



# MANGALORE UNIVERSITY

## DEPARTMENT OF BIOSCIENCES

### MSc Food Science & Nutrition

**FNS 503      RECENT TRENDS IN FOOD TECHNOLOGY      39 Hrs (13× 3 units)**

#### **Course outcome:**

- Describe the trends in food technology in food industries.
- Write down the applications of nanotechnology and role of Nano particles in agriculture and food processing, and also about nano packaging and intelligent packaging..
- Write down the usage of various advanced instruments in non-thermal processing which helps them to understand the advances in food industry.
- Describe the trends in food packaging by modifying the packaging atmosphere.
- Describe knowledge of the advancement in food industry.

#### **Unit I: Nanotechnology**

Nano particles, role of nano particles in agriculture (pesticides), processing (drinking water purification), functional classification and examples – nano-barriers, nano-antimicrobials, nano-sensors, nano-foods (flavorings, emulsion, viscosifiers and preservatives), nano packaging materials in improved packaging, active packaging and intelligent packaging. Current scenario and acceptance.

#### **Unit II: Trends in packaging**

Plastics and polymers, tetra packaging, retort pouch processing, aseptic packaging, modified atmosphere packaging, smart packing: active packaging (oxygen scavengers, ethylene scavengers, carbon dioxide emitters, moisture controllers, light absorbers, odor removers, antimicrobials and antioxidants) and intelligent packaging (time-temperature indicators, oxygen indicators, carbon dioxide indicators, microbial growth indicators, pathogen indicators), edible films and coatings, ethanol vapor generators.

#### **Unit III: Non Thermal Processing**

High Pressure Processing (HPP), Use of gases (ozone, chlorine dioxide, cold plasma), Light (UV, pulsed light), Use of chemicals (chlorine, surfactants) and ionized radiation

(gamma radiation, electron beam), benefits of non thermal processing over thermal processing.

### References:

- Braun D., Cherdrón H., Rehahn M., Ritter H. and Voit B. (2005), Ed: 4, Springer Berlin, Heidelberg Newyork, Polymer Synthesis: Theory and Practice.
- Howard Q. Zhang, Gustavo V. Barbosa-Canovas, V. M. Bala Subramaniam, C. Patrick Dunne, Daniel F. Farkas and James T. C. Yuan (2011), Wiley-Blackwell, Nonthermal Processing Technologies for Food.
- Raija Ahvenainen (2003), CRC Press, Woodhead Publishing Limited, Cambridge London, Novel Food Packaging Techniques.
- Richard Coles, Dereck McDowell and Mark J. Kirwan (2003), CRC Press, Blackwell Publishing, Food Packaging Technology.

