

MRSPTU B.Sc. (FOOD SCIENCE AND TECHNOLOGY)/B.F.S.T (Hons.) SYLLABUS
2021 BATCH ONWARDS

Total Credits =21

Semester 1 st		Contact Hrs.			Marks			Credits
Subject code	Subject Name	L	T	P	Internal	External	Total	
BFOTS1-101	General Microbiology	3	1	-	40	60	100	4
BFOTS1-106	Introduction to Food Technology-I	3	1	-	40	60	100	4
BFOTS1-103	*Mathematics	3	1	-	40	60	100	4
BFOTS1-104	Computer Science and Applications	3	1	-	40	60	100	4
BFOTS1-105	General Microbiology Lab I	-	-	4	60	40	100	2
BPHAR0-002	**Life Sciences	3	1	-	40	60	100	4
BHUMA0-001	Communicative English	3	-	-	40	60	100	3
Total		-	-	-	260	340	600	21

*Mathematics for Medical Students

** Life Sciences for Non-Medical students.

Total Credits =19

Semester 2 nd		Contact Hrs.			Marks			Credits
Subject code	Subject Name	L	T	P	Internal	External	Total	
BFOTS1-201	Introduction to Food Technology II	3	1	-	40	60	100	4
BFOTS1-202	Principles of Food Preservation	3	1	-	40	60	100	4
BFOTS1-203	Environmental studies	3	-	-	40	60	100	3
BFOTS1-204	Food Chemistry	3	1	-	40	60	100	4
BFOTS1-205	Introduction to Food Technology II Lab-II	-	-	4	60	40	100	2
BFOTS1-206	Principles of food preservation Lab-III	-	-	4	60	40	100	2
Total		-	-	-	280	320	600	19

SEMESTER FIRST

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GENERAL MICROBIOLOGY

Subject Code: BFOTS1-101

L T PC

Duration: 60Hrs.

3 1 0 4

Course Objectives:

1. To introduce students with the world of microbiology.
2. To familiarize them with different types of micro-organisms.
3. To teach them about cultivation and control of micro-organisms.
4. To aware them about the factors affecting the growth of micro-organisms.

Course Outcomes:

1. Students acquire knowledge about microbiology.
2. They become familiar with different types of micro-organisms.
3. Students learn about the techniques of cultivation and control of micro-organisms.
4. Students become aware about the factors affecting the growth of micro-organisms.

UNIT-I (15Hrs.)

Introduction: Discovery of microbial world, theory of spontaneous generation, Germ theory of disease, Koch's postulates, Pure culture concept, Nature and properties of prokaryotic and eukaryotic micro-organisms.

UNIT-II (15Hrs.)

General characteristics and Nutritional requirements: General characteristics of bacteria, yeast, mold, viruses, algae. Types of bacteria, nutritional classification of bacteria.

Reproduction of micro-organisms: Brief account of bacteria, yeast and mold reproduction.

UNIT-III (15Hrs.)

Microbial Growth: Definition of growth, growth cycle, growth rate, generation time, measurement of growth, effect of environmental factors such as temperature, oxygen, moisture, salt, pH, oxidation- reduction potential and radiations on growth.

UNIT-IV (15Hrs.)

Cultivation of micro-organisms: Pour plate method, spread plate method and streak plate

Control of Micro-organisms: Control of micro-organisms by physical, chemical and biological methods.

Recommended Books:

1. Pelczar M. J., Chan E.C.S. and Krieg N.R., 'Microbiology', 5th Edition., McGraw Hill Co, Singapore, **1987**.
2. Stanier R.Y., Graham J.L., Wheelies M.L. and Painter P.R., 'General Microbiology', 5th Edition., The Macmillan Press Ltd., London, **1993**.
3. Cappuccino J.G. and Sherman N., 'Microbiology: A Laboratory Manual', Benjamin-Cummings Publishing Co., USA, **2004**.
4. Gunase K. P., 'Laboratory Manual in Microbiology', New Age International (P) Ltd. New Delhi, **1996**

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INTRODUCTION TO FOOD TECHNOLOGY-I

Subject code: BFOTS1-106

L T P C
3 1 0 4

Duration: 60Hrs.

