JSS COLLEGE OF ARTS, COMMERCE & SCIENCE

(An Autonomous College of University of Mysore)

Re-accredited by NAAC with 'A' grade

OOTY ROAD, MYSORE-570 025, KARNATAKA

ESTD-1964

SYLLABUS

2018-2019

M.VOC. FOOD PROCESSING & ENGINEERING

Scheme of Instruction								
General Education Component								
(L-Lecture; T-Tutorial; P-Practical/Practice) (1 Credit = 15 Hrs)								
Semesters	**Course code**	**Title**	**L:T:P**	**Theory Hours**	**Tutorial Hours**	**Practical Hours**	**Total Hours**	**Total Credits**
Sem I	MFA 510	Food Chemistry	2:0:1	30	0	15	45	3
	MFA 520	Food and Nutrition	2:0:1	30	0	15	45	3
								06
Sem II	MFB 510	Food Microbiology	2:0:1	30	0	15	45	3
	MFB 520	Biostatistics	2:0:1	30	0	15	45	3
								06
Sem III	MFC 510	Information Communication Technology	2:0:1	30	0	15	45	3
	MFC 520	EDP	2:0:1	30	0	15	45	3
								06
Sem IV	MFD 510	Food Marketing	2:0:1	30	0	15	45	3
	MFD 520	Food Standards, Regulatory Affairs and IPR Issues	2:0:1	30	0	15	45	3
								06

General Component **Course Code: MFA 510**
Semester – I

After completion of the course student is able to

CO1: Understand the details of role in processing and food formulations
CO2: Identify the details of of food dispersion system
CO3: Understand in depth Enzymes in food industry
CO4: Identify the details of Chemistry of food flavour

Sl. No.	Food Chemistry	Hrs
1.	Introduction to food chemistry, its role in processing and food formulations,	1
2.	Moisture in foods: Role and type of water in foods, Functional properties of water, role of water in food spoilage, Water activity and sorption isotherm, Molecular mobility and food stability.	2
3.	Dispersed systems of foods: Physicochemical aspects of food dispersion system: a) Sol b) gel c) foam d) emulsions.	1
4.	Carbohydrates: Functional characteristics of different carbohydrates. Maillard reaction, caramelization, methods to control non enzymatic reactions. Starch and Dietary fibres, Functional properties of polysaccharides, natural vegetable gums, carbohydrate composition of various natural foods.	5
5.	Proteins in foods: Protein content and composition in various foods- cereal grains, legumes and oilseed proteins, proteins of meat, milk, egg and fish. Functional properties of proteins in foods – water and oil binding, foaming, gelation, emulsification. Effect of processing on functional properties of proteins-heat processing alkali treatments, chilling, freezing, dehydration and radiations. Unconventional sources of proteins- SCP fish protein concentrates, leaf proteins	5
6.	Lipids in foods: Role and use of lipids /fat, occurrence, fat group classification, Physicochemical aspects of fatty acids in natural foods, hydrolysis, reversion,. Chemical aspects of lipolysis, auto-oxidation, antioxidants, Technology of fat and oil processing: Refining, Hydrogenations, Inter etherification, Safety use of oils and fats in food formulation.	5
7.	Vitamins and minerals, Dietary sources, requirements,	2

	Allowances, Enrichment, Restorations, Fortifications, Losses of vitamins and minerals, Optimization and retention of vitamins and minerals	
8.	Enzymes in food industry, Carbohydrases (Amylases, cellulases, pectinases,) Proteases, Lipases and oxidases in food processing.	2
8.	Chemistry of food flavour: definitions of flavour, Flavourmatics / flavouring compounds, Sensory assessment of flavour, Technology for flavour retention.	2
9.	Food additives: Buffer systems/ salts / Acids, Chelating agents and sequestrants, Antioxidants, Antimicrobial agents, Non-nutritive and low calorie sweetners, Stabilizer and thickeners,	2
10.	Food colours, natural and synthetic, Regulatory aspects –Natural and synthetic permitted food colours.	1
11.	Food toxicants – anti nutritional factors and their occurrence, effects and methods of elimination or inactivation- protease inhibitors, lectins, lathyrogens, phytates and flatulence factors.	2
12.	Food Contaminants, Pesticidal residues – permitted limits. Toxicology and public health.	2

