

Department of Food Sciences
University of the Punjab, Lahore
Course Outline



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| Programme | B.Sc. (Hons.) Food Science & Technology | Course Code | FST-308 | Credit Hours | 1) |
| Course Title | Beverage Technology | | | | |
| Course Introduction | | | | | |
| Basic knowledge of nature components and classes of food (beverages) | | | | | |
| Learning Outcomes | | | | | |
| On the completion of the course, the students will: | | | | | |
| <ol style="list-style-type: none"> 1. Get introduced to beverages 2. Have knowledge of various components of beverage, formulations, processing conditions and mode of spoilage. 3. Write and speak with effective communication skills, through class participation and in preparation of homework assignment. | | | | | |
| THEORY | | | | | |
| Course Content | | | Assignments/Readings | | |
| Week 1 | Unit-I | | Chapter 1,2 chemistry and technology of soft drinks and fruit juices Material from websites | | |
| | 1.1 Introduction to beverage technology 1.1.1 Beverage industry in Pakistan and worldwide, history, evolution and future trends. | | | | |
| Week 2 | 1.2 Beverages: classification-still, carbonated, alcoholic, dilatable, ready to serve | | Chapter 1,2 chemistry and technology of soft drinks and fruit juices Material from websites | | |
| | Unit-II | | | | |
| Week 3 | 2.1 Beverage ingredients 2.1.1 Water, fruits components, color and preservatives. | | Chapter 5 Chemistry and technology of soft drinks and fruit juices | | |
| | Unit-III | | | | |
| 3.1 Sweeteners, flavorings | | Chapter 4,5 Chemistry and technology of soft drinks and fruit juices | | | |

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| Week 4 | <p align="center">Unit-IV</p> <p>4.1 Manufacture of soft drinks and fruit juices 4.2 Mixing, pasteurization, homogenization</p> | Chapter 6 Chemistry and technology of soft drinks and fruit juices |
| Week 5 | <p align="center">Unit-V</p> <p>5.1 Filling, packing and storage</p> | Chapter 6 Chemistry and technology of soft drinks and fruit juices |
| Week 6 | <p align="center">Unit-VI</p> <p>6.1 Carbonated beverages 6.1.1 Carbonation</p> | Chapter 7 Chemistry and technology of soft drinks and fruit juices |
| Week 7 | <p align="center">Unit-VII</p> <p>7.1 History, CO₂, gas volume</p> | Chapter 7 chemistry and technology of soft drinks and fruit juices |
| Week 8 | <p align="center">Unit-VIII</p> <p>8.1 Soft drinks and fruit juices: 8.1.1 Ingredients specification and formulation and pasteurization.</p> | Chapter 8 Chemistry and technology of soft drinks and fruit juices |
| Week 9 | <p align="center">Unit-IX</p> <p>9.1 Manufacturing problems changes in color, appearance, flavor .</p> | Chapter 8 Chemistry and technology of soft drinks and fruit juices |
| Week 10 | <p align="center">Unit -X</p> <p>10.1 Packaging: types, interactions</p> | Chapter 9 Chemistry and technology of soft drinks and fruit juices |
| Week 11 | <p align="center">Unit -XI</p> <p>11.1 Shelf life issues: microbiological problems</p> | Chapter 11 Chemistry and technology of soft drinks and fruit juices |
| Week 12 | <p align="center">Unit-XII</p> <p>12.1 Bottled water 12.1.1 Legislation, water treatment, filling, quality issues.</p> | Chapter 5 The soft drinks companion |

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| Week 13 | Unit-XIII 13.1 Fermented beverages: 13.1.1 Introduction types role of microorganism. | Chapter 1,2 Handb of food and beverage fermentation technology |
| Week 14 | Unit-XIV 14.1 Beverages and bottled water 14.2 Regulations and standards | Chapter 1 chemistry and technology of soft drinks and fruit juices |
| Week 15 | Unit –XV 15.1 Statuary requirements | Chapter 24 food science |
| Week 16 | Unit -XVI 16.1 Labeling and nutrition claims | Chapter 24 food science |
| PRACTICAL | | |
| Course Content | | Assignments/Readings |
| Week 1 | Water treatment and analysis | |
| Week 2 | Water treatment and analysis | |
| Week 3 | Water treatment and analysis | |
| Week 4 | Preparation of fruit pulps | |
| Week 5 | Preparation of juice concentrates | |
| Week 6 | Formulation and carbonated beverages | |
| Week 7 | Analysis of beverages | |
| Week 8 | Analysis of beverages Chemical analysis | |
| Week 9 | Analysis of beverages Microbiological analysis | |
| Week 10 | Manufacture of fermented beverages | |
| Week 11 | Manufacturing of fermented beverages | |
| Week 12 | Class discussion and quiz | |
| Week 13 | Manufacture of synthetic beverage | |
| Week 14 | Visit to a beverage industry | |
| Week 15 | Class presentation and discussion | |
| Week 16 | Class presentation and discussion | |

| Textbooks and Reading Material |
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| <p>1. Ashurst, P.R. and Hargitt, R. 2009. Soft drink and fruit juice problems solved. Woodhead Publishing. Ltd., Abington, Cambridge, UK.</p> <p>2. Shachman, M. 2000. The soft drinks companions: A technical handbook for the beverage industry. CRC Press Taylor & Francis Group, Boca Raton, Florida, USA.</p> <p>3. Varnam, H.A. and Sutherland, J.M. 1999. Beverages: technology, chemistry and microbiology. CRC Press Taylor & Francis Group, Boca Raton, Florida, USA.</p> |
| Teaching Learning Strategies |
| <ol style="list-style-type: none"> 1. Lectures 2. Pamphlets 3. Reports 4. Slides specimen vouchers 5. Class discussion (multimedia/white board marker) 6. Class quizzes / group discussions |
| Assignments: Types and Number with Calendar |
| <ol style="list-style-type: none"> 1. Hand written / soft forms 2. Surprise test 3. Practical copy preparation |
| Assessment |

| Sr. No. | Elements | Weightage | Details |
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| 1. | Midterm Assessment | 35% | Written Assessment at the mid-point of the semester. |
| 2. | Formative Assessment | 25% | Continuous assessment includes: (10%) Classroom participation, assignments, presentations viva voce, attitude and behavior, hands-on-activities, short tests, projects, practical, reflections, readings, quizzes etc.(15%) |
| 3. | Final Assessment | 40% | Written Examination at the end of the semester. It is mostly in the form of a test, but owing to the nature of the course the teacher may assess their students based on term paper, research proposal development, field work and report writing etc. |