

**VFP6G17TB - Unit Operations in Food Industry
(GENERAL COURSE - 17)
Semester VI**

Total Credits: 4

Total Lecture Hours: 60 (4 Hours/ Week)

Aim of the course: To provide in-depth knowledge in basic concepts of various unit operations in a food industry.

Course Overview and Context

- ☐ To understand the different operations performed in food industry
- ☐ To know details of working of different equipments

Content

MODULE	CONTENT	LECTURE
1	Heat Transfer in Food Processing- Modes of heat transfer-conduction, convection and radiation- heat exchangers- plate heat exchanger-tubular heat-scraped surface heat exchanger.	10
2	Evaporation-Basic principle, need for evaporation, single effect, multiple effect, heat economy, type of evaporator-long tube, short tube, agitated film evaporator.	10
3	Distillation and crystallization- Simple distillation, flash distillation, steam distillation, fractional distillation Crystallisation -theory, tank crystallizer and scraped surface crystallizer.	15

4	Extraction and extrusion-Solid Liquid extraction-leaching, Liquid-Liquid extraction, Super critical fluid extraction, single screw extruder, twin screw extruder	15
5	Mechanical separation and material handling-Sedimentation, Centrifugal separation, filtration, Mixing, Material handling-Belt conveyor, Screw Conveyor, bucket elevator and pneumatic conveyor.	10

Learning Resources

References

1. Y.H.Hui, (2005), "Handbook of Food Science, Technology and Engineering" (vol.1-4), Marcel Dekker Publishers.
2. M.A.Rao, S.S.H.Rizvi and A.K.Dutta, (2005), "Engineering properties of Foods", 3rd ed., Marcel Dekker Publishers.
3. H.Pandey, H.K. Sharma, R.C.Chouhan, B.C. Sarkar and M.C. Bera, (2004), "Experiments in Food Process Engineering", CBS Publishers and Distributors.
4. R.P.Singh and D.R.Heldman, (2001), "Introduction to Food Engineering", 3rd ed., Academic Press.
5. S.K.Sharma, S.J.Mulvaney and S.S.H.Rizvi, (2000), "Food Process Engineering: Theory and Laboratory Experiments", Wiley and Sons Publishers.

**VFP6G18TB - Food Quality Assurance
(GENERAL COURSE - 18)
Semester VI**

Total Credits: 4

Total Lecture Hours: 60 (4 Hours/ Week)

Aim of the course: To acquaint with food quality parameters and control systems, food standards, regulations, specifications.

Course Overview and Context

- ☐ To understand the principles and framework of food safety.
- ☐ To understand food laws and regulations governing the quality of foods.
- ☐ To apply preventive measures and control methods to minimize microbiological hazards and maintain quality of foods.
- ☐ To identify the wide variety of parameters affecting food quality.
- ☐ To understand about Intellectual property rights.

Content

MODULE	CONTENT	LECTURE
1	Concept of quality-Quality attributes-physical, chemical, nutritional, microbial, and sensory; their measurement and evaluation; Sensory vis-à-vis instrumental methods for testing quality.	10
2	Concepts of quality management-Objectives, importance and functions of quality control, Quality management systems in India, Sampling procedures and plans, Food Safety and Standards Act, 2006, Domestic regulations, Global Food safety Initiative, Various organizations dealing with inspection, traceability and authentication, certification and quality assurance -PFA, FPO, MMPO, MPO, AGMARK, BIS; Labeling issues, International food standards.	15

3	HACCP system-Hazard analysis Critical Control Point: Definition, principles, Guidelines for the application of HACCP system.	10
4	Food Quality Laws and Regulations-Quality assurance, Total Quality Management, GMP/GHP, GLP, GAP, Sanitary and hygienic practices, HACCP, Quality manuals,documentation and audits; Indian & International quality systems and standards like ISO and Food Codex, Export import policy, export documentation, Laboratory quality procedures and assessment of laboratory performance, Applications in different food industries, Food adulteration and food safety.	15
5	Intellectual Property Rights- IPR – Introduction, History in India, Laws related to IPR, Copyright, patent, trademark, designs, geographical indications of food, World Intellectual Property Organization (WIPO), Commercialization of Intellectual Property Rights (IPR), important websites.	10

Reference Books

1. Yong-Jin Cho, Sukwon Kang.(2011), “Emerging Technologies for Food Quality and Food Safety Evaluation” ,CRC Press.
2. Alli Inteaz, (2003), “Food Quality Assurance: Principles and Practices”, CRC Press.
3. Vasconcellos J. Andres, (2003), “Quality Assurance for the Food Industry: A Practical Approach”,CRC Press.

**VFP6G19TB - Emerging Technologies in Food Industry
(GENERAL COURSE - 19)
Semester VI**

Total Credits: 4

Total Lecture Hours: 60 (4 Hours/ Week)

Aim of the course: To understand about new developments in food industry and to impart knowledge about the importance and applications of the technology.

Course Overview and Context

- ☐ To enable the student to understand: Emerging / alternative technologies applied to food processing.
- ☐ Relative advantages / disadvantages over existing technologies.
- ☐ Economics and commercialization of newer technologies.

