

# **SHIVAJI UNIVERSTIY KOLHAPUR**



**Accredited By Naac with 'A' Grade**

**Revised Syllabus for**

**B. Sc Part-III**

**Food Science and Technology (Entire)  
CBCS PATTERN**

**Syllabus to be implemented from**

**June, 2022 onwards.**

## Sem – V

### Animal Product Technology- Paper- I

(DSC FST-E-1-Animal Product Technology-I)

credits 2 (Marks 50) Hours 30,37.5 Lectures of 48 Minutes

Unit- I- Meat	Hours Allotted
<p>A) Introduction To Meat Industry:-</p> <ol style="list-style-type: none"><li>1) Scope Of Indian Meat Industry</li><li>2) Nutritional Values &amp; Properties Of Meat</li><li>3) Skeletal Muscle Contraction</li><li>4) Post Mortem Chemistry</li><li>5) Tenderness</li><li>6) Post Mortem Quality Problems</li></ol> <p>B) Slaughter Procedure Of Live Stock:-</p> <ol style="list-style-type: none"><li>1) By-Products Of Live Stock</li><li>2) Meat Inspection</li><li>3) Sanitation</li><li>4) Meat Grading</li><li>5) Meat Cookery</li><li>6) Meat Micro- Biology &amp; Safety</li><li>7) Preservation &amp; Storage</li></ol> <p>C) Meat Processing</p> <ol style="list-style-type: none"><li>1) Introduction</li><li>2) Muscle Structure &amp; Function</li><li>3) Conversion Of Muscle To Meat</li><li>4) Pre-Requisite Programme Of Slaughtering Of Animals</li><li>5) Pre- Slaughtering Methods</li><li>6) Post- Slaughtering Operations</li><li><b>7) Processed Meat Product</b></li></ol>	15
Unit-II- Fish	Hours Allotted
<ol style="list-style-type: none"><li>1) Introduction</li><li>2) Classification Of Fish</li><li>3) Composition &amp; Nutritive Value Of Fish</li><li>4) Smoking Effect On Nutritional Quality</li><li>5) Nutritional Benefits</li><li>6) curing</li><li>7) Preservation &amp; Processing Of Fish</li><li>8) Techniques Used For Smoking</li><li>9) Factors Affecting Quality Of Fish</li><li>10) Canning Of Fish</li><li>11) Packaging</li><li>12) Fish Spoilage</li><li>13) Products Of Fish</li></ol>	15

**References:-**

- 1) Manay S.N & Shadaksharswamy M. (2001); food facts and principles, 2<sup>nd</sup> edn., New Age International (P) Limited publishers
- 2) Potter N.N & Hotchkiss J.H. (1966); Food Science, 5<sup>th</sup> edn., CBS Publishers & distributors.
- 3) Shrilakshmi B. (2003); food Science, 3<sup>rd</sup> edn., New age International (P) Limited publishers.
- 4) NIIR Board; preservation of meat & poultry products 1<sup>st</sup> , Asia Pacific Business Press

**Sem – V**

**Fermentation Technology-Paper- I**

(DSC FST-E-2- Fermentation Technology-I)

credits 2 (Marks 50) Hours 30,37.5 Lectures of 48 Minutes

Unit-I-	Hours Allotted
<p>A) Introduction To Fermentation Technology:-</p> <ol style="list-style-type: none"><li>1) Growth Kinetics Of Micro-Organisms</li><li>2) Isolation</li><li>3) Preservation</li><li>4) Improvement Of Industrially Important Micro-Organism</li><li>5) Inoculums Preparation</li><li>6) Sterilization Of Air &amp; Media</li></ol> <p>B) Fermentation:-</p> <ol style="list-style-type: none"><li>1) Definition Of Fermentation</li><li>2) Importance Of Fermentation</li><li>3) Substrate For Fermentation</li></ol> <p>C) Fermenter:-</p> <ol style="list-style-type: none"><li>1) Design</li><li>2) Type &amp; Construction</li><li>3) Basic Function Of Fermenter</li><li>4) Batch Fermentation</li><li>5) Fed- Batch Fermentation</li><li>6) Continuous Fermentation</li><li>7) Instrument &amp; Control</li><li>8) Aeration &amp; Agitation</li></ol>	15
Unit-II	Hours Allotted
<p>A) Downstream Processing-</p> <ol style="list-style-type: none"><li>1) Principle</li><li>2) Methodology</li><li>3) Instrumentation An Applications Of Cell Homogenization</li><li>4) Filtration</li><li>5) Ultrafiltration</li><li>6) Enzymes &amp; Immobilization Of Enzymes</li><li>7) Distillation</li><li>8) Biological Waste Treatment</li><li>9) Chromatography</li></ol>	15

