



ASSAM SCIENCE AND TECHNOLOGY UNIVERSITY
Guwahati
Course Structure and Syllabus

(From Academic Session 2020-21 onwards)

M.Voc
Food Processing and Quality Management (CBCS)

4TH Semester



ASSAM SCIENCE AND TECHNOLOGY UNIVERSITY

Guwahati

Course Structure

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M.Voc Food Processing and Quality Management (CBCS)

4th Semester: Course Structure

Theory/ Practical	Sl. No.	Sub Code	Subject	Hrs/Week			Credit C	Marks	
				L	T	P		CE	ESE
Elective-4 (any one)									
Theory	1	MFP202E401	Food Safety, Regulation and Quality Control	3	0	0	3	30	70
Practical		MFP202E411	Food Safety, Regulation and Quality Control Practical	0	0	2	1	30	70
Theory	2	MFP202E402	Waste Management In Food Industries	4	0	0	4	30	70
Theory	3	MFP202E403	Marketing Management and International Trade	3	0	0	3	30	70
Practical		MFP202E413	Marketing Management and International Trade Practical	0	0	2	1	30	70
Core									
Practical	1	MFP202421	Major Project/Internship, Presentation and dissertation	0	0	32	16	30	70
Total				3/4	0	34/32	20	90/60	210/140
Total Contact Hours per Week = 37/36									
Total Credit = 20									

Subject code	Subject	Hours per week L-T-P	Credit C
MFP202E401	Food Safety, Regulation and Quality Control	3-0-0	3

MODULE 1:

Food safety: definition, concept, urbanization of population and necessity of processed and preserved foods and the necessity of ensuring quality of food to prevent adulteration and maintenance of food safety, importance of food safety in the food processing industry, prosecution for adulteration and punishment.

MODULE 2:

Food Safety Programs: Definitions and importance, Good Manufacturing Practices (GMPs), Pest Control Program, Facility Maintenance, Personal Hygiene, Sanitary Design of Equipment and Infrastructure, Sanitation Program. (Sanitation Standard Operating Procedures (SSOPs)., Product Identification, Tracking and Recalling Program, Preventive Equipment Maintenance Program, Education and Training Program

MODULE 3:

National and international food regulatory agencies, General food laws and food safety regulations, Nutritional labeling regulation (mandatory and optional nutrients, nutritional descriptors and approved health claims); Microbial contamination, Cross-contamination, Chemical contamination, Physical contamination, Allergen contamination

MODULE 4:

Hazard Analysis and Risk Assessment: Physical hazards (metals, glass, etc), Chemical hazards (food additive toxicology, natural toxins, pesticides, antibiotics, hormones, heavy metals and packaging components), Biological hazards (epidemiology of biological pathogens: virus, bacteria and fungi), Evaluation of the severity of a hazard Controlling Food Hazards, Hazard Analysis Critical Control Point (HACCP) system.

MODULE 5:

Food Hygiene Programs: Personal hygiene, Training programs, Infrastructure, Water in the food industry, Water sources, Water uses, Water quality, Treatments, Cleaning and sanitation, Cleaning agents, Sanitizing agents, Equipment and systems, Evaluation of sanitation efficacy, Pest Control, Pest Classification (insects, rodents and birds), Prevention and control, IPM, Disposal of wastes.

MODULE 6:

Food Safety regulations and management systems: National and international food quality regulations, Indian Food regulations – History of Indian Food Regulations: BIS, ISI, FPO, PFA and

FDA. Food Safety and Standards Act 2006, Integrated Food Law - Multi departmental - multilevel to single window control system, consumer protection Act, International food trade, Codex Alimentarius, traceability, EU-regulations on the hygiene and additives of foodstuffs, GAP, Organic farming, GMP, Environmental risk assessment in food safety aspect, ISO certifications for food industry, British Regulatory Consortium(BRC), American Institute of Bakers(AIB), The necessity of harmonised Food Standards for international trade; various aspects and relation with domestic laws; Codex Nodal agency, FAO, WHO, WTO.

Intellectual Property Rights and Trade Marks: Protection of investment and efforts in research and development by patenting; Criteria of patentability; National and international patent; Terms of patents; Copyright.

MODULE 7:

Food quality: Definition, Quality Control and Quality Assurance in food system, TQM, SOP, Sampling, Audit; Importance of testing of ingredients, additives, heavy metals etc; using animals for evaluating safety; Clinical studies. Responsibility of agriculture, food industry & food supply sector; Standards of Weights & Measures, , Important Issues of GM Foods, Fortification, Nutrition Information on Label, Organic Foods, Safety of Additives, Processes etc., 5S, 4M, Maintenance of documents and its importance, Food storage measures.

MODULE 8:

Control on Purchased Product Procurement of various products, evaluation of supplies, Quality Management Organization structure and design, quality function, quality cost, optimization of process parameter and validation, Complain handling, CAPA, Human Factor in quality-Attitude of top management, cooperation of groups, operators attitude, responsibility, Seven statistical tool for quality assessment, Zero defects, Quality Circle, Emergency preparedness.

