MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA – 8

(Affiliated to Krishna University, Machilipatnam)

SYLLABUS

Subject: Food Science & Technology **Semester: I**

Course Title: Introduction to Food Science **Course Code: 20FTCCIF13**

No. of Hours: 60 **LTP: 400** **Credits: 3**

Objectives

- To understand the history and evolution of food processing.
- To study the structure, composition, nutritional quality of foods.
- To introduce students to the basic fundamentals of food science and underlying technology associated with providing a safe, nutritious, and abundant supply of fresh foods to humans.

Course Outcomes

CO1: Summarize the history and basic concepts of food science and technology.

CO2: Compare different cooking methods

CO3: Outline the structure, sources and composition of different food components.

CO4: Classify different food components.

UNIT –I **(10 Hrs.)**

Historical evolution of food processing technology. Definition and scope of Food science, Basic Food group classification (ICMR), Food Pyramids. Understanding relationship between food, nutrition and health. Concept of BMI, Concept and characteristics of Balanced diet.

UNIT – II **(10 Hrs.)**

Pre-Cooking methods: Cleaning, Peeling and Stringing, Sieving, Soaking, Processing.

Cooking Methods:

Moist heat methods: Boiling, Simmering, Stewing, Blanching, Poaching, Steaming, Pressure cooking.

Dry heat methods: Roasting, Grilling, Toasting, Baking, Sautéing, Frying.

Combination Methods: Braising and Micro wave cooking.

Advantages and Disadvantages of cooking food.

UNIT-III **(10 Hrs.)**

Cereals, Cereal products and millets: Structure, composition and Nutritive value, selection and storage of Rice, Wheat, Maize. Cereal cookery: Gluten of wheat, Gelatinization, Dextrinization.

Pulses: Composition, Nutritive value, Selection, Storage of pulses, Toxic contents in pulses, cookery.

Fats and oils: Nutritional importance – Ground nuts, Gingelly seeds, coconut, soya nuts. Functions of oils and fats and their role in cookery. Selection and storage.

Spices and condiments: Classification, Composition, Nutritive value, General Function.

UNIT-IV **(8 Hrs.)**

Fruits: Classification, composition, Nutritive value, Enzymatic and Non-Enzymatic Browning, Selection, grading and storage.

Vegetables: Classification, composition, Nutritive Value, Nutrient losses while Cooking, Selection and storage.

UNIT-V **(10 Hrs.)**

Milk and Milk Products: Importance, Composition, Nutritive Value, Physical and Chemical Properties of milk, Types of Milk available in the market.

Fleshy Foods: Meat, Poultry, Fish, Composition, Nutritive Value, Selection Structure of Meat Muscle.

Eggs: Structure, composition, Nutritive value, Quality and Grading of eggs, spoilage, Green ring formation.

Skill / Hands on activities (12 Hrs.)

1. Practice food preparation by various cooking methods
2. Prepare and evaluate the pectin in fruits

Prescribed Textbooks

1. B. Sri Lakshmi, Food science, New Age Publishers, 2002
2. Vijaya Khader, Food, Nutrition & Health, Kalyan publishers, 2000.

Reference Textbooks

1. B. Sri Lakshmi, Food science, New Age Publishers, 2002
2. Roday, S. Food Science., Oxford publication, 2011
3. Fundamentals of Food and Nutrition, S.R. Mudambi, M.V. Rajagopal, Wiley Easern Limit, 1993.

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA – 8

(Affiliated to Krishna University, Machilipatnam)

SYLLABUS

Subject: Food Science & Technology **Semester: I**

Course Title: Cooking Techniques - Practical **Course Code: 20FTP1CT12**

No. of Hours: 30 **LTP: 002** **Credits: 2**

Objectives

- To evaluate the germination of pulses, gelatinization of legumes and enzymatic reactions for fruits and vegetables, animal foods.
- To learn the preparation of Bulls eye and poached egg, green ring formation.
- To know the comparison of conventional and microwave cooking method and nutritional status parameters.

Course Outcomes

After completion of the practical, student will be able to

CO1: Evaluate the germination of pulses, gelatinization of legumes and enzymatic reactions for fruits and vegetables, animal foods

CO2: Analyse Bulls eye and poached egg, green ring formation and nutritional status parameters.

CO3: Differentiate between conventional and microwave cooking methods.

List of Experiments

1. Comparison of Conventional and Micro wave cooking methods.
2. Estimation of Gluten content in given flours.
3. Pulses; Germination and its Applications – Salads, chats.
4. Effects of gelatinization on legumes/ pulses.
5. Preparation and Evaluation of Pectin from given fruits.
6. Observe the Enzymatic reaction for fruits and vegetables.
7. To learn the preparation and importance of Bulls eye and Poached egg, Green ring formation.
8. To know the smoking point of different oils.
9. Quality inspection of animal foods.
10. Estimation of BMI and other nutritional status parameters.

MARIS STELLA (AUTONOMOUS) COLLEGE, VIJAYAWADA-8

(Affiliated to Krishna University, Machilipatnam)

SYLLABUS

Subject: Food Science & Technology **Semester: II**

Course Title: Basic Nutrition **Course Code: 20FTCCBN23**

No. of Hours: 60 **LTP: 400** **Credits: 3**

Objectives

- To Understand the relationship between food, nutrition and health.
- To evaluate functions of food, meal planning and nutritional labelling.
- To analyse classification and composition of nutrients and their sources.

Course outcomes

CO1: Explain the basic concepts of nutrition.

CO2: Classify various types of nutrients.

CO3: Summarize the composition, classification and food sources of proteins & lipids

CO4: Outline the functions and nutritional requirement of minerals, vitamins and dietary fibers.

CO5: Explain the concepts of meal planning and nutritional labeling.

UNIT-I **(8 Hrs.)**

Introduction to nutrition: Objectives for the study of nutrition. Definition of Nutrition, health, Dietetics. Factors determining food acceptance- physical, socio-cultural and economic factors. Functions of food, Malnutrition – types and causes.

