



JAI HIND COLLEGE
BASANTSING INSTITUTE OF SCIENCE
&
J.T.LALVANI COLLEGE OF COMMERCE
(AUTONOMOUS)

"A" Road, Churchgate, Mumbai - 400 020, India.

Affiliated to
University of Mumbai

Program: B.Sc.

Proposed Course: Biotechnology (Applied Component)

Nutrition and Dietetics

Semester-V

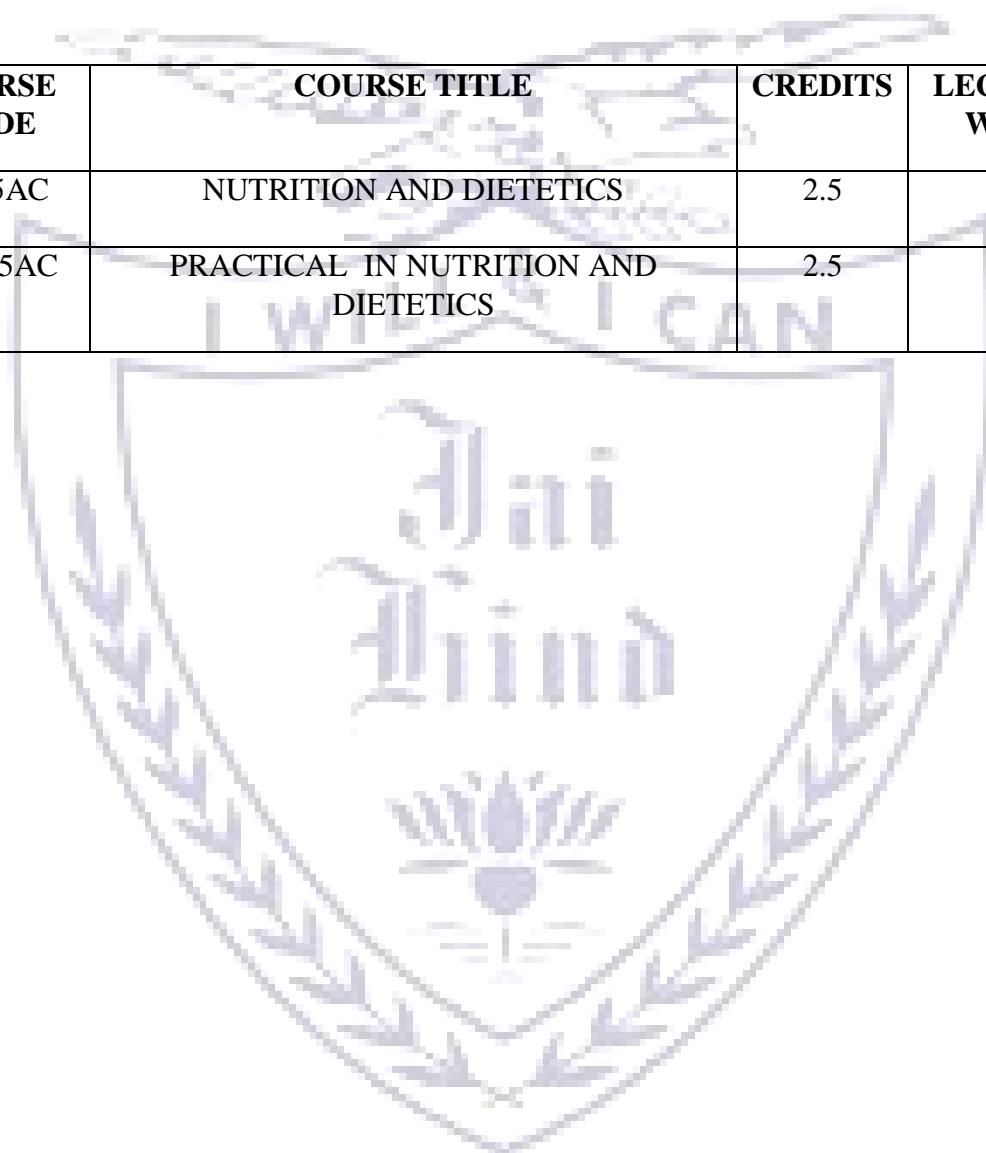
Credit Based Semester and Grading System (CBCS)

