KURUKSHETRA UNIVERSITYKURUKSHETRA

Syllabus (5th & 6th Semester)

For Under-Graduate Programme

Bachelor of Vocation in Food Science and Quality Control

Interdisciplinary Scheme-D

Under Multiple Entry-Exit, Internship and CBCS-LOCF in accordance to NEP-2020

w.e.f. 2025-26

Department of Home Science

Session: 2025-26			
Part A – Introduction			
Subject	Bachelor of Vocation in Food Science and Quality Control		
Semester	V		
Name of the Course	Advances in Food Processing & Preservation		
Course Code	**B23-FTQ-501**		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC-A5		
Level of the course (As per Annexure-I	300-399		
Pre-requisite for the course (if any)	Senior Secondary(10+2)		
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1. Understand the basics of extrusion and hydrostatic pressure technology 2. Gain knowledge about methods of processing and applications in food industry 3. Know various new technologies as methods of preservation 4. Understand effect of processing methods and their effect on food properties. _____ 5*. Gain practical knowledge about methods of preservation, processing and food quality		
Credits	**Theory**	**Practical**	**Total**
	3	**1**	**4**
Contact Hours	**3**	**2**	**5**
Max. Marks:100 **Internal Assessment Marks:20(T)+10(P)=30** **End Term Exam Marks:50(T)+20(P)=70**		**Time:3hrs (T)** **4hrs (P)**	

Part B- Contents of the Course		
Instructions for Paper- Setter: The examiner will set nine questions in all, selecting two questions from each unit and one compulsory. **Instructions for the Candidate:** The candidates will attempt five questions in all, selecting one question from each unit and the compulsory question as well.		
Unit	**Topics**	**Contact Hours**
I	**1. Extrusion Technology:** Introduction to extruders, principles, extrusion process, advantages of extrusion, extrusion equipment, single screw extruders and twin screw extruders. Breakfast cereals by extrusion technology. 2. **Hydrostatic Pressure Technology**: General principles, effect of hydrostatic pressure on microorganisms-possible mode of action, application of hydrostatic pressure technology in food industry.	12
II	1. **Hurdle Technology:** Principles and basic aspects of hurdle technology, different hurdles, hurdle effect, application of hurdle technology in food products. 2. **Osmotic Dehydration:** Mechanism of osmotic dehydration, application of osmotic dehydration.	10
III	1. **Membrane Separation:** Principle, different types of Membrane processing, Application in Food industry. 2. **Pulsed Electric Fields Processing:** PEF treatment systems, main processing parameters. Mechanisms of action: mechanisms of microbial inactivation.	11
IV	1. **Ultrasound Processing:** Fundamentals of ultrasound, ultrasound as a food preservation and processing aid, effects of ultrasound on food properties. 2. **Alternate Thermal Processing:** Microwave heating, Radio-frequency processing: Dielectric heating, Radio-frequency heating; Ohmic heating, Freeze drying, Freeze concentration, UV radiation.	12

V*	• Filtration of juices for preservation • Microbial load estimation in preserved food • Microwave treatment of food	30
	• To study the effect of processing on the keeping quality of food • Estimation of shelf life using various preservation techniques • New product development using food processing techniques and its proximate analysis	

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory** ● Class Participation: **05** ● Seminar/presentation/assignment/quiz/class test etc.:**0**5 ● Mid-Term Exam: **10** ➢ **Practicum** ● Class Participation: **00** ● Seminar/Demonstration/Viva-voce/Lab records etc.:**10** ● Mid-Term Exam: **NA**	**End Term Examination:** **50** **20**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Gloud, G. W. (1995). New Methods of Food Preservation, Springer Publication
2. Holdswarth, S. D. (1993). Aseptic Processing and Packaging of Food Products, Elsevier, London.
3. Church, P. N. (1993). Principles and Applications of Modified Atmosphere Packaging of Food, Blackie Academic & Professional, U.K.
4. Leistner L & Gould G.W. (2002). Hurdle Technologies: Combination Treatments for Food Stability, Safety and Quality. Springer Publications
5. Gustavo V. Barbosa-Cánovas, María S. Tapia, M. Pilar Cano (2005). Novel Food Processing Technologies, CRC press
6. Tewari, G, Juneja, V.K. (2007). Advances in thermal and non-thermal preservation, Wiley Blackwell Press