Carbohydrates: composition, classification (very brief), food sources, functions, RDA values.

UNIT-II **(10 Hrs.)**

Proteins: composition, classification based on structure and composition, food sources, functions, RDA values. Net protein utilization and Protein quality (nutritive value of proteins).

Lipids: composition, classification (very brief), food sources, functions, RDA values. Iodine value, Rancidity in fats.

UNIT-III **(10 Hrs.)**

Minerals: functions, sources, deficiency of macro minerals: calcium, Micro minerals: zinc, iron and iodine, fluorine.

Vitamins: functions, sources, deficiency diseases of fat-soluble vitamins (A, D, E, K) and water-soluble vitamins (B complex & C)

UNIT –IV **(10 Hrs.)**

Dietary fiber: types, sources, requirements, deficiency disorders.

Water: sources, requirements, functions, water balance, effect of deficiency.

Energy: energy content of foods, measurements of energy, energy requirements

UNIT-V **(10 Hrs.)**

Meal Planning- Factors affecting meal planning, understanding specific considerations for planning meal for different groups of people.

Nutritional labelling

Importance, global trends, codex guidelines, nutritional labelling in India, FSSAI guidelines.

Skill / Hands on activities **(12 Hrs.)**

1. Preparation and calculation of nutritive values of various recipes.
2. Identification of seasonal availability of foods.

Prescribed Text Book

1. B. Srilakshmi, Nutrition Science, New Age Publishers, 2002 Bamji MS, Krishna swamy K, Brahman GNV (2009).

Reference Text Book

1. Text book of Human Nutrition,3rd edition. Oxford and IBH Publishing Co. Pvt.Ltd. VijayaKhader, Food, Nutrition & Health, Kalyan publishers, 2000.

MARIS STELLA (AUTONOMOUS) COLLEGE, VIJAYAWADA-8

(Affiliated to Krishna University, Machilipatnam)

SYLLABUS

Subject: Food Science & Technology **Semester: II**

Course Title: Nutritional Facts of Food - Practical **Course Code: 20FTP2NF22**

No. of Hours: 30 **LTP: 002** **Credits: 2**

Objectives

- To identify the seasonal availability of nutrient rich foods, sources, prices, low-cost nutrient rich foods.
- To calculate the nutritive value of different foods and saponification value.
- To design the meal plans for different age and income groups.
- To learn the knowledge of nutritional labeling.

Course Outcomes

CO1: Identify the seasonal availability of nutrient rich foods, sources, prices, low cost nutrient rich foods.

CO2: Evaluate the nutritive value of different foods and saponification value.

CO3: Design the meal plans for different age and income groups.

List of Experiments

1. Identification of nutrient rich sources of foods and their prices.
2. Identification of seasonal availability of nutrient rich sources of foods.
3. Learning to calculate nutritive value of different foods
   - (a) Cereals
   - (b) Pulses
   - (c) Fruits
   - (d) Vegetables
   - (e) Fleshy foods (meat, poultry, egg, fish)
   - (f) Milk and milk products
4. Calculation of saponification value of oil.
5. Nutritional labelling of food products
6. List out low-cost nutrient rich foods.
7. Planning of meals for adults of different activity levels for various income groups.
8. Planning of nutritious snacks for different age and income groups

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA – 8

(Affiliated to Krishna University, Machilipatnam)

SYLLABUS

Subject: Food Science & Technology **Semester: III**

Course Title: Food Technology & Preservation **Course Code: 20FTCCFP33**

No. of Hours: 60 **LTP: 400** **Credits: 3**

Objectives

- To learn the science behind various preservation technologies.
- To impact knowledge on Low and high preservative techniques.
- To understand Irradiation Plant layout, E beam & gamma effect.
- To understand evaporators, dryers- types and functioning

Course Outcomes

CO1: Explain the principles and classification of food preservation.

CO2: Outline various food preservation technologies.

CO3: Classify food and microorganism and explain factors affecting shelf life of food.

UNIT-I: Introduction to Food preservation (8 Hrs.)

1.1 Food Preservation- Definition, Principle, Classification of food preservation, Importance of bacteria, yeast and molds in foods.

1.2 Classification of microorganisms, factors affecting growth of microorganisms in food. typical growth curve of microorganisms.

1.3 Classification of Food-Perishable, semi-perishable & non-perishable.

UNIT-II: Food Preservation by high temperature (10 Hrs.)

2.1 Thermal Processing- Classification of thermal treatments, Mode of action.

2.2 Commercial heat preservation, methods: Sterilization, Pasteurization and blanching- definition, method and types.

UNIT-III: Food Preservation by Low temperature (10 Hrs.)

3.1 Freezing and Refrigeration: cold storage- definition, advantages and disadvantages, refrigeration, and freezing, principle of freezing, changes occurring during freezing, types of freezing- (slow and quick).

3.2 Thawing-Definition, changes during thawing and its effect on food.

UNIT-IV: Food Preservation by Moisture control (10 Hrs.)

4.1 Drying and Dehydration – Definition and principles of drying, factors affecting rate of drying, types of dryers used in the food industry.

4.2 Evaporation – Definition, principles, factors affecting evaporation, names of evaporators used in the food industry.

UNIT-V: Food Preservation by Irradiation (10 Hrs.)

5.1 Irradiation - Definition, principles, types, advantages and disadvantages.

5.2 Application and benefits of irradiation processing in the food industry. Quality and safety of irradiated foods.

Skill/ Hands on activities (12 Hrs.)

1. Practice food preservation techniques, packaging methods etc.
2. Prepare food items like sauces, ketchup, squashes & syrups.

