



**MANGALORE UNIVERSITY**  
**DEPARTMENT OF BIOSCIENCES**  
**MSc Food Science & Nutrition**

**FNS 504 PRINCIPLES OF FOOD PROCESSING**

**39 Hrs (13× 3 units)**

**Course outcome**

- Describe the basic operation in food processing.
- Write down the principles of cold processing of foods and irradiation
- Identify the Basic principles of thermal processing.
- Understand the concept of Controlled atmosphere packaging
- Identify the interaction between packaging material and food

**Unit I:** Basic operation in food processing: Mixing, stirring, cooling, separation, evaporation, forming/moulding, processing of extruded products, rendering, refining, tempering, thawing, canning. Basic principles of cold processing of foods and irradiation: Refrigeration, freezing of foods, initial freezing point, freezing curve, changes during the freezing, rate of freezing, damage from intermittent thawing, factors affecting the freezing rate, freezer burn. Irradiation of foods – methods, safety aspects, regulations, food selection.

**Unit II:** Basic principles of thermal processing: Thermal food processing, canning, steps and process, heat penetration into cans, cold point in food mass, determination of process time, thermal death time determination, TDT curve. Heating food in containers, hydrostatic cooker or cooler, hot pack and hot fill, inoculated pack studies.

**Unit III:** Basic principles of post food processing operation: Controlled atmosphere, MAP (Modified atmospheric packaging), coating and enrobing, packaging materials specially designed for processed foods, advantages and disadvantages. Interaction between packaging material and food, aseptic processing and aseptic packaging.

**REFERENCES**

1. Fabriani, G and Lintas C (1988) Durum Wheat Chemistry and Technology, American Association of Cereals Chemistry Inc.
2. Kent N L (1993), Technology of Cereals., 4<sup>th</sup> ed, Pergamon Press
3. Olson, V M Shemwell G A and Pasch S (1988) Egg and Poultry, Meat Processing
4. Fellows P J (2002), Food Processing Technology- Principles and Practices, 2<sup>nd</sup> ed. Woodhead Publishing Ltd.
5. Potter N and Hotchkiss JH, Food Science, 5th Ed. AVI Book
6. Manay NS & Shadaksharaswamy 1997. Food facts and principles: New Age Publ.
7. Potty VH & Mulky MJ. 1993. Food processing, Oxford & IBH.
8. Srilakshmi B. 2002. Nutrition Science, New Age Publ.
9. Swaminathan MS. 1993. Food Science, New Age International
10. Ganesh, Food Science and Experimental Foods