Session: 2025-26			
Part A - Introduction			
Subject	Bachelor of Vocation in Food Science and Quality Control		
Semester	V		
Name of the Course	Principles of Food Engineering		
Course Code	**B23-FTQ-502**		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC-B5		
Level of the course (As per Annexure-I	300-399		
Pre-requisite for the course (if any)	Senior Secondary(10+2)		
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1. Gain knowledge about concept of evaporators and energy balance. 2. Understand the role of thermal processing in food engineering 3. Know about methods and their principles of processing and engineering in food industry 4. Understand about the food processing plants _____ 5*. Gain practical knowledge about use of various equipment for measuring specific heat, viscosity, dehydration etc.		
Credits	**Theory**	**Practical**	**Total**
	3	**1**	**4**
Contact Hours	**3**	**2**	**5**
Max. Marks:100 **Internal Assessment Marks:20(T)+10(P)=30** **End Term Exam Marks:50(T)+20(P)=70**		**Time:3hrs (T)** **4hrs (P)**	
Part B- Contents of the Course			
Instructions for Paper- Setter: The examiner will set nine questions in all, selecting two questions from each unit and one compulsory.			

Instructions for the Candidate: The candidates will attempt five questions in all, selecting one question from each unit and the compulsory question as well.		
Unit	**Topics**	**Contact Hours**
I	1. **Material & Energy Balance**:- Properties of wet, dry saturated & superheated steam, use of steam tables & Mollier diagram 2. **Evaporation**: - Boiling point elevation. Basic principles of evaporators. Construction and operation. Different types of evaporators used in food industry.	12
II	**Thermal Processing**: - Microbial inactivation, concept of F, Z & D value, evaluation of thermal process time for batch sterilization by graphical & formula method, Calculation of process time, continuous flow system, factors affecting rate of heat penetration, effect of Can size on sterility requirement	11
III	**Drying and Dehydration:** Rate of drying, constant, & falling rate periods, Engineering aspects of different types of driers used in food processing including tray drier, drum drier, fluidized bed drier, spray and freeze drier etc.	10
IV	1. **Freezing:** - Depression of Freezing point, Planks equation and other modified equations for prediction of freezing time, freezing time calculation for a product having uniform temperature (negligible internal resistance). 2. **Liquid Transport System-** Pipelines and pumps for food processing plants-positive displacement pumps, air-lift pumps, propeller pumps, centrifugal pumps and jet pumps.	12
V*	• Determination of cooking properties of parboiled and raw rice. • Determine the viscosity of the given sample using capillary viscometer. • To analyze the milk components using Milk Analyzer • Experiment on properties of food through microwave oven heating. • To perform dehydration of given food sample and to evaluate its moisture content on wet and dry basis. • To determine Brix of any food sample using Digital refractometer	30

Suggested Evaluation Methods		
Internal Assessment: ➢ **Theory** ● Class Participation: **05** ● Seminar/presentation/assignment/quiz/class test etc.:**0**5 ● Mid-Term Exam: **10** ➢ **Practicum** ● Class Participation: **00** ● Seminar/Demonstration/Viva-voce/Lab records etc.:**10** ● Mid-Term Exam: **NA**		**End Term Examination:** **50** **20**
Part C-Learning Resources		
Recommended Books/e-resources/LMS: 1. Singh, R.P and Heldman, D.R. (1984). Introduction to Food Engg., Academic Press, INC, London. 2. Earle, R.L. (1983) Unit Operations in Food processing, 2nd Edition Pergamon Press Oxford,U.K. 3. Toledo, R.T. (1997). Fundamentals of Food Process Engineering, CBS Publishers, New Delhi. 4. Batty, J.C. and Folkman, S.L. 1983. Food Engineering Fundamentals.Johnwiley and Sons, New York 5. Mukul S, Vairat A.D., John H, Minz P.S., Kumari K, Ray A. 2023 Practical Lab Manual Engineering Properties of Food and Dairy Products, PrakharGoonj Publication, Delhi		