Prescribed Text Books

1. Text Book on Food Storage and Preservation (2004) by Vijaya Khader.
2. Food Science (2002) by B. Srilakshmi.

Reference Text Books

1. Food Processing and Preservation (2010) by B.SivaShakar.
2. Food Processing and Preservation (2007) by G. Subbalakshmi
3. Food preservation and processing (2007) by ManoranjanKalia

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA – 8

(Affiliated to Krishna University, Machilipatnam)

SYLLABUS

Subject: Food Science & Technology **Semester: III**

Course Title: Food Technology & Preservation - Practical **Course Code: 20FTP3FP32**

No. of Hours: 30 **LTP: 002** **Credits: 2**

Objectives

- To learn food preservation methods and techniques

Course outcomes

CO 1: Practice food preservative techniques.

CO 2: Prepare sauces, ketchup, squashes & syrups.

CO 3: Perform pasteurization of fluids and blanching of plant foods.

List of experiments

1. To study the concept of sterilization.
2. Determination of pH of different foods with pH meter.
3. Study quality characteristics of foods preserved by drying/dehydration/ freezing.
4. Market survey of preserved fruit and vegetable products.
5. Preparation, packaging, sensory/objective (TSS, pH) of:
   a) Sauces (chilli sauce and tomato sauce)
   b) Ketchup (tomato)
   c) Squash (lemon squash, orange squash, pineapple squash)
   d) Syrup (rose syrup and almond syrup)
6. To perform pasteurization of fluids using different methods.
7. To perform blanching of different plant foods.

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA-8
Affiliated to Krishna University, Machilipatnam

SYLLABUS

Subject: Food Science & Technology **Semester: IV**
Course Title: Food Processing Techniques **Course Code: 20FTCCFP43**
No. of hours: 60 hours **LTP: 400** **Credits: 3**

Objectives:

- To teach technology of milling of various cereals
- To impart knowledge of different methods of fruit processing.
- To know the compositional and technological aspects of milk and fish
- To learn about processing of various spices, tea, coffee and cocoa.

Course Outcomes:

CO 1: Know about the various processing steps of major cereals after harvesting

CO 2: Understand the processing of fruits and vegetables in making different products like juices, jam and jellies and marmalade.

CO 3: Learn about processing of milk and milk products.

CO 4: Learn about the processing of fish by curing agents, drying and \ salting

CO5: Understand the different methods of processing of spices and oil production.

UNIT-I Technology of Cereals & cereal products **(8 Hrs.)**

Milling technology: Wheat- selection of wheat, milling, grading, flour treatments (bleaching, maturing), Processing.

Rice – ageing of rice, Physicochemical properties, milling (mechanical & solvent extraction), processing- parboiling, puffed rice.

Sorghum and millets – Traditional & commercial milling (dry &wet)

UNIT-II Technology of Fruits **(10 Hrs.)**

Fruits beverages: beverage definition, classification, preparation of juices, squashes, nectars, concentrates and powder.

Preparation of Jam, jellies and marmalade: Jelly: Essential constituents (Role of pectin, ratio), Theory of jelly formation, Processing & technology, defects in jelly.) Marmalade: Types, processing & technology, defects.

UNIT-III Technology of Milk and Milk products **(10 Hrs.)**

Milk: Physical properties of milk, Composition of milk, storage of milk.

Market Milk industry and milk products: Platform testing.

Processing- Filtration, Clarification, Homogenization, Pasteurization– definition, principle and method

UNIT-IV Technology of meat and meat products **(10 Hrs.)**

Fish Curing and Smoking: Drying and salting of fish, effect of water activity on fish quality,

process- salting methods (brining, pickling, kench curing, Gaspe curing)

Canning of fish: Principles, classification, storage of canned fish, pre-process operations, post process operations.

UNIT-V Technology of spices and oil seeds **(10 Hrs.)**

Spices: Processing and properties of major and minor spices, essential oils & oleoresins,adulteration.

Tea, coffee and cocoa: tea leaves- Processing and properties, coffee-processing, properties and products, cocoa- types and products.

Skill/Hands on activities **(12 Hrs.)**

1. Preparation of jams, jellies and marmalades.
2. Practise food processing techniques, packaging methods etc.

Prescribed Text Books

1. Food Processing and Preservation (2010) by B. SivaShakar.
2. Food Processing and Preservation (2007) by G. Subbalakshmi
3. Food preservation and processing (2007) by ManoranjanKalia

Reference Text Books

1. Bawa. A. S, O.P Chauhan etal. Food Science. New India Publishing agency, 2013
2. Roday, S. Food Science, Oxford publication, 2011.
3. B. Srilakshmi, Food science, New Age Publishers,2002
4. Meyer, Food Chemistry, New Age,2004
5. De Sukumar., Outlines of Dairy Technology, Oxford University Press, 2007

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA-8

(Affiliated to Krishna University, Machilipatnam)

SYLLABUS

Subject: Food Science & Technology **Semester: IV**

Course Title: Nutraceuticals & Functional Foods **Course Code: 20FTCCNF43**

No. of hours: 60 Hrs. **LTP: 400** **Credits: 3**

Objectives:

- To develop comprehensive understanding of different nutraceuticals and functional foods
- To understand the potential of various functional foods in promoting human health.

Course Outcomes:

- Correlate the health benefits of functional foods and nutraceuticals
- Understand about the importance and therapeutic applications of Pharma and designer foods.
- Summarize the nutritional benefits & health implications of functional foods.
- Discuss the role of phytochemicals and other bioactive compounds in promoting human health.

UNIT-1: Health foods **(8 Hrs.)**

1.1 Nutraceuticals- Definition, need, importance, classification, types, sources, processing of nutraceutical products, role in health, therapeutic applications.