Content

MODULE	CONTENT	LECTURE
1	Membrane separation process-Membrane Technology-process- Micro-filtration, Ultra-filtration, Nano-filtration and Reverse Osmosis-advantages-equipment	10
2	High pressure processing and microwave heating-Microwave heating of foods- Mechanism of Heat Generation-Working of microwave oven,High Pressure processing: Concept-Equipment for HPP Treatment-Mechanism of Microbial Inactivation and its Application in Food	15
3	Irradiation and PEF and ohmic heating- Pulsed electric field – equipment – mechanism of PEF-advantages, Ohmic heating of foods- mechanism- principle-advantages, applications	15

4	Osmotic dehydration of foods-Principle – Mechanism of osmotic dehydration – Effect of process parameters on mass transfer – Methods to increase the rate of mass transfer – Applications – Limitations of osmotic dehydration	10
5	Nanotechnology and antimicrobial technology-Role of Antimicrobial agents in food –Plant and animal derived antimicrobials – Antimicrobial enzymes, antimicrobial food packaging, nanotechnology-application of nanotechnology in food industry	10

Learning Resources

Reference Books

1. Leistner L. and Gould G. Hurdle Technologies – Combination treatments for food stability safety and quality, Kluwer Academics / Plenum Publishers, New York (2002)
2. Novel Food Processing Technologies(Food Science and Technology Series) by Gustavo V. Barbosa-Canovas, Maria S. Tapia, M. Soledad Tapia, M. Pilar Cano, Publisher: CRC Press, November 2004, ISBN-13: 9780824753337,
3. P Richardson (2001), “Thermal Technologies in Food Processing”, Campden and Chorleywood Food Research Association, UK, Woodhead Publishing Limited.

VFP6S16PB – Food Service Management
(SKILL COURSE - 16)
Semester VI

Total Credits: 6

Total Lecture Hours: 90 (6 Hours/ Week)

Aim of the course: To understand the functioning of food service establishments. And to acquire knowledge about the services that should be given by a food service establishment.

Course Overview and Context

- ☐ To understand the organisation of food service establishments
- ☐ To understand the management of human, material and financial resources.
- ☐ To be familiar with various concepts involved in quantity and quality food production and service.
- ☐ To understand the need for efficient personnel management in the food industry.

Content

MODULE	CONTENT	LECTURE
1	Introduction to Food Service Establishments-Types of food service establishments. Planning for a food service unit- Planning, investment, Project report, Registration (License and Inspection).	15
2	Menu Planning and table setting-Menu Planning- importance, types, steps in planning. Requisites in designing a menu card, Methods of purchase, delivery, receiving, storage types. Table Setting and Arrangement - Indian and Western Styles of Table Setting.	25

3	Food Service and Delivery system- Centralized and decentralized delivery systems, types of food service systems conventional, commissary, ready prepared, assembly, service styles - table, counter, tray, silver, plate, cafeteria, buffet. Specialized forms of food service - hospitals, airline, rail, homedelivery, catering and banquet, room and lounge service.	20
4	Food Service Management-Managing an organization, Process involved, Principles of management, Functions of management- planning, organizing, directing, co-ordinating, evaluating, and controlling. Total quality management	20
5	Accounting-Book keeping, books of accounts, Journal, Ledger, trial balance, balance sheet. profit analysis, food cost control.	10

Learning Resources

Reference Books

1. Arora, (2007), “Food Service And Catering Management” APH Publishing.
2. Wentz Bill, (2007), “Food Service Management”, Atlantic Publishing Company.
3. Malhotra, R. K.(2002), “Food Service and catering Management” ,Anmol Publication Pvt Ltd.

**VFP6S17PB – Personality Development
(SKILL COURSE - 17)
Semester VI**

Total Credits: 6

Total Lecture Hours: 90 (6 Hours/ Week)

Aim of the course: To understand the strategies for the personality development and to improve the personality of the employees upon organizational effectiveness.

Course Overview and Context

□ To bring about personality development with regard to the different behavioural dimensions.

Content

MODULE	CONTENT	LECTURE
1	Leadership-Introduction to Leadership, Leadership Power, Leadership Styles, Leadership in administration	18
2	Interpersonal Relations-Introduction to Interpersonal Relations, Analysis of different ego states, Analysis of Transactions, Analysis of Strokes, Analysis of Life position	18
3	Stress and Conflict Management-Introduction to Stress, Causes of Stress, Impact Stress, Managing Stress. Conflict: Introduction to Conflict, Causes of Conflict	18
4	Time Management-Time as a Resource, Identify Important Time Management Wasters, Individual Time Management Styles, Techniques for better Time Management.	18
5	Motivation-Introduction to Motivation, Relevance and types of Motivation, Motivating the subordinates, Analysis of Motivation	18

**VFP6S18PB – Industrial Experience
(SKILL COURSE - 18)
Semester VI**

Total Credits: 6

Aim of the course: To understand the strategies for the setup and running of food industry.

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Course Overview and Context

☐ To bring about knowledge needed in food industry & requirements for setup of new food industry.