Sl. No.	**Practical**	**Hrs**
1.	Determination of moisture content of foods using different methods	1
2.	Determination of crude proteins by microkjeldahl method	2
3.	Determination of crude fat by soxlet method	2
4.	Determination of acid value, saponification value and iodine number of fat/ oil	2
5.	Determination of minerals and acid insoluble ash and estimation of Calcium and phosperus	3
6.	Assay of amylases, papain and lipases	2
7.	Detection of common food adulterants	2
8.	Determination of food colors	1

MODEL QUESTION PAPER

CODE NO: **Semester - I**

Food Chemistry

TIME: 3 hrs **Max marks: 70**

Instructions: Draw neat and labeled diagram wherever necessary.

PART-A

I. Write short notes for the following(any 5): **(5x2=10)**

1. ----------
2. ----------
3. ----------
4. ----------
5. ----------
6. ----------

PART-B

II. Answer any 4 of the following: **(4x5=20)**

1. ----------
2. ----------
3. ----------
4. ----------
5. ----------

PART –C

III. Answer any 4 of the following: **(4x10=40)**

IV.

1. ----------
2. ----------
3. ----------
4. ----------
5. ----------

I SEMESTER PRACTICAL EXAMINATION

FOOD CHEMISTRY

PRACTICAL

SCHEME OF EXAMINATION

DURATION: 3 Hours

Maximum Marks: 70

Practical proper: 60

Record marks: 10

NOTE :- Candidates are required to submit the records duly signed by the teacher-in charge and certified by the Head of the Department

1. Determination of moisture content of foods using different methods
2. Determination of crude proteins by micro Kjeldahl method
3. Determination of crude fat by Soxhlet method
4. Determination of acid value, saponification value and iodine number of fat/ oil
5. Determination of minerals and acid insoluble ash and estimation of Calcium and phosphorus
6. Assay of amylases, papain and lipases
7. Detection of common food adulterants
8. Determination of food colors

General Component **Course code: MFA 520**

Semester - I

After completion of the course student is able to

CO1: Deliberate the details of Food Design

CO2: Understand in details with examples Functions of food

CO3: Understand the details of Nutrition

CO4: Specify in details with examples Antinutritional factors

Sl. no.	Food and Nutrition	Hrs
1.	Introduction to Food: Definition, classification and constituents of food : Carbohydrates, Fats , Proteins ,Fat soluble vitamins-A, D, E and K , Water soluble vitamins – Thiamin, Riboflavin, Niacin, Pyridoxine, Folate, Vitamin B12 and Vitamin C, Minerals – Calcium, Iron, Zinc, Iodine and Flourine.	3
2.	Food Design: Nutritive values of cereals, pulses, oil seeds, fruits, vegetables, fish, meat and eggs.	2
3.	Functions of food, Effect of deficiency & overconsumption of dietary sources on health, Basic Food Groups, Recommended dietary Allowance (RDA), Food guide pyramid, Dietary fibers, Functions of water in body. Balanced Diet: Concept of Balanced Diet: Definition, food groups used in planning balanced diets.	5
4.	Traditional and contemporary methods of food processing and quality evaluation of food products	3
5.	Nutrition: Basic terms used in Nutrition, relationship between food, health and nutrition, Bioavailability of nutrients. Basal Metabolic Rate (BMR). Protein quality, Dietary allowances and standards for different age groups: Adult man/woman, Preschool children, Adolescent children, pregnant woman. Geriatric nutrition, Nutrition for athletes	10
6.	Digestion and absorption of carbohydrates, proteins and fats. Factors influencing the sensory acceptability and digestion of foods	1
7.	Food Design: Nutritive values of cereals, pulses, oil seeds, fruits,	4

	vegetables, fish, meat and eggs. Nutrient composition of foods and Energy calculations	
8	Antinutritional factors: Sources and harmful effects of anti vitamins (e.g.: avidin, dicoumarol), Natural toxicants, (e.g.: Lathyrus sativa).Food adultrants- structure and harmfull effects of - Butter yellow, lead chromate and malachite green.	2

