1. **FST 1103 PRINCIPLES OF HUMAN NUTRITION**
2. *COURSE INSTRUCTOR (s)*

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1. *COURSE TYPE*

*Core course for Year 1 BSc. Food Science & Technology and Year 1 BSc Human Nutrition*

1. *COURSE STRUCTURE*

*Course is 3 credit units (3 CU): 2 lecture hours and 2 practical hours per week for 15 study weeks; [i.e. 30 lecture hours & 30 practical hours equivalent to 45 contact hours].*

1. *COURSE DESCRIPTION*

*Introduction to nutrients, their food sources, metabolism and importance in human health. Also provide an overview of the nutritional needs at different life stages; dietary guidelines; and the relationships among food, nutrition, and health. Students also are introduced to diet analysis strategies and assessment of nutritional status.*

1. *COURSE OBJECTIVES*

***General Objectives***

1. *At an introductory level, have an understanding of principles of nutrition including the roles, metabolism, requirements, and sources of nutrients*
2. *At an introductory level, have an understanding of how nutritional needs change throughout the lifespan and during stress and exercise.*

***Specific objectives***

1. *Describe the major global issues related to food and nutrition.*
2. *Describe current health promotion strategies and dietary guidelines*
3. *Demonstrate the ability to use diet analysis programs to determine nutrient intake.*
4. *Develop skills to conduct simple nutrition assessments to determine risk for undernutrition and overnutrition.*
5. *Be able to answer questions concerning the effect of socioeconomic, psychological, and cultural factors on food intake.*
6. *Be able to discuss hunger and global environmental and problems related to food and nutrition.*
7. *RECOMMENEDED REFERENCES*
	1. ***Nutrition Concepts and Controversies,*** *10th Edition by F. Sizer & E. Whitney. Published by Thomson Learning, Inc*
	2. ***Understanding Nutrition****, 11th Edition by E. Whitney and Sharon R Rolfes Published by Thomson Learning, Inc*
	3. ***Human Nutrition and Dietetics.*** *J. S. Garrow, W.P.T. James and A. (Eds) Churchill Livingstone. 10th Edition.*
	4. ***Vitamins and Mineral Requirements in Human Nutrition.*** *WHO/FAO (2004) Second Edition.*
8. *COURSE CONTENT, METHODS OF INSTRUCTION, TOOLS AND*

*EQUIPMENT*

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| ***TOPIC*** | ***CONTENT*** | ***METHOD OF INSTRUCTION/ Time allocation******(i.e. contact hours)*** | ***TOOLS/ Equipment needed*** |
| 1. *Food consumption and nutrition assessment*
 | * *Factors that influence food choices*
* *Ways to determine nutritional status of individuals – anthropometry; biochemical indicators of iron, vitamin A, iodine, and zinc; reliability of clinical assessments; common dietary assessment methods*
 | *-Interactive lectures* *(2 hr)* *-Reading*  *(2 hrs) – Family tree* | *LCD projector/ White boards*  |
| 1. *Carbohydrates*
 | * *Role of starches and fibre in food and human nutrition*
* *Digestion, absorption, and metabolism of each*
* *Problems in carbohydrate metabolism (diabetes mellitus)*
* *Food processing, fibre and health*
 | *- Interactive lecture* *(2 hrs)**-Reading assignment – Fiber and food labelling* | *LCD projector/ White boards*  |
| 1. *Lipids*
 | * *Overview of functions of triglycerides, sterols, and phospholipids important in food and human nutrition*
* *Digestion, absorption, and metabolism of each*
* *Essential fatty acids – sources and importance in health*
* *Lipids in overweight and obesity*
* *Problems of lipid deficiency and over-consumption*
 | *-Interactive lectures* *(2 hr)* *-Assignments*  *(2 hrs) – fat in foods* | *LCD projector/ White boards* *Food/fat samples* |
| 1. *Protein*
 | * *Digestion, absorption, and metabolism*
* *Essential amino acids*
* *Complementation*
* *Factors influencing bioavailability*
* *Indicators of deficiency and toxicity*
* *Protein energy malnutrition and kwashiorkor*
* *Interventions to improve nutriture*
 | *- Interactive lectures* *(2 hrs)**- Lab practical (6 hrs)**-Assignment – Management of protein and energy malnutrition*  | *LCD projector/ White boards / Flip charts/ Materials*  |
| 1. *Energy balance*
 | * *Overview of metabolism both macro and micronutrients*
 | *- Interactive lectures* *(2 hrs)**- Assignment (2 hrs) – Diet analysis* | *LCD projector/ White boards/flip charts* |
| 1. *Evaluation*
 | *Mid semester evaluation* | *2 hour exam* | *Answer booklets and timer* |
| 1. *Water-soluble vitamins*
 | * *Overview of functions and food sources*
* *Factors influencing bioavailability*
* *Who is at risk for deficiency*
* *Indicators of deficiency and toxicity*
* *Dietary recommendations*
* *Interventions to improve nutriture*
 | *-Interactive lecture* *(2 hr)* *-Assignment (2 hrs) – vitamins in food*  | *LCD projector/ White boards* |
| 1. *Fat-soluble vitamins*
 | * *Role in metabolism of macronutrients*
* *Overview of functions and food sources*
* *Who is at risk for deficiency*

