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)			
					In-Semester		End-Semester	
					Theory	Practical	Theory	Practical
Baking and Confectionary-I	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 ingredientsand 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	Units in the VTC	Hours	Credits	Total Marks	Distribution of Marks (as per OC-8)			
					In-Semester		End-Semester	
					Theory	Practical	Theory	Practical
Baking and Confectionary - II	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 Learning Outcome	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)			
					In-Semester		End-Semester	
					Theory	Practical	Theory	Practical
Baking and Confectionary - III	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 how to apply technology in baking and confectionary. **2.** To demonstrate how to use manufacturing technology in bakery and confectionary production.
Course Learning Outcome	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)	**A. Cake making:**

30 Hours	• 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.