Sl. no.	**Practical**	**Hrs**
1.	Sensory acceptability of food products: Physical Attributes (Appearance, color, texture, taste and overall acceptansibility). Texture measurement of food products by instrumental methods. Preparation of food labelling. Formulation for foods for target groups (weaning, pre-school children, geriatric, therapeutic foods etc.). Processing of spices for traditional products. Storage and shelf determination.	15

MODEL QUESTION PAPER

CODE NO: **Semester - I**

Food and Nutrition

TIME: 3 hrs **Max marks: 70**

Instructions: Draw neat and labeled diagram wherever necessary.

PART-A

V. Write short notes for the following(any 5): **(5x2=10)**

7. ----------
8. ----------
9. ----------
10. ----------
11. ----------
12. ----------

PART-B

VI. Answer any 4 of the following: **(4x5=20)**

6. ----------
7. ----------
8. ----------
9. ----------
10. ----------

PART –C

VII. Answer any 4 of the following: **(4x10=40)**
VIII.

6. ----------
7. ----------
8. ----------
9. ----------
10. ----------

I SEMESTER PRACTICAL EXAMINATION

Food and Nutrition

PRACTICAL

SCHEME OF EXAMINATION

DURATION: 3 Hours

Maximum Marks: 70

Practical proper: 60

Record marks: 10

NOTE :- Candidates are required to submit the records duly signed by the teacher-in charge and certified by the Head of the Department

1. Sensory acceptability of food products: Physical Attributes (Appearance, color, texture, taste and overall acceptansibility).
2. Texture measurement of food products by instrumental methods.
3. Preparation of food labelling.
4. Formulation for foods for target groups (weaning, pre-school children, geriatric, therapeutic foods etc.).
5. Processing of spices for traditional products.
6. Storage and shelf determination.

General Component **Course code: MFB 510**

Semester – II

After completion of the course student is able to

CO1: Learn the classification and characteristics of Microorganisms

CO2: Understand in depth Microbial growth

CO3: Understand the details of Pasteurization and sterilization

CO4: Learn in depth Microbial Metabolism

CO5: Learn the classification and characteristics of Food borne diseases and poisoning

CO6: Understand the classification and characteristics of Food spoilage

CO7: Identify in details with examples Food safety

CO8: Understand in depth Fermented food

CO9: Learn the details of Microbiology of fruits and its processed product

Sl. no.	Food Microbiology	Hrs
1.	Microbiology: Introduction, historical developments in food microbiology; prokaryotes and eukaryotes; Microscope; classification & morphology of microbes; Techniques of pure culture; Bacteriology of air & water; classification of microorganisms-a brief account; sources of microorganisms in foods; microbial growth, growth curve; Thermal inactivation of microbes; Concept, determination & importance of TDT, F, Z & D values; Factors affecting heat resistance; Pasteurization and sterilization. factors affecting growth-intrinsic and extrinsic factors controlling growth of microorganisms. Microbiology of various food stuffs.-Cereals, legumes, oilseeds, fruits & vegetables, Milk and their processed products	8
2.	Disinfection & disinfectants; Energy metabolism of aerobic & anaerobic microbes	4
3.	Effect of food preservatives, heating process, irradiation, low temperature storage, chemical preservatives and high-pressure processing on the microbiology of foods; control of water activity and microbial growth	
4.	Foods microbiology and public health: food poisoning, types of food poisonings, important featuresetc; bacterial agents of food borne illness, food poisoning by *Clostridium, Salmonella, E. coli,*	5