1.2 Functional Foods- Definition, need, importance, classification, sources, role in health, therapeutic applications

1.3 Phytochemicals- Definition, need, importance, classification, sources, role in health, therapeutic applications

1.4 Anti-oxidants present in foods, Their role in health and disease

UNIT-II: Pharma and Designer foods **(10 Hrs.)**

2.1 Definition, need, importance, sources, Designing a food - Designer eggs, Diabetic foods,

2.2 sources of Sodium, lactose, phenylalanine free foods, fibre rich foods their role in health and therapeutic applications

UNIT- III: Dietary supplements **(10 Hrs.)**

3.1 Food Fortification, examples of fortified foods, health implications.

3.2 Protein rich foods- Sources, types, methods of protein extraction, oilseeds, legume cakes, leaf protein concentrates nutritional implications and therapeutic applications

UNIT-IV: Low fat foods **(10 Hrs.)**

4.1 Synthetic lipids, structured lipids, fat replacers, cholesterol free foods-health implications.

4.2 Non-nutritive sweeteners- Definition, need, importance, types, sources,

4.3 Development of sugar free products, role in health, therapeutic applications

UNIT- V: Food Biotechnology **(10 Hrs.)**

5.1 Food Biotechnology- Definition, need, importance, food processing improvements through biotechnology

5.2 GM foods, Food labelling, health implications

Skill/ Hands on activities **(12 Hrs.)**

1. Market survey of locally available Nutraceutical and functional foods
2. Identification of anti-oxidants present in foods.
3. Perform Fortification of food.

Prescribed Books

1. Nutraceutical and Functional Food Processing Technology by Joyce Irene Boye.
2. Functional Foods and Nutraceuticals by Rotimi E. Aluko.

Reference Books

1. Birch. G.G & Parker. K. J. Nutritive Sweeteners- 2 Applied Science Publishers, New Jersey, 1982
2. Creighton, T.E. Proteins 2 nd edition, W.H. Freeman & company, New York, 1993
3. Hettiarachchy, S.N. Ziegler. R.G. Protein functionality in food systems, Ift basic symposium
4. Series, Hong Kong, 1994
5. Hand book of Nutraceuticals and Functional Foods Robert E.C. Wildman 2007
6. Regulation of Functional Foods & Nutraceuticals Clare M. Hasler -2008

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA-8

(Affiliated to Krishna University, Machilipatnam)

SYLLABUS

Subject: Food Science & Technology **Semester: IV**

Course Title: Food Processing Techniques - Practical **Course Code: 20FTP4FP42**

No. of Hours: 30 **LTP: 002** **Credits: 2**

Objectives:

- To teach technology of milling of various cereals
- To impart knowledge of different methods of fruit processing.
- To know the compositional and technological aspects of milk and fish

Course outcomes

CO 1: To detailed learning on the processing of fruits in making different products.

CO 2: Identification of cereals and cereal products.

CO 3: Learn about processing of milk and milk products

1. Identification of different varieties of millets and cereals
2. Cooking characteristics of rice.
3. Preparation of jams, jellies and marmalades.
4. To estimate milk protein by Folin method.
5. Preparation of flavoured milk/ Pasteurisation of milk.
6. Quality evaluation of fish/prawn.
7. Adulteration of spices.

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA-8

(Affiliated to Krishna University, Machilipatnam)

SYLLABUS

Subject: Food Science & Technology **Semester: IV**

Course Title: Nutraceuticals & Functional Foods - Practical **Course Code: 20FTP5NF42**

No. of hours: 30 hours **LTP:002** **Credits: 2**

Objectives:

- To develop comprehensive understanding of different nutraceuticals and functional foods
- To understand the potential of various functional foods in promoting human health.

Course Outcomes

CO 1: Practise the testing of newly developed product.

CO 2: Prepare score cards, ranking & rating cards.

CO 3: Perform shelf life studies on developed products.

List of experiments

1. Market survey of locally available foods
2. Selection and formulation of the product using nutraceuticals & functional foods.
3. Testing of the developed product.
4. Conducting sensory tests and preparation of score cards, Ranking, Rating.
5. Conducting sensory tests - Ranking, Rating.
6. Costing of the Product.
7. Shelf life studies on developed products

MARIS STELLA (AUTONOMOUS) COLLEGE VIJAYAWADA-8

(Affiliated to Krishna University, Machilipatnam)

SYLLABUS

Subject: Food Science & Technology **Semester: V**

Course Title: Dietetics- Practical **Course Code: 20FTP611DT2**

No. of Hrs.: 45 **LTP: 003** **Credits: 2**

Objectives:

- To impart knowledge on diet for various disease conditions.
- To analyse dietary treatment and its planning.

Course Outcomes

CO1: Gain knowledge on the principles of diet therapy and different therapeutic diets.

CO2: Develop aptitude for taking up dietetics as a profession

List of Experiments: **(30 Hrs.)**

1. Planning and preparation of soft, liquid, bland & semi solid diets
2. Planning and preparation of a diet for obesity, underweight.
3. Planning and preparation of a diet for jaundice.
4. Planning and preparation of a diet for kidney stones.
5. Planning and preparation of a diet for diabetes mellitus.
6. Planning and preparation of a diet for Atherosclerosis.

Skill / Hands - on: Field work / Mini Project **(15 Hrs.)**

- Training students to plan a diet for different health conditions based on dietary principles.
- Visit the dietetics department to understand the scope & importance of a dietitian.
- Conducting a survey on 24- hours dietary recall of vulnerable groups.