Course Objectives:

1. To make students familiar with food science and technology.
2. To provide them detailed knowledge about structure of different cerealgrains.
3. To aware them about processing of pulses.
4. To give them an overview of fats and oils.

Course Outcomes:

1. Students become familiar with food science and technology.
2. Students acquire knowledge about structure of different cerealgrains.
3. Students become aware about processing of pulses.
4. Students get knowledge about fats and oils.

UNIT-I (11Hrs.)

Introduction to Food Science and Technology, its scope and importance.

UNIT-II (18Hrs.)

Compositional, Nutritional and Technological aspects of Plant foods

Wheat: structure and composition, types (hard, soft/strong, weak) Diagrammatic representation of structure of wheat grain.

Rice: Structure and composition, parboiling of rice- advantages and disadvantages. Malting, gelatinization of starch, types of browning- Maillard & caramelization.

Corn: Structure and composition, Dry and wet milling.

Millets: Types of millets and its nutritional properties

UNIT-III (15Hrs.)

Pulses: Structure and composition of pulses, toxic constituents in pulses, processing of pulses: soaking, germination, decortication, cooking and fermentation.

UNIT-IV (16Hrs.)

Fats and Oils: Classification of lipids, types of fatty acids - saturated fatty acids, unsaturated fatty acids, essential fatty acids, trans fatty acids. Rancidity –Types- hydrolytic and oxidative rancidity and its prevention.

Recommended Books

1. Manay, S. and Shadaksharaswami, M., 'Foods: Facts and Principles', New Age Publishers, 2004.
2. Srilakshmi B., 'Food science', New Age Publishers, 2002.
3. Meyer L. H., 'Food Chemistry', New Age, 2004
4. Kenneth F. et al, edited-Vol-1, 2, 'The Cambridge World History of Food, Cambridge', Univ. Press, 2000.
5. Eastwood M., 'Principles of Human Nutrition', 2nd Edition, Blackwell Publishing, 2003.

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MATHEMATICS

Subject Code: BFOTS1-103

L T PC

Duration:60Hrs.

3 1 0 4

Course Objectives:

1. To introduce students with basics of mathematics.
2. To provide them knowledge about mensuration techniques.
3. To make them familiar with quadratic equations.
4. To teach them about matrix and determinants.

Course Outcomes:

1. Students become familiar with basics of mathematics.
2. Students get knowledge about mensuration techniques.
3. Students learn about the quadratic equations.
4. Students acquire knowledge about matrix and determinants.

UNIT-I (17Hrs.)

Mensuration: Mensuration of rectangles, easy examples of garden paths, cost of planting trees and fencing gardens. Area of right angled triangles area and height of isosceles and equilateral triangles, area of triangles in terms of sides, rent of field. Area of parallelograms, rhombus, quadrilateral and trapezoid. Regular polygons with emphasis on hexagon and octagon. Simple cases of similar figures. Circumference and area of circles. Circular rings. Cost of fencing circular fields and paths.

UNIT-II (14Hrs.)

Mensuration: Volumes of cubes and rectangular solids. Cubic contents of tanks and cisterns, Volumes of triangular & rectangular prisms, right circular cylinders and segments of cylinders (Easy numerical examples based on Science only to be set Proofs of formulae).

UNIT-III (15Hrs.)

Algebra: Solution of quadratic equations and of those reducible to quadratic equation (One variable). Relation between roots and co-efficients. nth term and sum to n terms of an A. P. and G.P. nth term of an H. P. (excluding means and problems on numbers). Permutation and combinations: simple problems only. (Proofs of formulae not required).

UNIT-IV (14Hrs.)

Matrix and Determinant: Introduction matrices, Types of matrices, Operation of matrices, Transpose of matrix, Matrix multiplication, Determinants, Properties of determinants, Products of determinants, Minors and co-factors, Adjoint of a square matrix, Singular and non singular matrices, Inverse of Matrices.

Recommended Books

1. Algebra by Kapoor D. C. and SinghG.
2. Algebra by Nagpal T. N. and GuptaK.K.
3. Comprehensive Calculus by Dehiya R.S.
4. New Style Calculus for T. D.C

COMPUTER SCIENCE & APPLICATIONS

Subject Code: BFOTS1-104

**L T PC
3 1 0 4**

Duration: 60Hrs.