	Bacillus, Staphylococcus etc.; non-bacterial agents of food borne illness: poisonous algae, and fungi-a brief account**.**	
5.	Food spoilage and microbes of milk, fruits, vegetables and various plant products, spoilage of canned foods; methods of isolation and detection of microorganisms or their products in food; conventional methods; rapid methods, retention of microbes, (newer techniques)-immunological methods; fluorescent, anti body, radioimmunoassay, principles of ELISA, PCR (Polymerase chain reactions**)**	8
6.	Indicators microorganisms; microbiological criteria of foods and their significance; the HACCP system and food safety used in controlling microbiological hazards, applications of hurdle technology for controlling microbial growth.	4
7.	Microbiology of Fermented foods:, Cereals, Vinegar, Oriental foods, Alcoholic beverages. Food poisoning and microbial toxins, standards for different foods. Food borne intoxicants and myco toxins	4
8.	Microbiology of milk & milk products like cheese, butter, ice cream, and milk powder etc	4
9.	Microbiology of fruits & vegetable and products like jam, jelly, sauce, juice; etc	4
10.	Microbiology of cereal & cereal products like bread, biscuits, confectionary etc	4

Sl. no.	**Practical**	**Hrs**
1.	Equipments used in microbiology laboratory, study of microscope, observation of microbial slides, preparation and sterilization of media, methods of sterilization, staining techniques, effects of environmental factors on growth of microorganisms, **Assignment**-microbiological analysis of market samples- milk & milk products, fresh & processed fruits and vegetables, Cereal & bakery products	45

MODEL QUESTION PAPER

CODE NO: **Semester - II**

Food Microbiology

TIME: 3 hrs **Max marks: 70**

Instructions: Draw neat and labeled diagram wherever necessary.

PART-A

IX. Write short notes for the following(any 5): **(5x2=10)**

13. ----------
14. ----------
15. ----------
16. ----------
17. ----------
18. ----------

PART-B

X. Answer any 4 of the following: **(4x5=20)**

11. ----------
12. ----------
13. ----------
14. ----------
15. ----------

PART –C

XI. Answer any 4 of the following: **(4x10=40)**

XII.

11. ----------
12. ----------
13. ----------
14. ----------
15. ----------

II SEMESTER PRACTICAL EXAMINATION

Food Microbiology

PRACTICAL

SCHEME OF EXAMINATION

DURATION: 3 Hours

Maximum Marks: 70

Practical proper: 60

Record marks: 10

NOTE :- Candidates are required to submit the records duly signed by the teacher-in charge and certified by the Head of the Department

1. Equipments used in microbiology laboratory, study of microscope, observation of microbial slides, preparation and sterilization of media, methods of sterilization, staining techniques, effects of environmental factors on growth of microorganisms,
2. Assignment-microbiological analysis of market samples- milk & milk products, fresh & processed fruits and vegetables, Cereal & bakery products

General Component **Course code: MFB 520**

Semester – II

After completion of the course student is able to

CO1: Deliberate the classification and characteristics of Statistical concepts like data structure, sampling methods, data collection and analysis, graphical representation etc.,

CO2: Understanding the Measure of Central Tendency

CO3: Brief knowledge about Types of distribution of data -Normal, Binomial, Poisson

CO4: Understand the characteristics of application of Mean deviation, Standard deviation, standard error, coefficient of variation and other concepts in market data analysis

CO5: Understand the benefits and implementation of Z-test, t-test, ANOVA, Chi-square test in data evaluation

CO6: Learn the classification and characteristics of Regression estimate and correlation coefficient

CO7: Identify the details of Experimental designs and data transformation

Sl. no.	Biostatistics	Hrs
1.	Statistical concepts: Data structure, sampling methods, collection, classification and tabulation of data, graphical and diagrammatic representation, histogram, frequency polygon, frequency curve, bar graph, pie chart etc.	4
2.	Measure of Central Frequency: Mean, median, mode.	2
3.	Measure of dispersion of data: Range, semi-interquartile range, mean deviation, standard deviation, standard error, coefficient of variation, confidence limits.	5
4.	Types of distribution of data: Normal, Binomial, Poisson.	7
5.	Z-test, t-test, ANOVA, multiple comparisons, LSD and DMRT, Chi-square test.	4
6.	Regression estimate, correlation coefficient.	4

7.	Experimental designs, data transformation.	4

Sl. no.	**Practical**	**Hrs**
1.	Analytical Problems / calculations	15

MODEL QUESTION PAPER

CODE NO: Semester - II

Biostatistics

TIME: 3 hrs **Max marks: 70**

Instructions: Draw neat and labeled diagram wherever necessary.