Reference Text Books:

1. Sri Lakshmi, b.,2005, Dietetics, the Bangalore printing & publishing co. ltd., Bangalore
2. Anatia F.P., Clinical dietetics and nutrition,3rd edition oxford university press, Bombay,1989
3. B. Srilakshmi (2002) Nutrition science, New age international (P) limited, Delhi

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA – 8

(Affiliated to Krishna University, Machilipatnam)

SYLLABUS

Subject: Food Science & Technology **Semester: V / VI**

Course Title: Nutrition in Health-Practical **Course Code: 20FTP621NH2**

No. of Hours: 45 **LTP: 003** **Credits: 2**

Objectives:

- To help students to understand planning and preparation of nutritious diet for specific conditions
- To demonstrate the importance of nutritious foods

Course Outcomes:

CO1: Impart knowledge on planning and preparation of nutritious snacks

CO2: Discuss the role of diet during pregnancy & lactation

CO3: Understand the record analysis of 24-hour dietary recall

List of experiments: **(30 Hrs.)**

1. Planning and preparation of balanced diet for pregnant woman
2. Planning and preparation of diet for lactating mother
3. Planning and preparation of diet for pre-school child
4. Planning and preparation of nutritious snacks for school age children
5. Planning a diet for adult Man and Woman (sedentary, moderate, heavy worker)
6. Record diet of self- using 24-hour dietary recall and its nutritional analysis
7. Estimation of height, weight, BMI and MUAC

Skill / Hands - on: Field work / Mini Project **(15 Hrs.)**

- Training students to plan a diet for different age groups based on dietary principles.
- Visit the dietetics department to understand the scope & importance of a dietitian.
- Conducting a survey on 24- hours dietary recall of vulnerable groups.

Reference Text Books:

1. Sri Lakshmi, b.,2005, Dietetics, the Bangalore printing & publishing co. ltd., Bangalore
2. Anatia F.P., Clinical dietetics and nutrition,3rd edition oxford university press, Bombay,1989
3. B. Srilakshmi (2002) Nutrition science, New age international (P) limited, New Delhi

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA – 8
(Affiliated to Krishna University, Machilipatnam)
SYLLABUS

Subject: Food Science & Technology **Semester: V / VI**
Course Title: Food Service Management-Practical **Course Code: 20FTP631FM2**
No. of Hours: 45 **LTP: 003** **Credits: 2**

Objectives:

- To explain the physical layout of food service institutions, commercial and ICDS school feeding.
- To discuss the kitchen layout in Hospitals & food service institutions

Course Outcomes:

CO1: Impart knowledge on planning a physical layout of food service institutions
CO2: Understand the role of kitchen layout in hospital institutions
CO3: Demonstration on the importance of Mid-day meal programmes in schools.

List of Experiments: **(30 Hrs.)**

1. Planning physical layout of food service institutions, commercial and ICDS and school feeding.
2. Quality food production and purchase and sale by the students.
3. Visit mid - day meal programmes and observe food service.
4. Visit to dietetics department kitchen layout in hospital.
5. Visit a food service institution to study the layout and food service equipment handling.

Skill / Hands - on: Field work / Mini Project **(15 Hrs.)**

- In this course students will learn how to plan a layout of food service institutions.
- Students produced quality food and purchased and sold it.
- Visit mid - day meal programmes and observe how food is served.
- Visiting the hospital's dietetics department kitchen.
- Visit a food service institution to observe equipment handling and layout.

MARIS STELLA (AUTONOMOUS) COLLEGE VIJAYAWADA-8

Affiliated to Krishna University, Machilipatnam

SYLLABUS

Subject: Food Science & Technology **Semester: V / VI**

Course Title: Food Safety & Quality Control - Practical **Course code: 20FTP712FQ2**

No. of Hrs.: 45 **LTP: 003** **Credits: 2**

Objectives:

- To demonstrate quality inspection & detection of adulterants in various foods

Course outcomes:

CO1: Analyse the common adulterants in different foods

CO2: Developing product following the food safety & quality parameter

List of Experiments: **(30 Hrs.)**

1. Market survey of preserved fruits and vegetable products.
2. Visit a food testing lab or any agency of food standards.
3. Nutrition labelling requirements and developments.
4. Detection of common adulterants in different foods
5. Development of a product following the food safety and quality parameter

Skill / Hands - on: Field work / Mini projects: **(15 Hrs.)**

- This Market survey provides good insights into how fruits and vegetable products are preserved.
- Understanding how to identify the common foods contaminated by adulterants.
- An industrial visit to the students to familiarize them with the food quality testing labs.
- Development of new products.

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA – 8
(Affiliated to Krishna University, Machilipatnam)
SYLLABUS

Subject: Food Science & Technology **Semester: V/VI**
Course Title: Bakery Technology - Practical **Course code: 20FTP722BT2**
No. of Hrs.: 45 **LTP: 003** **Credits: 2**

Objectives:

- To impart knowledge on assessing quality of bakery products
- To demonstration bakery food products

Course Outcomes:

CO1: Analyse the quality of bakery products
CO2: Demonstration of bakery food products

List of experiments: **(30 Hrs.)**

1. Quality assessment of raw materials
2. Preparation of bread and assessment of its quality
3. Preparation of sponge cake and assessment of its quality.
4. Preparation of cookies and assessment of quality.
5. Preparation of biscuits and assessment of quality.
6. Visit the baking industry and prepare a report.

Skills / Hand - on Activities: **(15 Hrs.)**

- Training the students to prepare nutrient rich modified bakery products
- Visit the bakery industry to impart knowledge on development of various bakery products
- Quality testing of ingredients used in bakery products.

Reference Textbooks:

1. Raina et.al. (2003). Basic Food Preparation-A complete Manual. 3rd Ed. Orient Longman Pvt. Ltd.
2. Brandt R. L. (1993). Fat & Calorie – Modified Bakery Products, Springer US.
3. Samuel A. Matz (1999). Bakery Technology and Engineering, PAN-TECH International Incorporated.
4. Farida Faubion (1997). Dough Rheology and Baked Product Texture, CBS Publications.

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA – 8
(Affiliated to Krishna University, Machilipatnam)
SYLLABUS

Subject: Food Science & Technology **Semester: V/VI**
Course Title: Food Packaging Technology–Practical **Course Code:20FTP732PT2**
No. of Hours: 45 **LTP: 003** **Credits: 2**

Objectives:

- To impart knowledge on determining strength of packaging materials
- To demonstrate the importance of packaging by using various packaging materials.

Course Outcomes:

CO1: Analyse the bursting strength of packaging materials to prevent food contamination.

CO2: Demonstrate the importance of packaging by using various packaging materials.