Session: 2025-26			
Part A - Introduction			
Subject	Bachelor of Vocation in Food Science and Quality Control		
Semester	V		
Name of the Course	Microbial Technology and Therapeutic Foods		
Course Code	**B23-FTQ-503**		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC-C5		
Level of the course (As per Annexure-I	300-399		
Pre-requisite for the course (if any)	Senior Secondary(10+2)		
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1. Know about microbial technology and their use 2. Understand the health benefits of foods with adequate safety 3. Gain knowledge about fermented foods and their therapeutic use 4. Know about therapeutic foods and their usage _____ 5*. Gain practical knowledge about production of therapeutic recipes using microbial technology		
Credits	**Theory**	**Practical**	**Total**
	3	**1**	**4**
Contact Hours	**3**	**2**	**5**
Max. Marks:100 **Internal Assessment Marks:20(T)+10(P)=30** **End Term Exam Marks:50(T)+20(P)=70**		**Time:3hrs (T)** **4hrs(P)**	
Part B- Contents of the Course			
Instructions for Paper- Setter: The examiner will set nine questions in all, selecting two questions from each unit and one compulsory. **Instructions for the Candidate:** The candidates will attempt five questions in all, selecting one question			

from each unit and the compulsory question as well.		
Unit	**Topics**	**Contact Hours**
I	1. **Introduction:** Definition, Development of functional food, Isolation, Storage, Processing and stability of phytochemicals/bioactive compounds. 2. **Prebiotics and Probiotics:** Usefulness of probiotics and prebiotics in gastro intestinal health and other benefits, beneficial microbes; types of prebiotics and their effects on gut microbes, resistant starch, fructo-oligosaccharides as probiotic food components.	12
II	**Natural pigments** (chlorophyll, chlorophyllin, carotenoids), Anthocyanin, Glucosinolates, Isoflavonoids, Phytoestrogens, Antioxidants, Phytosterols.	10
III	1. **Fermentation technology:** Fermentation Definition, Type-Aerobic and Anaerobic Fermentation. 2. **Fermented Food Products:** Microbial starter culture, Uses in dairy, meat, fruits, and vegetables products. Production of Pickle and Olives, Alcoholic beverages and Acetone, Butanol, Glutamic acid, Lactic acid, Citric acid, Baker's yeast and L-Aspartic acid.	12
IV	1. **Production of vitamins:** Thiamin B-1, Riboflavin (B-2), vitamin B-12. Microbial polysaccharides: Fermentative production of Xanthan gums, Dextran, Pullulan. 2. Health benefits of nutraceuticals.	11
V*	• Production of probiotic foods e.g. juice, milk, etc. • Production of wine e.g. cider, red wine, etc. • Production of ethanol from whey • Production of fermented juice • Production of lactic acid • Production of sauerkraut • Development of a therapeutic product	30
Suggested Evaluation Methods		

Internal Assessment:	End Term Examination:
➢ **Theory** ● Class Participation: **05** ● Seminar/presentation/assignment/quiz/class test etc.:**0**5 ● Mid-Term Exam: **10** ➢ **Practicum** ● Class Participation: **00** ● Seminar/Demonstration/Viva-voce/Lab records etc.:**10** ● Mid-Term Exam: **NA**	**50** **20**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Gibson GR & William CM. (2000).Functional Foods - Concept to Products.
2. Goldberg I. (1994). Functional Foods: Designer Foods, Pharma Foods.
3. Prescott & Dunn's Industrial Microbiology by B. Reed millian Publishers Ltd. Connecticut
4. Biotechnology by R.H. Rejm and G. Reed Vol. 4, 5, 6, & 7a), Verlag Press