Course Objectives:

1. To introduce students with history and basic architecture of computer.
2. To familiarize students with operating systems.
3. To aware students about networks used for communication.
4. To provide them knowledge about data security.

Course Outcomes:

1. Students become aware about the history and architecture of computer.
2. Students become familiar with different operating systems.
3. Students get knowledge about networks used for communication.
4. Students learn about data security.

UNIT-I (16Hrs.)

Computer Fundamentals Introduction to Computers: Characteristics of computers, Historical perspectives of computers, Computer generations, types of computers and uses, Software, Hardware, Basic architecture and functions of CPU and its parts, Important I/O devices like Keyboard, Mouse, Printers, Video Monitors.

Memory Storage: Memory Cells, Semiconductor and Magnetic core memory, ROM (its types), RAM, Cache and Virtual memory, Secondary storage devices and their organization (Hard disk, Floppy disk, CD, DVD).

UNIT-II (16Hrs.)

Operating Systems: Definitions, Need, Organization, Functions, Types of Operating Systems, DOS, Windows, Handling Drives, Directories and files, Commands (Internal & External), Icons, Clipboard, Folders, Major differences between DOS & Windows.

Communication Networks: Hardware and software components, seven layers of OSI architecture, Network Topologies (Ring, Star, Fully Connected and Bus), LAN and WAN, Bounded and unbounded communication media, Internet, World Wide Web and I.T., Browsers, Important terminology regarding Internet applications.

UNIT-III (14Hrs.)

Computer Applications Word Processing: Techniques, File manipulation, Formatting, Printing setups Table handling, Mail merge, etc. using MS-Word.

Spreadsheet Package: Worksheets, formatting sheets, Calculations and graphing using formulae and functions, Import and export of data using MS-Excel.

UNIT- IV (14Hrs.)

Computer Applications Graphics: Objectives and types of graphics, Presentation packages, Slides designing, Diagrams and graphs, Import & Export data using MS-Power Point.

Data Security against Viruses: Definition of computer viruses, detection, prevention and cure against viruses using anti-virus software packages.

Recommended Books

1. Rajaraman, 'Fundamentals of Computers', Prentice Hall of India.
2. N.K. Tiwari, 'Computer Fundamental with Pharmacy Applications', 1st Edition, Pharm. MedPress, 2008.
3. Stultz, 'Learn MS-Office 2000', BPB Publications.
4. Ivens, 'Using Microsoft Windows', Prentice Hall of India, 1998.
5. Stultz, 'Learn DOS in a day', BPB Publication.

LAB-I GENERAL MICROBIOLOGY

Subject Code: BFOTS1-105

**L T PC
0 0 4 2**

Duration: 30Hrs.

Course Objectives:

1. To familiarize students with different equipment's used in microbiology.
2. To provide them detailed knowledge about media preparation.
3. To improve their practical skills required for handling microbiological tools.
4. To demonstrate different methods of staining.

Course Outcomes:

1. Students become familiar with different equipment's used in microbiology.
2. Students acquire knowledge about media preparation.
3. Students learn practical skills required for handling microbiological tools.
4. Students become aware about different methods of staining.

Practical

1. To study different parts of a microscope.
2. Study of instruments (Autoclave, Hot air oven, Incubator, Laminar flow, pH meter, and spectrophotometer) of microbiology laboratory.
3. Preparation of nutrient agar and MacConkey's Agar plates, slants and broth.
4. To study the serial dilution method.
5. To perform pour plate, spread plate and streak plate methods for isolation and enumeration of micro-organisms.
6. To perform Simple staining.
7. To stain the given bacteria by Gram's staining method.
8. To perform negative staining.
9. To determine the number of micro-organisms with a Haemocytometer.
10. To determine the motility of bacteria by hanging drop method.

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LIFE SCIENCES

Subject code: BPHAR0-002

L T PC

Duration: 60 Hrs.

3 1 0 4

Course Objectives

1. To familiarize students with cell and molecular biology.
2. To aware them about the mechanism of digestion, absorption and respiration.
3. To enrich their knowledge about human health and disease.
4. To teach them about structure and functions of various food components

Course outcome:

1. Students become familiar with cell and molecular biology.
2. Students become aware about the mechanism of digestion, absorption and respiration.
3. Students learn about human health and disease.
4. Students acquire knowledge about the structure and functions of various food components.