CO3: Describe the packaging requirements for raw and processed foods

List of Experiments: **(30 Hrs.)**

1. Identification of different types of packaging and packaging materials
2. Determination of tearing strength of paper
3. To perform grease-resistance test on Paper
4. To perform different destructive tests for glass containers.
5. Determination of drop test of food package
6. Determination of bursting strength of packaging material
7. Visit to relevant industries for observing food packaging

Skill / Hands - on: Field works / Mini Projects **(15 Hrs.)**

- Identification of different types of packaging materials.
- To have a working knowledge of how to perform different packaging quality tests
- A visit to relevant industries for the purpose of observing food packaging.

MARIS STELLA (AUTONOMOUS) COLLEGE VIJAYAWADA-8

Affiliated to Krishna University, Machilipatnam

SYLLABUS

Subject: Food Science and Technology **Semester: V**
Course Title: Dietetics **Course Code: 20FTSEC11DT3**
No. of Hrs.: 45 **LTP: 300** **Credits: 3**

Objectives:

- To understand the importance & role of dietician
- To impart knowledge on dietary modifications of patients suffering from specific diseases.

Course Outcomes:

CO1: Discuss the role of dietician
CO2: Correlate dietary modifications for obesity and leanness
CO3: Summarize the importance of diet plan for gastrointestinal disorders
CO4: Analyse dietary treatment for kidney and liver diseases.
CO5: Illustrate the need and role of diet in Diabetes, CVD & Febrile conditions.

Unit - I **(9 Hrs.)**

Dietician: Roles & responsibilities of nutritionist/dieticians, interpersonal relation with Health care team, Nutrition counselling, IDA.

Therapeutic nutrition: Definition, types of diet in hospitals (liquid diet, solid diet, semi- solid diet, bland diet, normal family diet)
Methods of feeding - tube feeding, intravenous feeding.

Unit - II **(9 Hrs.)**

Energy imbalance:
Obesity- Definition, types, causes, assessment, dietary modifications & guidelines.
Underweight – Definition, Etiology, symptoms, dietary modifications.

Renal Diseases:
Kidney stones: Definition, Causes, Symptoms, dietary modifications.
Acute Renal Failure (ARF): Definition, Causes, Symptoms, dietary modifications.
Chronic Renal Failure (CRF): Definition, Causes, Symptoms, dietary modifications.
Nephritis & Nephrotic syndrome: Definition

Unit - III **(9 Hrs.)**

GI disorders:

Peptic Ulcer: Aetiology, symptoms, dietary modifications.

Constipation: Aetiology, symptoms, dietary modifications.

Diarrhoea: Aetiology, symptoms, dietary modifications.

Liver diseases:

Types of liver diseases (Jaundice, Cirrhosis of liver, Hepatitis)- causes, symptoms, dietary modifications in hepatitis.

Unit - IV **(9 Hrs.)**

Cardiovascular diseases:

Atherosclerosis: Etiology, symptoms, dietary modifications, role of fat in atherosclerosis.

Diabetes mellitus: Definition, classification, causes, diagnosis, complications, dietary modifications.

Unit- V **(9 Hrs.)**

Allergy:

Definition, classification, common food allergy, Diagnosis, dietary modifications.

Febrile conditions:

Short duration- Fever: Definition, types (typhoid, malaria, dengue), general dietary modifications.

Long duration- Tuberculosis: Definition, dietary modifications.

Co-Curricular Activities:

- Assignment tasks
- Group discussions
- Student presentations & seminars
- Online quizzes

Reference Text Books:

1. Sri Lakshmi, b.,2005, Dietetics, the Bangalore printing & publishing co. ltd., Bangalore
2. Anatia F.P., Clinical dietetics and nutrition,3rd edition oxford university press, Bombay,1989
3. B. Srilakshmi (2002) Nutrition science, New age international (P) limited, Delhi

MARIS STELLA (AUTONOMOUS) COLLEGE VIJAYAWADA-8

Affiliated to Krishna University, Machilipatnam

SYLLABUS

Subject: Food Science & Technology **Semester: V / VI**

Course Title: Food Safety & Quality Control **Course Code: 20FTSEC12FQ3**

No. of Hrs.: 45 **LTP: 300** **Credits: 3**

Objectives:

- To impart knowledge on food safety standard laws and regulations.
- To educate students on safeguard good manufacturing practices to prevent food adulteration.

Course Outcomes:

CO1: Summarize the basic concepts of food safety and standards.

CO2: Illustrate the role of international standards for quality control and management.

CO3: Impart knowledge on different techniques used to detect food adulteration.

CO4: Discuss the role of quality management in food industries.

Unit - I **(9 Hrs.)**

Introduction to food safety:

Definition, Importance of food safety, types of hazards: biological, chemical, physical, environmental, factors affecting food safety, HACCP-principles, importance. Roles & responsibilities of food safety officer.

Unit - II **(9 Hrs.)**

Food safety standards:

General principles of food safety, introduction to food acts laws, standards, FSSAI

National standard acts (FPO, MPO, BSI, AGMARK, FDA, PFA), International standards (ISO, CODEX alimentarius).

Unit - III **(9 Hrs.)**

Methods for determining food quality - Subjective and objective methods. Sensory assessment of food quality - appearance, colour, flavour, texture and taste, different methods of sensory analysis, preparation of score card, panel criteria.

Unit - IV **(9 Hrs.)**

Food additives – Definition, classification, Preservatives (definition, importance) colouring, flavouring, raising agents, emulsifiers, antioxidants.

Unit - V **(9 Hrs.)**

Contaminants of food

Adulteration –definition, types of adulterants used- intentional adulterants, incidental adulterants. Methods of detection.

Packaging materials- types, advantages & disadvantages, contamination

Co-curricular Activities

- Assignments
- Group discussions
- Classroom quizzes
- Student presentations and seminars.