**References:-**

- 1) Food microbiology, 2<sup>nd</sup> edition by Adams M & Moss M. 2008 RSC Publishing
- 2) Food Microbiology, 5<sup>th</sup> edition by William c frazier, Dennis C. Westhoff
- 3) Microbiology of Fermented Foods Volume II & I By Brian J. Wood. Elsevier Applied Science Publication. 1997
- 4) Principles of fermentation Technology by Stanbury, P. F, Whitekar A. & Hall 1995, pergaman. McNeul & Harvey. (AC) NEW

**Sem – V**

**Food Quality & Safety Management -Paper- I**

(DSC FST-E-3- Food Quality & Safety Management -I)

credits 2 (Marks 50) Hours 30,37.5 Lectures of 48 Minutes

Unit-I-	Hours Allotted
<p>A) Food Quality-</p> <ol style="list-style-type: none"><li>1) Introduction Of Food Quality &amp; Safety</li><li>2) Important Functions Of Quality Control</li><li>3) Food Quality &amp; Quality Attributes</li><li>4) Classification Of Quality Attributes &amp; Their Role In Food Quality</li><li>5) Sensory Evaluation Of Food Quality-Introduction</li><li>6) Panel Screening- Selection Of Panel Members</li><li>7) Methods Of Sensory Evaluation &amp; Evaluation Cards- Difference/ Decimation Procedures</li><li>8) Methods Of Sensory Evaluation &amp; Evaluation Cards-Ranking &amp; Rating Procedure</li></ol> <p>B) Food Assessment-</p> <ol style="list-style-type: none"><li>1) Quality Assessment Of Food Materials- Fruits &amp; Vegetables</li><li>2) Quality Assessment Of Food Materials-Cereals &amp; Legumes</li><li>3) Quality Assessment Of Food Materials- Dairy Products</li><li>4) Quality Assessment Of Food Materials- Meat, Poultry, Egg &amp; Processed Food Products.</li></ol>	15
Unit-II	Hours Allotted
<p>A) Food Safety Management-</p> <ol style="list-style-type: none"><li>1) Defination Of Food Safety</li><li>2) Importance Of Food Safety</li><li>3) Hazards</li><li>4) Types Of Hazards</li><li>5) Factors Affecting Food Safety</li><li>6) Importance Of Safe Food</li><li>7) Microbiological Consideration In Food Safety</li><li>8) Toxicity</li></ol>	15

**References:-**

- 1) The Food Safety & Standards Act 2006. Professional Book Publishers Delhi
- 2) Quality Control For Food Industry- krammer & Twigg
- 3) Food Science- Norman N-Potter, Joseph H. Hotchkiss, CBS Publishers & distributors, New Delhi, 1997 5<sup>th</sup> edition
- 4) Ranganna S. 2012 Handbook of analysis & quality control for fruits & vegetable products, Tata McGraw Hill Education Pvt. Ltd, New Delhi

**Sem – V**

**Food Additives & Toxicology -Paper- I**

(DSC FST-E-4- Food Additives & Toxicology -I)

credits 2 (Marks 50) Hours 30,37.5 Lectures of 48 Minutes

Unit-I-	Hours Allotted
A) Introduction To Food Additives- 1) General Classification 2) Types 3) Uses 4) Functions 5) Risks 6) Benefits 7) Role Of Food Additives In Food Processing B) Preservatives- 1) Antimicrobial Agents- Types, Mode Of Action & Their Application 2) Antioxidants- Types & Mechanism Of Oxidation Inhibition 3) Antibrowning Agents- Types, Function & Mode Of Action C) Chelating Agents & Sequestrants- Types, Uses & Mode Action	15
Unit-II	Hours Allotted
A) Toxicology- 1) Definition Scope & General Principles Of Food Toxicology 2) Manifestation Of Toxic Effects 3) Classification Of Food Toxicants 4) Factors Affecting Toxicity Of Compounds 5) Safety Of A Food Additives	15

**References:-**

- 1) Principles of food science Part-I Food Chemistry by Fennema. O. R
- 2) Food Science by potter 3<sup>rd</sup> edition
- 3) Handbook of Food additives by furia T.E. Vol-I & II
- 4) Encyclopedia of food colour & additives Vol. 3<sup>rd</sup> by George A.B



**Sem – VI**

**Animal Product Technology -Paper- II**

(DSC FST-F-1- Animal Product Technology -II)

credits 2 (Marks 50) Hours 30,37.5 Lectures of 48 Minutes

Unit-I-	Hours Allotted
A) Eggs:- 1) Structure 2) Composition 3) Nutritive Value 4) Functional Properties B) Quality Of Eggs :- 1) Internal Quality Evaluation 2) Egg Candling 3) Egg Grading 4) Deterioration During Storage 5) Microbial Spoilage Of Eggs 6) Preservation & Storage Methods For Eggs 7) Packaging & Trans Portation Of Eggs C) Egg Cookery :-	15
Unit-II	Hours Allotted
A) Poultry :- 1) Types Of Poultry 2) Muscle Structure 3) Composition 4) Chemical & Nutritive Value Of Poultry Meat 5) Poultry Dressing & Slaughtering Methods 6) Postmortem Changes 7) Preservation 8) Grading 9) Packaging Of Poultry Meat	15