Session: 2025-26			
Part A - Introduction			
Subject	Bachelor of Vocation in Food Science and Quality Control		
Semester	VI		
Name of the Course	Food Industry Waste and By Product Management		
Course Code	**B23-FTQ-601**		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC-A6		
Level of the course (As per Annexure-I	300-399		
Pre-requisite for the course (if any)	Senior Secondary(10+2)		
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1. Understand the concept of food waste and its characterization 2. Know about the various methods of effective waste utilization 3. Gain knowledge about waste utilization of meat, poultry and fish 4. know about various treatments given to food industry waste 5*. Gain practical knowledge about various useful products from food industry waste		
Credits	**Theory**	**Practical**	**Total**
	3	**1**	**4**
Contact Hours	**3**	**2**	**5**
Max. Marks:100 **Internal Assessment Marks:20(T)+10(P)=30** **End Term Exam Marks:50(T)+20(P)=70**		**Time:3hrs (T)** **4hrs(P)**	
Part B- Contents of the Course			
Instructions for Paper- Setter: The examiner will set nine questions in all, selecting two questions from each unit and one compulsory. **Instructions for the Candidate:** The candidates will attempt five questions in all, selecting one question from each unit and the compulsory question as well.			

Unit	Topics	Contact Hours
I	1. **Introduction:** Definition, Origin, Type of waste and magnitude of waste, Importance of Waste Management, Food waste as source of biogenic raw material and energetic utilization. 2. **Waste Characterization:** Temperature, pH, Oxygen Demand (BOD, COD, TOD), Fat, Oil and Grease content, Metal content, Forms of phosphorus and sulphur in waste waters.	11
II	1. **Utilization of waste:** Processes for waste utilization from fruit and vegetable industries like (apple, orange, mango, potato etc.), Distillation for production of alcohol - oil extraction from waste - citric acid production from fruit waste, Extraction of active ingredients from fruit waste. 2. **By-Products Utilization of Wheat and Pulse Mill**: By products of wheat milling- germs and bran, By products of pulses milling - husk, germs and broken.	10
III	1. **Fish, Meat and Poultry Waste Utilization:** Fish Industry by products, Waste utilization- Meat and Poultry Waste recycling. 2. Environmental Protection Act and Specification for Effluent of different food industries. Waste Utilization Environment Management Systems (ISO 14000) and its Application in Food Industry.	12
IV	1. **Effluent Treatment**: **Pre-treatment of waste:** Sedimentation, Coagulation, Flocculation and Flotation. 2. **Secondary treatments:** Biological oxidation-trickling filters, Oxidation ditches, Activated sludge process, Rotating biological contractors, Lagoons. 3. **Tertiary treatment**: Advanced waste water treatment process-sand, coal and activated carbon filters, phosphorus, sulphur, nitrogen and heavy metals removal. Assessment, treatments and disposal of soil waste; Concept of Vermicomposting and Bio-gas generation.	12

V*	• Identification of useful products from food and agricultural waste • Characterization of industrial effluents for pH, TS, TDS, TSS parameters. • Food waste as a compost agent • To determine acidity & alkalinity of waste water • Determination of TPC in water samples from different sources. • Product development using food waste	30
Suggested Evaluation Methods		
Internal Assessment: ➢ **Theory** ● Class Participation: **05** ● Seminar/presentation/assignment/quiz/class test etc.:**0**5 ● Mid-Term Exam: **10** ➢ **Practicum** ● Class Participation: **00** ● Seminar/Demonstration/Viva-voce/Lab records etc.:**10** ● Mid-Term Exam: **NA**		**End Term Examination:** **50** **20**
Part C-Learning Resources		
Recommended Books/e-resources/LMS: 1. Robert R. Zall (2004), Managing Food Industry Waste: Common sense methods for Food Processors, Blackwell Publishing. 2. Loannis S. and Arvanitoyannis (2008). Waste Management in Food Industry, Academic Press 3. VassoOreopoulou and Winfried Russ (2007). Utilization of byproducts and treatments of waste in Food Industry, Springer publication. 4. Lawrence K. Wang (2006). Waste Treatments in Food Industry, Taylor and Francis.		