PART-A

XIII. Write short notes for the following(any 5): **(5x2=10)**

19. ----------
20. ----------
21. ----------
22. ----------
23. ----------
24. ----------

PART-B

XIV. Answer any 4 of the following: **(4x5=20)**

16. ----------
17. ----------
18. ----------
19. ----------
20. ----------

PART –C

XV. Answer any 4 of the following: **(4x10=40)**

XVI.

16. ----------
17. ----------
18. ----------
19. ----------
20. ----------

II SEMESTER PRACTICAL EXAMINATION

Biostatistics

PRACTICAL

SCHEME OF EXAMINATION

DURATION: 3 Hours

Maximum Marks: 70

Practical proper: 60

Record marks: 10

NOTE :- Candidates are required to submit the records duly signed by the teacher-in charge and certified by the Head of the Department

1. Analytical Problems / calculations

General Component **Course code: MFC 510**

Semester – III

After completion of the course student is able to

CO1: Humanitarian supply chain - definition, technology, activities, information and resources involved in moving aid to disaster affected areas

CO2: Deliberate the details of Technology framework and explain Front end, middleware and infrastructure services

CO3: Identify the Role of Mobile technologies, handheld and wireless technologies in disaster management

CO4: Challenges in beneficiary identification and to ensure, how food assistance reaches right people

CO5: Role of ICT in emergencies, relief management and tracking routes

CO6: World food program and its role in strategising and providing food assistance in development and emergencies

Sl. no.	Information Communication Technology	Hrs
1	The humanitarian supply chain – Definition, system of organizations, people, technology, activities, information and resources involved in moving a product or service from supplier to customer	5
2	Technology framework – Front-end services, Middleware services and Infrastructure services: Supporting the food assistance supply chain; Mapping technologies; Web portals	5
3	Mobile technologies - Combining hand-held and wireless communications technologies	5
4	Beneficiary identification - Challenges in food assistance to ensure that assistance goes to the right beneficiaries	5
5	ICT in emergencies – Requirement inputs of Food assistance interventions during emergencies	5
6	Linking the humanitarian supply chain - Ways in which WFP uses technology and technological techniques to fulfill its role as the	5

	provider of food assistance in development and emergencies	

Sl. no.	Practical	Hrs
1.	Identification of software related to Food Processing and Engineering	3
2.	Practicing the use of software	6
3.	Requirement development for Food Processing Software	6

MODEL QUESTION PAPER

CODE NO: Semester – II

Information Communication Technology

TIME: 3 hrs **Max marks: 70**

Instructions: Draw neat and labeled diagram wherever necessary.

PART-A

XVII. Write short notes for the following(any 5): **(5x2=10)**

25. ----------
26. ----------
27. ----------
28. ----------
29. ----------
30. ----------

PART-B

XVIII. Answer any 4 of the following: **(4x5=20)**

21. ----------
22. ----------
23. ----------
24. ----------
25. ----------

PART –C

XIX. Answer any 4 of the following: **(4x10=40)**

XX.

21. ----------
22. ----------
23. ----------
24. ----------
25. ----------

II SEMESTER PRACTICAL EXAMINATION

Information Communication Technology

PRACTICAL

SCHEME OF EXAMINATION

DURATION: 3 Hours

Maximum Marks: 70

Practical proper: 60

Record marks: 10

NOTE :- Candidates are required to submit the records duly signed by the teacher-in charge and certified by the Head of the Department

I. Identification of software related to Food Processing and Engineering.
II. Practicing the use of software.
III. Requirement development for Food Processing Software