Prescribed Text Book:

1. Food hygiene safety and quality by Alok kuma
2. Food science-Norman potter
3. Food Technology - Prescott.S.C.and Procter
4. Food chemistry-Meyer
5. Food science, Chemistry and experimental foods - M. Swami Nathan
6. Food chemistry - Lee

Reference Text Book:

1. Food safety and quality program plan (English paper serviceUs Food safety quality
2. Food science-Srilakshmi(2001)2nd edition, New age international publishers-(2001)
3. Rerfus. K. Guthrie-Food sanitation –3rd edition –Van Nostrand Reinhold Newyork 1988.
4. Mahirdra-S.N.-Food safety –A techno-legal analysis-Tata McGrawhill publishers 2000.
5. Manoranjan Kalia-Food processing and preservation.
6. Roday-Food hygiene and sanitation.
7. Indian Food industry,2000,Vol

MARIS STELLA (AUTONOMOUS) COLLEGE, VIJAYAWADA-8 Affiliated to Krishna University, Machilipatnam

SYLLABUS

Subject: Food Science & Technology **Semester: V / VI**
Course Title: Nutrition in Health **Course Code: 20FTSEC21NH3**
No. of Hours: 45 **LTP: 300** **Credits: 3**

Objectives:

- To help to summarize the steps involved in meal planning, effect of nutrients during pregnancy.
- To explain the role of nutrients during lactation and infancy.
- To illustrate the nutritional requirements during pre-school and school age.
- To discuss the assessments of nutritional status

Course Outcomes:

CO1: Impart knowledge on planning a diet to pregnant & lactating women.
CO2: Understand the concept of BMI calculation
CO3: Demonstrate the dietary requirements for infants & school going children
CO4: Describe the Nutritional status assessment.
CO5: Explain the importance of nutrition during adolescent & adulthood

UNIT I **(9 Hrs.)**

Meal planning:

Definition, principles, steps in meal planning, my plate(NIN), Dietary guidelines for Indians.

Nutrition during pregnancy: physiological changes, general dietary problems, food and nutritional requirements, complications.

UNIT II **(9 Hrs.)**

Nutrition during lactation: physiology of lactation, food and nutritional requirement mechanism of lactation.

Nutrition during infancy: food and nutritional requirement, supplementary foods- types, importance, difference between breastfeeding vs bottle feeding.

UNIT III **(9 Hrs.)**

Nutrition during pre-school: Growth & development, food and nutritional requirements, development of food habits, nutrition related problems.

Nutrition during school age: Food and nutritional requirements, importance of nutritious snacks, packed lunch programmes.

UNIT IV **(9 Hrs.)**

Nutrition during Adolescence – Growth spurt, Food and nutritional requirement, eating problems in adolescence- anorexia nervosa and bulimia nervosa, binge eating disorder, importance of peer food habits.

Nutrition during adulthood: Nutritional needs of adults (men and women) – types of physical activity, food and nutritional requirements, menopause stage, estrogenic foods, complications.

UNIT V **(9 Hrs.)**

Methods of assessment of Nutritional status

Direct methods- Anthropometric, biochemical, clinical, dietary assessment

Indirect methods- Economical, Ecological, Vital statistics.

Co-Curricular Activities:

- Assignment tasks
- Group discussion
- Presentations & student seminars
- Quizzes (online/offline)

Prescribed Text Book

1. B. Sri Lakshmi, Dietetics, New Age publications
2. Dietetics -B. Srilakshmi, New Age International Pvt. Ltd, 2003.
3. Nutrition Science-B. Srilakshmi, New Age International Pvt.Ltd., 2003.
4. Food, nutrition and diet therapy -Krause, Eleventh edition

Reference Text Book

1. Bamji MS, Krishnaswamy K, Brahmam GNV (2009). Textbook of Human Nutrition, 3rd Edition. Oxford and IBH Publishing Co. Pvt. Ltd.
2. Srilakshmi (2007). Food Science, 4th Edition. New Age International
3. Nutrition Trends in India -Vinodhini Reddy, Prahlad Rao, Govmth Sastry and Kashinath, NIN, Hyderabad, 1993.
4. Modern Nutrition in Health and Diseases- Shills, E.M. Olson, A.J. and Shike, Lea and Febiger
5. Human Nutrition and Dietetics- Davidson S Passmore R, Brock JP, ELBS and Churchill, Livingstone.
6. Fundamentals of foods and Nutrition - Mudambi SR and Rajagopal M Y, Wiley Eastern Ltd. ICMR- Nutritive value of Indian Foods, 1989.

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA – 8

(Affiliated to Krishna University, Machilipatnam)

SYLLABUS

Subject: Food Science & Technology **Semester: V/VI**

Course Title: Bakery Technology **Course code: 20FTSEC22BT3**

No. of Hrs.: 45 **LTP: 300** **Credits: 3**

Objectives:

- To impart knowledge on bakery food product
- To enable students to understand the science behind bakery technology.

Course outcomes:

CO1: Discuss the basic concepts of the bakery industry.

CO2: Summarize the process of bread making.

CO3: Correlate the processes, quality characters for cakes, biscuits and cookies.

CO4: Develop different bakery food products.

UNIT- I **(9 Hrs.)**

Baking - Definition, Principles of baking, classification of baked foods. Types of equipment in the baking industry, cleaning and sanitizing methods of baking equipment, baking temperature of different products.

UNIT - II **(9 Hrs.)**

Ingredients and their Role in Baking - Flour, Yeast, sugar, egg, butter, salt, baking powder, colouring, flavouring agents. List of standard colouring and flavouring agents.

UNIT - III **(9 Hrs.)**

Preparation of baked foods - Quick breads, cakes and its varieties, different types of biscuits, cookies and pastries.

Decoration of baked foods - Icing- Types of Icing used in different bakery products.

UNIT - IV **(9 Hrs.)**

Types of packaging materials used for bakery products, method of packaging.

Quality control- Quality control of raw material / finished products. Spoilage of bread - Causes, Rope and mold spoilage and prevention.