Session: 2025-26			
Part A - Introduction			
Subject	Bachelor of Vocation in Food Science and Quality Control		
Semester	VI		
Name of the Course	Nutrition and Health		
Course Code	**B23-FTQ-602**		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC-B6		
Level of the course (As per Annexure-I	300-399		
Pre-requisite for the course (if any)	Senior Secondary(10+2)		
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1. Know about the new concepts of nutrition 2. Understand the healthy aspects of macronutrients 3. Gain knowledge about nutritional assessment 4. Now about the role of drugs in health _____ 5*. Gain practical knowledge about planning and cooking of healthy recipes and performing nutritional assessment		
Credits	**Theory**	**Practical**	**Total**
	3	**1**	**4**
Contact Hours	**3**	**2**	**5**
Max. Marks:100 **Internal Assessment Marks:20(T)+10(P)=30** **End Term Exam Marks:50(T)+20(P)=70**		**Time:3hrs (T)** **4hrs(P)**	
Part B- Contents of the Course			
Instructions for Paper- Setter: The examiner will set nine questions in all, selecting two questions from each unit and one compulsory. **Instructions for the Candidate:** The candidates will attempt five questions in all, selecting one question			

from each unit and the compulsory question as well.		
Unit	**Topics**	**Contact Hours**
I	1. **Food and nutrients**: Definition, Functions of food, Levels of Nutritional status 2. **Assessment of nutritional status** : Objectives and importance, Methods of assessment a. Direct – Clinical signs, Anthropometric Measurements, Biochemical Tests b. Indirect – Diet surveys, Vital statistics	11
II	1. **Energy balance:** Food energy measure, Basal Metabolic Rate (B.M.R.), Factors affecting B.M.R., RDA 2. **Malnutrition**: Type of Malnutrition, Nutrition Infection and Immunity, Nutrition Education	10
III	1. **Carbohydrates:** Dietary Importance, Special Functions of Carbohydrates in Body Tissues, Relationship Between Dietary Fiber and Various Health Problems, Glycemic Index 2. **Fats:** Functions of EFA, Role of ω-3, ω -6 Fatty Acids in Health and Disease, Trans Fatty Acids and Prostaglandin. Essential Fatty Acids, Cholesterol, LDL, HDL, VLDL.	12
IV	1. **Proteins**: Nature and Essentiality of Amino Acids and Proteins, Functions of Protein, Concept of Protein Balance, Biological Value, Therapeutic Applications of Specific Amino Acids. 2. Nutrient Drug Interaction.	12
V*	• Role of various National and International agencies in field of human nutrition • Planning of low cost nutritious recipes for infants, preschoolers • Planning and preparation of diet for various health conditions. • Nutritional labeling of food products • Planning and preparation of snacks for PEM • Dietary assessment – FFQ and 24 hour diet recall	30

Suggested Evaluation Methods	
Internal Assessment: ➢ **Theory** ● Class Participation: **05** ● Seminar/presentation/assignment/quiz/class test etc.:**0**5 ● Mid-Term Exam: **10** ➢ **Practicum** ● Class Participation: **00** ● Seminar/Demonstration/Viva-voce/Lab records etc.:**10** ● Mid-Term Exam: **NA**	**End Term Examination:** **50** **20**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Insel, P., Turner R.E. & Ross, D. (2006). Discovering Nutrition, IInd Edition. ADA, Jones and Bartlett Publishers Inc., USA.
2. MudambiSumati R. &Rajagopal, M.V. (1995). Fundamentals of Food & Nutrition. New Age International (P) Limited, Publishers.
3. ICMR (1995). Nutrient Requirement & RDA, ICMR, New Delhi.
4. Gibney, M.J., Elia, M., Ljungqvist, O. &Dowsett, J. (2005). Clinical Nutrition. The Nutrition society textbook series, Blackwell publishing company.
5. Srilakshmi B. (2011). Dietetics. New Age International Publishers
6. Swaminathan M. 1974. Essentials of Foods and Nutrition. Vol. II. Ganesh & Co.