General Component **Course code: MFC 520**

Semester - III

After completion of the course student is able to

CO1: Specify the need for EDP, Entrepreneurship characteristics in Food industry

CO2: Entrepreneurship development - Objectives, functions and classification, soft skills

CO3: Women entrepreneurship - scope, short comings and remedial measures

CO4: Role of Institutions like NIESBUD, KVIC, National financial Institutions in promotion of entrepreneurship

CO5: Identifying products, services and enterprise establishment and SWOT analysis

CO6: Learn Project report preparation and presentation skills. CBA, Risk and viability assessment of project

CO7: SME suitability to potential areas of food processing, globalisation of emerging business

Sl. no.	EDP	Hrs
1	Need for EDP, Entrepreneurship and enterprise – Concept, definition and characteristics with special reference to Food and allied areas of the Indian scenario.	2
2	Entrepreneurial development – objectives, evaluation and the existing experience, soft skill for entrepreneurship	2
3	Functions and classification of Entrepreneur and supporting institution and schemes by the National and International agencies Factors influencing entrepreneurship groups	3
4	Gender equality in Entrepreneurship, Women Entrepreneurship, selection of enterprising men and women. The short comings for women entrepreneurship and remedial majors	3
5	Identifying products, services and enterprise establishment-SWAT Analysis	1
6	Institution working for promotion of entrepreneurship in the	5

	country such as NSIC, NIMSME, NIESBUD, KVIC/KVIB etc. And also National Financial Institutions such as banks, corporations and Agro industry projects	
7	Identification of potential areas of food processing and regions for SMES, appraisal implementation, monitoring and evaluation, Globalization and the emerging business / entrepreneurial environment, business plan format for tiny and small enterprises, planning small scale units	5
8	Training the identified entrepreneurs, Investment analysis, Risk analysis and probable approach for successful entrepreneurship, cost benefit analysis, assessing financial viability of the project, market survey tools and market management	3
9	Network establishment for food chain, corporate and social responsibility	2
10	Communication skills, listing and noting down, project preparation and presentation skills, field dairy maintenance, upgradation of skills and knowledge on the contemporary food processing technology, public private partners	4

Sl. no.	**Practical**	**Hrs**
1	Different methods to identify potential entrepreneurs – men and women from both rural and urban areas	2
2	Selection of enterprise best suited for men and women, identification of business opportunities and financial processing sector	1
3	Selection and identification of enterprise based on local/regional – financial support, resources	3
4	Training on communication skills for development of enterprise by the entrepreneur	2
5	Market survey and identification of potential food processing entrepreneurships	3
6	Preparation of project reports, business plan and feasibility report	2
7	Presentation of the project proposed and documentation	2

1	Visit to Industries / Research Institutions	4
2	Project	8
3	Internship	12

MODEL QUESTION PAPER

CODE NO: Semester – III

EDP

TIME: 3 hrs **Max marks: 70**

Instructions: Draw neat and labeled diagram wherever necessary.

PART-A

XXI. Write short notes for the following(any 5): **(5x2=10)**

31. ----------
32. ----------
33. ----------
34. ----------
35. ----------
36. ----------

PART-B

XXII. Answer any 4 of the following: **(4x5=20)**

26. ----------
27. ----------
28. ----------
29. ----------
30. ----------

PART –C

XXIII. Answer any 4 of the following: **(4x10=40)**
XXIV.

26. ----------
27. ----------
28. ----------
29. ----------
30. ----------

III SEMESTER PRACTICAL EXAMINATION

EDP

PRACTICAL

SCHEME OF EXAMINATION

DURATION: 3 Hours

Maximum Marks: 70

Practical proper: 60

Record marks: 10

NOTE :- Candidates are required to submit the records duly signed by the teacher-in charge and certified by the Head of the Department

I. Different methods to identify potential entrepreneurs – men and women from both rural and urban areas
II. Selection of enterprise best suited for men and women, identification of business opportunities and financial processing sector
III. Selection and identification of enterprise based on local/regional – financial support, resources
IV. Training on communication skills for development of enterprise by the entrepreneur
V. Market survey and identification of potential food processing entrepreneurships
VI. Preparation of project reports, business plan and feasibility report
VII. Presentation of the project proposed and documentation
VIII. Visit to Industries / Research Institutions
IX. Project
X. Internship

