

<b>Semester</b>	7 and 8		
<b>Course Code:</b>	MIBI 41804		
<b>Course Name:</b>	Food Technology and Nutrition		
<b>Credit Value:</b>	4		
<b>Core/Optional</b>	Core		
<b>Hourly Breakdown</b>	Theory	Practical	Independent Learning
	60 hrs	-	140 hrs
<b>Course Aim/Intended Learning Outcomes:</b>			
Upon successful completion of this course student will be able to;			
<ul style="list-style-type: none"> <li>Describe heat transfer and psychrometry to pasteurization, canning, dehydration, concentration and extrusion processes,</li> <li>Assess how palatability and nutrient retention may be optimized without compromising microbiological safety of food products,</li> <li>Compare the variety of packaging materials available in relation to product requirements</li> <li>Explain the importance of balance diet to have optimal energy and nutrient intake to ensure good health and excellence in quality of life,</li> <li>Use RDA tables (WHO/MRI) -energy requirement, food composition tables- energy values of food</li> <li>Understand the variations of nutritional requirements throughout the lifecycle,</li> <li>Describe basis of nutritional disorders,</li> <li>Understand the relationships between diet and non- communicable diseases (NCD),</li> <li>Apply the knowledge on diet in the management of NCD and</li> <li>Describe the effect of food processing procedures on quality and nutritive value of food and the ways to maintain the quality and minimize the nutritional losses through processing.</li> </ul>			
<b>Course Content:</b>			
<b>Food Technology:</b>			
Application of genetics to food production. Impact of food biotechnology on food and nutrition. Fluid flow dynamics. Heat processing: introduction, heat transfer mechanisms, calculations relation to pasteurization, and sterilization, canning, aseptic and high pressure process, concentration, extrusion and safety. Food packaging. Food additives and their effect on microorganisms, natural toxicants in food products, mycotoxins, Food contaminants, Toxic products formed on cooking and processing. Chill/ambient storage of food products, Freezing and frozen storage. Packaging of foods, microbiology of packaging materials.			
<b>Nutrition:</b>			
<i>Energy value of food:</i> Energy Requirement, Energy zero balance, Energy (+) ve balance, Energy (-) ve balance, Malnutrition, Over-nutrition, Under-nutrition, Basal metabolic Rate (BMR), Determination of Energy (BMR), Factors affecting BMR, Recommended dietary allowance (RDA) for different Individuals- Infants, children, pregnant and lactation mothers, adults, RDA tables (WHO/MRI) -energy requirement, food composition tables- energy values of food, nutritional requirements vary throughout the lifecycle. <i>Basis of nutritional disorders:</i> Protein Energy Malnutrition – Kwashiorkor, marasmus and micronutrient deficiencies.			
<i>Non-communicable diseases (NCD):</i> obesity, diabetes mellitus, hypertension, thyroid diseases, liver cirrhosis, cancers, cardiovascular disorders, Relationships between diet and non-communicable diseases (NCD). Dietary determinants of NCD; tobacco, alcohol, low fruit and vegetable intake, physical inactivity, high blood pressure, high cholesterol, Dietary management for NCD.			
<i>Effect of food processes on nutrients:</i> Effect of food processing procedures on quality and nutritive value of food. Maintaining the quality and minimize the nutritional losses. <i>Physical, biochemical and microbial changes of food due to processing:</i> Changes in carbohydrates (starches), Proteins and fats, Deep-frying, Trans fatty acids, Changes of lipids with storage.			
<b>Teaching /Learning Methods:</b>			
Combination of lectures, assignments, group presentations, and research paper discussions			
<b>Assessment Strategy:</b> End of the course unit examination.			
<b>Continuous Assessment</b>		<b>Final Assessment</b>	
0%		100%	
Details: N/A		Theory (%)	Practical (%) Other (%)

	100	-	-
<b>Recommended Reading:</b> <ul style="list-style-type: none"><li>• Potter, N. N. and Hotchkiss, J.H. (1995) <i>Food Science</i>. 5<sup>th</sup> edition. Springer US.</li><li>• Nielsen, S. (2017) <i>Food Analysis</i>. 5<sup>th</sup> Ed. Springer International Publishing.</li><li>• Nielsen, S. (2017) <i>Food Analysis Laboratory Manual</i>. 3<sup>rd</sup> Ed. Springer International Publishing.</li><li>• Hill, T.R., Gallagher, A.M. and Vorster, H.H. (2019) <i>Introduction to Human Nutrition</i>. 3<sup>rd</sup> Ed. Wiley Blackwell.</li></ul>			