UNIT - V **(9 Hrs.)**

Modified bakery products: Modification of bakery products for people with special nutritional requirements e.g. high fiber, low sugar, low fat, gluten free bakery products.

Co-Curricular Activities:

- Assignment tasks
- Group discussions
- Student presentations & seminars
- Online quizzes

Reference Books:

1. Potter, N. Food Science, The AVI Publishing Co., Inc., West Port, Connecticut, 1975.
2. Modern Pastry Chab, Vol.I and II, A VI Publishing Co., Inc., West Port, Connecticut, 1977.
3. Dubey, S.C. (2007). Basic Baking 5th Ed. Chanakya Mudrak Pvt. Ltd.
4. Manay, S. & Shadakshara Swamy, M. (2004). Foods: Facts and Principles, New Age Publishers.
5. Raina et.al. (2003). Basic Food Preparation-A complete Manual. 3rd Ed. Orient Longman Pvt. Ltd.
6. Barndt R. L. (1993). Fat & Calorie – Modified Bakery Products, Springer US.
7. Samuel A. Matz (1999). Bakery Technology and Engineering, PAN-TECH International Incorporated.
8. Faridi Faubion (1997). Dough Rheology and Baked Product Texture, CBS Publications.
9. Baker"s Handbook on Practical Baking. Wheat Associates, USA, New Delhi.

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA – 8
(Affiliated to Krishna University, Machilipatnam)
SYLLABUS

Subject: Food Science & Technology **Semester: V /VI**
Course Title: Food service Management **Course Code: 20FTSEC31FM3**
No. of Hours: 45 **LTP: 300** **Credits: 3**

Objectives:

- To familiarize students with food services offered in organizations like Hospitals, Schools/ colleges, hotels, restaurants etc.
- To impart adequate skills on catering management in Restaurants & Hotels.

Course Outcomes:

CO1: Demonstrate the importance of food services and management
CO2: Correlate the factor responsible for food cost and maintenance of equipment.
CO3: Discuss the importance of environmental hygiene and sanitation in food service centres.
CO4: Define the processes of accounting and different types of cash books.

UNIT- I **(9 Hrs.)**

Food services in Institutions: General factors to be considered, kitchen lay out: size of kitchen, types of kitchen (L- shaped kitchen, U – shape, Single wall, double wall, Island kitchen. Peninsula kitchen).
Food management: characteristics of food, food purchasing, receiving and storage of food.

UNIT- II **(9 Hrs.)**

Food cost control: Factors responsible for receiving food from suppliers: methods of controlling food cost, kitchen calculations and cost statements.
Equipment: required for food preparation and service. Classification and selection of equipment, care and maintenance of equipment

UNIT- III **(9Hrs)**

Ventilation: lighting, water supply, food storage, food infection signs-preventive and control measures, cleaning and dishwashing, waste disposal.

UNIT- IV **(9 Hrs.)**

Sanitation and hygiene: personal hygiene, environmental hygiene and sanitation, Pest control.
Food service types: types of menu planning, Indian style, western style, North Indian. types of food production.

UNIT- V **(9 Hrs.)**

Books: keeping and accounting: Bookkeeping, system of Bookkeeping, Advantages of the double entry system, Book of account

Types of cash Books: posting of the cast Book, purchase Book, sales Book, purchases return Book, journal entries of transitions, maintaining a complete set of books, restaurant book, profit and loss account

Co-Curricular Activities

- Assignments
- Student presentations and Seminars
- Group discussions
- Online quizzes.

Prescribed Text Book:

Surjith Malhan & Mohini Sethi, Catering Management

Reference Text Books:

1. Kawala, k.,1963environmental sanitation in India, Lucknow publishing house.
2. Avery A, A modern guide to food service Equipment, CBI publishing Inc.,1989

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA – 8
(Affiliated to Krishna University, Machilipatnam)
SYLLABUS

Subject: Food science & Technology **Semester: V/VI**
Course Title: Food Packaging Technology **Course code:20FTSEC32PT3**
No. of Hours: 45 **LTP: 300** **Credits: 3**

Objectives

- To understand the food packing process and types of packaging material.
- To extract importance and functions of package labelling.
- To describe the packaging requirements for raw and processed foods.

Course Outcomes

CO1: Summarize food packing process and types of packaging material.
CO2: Explain various tests for packaging materials.
CO3: Describe the packaging requirements for raw and processed foods.
CO4: Demonstrate different types of packaging machinery
CO5: Extract importance and functions of package labelling.

UNIT- I **(9 Hrs.)**

Food packaging: Definition, Introduction, Importance of food packaging, Evolution of packaging, types of packaging materials, properties of packaging materials, advantages and dis-advantages of packaging.

UNIT- II **(9 Hrs.)**

Types of packaging: Forms of packaging – box, bottle, tetra, pouch, shrink, vacuum, gas, CAP, MAP.

UNIT- III **(9 Hrs.)**

Tests for packaging materials: Importance of packaging tests, Brief Introduction to WVTR, GTR, bursting strength, tensile strength, tearing strength, drop test, puncture test, impact test etc.

UNIT- IV **(9 Hrs.)**

Packaging Requirements:

Packaging requirements and their selection for raw and processed foods
1. Meat, fish, poultry, eggs
2.Milk and dairy products
3.Fruits and vegetables
4.Cereal grains and baked food products
5.Beverages

UNIT- V **(9 Hrs.)**

Packaging machinery: different types packaging machinery available- Bottling, can former, form fill and seal machines, bags – their manufacturing and closing, vacuum packs unit, shrink pack unit, tetra pack unit. Novel food packaging technologies: innovations and future prospective.

Package labelling: importance of labelling, functions and regulations, printing and Barcoding.

Co-Curricular Activities:

- Assignments
- Student presentations and seminars
- Online quizzes

References:

1. Food safety and quality program plan (English paper service Us Food safety quality).
2. Food packaging and technology. Author: Harsh Sharma