

SEMESTER - II

CODE	COURSE TITLE
18FNPCP01	FOOD ANALYSIS

Category	CIA	ESE	L	T	P	Credit
Core Practical	40	60	-	-	45 + 45	4

Preamble

Students acquire practical skills to analyze various macro and micro nutrients in food.

Prerequisite

Analytical skills in titration, colorimetry and basic concepts of instrumentation.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Prepare the reagents needed for the estimation various nutrients	K3
CO2	Acquire the techniques to evaluate the composition with analytical instruments	K5
CO3	Apply the techniques for research in Food Science and processing	K3

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	S	M	S	S
CO3	S	S	S	S	S

S- Strong; M-Medium; L-Low

Syllabus

1. Estimation of Energy value of foods in Bomb Calorimeter.
2. Estimation of Moisture content of foods.
3. Estimation of Fibre by Acid –Alkali method.
4. Estimation of Ash content in foods.

5. Estimation of Calcium by Titrimetric method.
6. Estimation of Iron by Wong's method.
7. Estimation of Phosphorus by Fiske and Subba Row method.
8. Estimation of Protein by Micro Kjeldhal method.
9. Estimation of Protein by Lowry's method.
10. Estimation of Fat by Soxhlet method.
11. Estimation of Carotene by Colorimetric method.
12. Estimation of Thiamine by Fluorimetric method.
13. Estimation of Riboflavin by Fluorimetric method.
14. Estimation of Vitamin-C by Dye method.
15. Determination of Saponification Number of Oil.
16. Determination of Iodine Number of Oil by Hanes method.
17. Determination of Acid Number of Oil.
18. Estimation of Lipid content in EggYolk.

Pedagogy

Hands on training, Demonstration

SEMESTER - III

CODE	COURSE TITLE
18FNPC312	FOOD QUALITY CONTROL & PRODUCT DEVELOPMENT

Category	CIA	ESE	L	T	P	Credit
Core	25	75	71	4	-	4

Preamble

The course summarizes the different stages of product development, food quality evaluation, patent system, food safety and hazards, food laws, quality control techniques and common food standards.

Prerequisite

Knowledge on basic concepts of product development and quality control.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Identify food hazards to ensure food safety	K6
CO2	Classify different stages and interpret government regulations governing quality control.	K6
CO3	Analyze the concept of patentability and various aspects of patent laws in India.	K4&K5
CO4	Develop ideas for creating different types of new foods and adapt various strategies for evaluation of newly developed foods	K4
CO5	Describe food specifications of different food products	K3&K4

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	S	S	S	S
CO3	S	S	M	S	S
CO4	S	S	M	S	S

CO5	M	S	S	M	S
-----	---	---	---	---	---

S- Strong; M-Medium; L-Low

Syllabus

UNIT I

15 Hrs.

Food safety: Meaning of food safety. **Food hazards:** Physical, Chemical, Biological hazards associated with foods and prevention - Effect of processing and storage on microbial safety. **Types of food toxicants:** Endogenous, natural, synthetic toxicants - **Food additives:** Classification and uses – **Food Adulteration.**

UNIT II

17 Hrs.

Quality control: Objectives, importance, functions of quality control, stages of quality control in food industry. **Government regulations in quality control:** FAO/WHO Codex Alimentarius commission, PFA, AGMARK, BIS, FPO, fair average quality (FAQ) specification for food grains, ISO 9000 series and ISO 22000. **HACCP:** Background, current status, structured approach, principles, benefits and limitation- Consumer Protection Act (CPA), FSSAI – Principle and role, GMP.

UNIT III

14 Hrs.

Role of Central and State Government in imparting quality control: WHO assisted activities – Role of central and state food laboratories - Qualification and duties of public analyst and food inspector. **Patent** – definition, requirements, patent laws in India, administrator, need for patent system, advantages, and precautions to be taken by applicants, Procedures- Patent and Non-patent.

UNIT IV

15Hrs.