MODULE 9:

Analysis and Interpretation of sensory scores, Application of sensory evaluation in Quality Management of foods, Instrumental measurements of sensory attribute of foods: Appearance, color, volume, density and specific gravity, Rheological and textural characteristics, Texture profile analysis, Nutrition value analysis.

Text books and Reference materials:

1. Early, R. (2005): Guide to Quality Management Systems for the Food Industry, Blackie, Academic and professional, London.
2. Gould, W.A and Gould, R.W. (2006). Total Quality Assurance for the Food Industries, CTI Publications Inc. Baltimore.

3. Pomeraz, Y. and MeLoari, C.E. (2006): Food Analyasis: Theory and Practice, CBS publishers and Distributor, New Delhi.
4. Bryan, F.L. (2000): Hazard Analysis Critical Control Point Evaluations A Guide to Identifying Hazards and Assessing Risks Associated with Food Preparation and Storage. World Health Organisation, Geneva.
5. FSSAI, FSIS, EU and FAO website for updates
6. Rajesh, M., and George, J. (2005) “Food Safety Regulations, Concerns and Trade : The Developing Country Perspective”, Macmillan.
7. Naomi, R., and Watson, D. (2007) “International Standards for Food Safety”, Aspen Publication.
8. Newslow, D.L. “The ISO 9000 Quality System: Applications in Food and Technology”, John Wiley & Sons, 2007.
9. Hubbard, Merton R. “Statistical Quality Control for the Food Industry”, 3rd Edition, Springer, 2003.
10. J.M.DeMan Rheology and Texture in Food Quality.
11. Y.Pomeranz Food Analysis : Theory and practice IS: 6273 (Part-1& Part-2).
12. M.A. Amerine Principles of Sensory Analysis of Food.
13. Food processing waste management by green and Kramer (AVI).
14. By- products from food industries: utilization and disposal by AFSI(I).

Subject code	Subject	Hours per week L-T-P	Credit C
MFP202E411	Food Safety, Regulation and Quality Control Practical	0-0-2	1

PRACTICAL:

1. Qualitative tests for detection of adulterants
2. Market sample evaluation and statistical application
3. Study on different logos in food package.
4. Demonstration on audit and report prepare.
5. Preparation of GMP checklist, checksheet.
6. Demonstration on complain handling and report-CAPA making.
7. Making a HACCP plan for Bakery/Milk processing industry.

Subject code	Subject	Hours per week L-T-P	Credit C
MFP202E402	Waste Management In Food Industries	4-0-0	4

MODULE 1:

Basic considerations: Standards for emission or discharge of environmental pollutants from food processing Industries as per the updated provision of Environment (Protection) Act, 1986. Characterization of food Industry effluents, Physical and chemical parameters, Oxygen demands and their interrelationships, Residues (solids), Fats, Oils and grease, Forms of Nitrogen, Sulphur and Phosphorus, Anions and cations, Surfactants, Colour, Odour, Taste, Toxicity. Unit concept of treatment of food industry effluent, Screening, Sedimentation Floatation as pre and primary reactants.

MODULE 2:

Waste Water Treatment: Waste water sources characteristics - standards for disposal of water, physical, chemical and biological characteristics of waste water; measurement of organic content in waste water; Physical operations in waste water treatment - screening; racks, mixing, flocculation, sedimentation, floatation, elutriation, vacuum filtration, incineration; chemical operations in waste water treatment - reaction kinetics; chemical precipitation, aeration and gas transfer process, rate of gas transfer, adsorption, disinfection; biological operations - aerobic and anaerobic

MODULE 3:

Storage & Disposal of Waste: Types of waste generated; Non- degradable & biodegradable wastes, Solid waste storage and disposal methods- land-filling, burial, incineration, recycling; Biological treatment of food industry wastes, storage and disposal of liquid and gaseous waste; legal aspects related to storage and disposal; environmental laws; pests & their control.

MODULE 4:

Advanced wastewater treatment systems. Physical separations, Micro-strainers, Filters, Ultra filtration and reverse osmosis. Physico-chemical separations: activated carbon adsorption, Ion-exchange electro-dialysis and magnetic separation. Chemical oxidations and treatment, Coagulation and flocculation. Disinfection. Handling disposal of sludge.

MODULE 5:

Utilization of Waste: Methods of utilizing wastes to make value added products. Utilization of by product- Pectin, food colourants, antioxidants from fruit peels (citrus, mango, pomegranate), lycopene from tomato peels, vegetable seed oils, biomolecules and enzymes from meat processing.

Generation of biogas, SCP, microalgae, animal feeds, zero emission plants; recovery & recycling of materials.

