases (e.g., MySQL) and perform CRUD operations using Laravel's - Gain proficiency in defining database relationships, designing schemas, and using migrations for database management.						
Unit I: (Theory) 15 Hours	Introduction to Server side Technology (Theory) Server-side technology: Overview of server-side vs. client-side technologies, Common server side languages and frameworks, Introduction to PHP and its role in web development, Setting up a development environment							

	(e.g., XAMPP, WAMP). • Database: Overview of relational databases and Mysql, Advantages to Mysql. • Frameworks: What is a web frameworks ,Introduction to Laravel framework,History and evolution of Laravel, Features and advantages of using Laravel
UNIT-II: (Practical) PHP 30 Hours	• PHP: Conditions and Branches, Loops, Functions, Working with types,User-defined Functions, Arrays, Strings and Advanced Data Manipulation in PHP, Arrays, Strings, Regular Expressions, Dates and Times, Integers and Floats. • Object-Oriented Programming with PHP : Classes and Objects, Inheritance, Throwing and Catching Exceptions Advance Features of Object-Oriented Programming in PHP : Working with Class Hierarchies, Abstract Classes and Interfaces.Session and Cookies in PHP. • File Handling: File open,close,read and write, File Manipulation (Rename,delete copying file), Uploading of files.
UNIT-III: (Practical) 30 Hours	Introduction to MySQL with PHP • Working with MySQL: Database Basics, MySQL Command Interpreter, Managing Databases and Tables, Inserting, • Updating and Deleting Data, Querying with SQL SELECT, Join Queries, Querying Web Databases, Querying a MySQL Database using PHP, • Processing User Input Writing to Web Databases, Database Inserts, Updates and Deletes, • Issues in Writing Data to Database
UNIT-IV: (Practical) 30 Hours	PHP Frameworks • Introduction to Laravel: Overview of Laravel framework, Installation and setup, basic folder structure, Introduction to MVC architecture. • Routing and Controllers: Routing basics, Route parameters, Route naming, Creating and using controllers, Controller methods. • Views and Blade Templating: Views in Laravel, Introduction to Blade templating, Blade directives and control structures, Blade layouts and partials. • Database Integration: Database configuration in Laravel, Using Eloquent ORM for database operations, Defining models and relationships, Querying the database using Eloquent. Forms and Validation: Creating forms in Laravel, Form validation using Laravel's validation rules, Displaying validation errors, Custom validation rules.

Suggested Practicals PHP	1. Declare variables for name, age, and email address. Print these variables with appropriate labels. 2. Write PHP code to perform arithmetic operations (addition, subtraction, multiplication, division) on two numbers. 3. Create a PHP script that checks if a user's age is greater than or equal to 18. If true, display "You are an adult"; otherwise, display "You are a minor". 4. Use a loop (for or while) to print numbers from 1 to 10 on separate lines. 5. Write a PHP program to print all the fibonacci series from 1 to n. 6. Create an array of fruits and use a loop to print each fruit on a new line. 7. Write a PHP function that takes two parameters (length and width) and calculates the area of a rectangle. Call the function with different values to test it 8. Create an HTML form with input fields for name and email. Write a PHP script to process the form data and display the submitted values. 9. Write PHP code to read the contents of a text file and display them on the screen. 10. Implement a PHP script that sets a session variable (e.g., username) when a user logs in. Display a personalized message using the session variable on subsequent visits.
Suggested Practical Laravel	1. Routing and Controllers: a. Create a new route that points to a controller method. The controller method should return a simple message or view. b. Implement route parameters in Laravel and use them to fetch data from a database in the controller method. 2. Views and Blade Templating: a. Create a new Blade template that includes a header, footer, and a content section. Extend this template in multiple views. b. Use Blade directives (if, foreach) to conditionally display content or loop through data in a view. 3. Database Operations: a. Create a migration to add a new table to the database schema. Run the migration to apply the changes. b. Implement CRUD operations (Create, Read, Update, Delete) for a resource (e.g., articles, users) using Laravel's Eloquent ORM. 4. Form Handling and Validation: a. Create a form to add new data to the database. Implement form validation using Laravel's validation rules. b. Display validation errors in the form and repopulate form fields with old input on validation failure. 5. File Upload and Storage: a. Build a form for users to upload files to the server. b. Implement functionality to store uploaded files in Laravel's storage system