Product development: Meaning, stages of product development- idea, developmental and commercialization, Criteria for development of new food. **Types of new foods:** Fortified foods, enriched foods, designer foods and convenience foods. **Food Quality Evaluation :** Subjective and objective evaluation of food- Strategic consideration behind new food development.

UNIT V

14 Hrs.

Food standards: Cereals & its products - Bread, biscuits, cakes, pasta products.

Fruit products : Jam, juices, squashes, ketchup, sauce. **Oils & fats:** Coconut oil, groundnut oil, palm oil, sunflower oil, vanaspathi. **Milk & its products:** Skimmed milk powder, partly skimmed milk powder, condensed sweetened milk. **Other products:** Coffee, tea, sugar, honey and toffees.

Text Books

Sl.No.	Author Name	Title of the Book	Publisher	Year and Edition
1.	Khurana,A. D	Text book of food safety	Mohit Publications	2010 Edition 1,
2.	Dev Raj, Rakesh Sharma and Joshi,V.K	Quality control for value addition in Food Processing	New Delhi Publishing Agency	2011
3.	Sathe,A.Y	A first course in food analysis	New Age Publications	1999

Reference Books

S.No	Author Name	Title of the Book	Publisher	Year and Edition
1.	BIS standards			
2.	Swaminathan,M	Food Science Chemistry & Experimental foods	Bappco Publishers.	1995
3.	Singh,S.P., Julie Funk, Tripathi,S.C., Nanda Joshi	Safety quality Assurance and Global trade	International book distributors	2009 1 st Edition

JOURNALS

1. Indian food Industry. CFTRI, Mysore.
2. Processed food Industry, Compu type media, Viba press Pvt Ltd, New Delhi.
3. FSSAI Manual 2011

Web Resources

https://fssai.gov.in/dam/jcr.../Guidance_Document_Bakery_Sector_24_10_2017.pdf
<https://www.slideshare.net/MdmSri/chapter-3-evaluation-of-food>
www.powershow.com/.../FOOD_QUALITY_CONTROL_powerpoint_ppt_presentatio...

Pedagogy

Chalk and talk, PPT, Case study, Assignment, Group Discussion, Seminar

SEMESTER - IV

CODE	COURSE TITLE
18FNPCP02	CLINICAL NUTRITION TECHNIQUES

Category	CIA	ESE	L	T	P	Credit
Core Practical	40	60	-	-	90	4

Preamble

Students acquire practical skills in clinical nutrition techniques and apply the same in research and work field.

Prerequisite

Analytical skills in titration and basic concepts of instrumentation.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Prepare the reagents needed for the estimation of various components in blood and urine	K5
CO2	Estimate the parameters using appropriate techniques	K6
CO3	Apply the techniques for research in biochemical assessment	K3

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	S	M	S	S
CO3	S	S	S	S	S

S- Strong; M-Medium; L-Low

Syllabus

QUANTITATIVE ANALYSIS OF BLOOD

1. Estimation of blood glucose by Glucose oxidase method
2. Estimation of blood hemoglobin and Iron by Wong's method.
3. Estimation of blood Hemoglobin by Cynamethaemoglobin method .
4. Estimation of blood Cholesterol by Zake's method.
5. Estimation of Serum Albumin/ Globulin ratio by Salt precipitation method.
6. Estimation of Serum Phospholipids by Fiske and Subba Row method.
7. Estimation of Serum Protein by Lowry's method.

QUANTITATIVE ANALYSIS OF URINE

8. Estimation of Urinary Creatinine by Alkaline Picrate method.
9. Estimation of Urinary Urea by Diacetyl monoxime method.
10. Estimation of Urinary Calcium by Clark and Collip method.
11. Estimation of Urinary Phosphorus by Fiske and Subbarow.
12. Estimation of Urinary Ascorbic acid by Harris and Ray method.
13. Estimation of Urinary nitrogen by Micro Kjeldhal method.

DEMONSTRATION EXPERIMENTS

1. Estimation of Blood pyruvic acid
2. Estimation of Serum Alkaline Phosphatase
3. Isolation of nucleic acids
4. Animal study-Thiamine depletion- Repletion study

Pedagogy

Hands on training, Demonstration