**References:-**

- 1) Manay S.N & Shadaksharswamy M. (2001); food facts and principles, 2<sup>nd</sup> end, new Age Intrnational (p) limited publishers
- 2) Potter N.N & Hotchkiss J.H. (1966); Food Science, 5<sup>th</sup> edn., CBS Publishers & distributors.
- 3) Shrilakshmi B. (2003); food Science, 3<sup>rd</sup> edn., New age International (P) Limited publishers.
- 4) NIIR Board; preservation of meat & poultry products 1<sup>st</sup> , Asia Pacific Business Press

## Sem – VI

### Fermentation Technology -Paper- II

(DSC FST-F-2- Fermentation Technology -II)

credits 2 (Marks 50) Hours 30,37.5 Lectures of 48 Minutes

Unit-I-	Hours Allotted
A) Fermented & Unfermented Fruit & Beverages:- 1) Alcoholic Beverages- Beer, Wine, Cidar 2) Distilled Spirit- Rum, Vodka, Whisky 3) Traditional Fermented Food- Idli, Dosa, Dhokla B) Unfermented Beverages:- 1) RTS, Nector, Squash	15
Unit-II	Hours Allotted
A) Fermentation On Industrial Scale:- 1) Production Of Bakers Yeast 2) Food Yeast 3) Single Cell Protein 4) Vinegar 5) Organic Acid- (Citric & Lactic Acid) B) Cultivation Of Mushrooms 1) Penicillin 2) Vitamin 12	15

#### References:-

- 1) Food microbiology, 2<sup>nd</sup> edition by Adams M & Moss M. 2008 RSC Publishing
- 2) Food Microbiology, 5<sup>th</sup> edition by William c frazier, Dennis C. Westhoff
- 3) Microbiology of Fermented Foods Volume II & I By Brian J. Wood. Elsevier Applied Science Publication. 1997
- 4) Principles of fermentation Technology by Stanbury, P. F, Whitekar A. & Hall 1995, pergaman. McNeul & Harvey. (AC) NEW

**Sem – VI**

**Food Quality & Safety Management -Paper- II**

(DSC FST-F-3- Food Quality & Safety Management -II)

credits 2 (Marks 50) Hours 30,37.5 Lectures of 48 Minutes

Unit-I-	Hours Allotted
A) Statistical Quality Control Of Foods:- B) Consumer Studies 1) Types Of Consumer Studies 2) Preference Studies 3) Acceptance Studies 4) Factors Affecting Consumer Acceptance C) Food Safety Management Tools:- 1) Basic Concept Of Food Safety 2) pre-requisites- GHPs, GMPs, HACCP, ISO series 3) TQM- Concept & need for quality 4) Components of TQM (Total quality management)	15
Unit-II	Hours Allotted
A) Food laws & standards:- 1) AGMARK & Bureau Of Indian Standards 2) Additional Food Laws 3) Federal Poultry Products Inspection Act Of 1957 4) Federal Trade Commission Act 5) Infant Formula Act Of 1986 6) Nutrition Labeling & Education Act Of 1990 7) Consumer Protection Act 8) Food Safety & Standards 2006 9) Other Laws & Standards Related To Food 10) Control Of Food Quality	15

**References:-**

- 1) The Food Safety & Standards Act 2006. Professional Book Publishers Delhi
- 2) Quality Control For Food Industry- krammer & Twigg
- 3) Food Science- Norman N-Potter, Joseph H. Hotchkiss, CBS Publishers & distributors, New Delhi, 1997 5<sup>th</sup> edition
- 4) Ranganna S. 2012 Handbook of analysis & quality control for fruits & vegetable products, Tata McGraw Hill Education Pvt. Ltd, New Delhi

**Sem – VI**

**Food Additives & Technology -Paper- II**

(DSC FST-F-4- Food Additives & Technology -II)

credits 2 (Marks 50) Hours 30,37.5 Lectures of 48 Minutes

Unit-I-	Hours Allotted
A) Acidulants & Ph Control agents- B) Colouring agents C) flavouring agents D) sweetners E) emulsifiers F) stabilizers	15
Unit-II	Hours Allotted
A) Safety Of Toxicants- 1) Nature Of The Compound 2) Dose Of The Compound 3) Frequency Of Exposure 4) Route Of Exposure 5) Dietary Factors B) Endogenous Factors 1) Binding Of Toxicants To Plasma Proteins & Tissues 2) Excretory Process- I) Urinary Excretion, Ii) Biliary Excretion C) Dosage- 1) L.D(50) 2) Virtually Safe Dose 3) No Effect Dose	15

**References:-**

- 1) Principles of food science Part-I Food Chemistry by Fennema. O. R
- 2) Food Science by potter 3<sup>rd</sup> edition
- 3) Handbook of Food additives by furia T.E. Vol-I & II
- 4) Encyclopedia of food colour & additives Vol. 3<sup>rd</sup> by George A.B