UNIT-I (15Hrs.)

Cell & Molecular Biology: Cell theory, Prokaryotic cell, eukaryotic cell, cell wall, cell membrane, cytoskeleton, nucleus, chloroplast, mitochondria, endoplasmic reticulum, golgi bodies, ribosomes, lysosomes, vacuoles and centrosomes.

UNIT- II (15Hrs.)

Cell cycle & division, amitosis, mitosis and meiosis. Study of genetic material, structure of DNA and RNA, replication, transcription, genetic code, translation & DNA repair.

Human physiology: Digestion and absorption, breathing and respiration, circulation, excretory system, nervous system, skeletal and muscular systems.

UNIT-III (12Hrs.)

Human health and diseases: Pathogens, Parasites causing human disease (malaria, dengue, chickenguinea, typhoid, pneumonia, common cold, ringworm) and their control. Basic concepts of immunology, vaccines, antibiotics, cancer, HIV and AIDS.

UNIT-IV (18Hrs.)

Biotechnology and its applications: Recombinant DNA technology, applications in health, agriculture and industries, genetically modified organisms; Plant breeding, tissue culture, single cell protein, Transgenic plants and transgenic animals.

Recommended books:

1. Lehninger A. L., David L. N. and Michael M. C., 'Principles of Biochemistry', Worth Publishers, **1993**.
2. Singh B.D., 'Biotechnology', Kalyani Publishers.
3. Harvey L., Arnold B., Chris A. K., Paul M., Monty K., Jems D. and Mathew P. S., 'Molecular Cell Biology', W.H. Freeman, **2004**.

COMMUNICATIVE ENGLISH

Subject Code: BHUMA0-001

L T P C

Duration:45 Hrs.

3 0 0 3

Course Objectives:

1. To aware students about the importance of communication along with its process.
2. To enhance their knowledge about different barriers and elements of communication.
3. To familiarize them with different styles of communication.
4. To improve their skills required for presentations and group discussions.

Course Outcomes:

1. Students become aware about importance and process of communication.
2. Students come to know about barriers and elements of communication.
3. Students become familiar with different styles of communication.
4. Students gain enough confidence for giving presentations and group discussions.

UNIT-I (12 Hrs.)

Communication Skills: Introduction, Definition, the Importance of Communication, The Communication Process – Source, Message, Encoding, Channel, Decoding, Receiver, Feedback, Context

Barriers to communication: Physiological Barriers, Physical Barriers, Cultural Barriers, Language Barriers, Gender Barriers, Interpersonal Barriers, Psychological Barriers, Emotional barriers.

UNIT-II (11Hrs.)

Perspectives in Communication: Introduction, Visual Perception, Language, Other factors affecting our perspective - Past Experiences, Prejudices, Feelings, Environment.

Elements of Communication: Introduction, Face to Face Communication - Tone of Voice, Body Language (Non-verbal communication), Verbal Communication, Physical Communication.

UNIT-III (12Hrs.)

Communication Styles: Introduction, The Communication Styles Matrix with example for each Direct Communication Style, Spirited Communication Style, Systematic Communication Style, Considerate Communication Style.

Basic Listening Skills: Introduction, Self-Awareness, Active Listening, becoming an Active Listener, Listening in Difficult Situations

UNIT-IV (10Hrs.)

Interview Skills: Purpose of an interview, Do's and Don'ts of an interview

Giving Presentations: Dealing with Fears, Planning your Presentation, Structuring Your Presentation, Delivering Your Presentation, Techniques of Delivery

Group Discussion: Introduction, Communication skills in group discussion, Do's and Don'ts of group discussion.