General Component **Course code: MFD 510**

Semester – IV

After completion of the course student is able to

CO1: Food marketing definition and characteristics of rural/urban marketing

CO2: Learn the characteristics of opportunities and challenges in food marketing for SME's

CO3: Deliberate on Rural and urban Marketing segmentation, consumer behavior and changing trends

CO4: Product design - Importance of innovation, appropriate pricing. Network setup for raw material procurement and Finished product distribution

CO5: Specify the details of Sales promotion, design of advertisement & marketing campaign techniques, online marketing, target customers

CO6: Role of Food packaging for safety and present ability of product and importance of labelling for consumer acceptability

CO7: Relevance of Marketing information system and marketing research in accessing consumer behaviour

CO8: Specify the details of visit to marketing federations to understand marketing strategy and handling of perishable goods

Sl. No.	Food Marketing	Hrs
1.	Food Marketing: Definition, meaning, characteristics of rural and urban marketing	3
2.	Opportunities and challenges marketing food products by small scale entrepreneurs	2
3.	Rural marketing segmentation, rural consumer behavior, changing trends in rural consumer selection and decision, marketing process and influential factors, marketing needs for export products.	5
4.	Urban marketing segmentation, urban consumer behavior, changing trends in urban consumer selection and decision, marketing process and influential factors	5

5.	Product design, innovativeness presentation, services, prices, method of pricing, network for sourcing raw materials and distribution of products in both rural and urban area.	4
6.	Designing advertisement, campaign, sales promotion, choice of media, techniques, personal selling and publicity	4
7.	Online Marketing: Target population, product packing, distribution through courier and other mode of transportation.	3
8.	Food packaging, labelling for consumer acceptability	2
9.	Relevant of marketing information system, market research in accessing consumer behavior	2

Sl. No.	**Practical**	**Hrs**
1.	Regulatory aspects and food hygiene and safety for packing and marketing of food products. Costing of food products. Visit to marketing federation, cooperatives APMCs and other marketing organization and institution for familiarization of marketing strategy, handling and transportation of fresh package products, perishable goods and self stable and transport table. Financial management, securing financial support, advancing the products for marketing, bulk and retail sales, recalling the products recovery of advances.	15

MODEL QUESTION PAPER

CODE NO: Semester – IV

Food Marketing

TIME: 3 hrs **Max marks: 70**

Instructions: Draw neat and labeled diagram wherever necessary.

PART-A

XXV. Write short notes for the following(any 5): **(5x2=10)**

37. ----------
38. ----------
39. ----------
40. ----------
41. ----------
42. ----------

PART-B

XXVI. Answer any 4 of the following: **(4x5=20)**

31. ----------
32. ----------
33. ----------
34. ----------
35. ----------

PART –C

XXVII. Answer any 4 of the following: **(4x10=40)**

31. ----------
32. ----------
33. ----------
34. ----------
35. ----------

IV SEMESTER PRACTICAL EXAMINATION

PRACTICAL

Food Marketing

SCHEME OF EXAMINATION

DURATION: 3 Hours

Maximum Marks: 70

Practical proper: 60

Record marks: 10

NOTE :- Candidates are required to submit the records duly signed by the teacher-in charge and certified by the Head of the Department

1.Regulatory aspects and food hygiene and safety for packing and marketing of food products. Costing of food products

2.Visit to marketing federation, cooperatives APMCs and other marketing organization and institution for familiarization of marketing strategy, handling and transportation of fresh package products, perishable goods and self stable and transport table.

3.Financial management, securing financial support, advancing the products for marketing, bulk and retail sales, recalling the products recovery of advances.