Suggested Minor Project work (Students are to undertake one minor project for internal assesment)	1. To-Do List Application: Create a basic to-do list application where users can add, edit, delete, and mark tasks as completed. Implement user authentication so that each user has their own set of tasks. 2. E-commerce Store: Develop a simple ecommerce store with product listings, product details, shopping cart functionality, and checkout process. Implement user authentication and roles for customers and administrators. 3. Contact Management System: Build a contact management system where users can add, edit, delete, and search for contacts. Implement features like contact groups, import/export contacts, and contact sharing. 4. Event Management System: Develop an event management system for organizing and managing events. Include features such as event creation, registration, ticketing, attendee management, and event analytics 5. Task Management System: Create a task management system with task lists, task details, deadlines, priorities, and task assignments. Implement notifications and reminders for upcoming tasks.
Suggested Readings	1. DuBoi Paul s, MySQL Cookbook. 2. DuBois Paul, My SQL Cookbook 3. Pecoraro,Christopher John Mastering Laravel: A Comprehensive Guide to Laravel's Best Practices. 4. Stauffer,Matt Laravel: Up & Running. 5. Welling Luke and Laura Thomson, PHP and MySQL Web Development. 6. Welling Luke and Laura Thomson, PHP and MySQL Web Development.
Requirements	1. Computers 2. Desktop computers or laptops with adequate RAM and processing power. 3. Required software installed (e.g., PHP development environment, MySQL, Laravel, text editors). 4. Software: XAMPP, WAMP, or similar for local server setup (Apache,MySQL, PHP). 5. IDEs (Integrated Development Environments) such as Php Storm, Visual Studio Code, or Sublime Text for PHP and Laravel development. 6. Database Management MySQL or Maria DB for database management php MyAdmin or MySQL Workbench for database administration 7. Internet Access 8. External Storage 9. Printers and Scanners 10. Any other item as required

Qualified Instructors	• Instructors with experience in Web Designing and teaching. • Certifications or relevant qualifications in Web Designing

Paper Title	: Web Designing -III							
CODE	: VTC: 363.1							
Number of Credits	: 4							
Semester	:VI							
No. of Theory Hours Per Week	: One (1 hour)							
No. of Practical Hours per Week	: Three (3 Hours)							
Outline of the Paper:								
Type of Course	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)			
Web Designing - III					In-Semester		End-Semester	
					Theory	Practical	Theory	Practical
	Unit-I Theory (25 Marks)	15			25			
	Unit-II to IV Theory (75 Marks)	90	4	100		15		60
Marks Distribution		: Internal Assessment: 40 : External Assessment: 60						
Course Objectives		1. Understand the fundamentals of front-end development and the role of React in modern web development. 2. Learn how to set up a development environment for React applications using tools like Node.js and npm. 3. Gain proficiency in creating reusable components, managing state, and handling events in React. 4. Explore advanced React concepts such as hooks, context API, and component lifecycle methods. 5. Develop skills in building responsive and interactive user interfaces using React and CSS.						
Course Learning Outcome		After completion of the course students are able to: 1. design and develop dynamic and interactive user interfaces using React components and JSX syntax 2. implement state management solutions using React's built-in state management and context API 3. utilize React Router for handling navigation and creating multi-page applications 4. integrate third-party libraries, APIs, and services into React applications for enhanced functionality 5. apply responsive design principles and CSS techniques to create visually appealing and mobile-friendly interfaces.						
Unit I: (Theory) 15 Hours		• Introduction to React: Understanding the React ecosystem, Virtual DOM, and JSX, React • Components and Props: Creating components, passing props, and composing UIs, • State Management: Understanding state, setState, and component re-rendering. React Lifecycle • Methods:Exploring component DidMount, component DidUpdate.						

UNIT-II: (Practical) 30 Hours	Concepts Covered • Component creation and rendering • State management with React hooks • Handling user interactions and events • Asynchronous data fetching with APIs • Form handling, validation, and dynamic updates • React Router for client-side navigation
	Sample exercises and assignments • Exercise: Build a simple To-Do list application using React components, state management, and event handling. • Assignment: Create a weather forecast application using React components to display weather data fetched from an API. • Exercise: Develop a user registration form with form validation using React hooks and controlled components. • Assignment: Build a movie search application using React and an external API to search and display movie details.
UNIT-III: (Practical) 30 Hours	Concepts Covered • Structuring components for scalability • State management for dynamic data with Redux or Context API • Implementing CRUD operations for data manipulation • Utilizing React Router for multi-page applications • Filtering and sorting data for enhanced user experience
	Sample exercises and assignments • Exercise: Implement a simple e-commerce product listing page with React components and state management. • Assignment: Create a blog application where users can view, create, and delete blog posts using React Router for navigation. • Exercise: Build a chat application using React components and state to display messages in real-time. • Assignment: Develop a recipe finder application using React to search and display recipes fetched from an API.
UNIT-IV: (Practical) 30 Hours	Concepts Covered: • Building multi-step forms with conditional rendering • Designing responsive layouts for various devices • Implementing user authentication and authorization with JWT tokens • Securing routes and resources based on user roles
	Sample exercises and assignments • Exercise: Create a multi-step form using React Router for

	navigation between form sections. • Assignment: Build a portfolio website using React to showcase projects and skills with responsive design. • Exercise: Implement user authentication and authorization in a React application using JWT tokens. • Assignment: Develop a social media dashboard application with React components to display user posts and interactions.
Suggested Readings	1. Kirupa Chinnathambi, Learning React: A Hands-On Guide to Building Web Applications Using React and Redux, 2nd Edition, Addison-Wesley Professional, 2018 2. Michele Riva, React Design Patterns and Best Practices: Build easy to scale modular applications using the most powerful components and design patterns, 2nd Edition, Packt Publishing, 2019
Requirements	Materials: 1. Computers 2. Node.js for running JavaScript on the server (needed for npm or yarn) 3. phpMyAdmin or MySQL Workbench for database administration 4. Internet Access 5. External Storage 6. Printers and Scanners 7. Any other item as required
Qualified Instructors	• Instructors with experience in Web Designing and teaching. • Certifications or relevant qualifications in Web Designing