Recommended Books

1. Ruther Ford A. J., 'Basic Communication Skills for Technology', 2nd Edition, Pearson Education, **2011**.
2. Kumar S. and Pushplata, 'Communication Skills', 1st Edition, Oxford Press, **2011**.
3. Stephen P. Robbins, 'Organizational Behaviour', 1st Edition, Pearson, **2013**.
4. Gill H., 'Brilliant-Communication Skills', 1st Edition, Pearson Life, **2011**.
5. Gopalawamy R., 'The Ace of Soft Skills: Attitude, Communication and Etiquettefor Success', 5th Edition, Pearson, **2013**.
6. Dalley D., Burton L. and Margaret G., 'Developing your Influencing Skills', Green Hall, 1st Edition, Universe of Learning LTD, **2010**.
7. Konarnira, 'Communication Skills for Professionals', 2nd Edition, PHI, **2011**.
8. Mitra B. K., 'Personality Development and Soft Skills', 1st Edition, Oxford Press, **2011**.
9. 'Soft Skill for Everyone', Butter Field, 1st Edition, Cengage Learning India Pvt. Ltd., **2011**.
10. Francis Peters S.J., 'Soft Skills and Professional Communication', 1st Edition, McGraw Hill Education, **2011**.
11. John A., 'Effective Communication', 4th Edition, Pan MacMillan, **2009**.
12. Aubrey D., 'Bringing out the Best in People', 2nd Edition, McGraw Hill, **1999**.

SEMESTER-II

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INTRODUCTION TO FOOD TECHNOLOGY-II

Subject Code: BFOTS1-201

LTPC
3 1 0 4

Duration:60Hrs.

Course Objectives:

1. To aware students about classification and post-harvest changes in fruits and vegetables.
2. To familiarize them with compositional and nutritional aspects of animal foods.
3. To enhance their knowledge about milk and milk products.
4. To give them an overview of Indian spices and condiments.

Course Outcomes:

1. Students become aware about various types and post-harvest changes in fruits and vegetables.
2. Students become familiar with compositional and nutritional aspects of animal foods.
3. Students gain knowledge about milk and milk products.
4. Students get an overview about Indian spices and condiments.

UNIT-I (16Hrs.)

Fruits and Vegetables: Classification of fruits and vegetables, general composition, enzymatic browning, names and sources of pigments, Dietary fibre.

Postharvest changes in fruits and vegetables: Climacteric rise, horticultural maturity, physiological maturity, physiological changes, physical changes, chemical changes, pathological changes during the storage of fruits and vegetables.

UNIT-II (17Hrs.)

Compositional, Nutritional and Technological aspects of Animal foods Flesh Foods - Meat, Fish, Poultry

Meat- Definition of carcass, concept of red meat and white meat, composition of meat, marbling, post-mortem changes in meat- rigor mortis, tenderization of meat, ageing of meat.

Fish- Classification of fish (fresh water and marine), aquaculture, composition of fish, characteristics of fresh fish, spoilage of fish- microbiological, physiological, biochemical.

Poultry- Structure of hen's egg, composition and nutritive value, egg proteins, characteristics of fresh egg, deterioration of egg quality, difference between broiler and layers.

UNIT-III (12Hrs.)

Milk and Milk Products: Definition of milk, chemical composition of milk, its constituents, processing of milk, pasteurization, homogenization. An overview of types of market milk & milk products.

UNIT-IV (15Hrs.)

Food Spices and Condiments: Types and uses of spices and condiments, Chemical composition, Extraction, General processing, uses and special attributes of important Indian spices like pepper, cinnamon, clove, ginger, turmeric, cardamom, fenugreek and fennel, seasonings and condiments blends.

Recommended Books

1. Manay S. and Shadaksharaswami M., 'Foods: Facts and Principles', New Age Publishers, 2004.
2. Srilakshmi B., 'Food Science', New Age Publishers, 2002.
3. Meyer L. H., 'Food Chemistry', New Age, 2004
4. Kenneth F. et al, edited - Vol-1, 2, 'The Cambridge World History of Food', Cambridge Univ. Press, 2000.
5. Eastwood M., 'Principles of Human Nutrition', 2nd Edition Blackwell publishing, 2003.

PRINCIPLES OF FOOD PRESERVATION

Subject Code: BFOTS1-202

L T PC

Duration: 60Hrs

3 1 0 4

Course Objectives:

1. To make students familiar with food preservation and its history.
2. To provide them knowledge about preservation at low temperature.
3. To aware them about high temperature preservation techniques.
4. To teach them about preservative effects of drying and irradiation.

Course Outcomes:

1. Students become familiar with general methods of food preservation.
2. Students learn about effect of different food preservation methods on food quality.
3. Students become aware about chemical preservatives and their usage in foods.
4. Students get knowledge about effect of preservation methods on microbial degradation.