Session: 2025-26			
Part A - Introduction			
Subject	Bachelor of Vocation in Food Science and Quality Control		
Semester	VI		
Name of the Course	Food Logistics and Supply Chain Management		
Course Code	**B23-FTQ-603**		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC-C6		
Level of the course (As per Annexure-I	300-399		
Pre-requisite for the course (if any)	Senior Secondary(10+2)		
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1. Explain the concept of food supply chain 2. Understand about food sourcing and procurement 3. Know about latest trends in food supply chain 4. Understand the challenges faced in food supply chain _____ 5*. Gain practical knowledge about packaging, labeling and food safety		
Credits	**Theory**	**Practical**	**Total**
	3	**1**	**4**
Contact Hours	**3**	**2**	**5**
Max. Marks:100 **Internal Assessment Marks:20(T)+10(P)=30** **End Term Exam Marks:50(T)+20(P)=70**		**Time:3hrs (T)** **4hrs(P)**	

Part B- Contents of the Course

Instructions for Paper- Setter: The examiner will set nine questions in all, selecting two questions from each unit and one compulsory.
Instructions for the Candidate: The candidates will attempt five questions in all, selecting one question from each unit and the compulsory question as well.

Unit	Topics	Contact Hours

I	**Introduction and Overview:** Food Supply Chains & Food Logistics, Evolution of F o o d S upply C hain, Relationship Between Food & Economy, Factors in Food Supply Chain(FSC)–Producers, Processors, Retailers & Distributors, Consumers; Types of Food Supply Chains.	10
II	1. **Food Logistics:** Movement of Food, Packaging in Logistics, Temperature Controlled Supply Chains. 2. **Food Sourcing and Procurements:** Sourcing- Low-cost sourcing, Outsourcing, In-sourcing,Singlesourcing,Multiplesourcing,Partnerships,Procurement(Purchase)-SupplierSegmentation,SustainableProcurement	12
III	1. **Risk Management:** Risks of Logistics and Supply chain Management in Food Industry. 2. **Technology Trends in Food Supply Chain:** Traceability and Use of Technology- Traceability, Bar-coding,e-Procurement,FoodRegulations&Safety-MinimumQualityStandards.	11
IV	1. **Sustainability & Future Challenges:** Attributes to consider when designing food supply chain-Perishability, Seasonality in Production. 2. **Sustainability Challenges in Food Supply Chain**: Developing Sustainability within Food Supply Chains-Production, Processing, Logistics & Retail Logistics Infrastructure Food Cluster & Enterprise Zone, Food Parks & Hubs.	12
V*	• Infrastructure development for the food sector • Applications of Packaging in logistics • Market survey on Packaging material and labeling details • Food Safety - Minimum Quality Standards, Regulations & Standards • Innovations within food supply chains	30
Suggested Evaluation Methods		

Internal Assessment: ➢ **Theory** ● Class Participation: **05** ● Seminar/presentation/assignment/quiz/class test etc.:**0**5 ● Mid-Term Exam: **10** ➢ **Practicum** ● Class Participation: **00** ● Seminar/Demonstration/Viva-voce/Lab records etc.:**10** ● Mid-Term Exam: **NA**	**End Term Examination:** **50** **20**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. DaniS.,Food Supply Chain Management & Logistics (From Farm to Fork), Published by Kogan Page, NewDelhi.
2. HandfieldR.B.&NocholsE.L.(1999),IntroductiontoSupplyChainManagement,PrenticeHallPublications.
3. ChopraS.&MeindelP.(2002),SupplyChainManagement:Strategy,PlanningandOperation,Prentice Hall Publications.
4. EasthamJ.F.,SharplesL. &BallS.D. (2001), Food Supply Chain Management, Published by Butter worth Heinemann, NewDelhi.