REFERENCES:

1. Potter, N.N., and Hotchkiss, J.H. "Food Science", 5th Edition, CBS, 1996.
2. Moorthy, C.K. "Principles and Practices of Contamination Control and Clean rooms", Pharma Book Syndicate, 2003.
3. Roday, S. "Hygiene and Sanitation in Food Industry", Tata McGraw – Hill Publishing, 1999.
4. Wilson, C.L. "Microbial Food Contamination", 2nd Edition, CRC, 2008.
5. J.H. Green Food Processing Waste Management
6. Environment (Protection) Act
7. AFST(I) & CFTRI Proceedings of the Symposium on By-products from food Industries: Utilization and Disposal

Subject code	Subject	Hours per week L-T-P	Credit C
MFP202E403	Marketing Management and International Trade	3-0-0	3

MODULE 1:

Concept of marketing, functions of marketing, Concepts of marketing management, scope of marketing management, Marketing management process, Concepts of marketing, elements of marketing, Business Principles, Practices and Policies of Food trade, Mechanism of foreign Exchange.

MODULE 2:

Consumers buying behaviour, consumerism, Marketing opportunities analysis: marketing research and marketing information systems.

MODULE 3:

Concept of market structure, Marketing environment -Micro and macro environments, Market measurement- present and future demand, market forecasting, Market segmentation, targeting and positioning, Allocation and marketing resources

MODULE 4:

Marketing planning process, Product policy and planning: product-mix, product line, product life cycle, New product development process, Product brand, packaging, services decisions, Marketing channel decisions, Retailing, wholesaling and distribution, Pricing decisions, Price determination and pricing policy.

MODULE 5:

Promotion, Advertising, how advertising works, deciding advertising objectives, Advertising budget, Advertising message, media planning, personal selling, publicity, sales promotion, World consumption of food: Patterns and types of food consumption across the globe

MODULE 6:

International marketing and international trade, salient features of international marketing, Composition & direction of Indian exports, international marketing, environment, Deciding which & how to enter international market

MODULE 7:

Exports- direct exports, indirect exports, Licensing, Joint ventures, Direct investment, Export trends and prospects of food products in India, Government institutions related to international food trade: APEDA, Tea Board, Spice Board, MOFPI, etc. WTO and world trade agreements related to food business, Product Promotion and Pricing, Distribution Channels.

MODULE 8:

Intellectual Properties (IPs) : Historical Perspectives and Need for the Introduction of Intellectual Property Right regime, TRIPs and Provisions in TRIPS Agreement, Intellectual Property Rights (IPR) - *benefits of securing IPRs* Indian Legislations for the protection of various types of Intellectual Properties, Fundamentals of Patents, Copyrights, Geographical Indications, Trade Secrets and Traditional Knowledge, Trademarks, Protection of Plant Varieties and Farmers' Rights Act (PPV & FRA) and National Biodiversity Board, Material Transfer Agreements, Research Collaboration Agreements, License Agreements.

MODULE 9:

Food plant layout & Process planning for the product, Scale of operations of food industry in India. Factors determining fixed capital requirements. Establishing the food product unit. Creativity and innovation problem solving. Personnel management, salaries, wages and incentives, performance appraisal, quality control, Sources and factors of fixed capital and working capital.

Text books and Reference materials:

1. Philip Kotler, Kevin Lane Keller, Abraham Koshy, Mithileshwar Jha. 2013. Marketing Management: A South Asian Perspective, 14th Ed. Pearson Education.
2. William J. Stanton. 1984. Fundamentals of Marketing. Tata McGraw-Hill Publication, New Delhi.
3. C.N. Sontakki. Marketing Management. Kalyani Publishers, New Delhi.
4. John Daniels, Lee Radebaugh, Brigham, Daniel Sullivan. International Business, 15th Ed., Pearson Education.
5. Aswathappa. International Business. Tata McGraw-Hill Education, New Delhi.
6. Francis Cherunilam. International Business: Text and Cases, 5th Ed. PHI Learning, New Delhi.
7. D. David and S. Ericson, *Principles of Agri. Business Management*. Tata Mc Graw Hill Book Co., New Delhi.
8. P.K. Srivastava, *Marketing Management*. Himalaya Publishing House, New Delhi.
9. G.S. Batra and Narinder Kumar, *GATT implications of Denkel proposal*. Azmol Publications, New Delhi.
- 10.
- 11.

Subject code	Subject	Hours per week L-T-P	Credit C
MFP202E413	Marketing Management and International Trade Practical	0-0-2	1

PRACTICAL:

1. Observation of various OTC products and identification of highly perishable and fast moving in various outlets in your locality.
2. Export quality management in food industry.
3. Project feasibility report and cost benefit analysis for baking industry.
4. Industrial visit to different Food Processing industries.

Subject code	Subject	Hours per week L-T-P	Credit C
MFP202421	Major Project/ Internship, Presentation and dissertation.	0-0-32	16

Each student will have to carry out a major project work or minimum 45 days and maximum 60 days of internship in food industry. On completion of the project work/ internship, students have to submit the work in the form of a dissertation followed by oral presentation in the presence of faculty members and external expert