Unit-I (11Hrs.)

Introduction: Historical developments of food preservation. Principles of Food preservation, Scope & its benefits.

Chemical preservation: Class I and Class II preservatives.

Unit-II (16Hrs.)

Preservation by low temperature: Introduction, Freezing and Refrigeration, cold storage and freezing, freezing curve, changes during freezing, types of freezing; slow freezing, quick freezing, thawing, changes during thawing and its effects on food.

Unit-III (16Hrs.)

Preservation by high temperature: Thermal processing, Sterilization, commercial sterilization, pasteurization, and blanching. boiling, canning, aseptic processing, thermal death time.

Unit-IV (17Hrs.)

Preservation by Drying: Definition, drying as a means of preservation, differences between sun drying and dehydration (i.e. mechanical drying), factors affecting rate of drying, normal drying

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curve, Various types of driers used in food industry.

Irradiation: Units of radiation, Ultraviolet and ionizing irradiations, their effect on microorganisms & uses in food processing.

Recommended Books

1. Desrosier N. W. and Desrosier J. N., 'The Technology of Food Preservation', CBS Publication, New Delhi, **1998**.
2. Paine F.A. and Paine H.Y., 'Handbook of Food Packaging', Thomson Press India Pvt Ltd, New Delhi, **1992**.
3. Potter N.H., 'Food Science', CBS Publication, New Delhi, **1998**.
4. Ramaswamy Hand Marcott M., 'Food Processing Principles and Applications', CRC Press, **2006**.
5. Rao P.G., 'Fundamentals of Food Engineering', PHI Learning Pvt Ltd, New Delhi, **2010**.
6. Toledo R. T., 'Fundamentals of Food Process Engineering', Aspen Publishers, **1999**.

ENVIRONMENTAL STUDIES

Subject Code: BFOTS1-203

L T PC
3 0 0 3

Duration: 45Hrs.

Course Objectives:

1. To aware students about environmental studies and judicious use of natural resources.
2. To make them realize their responsibilities towards natural resources.
3. To familiarize them with ecosystem and its importance.
4. To draw their attention towards problems arising due to environmental pollution.

Course Outcomes:

1. Students become aware about environment and its protection.
2. Students become responsible towards the use of natural resources.
3. Students become familiar with ecosystem and its importance.
4. Students have fair knowledge to reduce environmental pollution.

UNIT-I (11Hrs.)

The multidisciplinary nature of environmental studies, Natural Resources, Renewable and non-renewable resources: Natural resources and associated problems.

UNIT-II (12Hrs.)

Forest Resources, Water Resources, Mineral Resources, Food resources, Energy resources, Land resources, Role of an individual in conservation of natural resources.

UNIT-III (12Hrs.)

Ecosystems, Concept of an ecosystem, Structure and function of an ecosystem, Introduction,

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types, characteristic features, Forest ecosystem; Grassland ecosystem; Desert ecosystem; Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

UNIT- IV (10Hrs.)

Environmental Pollution: Air pollution; Water pollution; Soil pollution.

Recommended Books

1. Sing Y.K., 'Environmental Science', New Age International Pvt, Publishers, Bangalore.
2. Agarwal K.C., 'Environmental Biology', Nidi Publ. Ltd. Bikaner, 2001.
3. Erach B., 'The Biodiversity of India,' Mapin Publishing Pvt.Ltd.
4. Brunner R.C., 'Hazardous Waste Incineration', McGraw Hill Inc.
5. Clark R.S., 'Marine Pollution', Clarendon Press Oxford.
6. Cunningham, W.P. Cooper, T.H. Gorhani, E & Hepworth, M.T. 'Environmental Encyclopedia', Jaico Publ. House, Mumbai, 1996, 2001.
7. De A.K., 'Environmental Chemistry', Wiley Eastern Ltd.
8. Down of Earth, Centre for Science and Environment. <https://www.downtoearth.org.in/>

FOOD CHEMISTRY

Subject Code: BFOTS1-204

L T PC

Duration: 60Hrs.

3 1 0 4

Course Objectives:

1. To introduce students with basic concepts and definition of food chemistry.
2. To teach students about chemical properties of food constituents.
3. To aware students about the chemical changes occurring in food due to its components.
4. To familiarize students with the food flavors and flavor enhancers.

