

by metering-FFS system, piston type filler, metering cup filler, filling of pastes, filling of powders; aseptic filling of pouches and bottles.

Nanotechnology and its applications in food industry; Basics of food plant design and layout; Plant utilities.

Practical

Preparation of flow charts for different food processing industries; Study of different parts of retort and canning process; Study of different types of evaporators and multiple effect evaporation system; Study of drum dryer and spray dryer and comparison of product qualities; Study of different types of mixers for solids and liquids; determination of mixing effectiveness and mixing index; Study of settling and sedimentation process in a tank; Study of different types of filters; Study of membrane modules and different types of membranes; Study of measurement of different properties of milk and milk products; Study of milk pasteurizer, sterilizer and homogenizer; Study on preparation of cream and butter; Study of preparation of cheese, paneer and ice cream; Study of different types of packaging materials; Study of different types of filling machines for liquids and powder/ granules; Study of layout of a food processing plant; Visit to food processing industries and dairy plants to study the plant layout and unit operations.

Suggested Readings

1. Ahmed, T. 1997. *Dairy Plant Engineering and Management*. Kitab Mahal.
2. Dash, S. K., Chandra, P. and Kar, A. 2024. *Food Engineering Principles and Practice*. CRC Press, Boca Raton, USA
3. McCabe, W. L., Smith, J. C. and Harriott. 1999. *Unit Operations of Chemical Engineering*. McGraw Hill.
4. Rao, D. G. 2009. *Fundamentals of Food Engineering*. PHI learning Pvt. Ltd, New Delhi.
5. Singh, R. P. and Heldman, D. R. 1993. *Introduction to Food Engineering*. Academic Press.
6. Toledo, R. T. 1997. *Fundamentals of Food Process Engineering*. CBS Publishers

Personality Development

2 (1+1)

Objective

To make students realize their potential strengths, cultivate their inter-personal skills and improve employability

Theory

Personality definition, Nature of personality, theories of personality and its types. The humanistic approach - Maslow's self-actualization theory, shaping of personality, determinants of personality, Myers-Briggs Typology Indicator, Locus of control and performance, Type A and Type B Behaviours, personality and Organizational Behaviour.

Foundations of individual behavior and factors influencing individual behavior, Models of individual behavior, Perception and attributes and factors affecting perception, Attribution theory and case studies on Perception and Attribution. Learning: Meaning and definition, theories and principles of learning, Learning and organizational behavior, Learning and training, learning feedback.

Attitude and values, Intelligence- types of Intelligence, theories of intelligence, measurements of intelligence, factors influencing intelligence, intelligence and Organizational behavior, emotional intelligence. Motivation- theories and principles, Teamwork and group dynamics.

Practical

MBTI personality analysis, Learning Styles and Strategies, Motivational needs, Firo-B, Interpersonal Communication, Teamwork and team building, Group Dynamics, Win-win game, Conflict Management, Leadership styles, Case studies on Personality and Organizational Behavior.

Suggested reading

1. Andrews, Sudhir. 1988. *How to Succeed at Interviews*. Tata McGraw-Hill.
2. Heller, Robert. 2002. *Effective Leadership. Essential Manager series*. Dk Publishing.
3. Hindle, Tim. 2003. *Reducing Stress. Essential Manager series*. Dk Publishing.
4. Lucas, Stephen. 2001. *Art of Public Speaking*. New Delhi. Tata - Mc-Graw Hill.
5. Mile, D.J. 2004. *Power of Positive Thinking*. Delhi. Rohan Book Company.
6. Kumar, Pravesh. 2005. *All about Self- Motivation*. New Delhi. Goodwill Publishing House.
7. Smith, B. 2004. *Body Language*. Delhi: Rohan Book Company.
8. Shaffer, D. R. 2009. *Social and Personality Development (6th Edition)*. Belmont, CA: Wadsworth.

Seminar

1 (0+1)

Objective

1. To enable students to improve their knowledge and understanding of a topic
2. To develop confidence and competence to identify and compare technical and practical issues related to the area of course specialization and to present it before a group of people

Practical

The student will be assigned to present on a technical and practical issue or on an emerging field. The activities should include establishing motivation for any topic of interest and develop a thought process for technical presentation, conduct a detailed literature survey and to build a document with respect to technical publications, analysis and comprehension of proof-of-concept and related data, and effective presentation with improved soft skills. It should also involve use of new and recent technologies for creating technical reports and presentation. The evaluation shall be based on the ability of the student to describe, interpret and analyze technical issues and competence in presenting.

Study tour

2 (0+2) NG

The study tour will be of 10-14 days duration within the 5th semester.

The students will visit industries/ institutions, preferably outside the state, so that, in addition to visiting the organisations/ industries (related to the profession), they will also be exposed to the geographical, social, socio-economic and cultural diversity of different places/ states. After the visit, the students will submit a report/ make a presentation.