<table>
<tr><td colspan="4">Session: 2025-26</td></tr>
<tr><td colspan="4">Part A - Introduction</td></tr>
<tr><td>Subject</td><td colspan="3">Bachelor of Vocation in Food Science and Quality Control</td></tr>
<tr><td>Semester</td><td colspan="3">VI</td></tr>
<tr><td>Name of the Course</td><td colspan="3">Entrepreneurship Development and Management</td></tr>
<tr><td>Course Code</td><td colspan="3">B23-FTQ-604</td></tr>
<tr><td>Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)</td><td colspan="3">CC-M6</td></tr>
<tr><td>Level of the course (As per Annexure-I</td><td colspan="3">300-399</td></tr>
<tr><td>Pre-requisite for the course (if any)</td><td colspan="3">Senior Secondary(10+2)</td></tr>
<tr><td>Course Learning Outcomes(CLO):</td><td colspan="3">After completing this course, the learner will be able to:
1. Gain knowledge about concept of a successful entrepreneur
2. Explain about the challenges in entrepreneurial process
3. Know about the Financial Institutions and Small scale Industries
4. Understand about the latest trends and legal aspects of small scale business
5*. Gain practical knowledge about TQM and economic analysis and profitability analysis of food plant</td></tr>
<tr><td rowspan="2">Credits</td><td>Theory</td><td>Practical</td><td>Total</td></tr>
<tr><td>3</td><td>1</td><td>4</td></tr>
<tr><td>Contact Hours</td><td>3</td><td>2</td><td>5</td></tr>
<tr><td colspan="2">Max. Marks:100
Internal Assessment Marks:20(T)+10(P)=30
End Term Exam Marks:50(T)+20(P)=70</td><td colspan="2">Time:3hrs (T)
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<tr><td colspan="4">Part B- Contents of the Course</td></tr>
<tr><td colspan="4"><u>Instructions for Paper- Setter:</u> The examiner will set nine questions in all, selecting two questions from each unit and one compulsory.
<u>Instructions for the Candidate:</u> The candidates will attempt five questions in all, selecting one question from each unit and the compulsory question as well.</td></tr>
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Unit	Topics	Contact Hours
I	1. **Entrepreneurship**: Definition of Entrepreneur, Internal and External Factors, Classification of entrepreneurs; Characteristic of successful entrepreneurs; Entrepreneurial motivation and Barriers. 2. **Concept of Entrepreneurship:** Concept & Theory of Entrepreneurship, Development of entrepreneurship	10
II	1. **Creativity and Entrepreneurial Plan**: Idea Generation, Screening and Project Identification, Creative Performance 2. **Project Planning**: Evaluation, Monitoring and Control segmentation. 3. **Institutional support for New Food Ventures:** Supporting Organizations; Incentives and facilities; Financial Institutions and Small scale Industries, Govt. Policies for SSIs.	11
III	1. **Managerial aspects of small Business**: Definition, Principles and Functions of Management, Marketing techniques, Personnel and Inventory Management. 2. **Trends in Entrepreneurship**: Rural, Social and women entrepreneurship; Family businesses; Entrepreneurship Education and Research: Need, Obstacles, Opportunities and Developments.	12
IV	1. **Production management**: Plant Location and Layout, Production Planning and Control, Marketing Challenges and Approaches for New Products and Services. 2. **Agricultural food processing industry :** Problems and Opportunities, Standard related to food industry 3. **Legal Aspects of small Business:** Elementary Knowledge income tax, sales tax, excise rules, factory act and payment of wages act.	12
V*	• Overview of present status of food industries in India • Overview of management databases • Market Survey, Consumer survey to identify new products	30

	• Layout for different types of food industries. • Data collection of materials and processes. • To study the essential elements of TQM.	
Suggested Evaluation Methods		
Internal Assessment: ➢ **Theory** ● Class Participation: **05** ● Seminar/presentation/assignment/quiz/class test etc.:**0**5 ● Mid-Term Exam: **10** ➢ **Practicum** ● Class Participation: **00** ● Seminar/Demonstration/Viva-voce/Lab records etc.:**10** ● Mid-Term Exam: **NA**		**End Term Examination:** **50** **20**
Part C-Learning Resources		
Recommended Books/e-resources/LMS: 1. Holt(1990)Entrepreneurship, New Venture Creation,Prentice-Hall 2. DollingerMJ(1999) Entrepreneurship,Prentice-Hall 3. SinghB.P., Management Concepts &Practices, DhanpatRai&sons,NaiSarak,Delhi. 4. Naidu NVR and KrishnaRaoT(2009).ManagementandEntreneurship,I.K.InternationalPvt.Ltd. 5. DwivediR.S. Management–An Integrated Approach, National Publishing Co.,Delhi.		