

## **IBT-926 PROBIOTICS, PREBIOTICS AND FUNCTIONAL FOODS 3-0 CHs**

### **Educational Objectives**

1. The proposed course is intended to provide an introduction to probiotics and their importance in producing value added food products. The course aims to produce graduates who can understand the concepts of probiotics and functional foods and their role in human health which is equally beneficial for both research and industry.

### **Course Outcomes**

2. After the completion of this course students will be able to understand the concepts of Probiotics, prebiotics and their applications to produce value added products for food, pharmaceuticals and health sector. They will be able to understand the limitations and challenges for their applications and would be able to rationalize the strategies to overcome such issues.

### **3. Course Contents**

- Introduction: Prebiotics, Probiotics and Functional foods
- Definitions, Background and historical perspectives
- Origin and sources of probiotic bacteria
- Nutrient components of foods
- Health claims associated to probiotic and functional foods
- Pre-requisites of a probiotic candidate
- Features regarded as probiotic?
- Stress defying mechanisms
- Cell surface properties
- Immuno-modulation
- Safety concerns of probiotics
- Pathogenicity
- Expert committee report and regulation of probiotics

- Safety evaluation
- Probiotic, prebiotics and health claims
- GIT related disorders
- Cancer
- Allergies
- H. pylori infection
- Metabolic disorders
- Validation of probiotic claims
- In vitro models to assess the probiotic potential
- In vivo studies and implications
- Industrial applications of probiotic bacteria
- Probiotic rescue
- Applications of probiotics in food industry
- Probiotics for livestock
- Probiotics for pisci-culture
- Probiotics for biomedical industry
- Challenges in Probiotic applications
- Issues in probiotic applications
- Delivery of viable probios
- Concept of probioactive
- Next generation probiotics
- Prebiotics
- Symbiotic
- Encapsulation of probiotics
- Prebiotics
- Sources of Prebiotics
- Low molecular weight fructans
- Inulin and oligosaccharides: A special focus on human studies
- Galactodisaccharides
- Functional Disaccharides
- Functional foods

- Classification of functional foods
- Milk and milk products
- Fruits and vegetables
- Soybean
- Probiotics as functional foods
- New Frontier in functional food processing
- Synthesis of GABA enriched dairy products by Lactic acid bacteria
- Production of high quality probiotics by using novel fermentation and stabilization technologies
- The application of nanotechnology to functional foods and nutraceuticals

#### 4. **Recommended Books**

- a. Handbook of prebiotics and probiotics ingredients health benefits and food applications, CRC press, Taylor and Francis group. 2010
- b. Probiotics and Health Claims, Blackwell Publishing Ltd, 2012
- c. Application of Biotechnology for Functional Foods, Michael Fernandez. Pew Initiative on Food and Biotechnology, 2007