General Component **Course code: MFD 520**

Semester – IV

After completion of the course student is able to

CO1: Deliberate in details with examples Food - Safety, Quality, QA and Current challenges to food safety

CO2: Learn in depth Principles of TQM, GMP, GHP, GLP and role of management in QC

CO3: Understand the concept of HACCP, 7 principles and its implementation

CO4: Learn the Role, guidelines of Food safety and standards authority of India for fruit and vegetable products

CO5: Specify the classification and characteristics of ISO 9000, 22000 and 14000

CO6: Learn the characteristics of WTO, Codex Alimentarious commission, SPS, TBT agreements

CO7: Learn the details of TRIPS and TRIMS, Patents rights and protection, GI and Industrial design

CO8: Understand Food adulteration, types of adulterants, methods of evaluation

Sl. No.	Food Standards, Regulatory Affairs and IPR Issues	Hrs
1.	Introduction to concepts of food quality, food safety, food quality assurance and food quality management; objectives, importance and functions of quality control, Current challenges to food safety	3
2.	Principles of food quality assurance, total quality management (TQM)–good manufacturing/management practices, good hygienic practices, good lab practices, general awareness and role of management practices in quality control	3
3.	Microbial quality control: determination of microorganisms in foods by cultural, microscopic, physical, chemical methods. Statistical quality control in food industry Food adulteration, nature of adulterants, methods of evaluation of food adulterants and toxic constituents	3
4.	Food safety management, applications of HACCP in food safety, concept of food trace ability for food safety, Food safety and Standards Act 2006: salient provision and prospects	3
5.	Role of national and international regulatory agencies, Bureau of	3

	Indian Standards (BIS), AGMARK, Food Safety and Standards Authority of India (FSSAI)	
6.	Introduction to WTO agreements: SPS and TBT agreements, Codex Alimentarious Commission ,, International organization for standards (ISO) and its standards for food quality and safety (ISO 9000 series, ISO 22000, ISO 15161,ISO 14000)	5
7.	Food safety in USA, USFDA, Legislation in Europe: Directives of the official journal of the EU, council regulations, food legislation in UK. Regulating methods for food analysis, case studies. Enforcers of Food Laws Approval Process for Food Additives ,Nutritional Labelling	5
8.	Concept of property, rights, duties and their correlation; History and evaluation of IPR; Copyrights and related rights. Distinction among Various forms of IPR. Patent rights/protection and procedure; Infringement or violation; Remedies against infringement; Indian Patent Act 1970 and TRIPS; Geographical indication and Industrial design	5
Sl. No.	**Practical**	**Hrs**
1.	Study of food regulations in various countries ; study of nutritional labelling of packaged food items by visiting food market, Visit the websites of FSSAI, BIS, AGMARK, ISO, Codex Alimentarius Commission , USFDA Study of patent law in India and the procedure for grant of patent in India	15

MODEL QUESTION PAPER

CODE NO: Semester – IV

Food Standards, Regulatory Affairs and IPR Issues

TIME: 3 hrs **Max marks: 70**

Instructions: Draw neat and labeled diagram wherever necessary.

PART-A

XXVIII. Write short notes for the following(any 5): (5x2=10)

43. ----------
44. ----------
45. ----------
46. ----------
47. ----------
48. ----------

PART-B

XXIX. Answer any 4 of the following: (4x5=20)

36. ----------
37. ----------
38. ----------
39. ----------
40. ----------

PART –C

XXX. Answer any 4 of the following: (4x10=40)

36. ----------
37. ----------
38. ----------
39. ----------
40. ----------

IV SEMESTER PRACTICAL EXAMINATION

PRACTICAL

Food Standards, Regulatory Affairs and IPR Issues

SCHEME OF EXAMINATION

DURATION: 3 Hours

Maximum Marks: 70

Practical proper: 60

Record marks: 10

NOTE :- Candidates are required to submit the records duly signed by the teacher-in charge and certified by the Head of the Department

1. Study of food regulations in various countries;

2. Study of nutritional labelling of packaged food items by visiting food market, Visit the websites of FSSAI, BIS, AGMARK, ISO, Codex Alimentarius Commission , USFDA

3. Study of patent law in India and the procedure for grant of patent in India