Course Outcomes:

1. Students get knowledge about the basic concepts of food chemistry.
2. Students learn about chemical properties of all food constituents.
3. Students become aware about chemical changes occurring in food during processing.
4. Students become familiar with food flavors and flavor enhancers.

UNIT-I (12Hrs.)

Introduction to Food: Definition and Composition.

Water: Structure of water and ice, Types of water, Sorption phenomenon, Water activity and packaging.

UNIT-II (16Hrs.)

Lipids: Classification, Physical properties-melting point, softening point, specific gravity, refractive index, smoke, flash and fire point, turbidity point. Chemical properties- reichertmeissel value, polenske value, iodine value, peroxide value, saponification value.

Changes in fats and oils: rancidity, lipolysis, flavor reversion, Fat Mimetics.

UNIT-III (17Hrs.)

Proteins: Protein classification and structure, Nature of food proteins (plant and animal proteins). Properties of proteins (electrophoresis, sedimentation, amphoterism and denaturation),

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Functional properties of proteins, organoleptic, solubility, viscosity, binding gelation/texturization, emulsification, foaming.

Carbohydrates: Classification and Functions (monosaccharides, oligosaccharides and polysaccharides), Modified celluloses and starches.

UNIT-IV (15Hrs.)

Vitamin: Importance and Stability, Water soluble & Fat soluble vitamins.

Flavour: Definition and basic tastes, Description of food flavours, Flavour enhancers.

Recommended Books

1. Fennema O. R, 'Food Chemistry', 3rd Edition, Marcell Dekker, New York, **1996**.
2. Whitehurst R. J. and Law B. A., 'Enzymes in Food Technology', CRC Press, Canada, **2002**.
3. Wong Dominic W. S., 'Food Enzyme, Chapman and Hall, New York, **1995**.
4. Potter N.N. and Hotchkiss J. H, 'Food Science', 5th Edition., Chapman & Hall, **1995**.
5. DeMan J.M., 'Principles of Food Chemistry', AVI, New York, **1980**.

LAB II INTRODUCTION TO FOOD TECHNOLOGY-II

Subject Code: BFOTS1-205

L T PC

Duration: 30Hrs.

0 0 4 2

Course Objectives

1. To familiarize students with different instruments used in food technology.
2. To aware them about the proximate analysis of different food products.
3. To make them understand the effect of pH and blanching on fruits and vegetables.
4. To teach them about the qualitative analysis of food.

Course Outcomes:

1. Students become familiar with different instruments used in food technology.
2. Students learn about the proximate analysis of different food products.
3. Students determine the effect of pH and blanching on fruits and vegetables.
4. Students learn to analyze the food qualitatively.

Practical's

1. Demonstration of the instruments used in food technology.
2. Determination of moisture content in different food samples.
3. Determination of ash content of different food samples.
4. Determination of TSS of ketchup by refractometer.
5. Determination of acidity of milk and juices.
6. To study the effect of blanching on vegetables.
7. Determination of specific gravity of oil and milk.
8. Determination of pH of food samples by pH meter.
9. Determination of saponification value and acid value.
10. Qualitative test for starch and protein.

LAB III PRINCIPLES OF FOOD PRESERVATION

Subject Code: BFOTS1-206

L TPC

Duration: 30Hrs

0 0 42

Course Objectives:

1. To aware students about the quality assessment of processed food products.
2. To prepare different food preserves with the use of sugar and salt.
3. To teach them the effect of heat treatment on shelf life of food.
4. To familiarize students about preservation of foods by oils and chemicals.

Course Outcomes:

1. Students determine the quality of processed food products.
2. Students prepare different food preserves with the use of salt and sugar.
3. Students learn about the effect of heat treatment on shelf life of food.
4. Students become familiar with processing steps of different food products.

Practical's

1. Cut out analysis of canned foods.
2. Preservation of fruits and vegetables by syruring and salting.
3. Preservation by paraffining.
4. Preparation of sauerkraut.
5. To determine the adequacy of blanching on vegetables.
6. To enhance the shelf life of eggs by oiling and pickling.
7. To study the curing of meat.
8. Preservative effect of honey and different concentrations.
9. Preservation of fruits and vegetables by salt, oil and vinegar.
10. Visit to food industry