*(especially folic acid and B-12)** *Factors influencing bioavailability*
* *Dietary recommendations*
* *Indicators of deficiency and toxicity*
* *Interventions to improve nutriture*
 | *-Interactive lectures* *(2 hrs)* *-Assignment (2 hrs) – vitamins in food*  | *LCD projector/ White Board/ Flip charts/ Materials and reagents* |
| 1. *Water and electrolytes*
 | * *Overview of functions water*
* *Health implications of dehydration and water toxicity*
* *Water and electrolytes on the market*
 | *-Interactive lectures* *(2 hrs)* *-Assignment (2 hrs) – mineral in food*  | *LCD projector/ White boards / Flip charts* |
| 1. *Minerals in nutrition*
 | * *Overview of functions and food sources of essential minerals*
* *Factors influencing bioavailability*
* *Indicators of deficiency and toxicity*
* *Dietary recommendations*
* *Interventions to improve nutriture*
 | *-Interactive lectures* *(2 hrs)* *-Assignment (2 hrs) – mineral in food*  | *LCD projector/ White boards / Flip charts* |
| 1. *Nutrient needs in lifecycle*
 | * *Address the special nutrient needs of:*
* *Pregnant and lactating women*
* *Infants and young children*
 | *-Interactive lectures* *(2hrs)* *--Assignment (2 hrs) – ENA*  | *LCD projector/ White boards / Flip charts* |
| 1. *Nutrient needs in lifecycle*
 | * *The school-age child*
* *Adolescents*
* *Older adults (65 yrs and older)*
 | *Interactive lectures* *(2hrs)* *-Assignment (2 hrs)-DETERMINE* | *LCD projector/ White boards / Flip charts* |
| 1. *Food, nutrition and health – Infectious diseases*
 | * *Overview of the relationships between nutrition and disease*
* *Role of nutrition in prevention and management of common infectious diseases such as HIV/AIDS and malaria*
 | *Interactive lectures* *(2 hrs)* *-Assignment* *- Diet adequacy (2 hrs)* | *LCD projector/ White boards / Flip charts* |
| 1. *Food, nutrition and health*
 | * *Role of nutrition in prevention and management of chronic diseases*
* *Energy balance, body weight and chronic diseases*
* *Rapid assessment of health risk*
 | *-Interactive lectures* *(2 hrs)* *-Assignment* *- Health risk (2 hrs)* | *LCD projector/ White boards / Flip charts* |
| 1. *World food and nutrition issues*
 | * *Overview of world hunger and malnutrition – who is affected*
* *Discuss factors influencing food production*
* *Overview of pillars of food security – availability, access (physical and economic), utilization*
* *Strategies to improve food security in country*
 | *Interactive lectures* *(2 hrs)**-Assignment (2 hrs) – Who is hungry* | *LCD projector/ White boards / Flip charts* |
|  | *Final evaluation* | *3 hours* |  |

1. *SUMMARY OF T IME NEEDED*
* *Lecture hours 30 hr*
* *Practicals 30 hr*
1. *OVERALL COURSE EVALUATION*
	* *Assignments 20%*
	* *Practicals, class attendance and participation 10%*
	* *Course tests 20%*
	* *Final exam 50%*