With effect from the academic year 2020-21

Semester V

Biotechnology Applied Component

COURSE CODE	COURSE TITLE	CREDITS	LECTURE/ WEEK
SBT5AC	NUTRITION AND DIETETICS	2.5	04
SBTP5AC	PRACTICAL IN NUTRITION AND DIETETICS	2.5	04



Course Code: SBT5AC	Course Title: Nutrition and Dietetics (APPLIED COMPONENT)	2.5 Credits
Learning Objectives	<ul style="list-style-type: none"> • To equip students with basic knowledge in the subjects of food science and its relation to health and well-being. • To enable students understand basic concepts related to various food groups, BMI, BMR, Balanced diets and fitness regimes. • To familiarize students with requirements for types of diet planning for different age groups. • To enable students understand meal planning in special conditions like pregnancy, diabetes, cancer and other such health conditions. • To provide students with an opportunity to conduct research in the field of Nutrition Science and its implications in human health. 	
Course description	<p>The Applied component paper specializing in Foods, Nutrition and Dietetics is designed to impart basic concepts, knowledge and skills which will benefit students at individual, social and community level. The student will gain a significant awareness about the different facets of food as we understand it in this modern world. Thus, the student will be equipped to make proper dietary choices according to the situation. This course will therefore help towards sensible decision making in case of career opportunities in the field of Nutrition and Dietetics as entrepreneur, in the medical field and food and fitness industry.</p>	
	THEORY	60 lectures
Sub Unit	Unit 1: Basic concepts in Human nutrition	15 lectures
1.	Nutrition for growth & development General aspects of Growth: Cellular and Physical Growth, Critical Periods of growth and development.	
2.	Epigenetic influence of nutrients on physical and Mental Growth and Development Human Body composition: Models of body composition, Changes in body composition through life cycle and factors influencing.	
3.	Assessment of body composition using <ul style="list-style-type: none"> • Anthropometry technique • Bio electrical impedance method, • DEXA technique • Doubly labeled water technique (DLW) Principles, Protocol, interpretation, Applications, Advantages & Disadvantages of each method.	

4.	Concept of dietary nutrient recommendations: RDAs and DRI (in brief)	
5.	FSSAI The Food Safety and Standards Act. Role of FSSAI.	
Sub Unit	Unit 2 : Energy, Food groups and Balanced diet	15 lectures
1.	Energy Units of measurement of body energy, Energy intake and Energy expenditure (EE) and Concept of BMR. Direct & Indirect Calorimetry and Non calorimetric techniques for calorie measurements. Concepts related to Energy imbalances Excess & Deficiency Acute and Chronic; Over and under nutrition.	
2.	Introduction to food groups Classification of food groups as Macronutrients and Micronutrients	
3.	Carbohydrates: Functions, calorific value, RDA, Dietary sources Glycemic Index and Glycemic Load-Applications in the diet Dietary fibers - Types, Health benefits Sugar substitutes and sweeteners: types and significance; Synthetic and Natural sweeteners; Nutritive and non -nutritive sweeteners Lipids: Types, calorific value, RDA, Dietary sources role in health Amino acids and Proteins: Types, calorific value, RDA, Dietary sources, Essential nonessential amino acids, BV of proteins, complete incomplete proteins	
4.	Vitamins : Classification and Role of individual vitamins in human health; RDA, Dietary sources Deficiency disorders (overview)	

	<p>Minerals-: Examples and Role of individual minerals in human health; RDA, Dietary sources Deficiency disorders (overview)</p> <p>Water</p>	
5	<p>Food guide pyramid Balanced diet</p>	
Sub Unit	Unit 3: Modern concepts in Nutrition and health management	15 lectures
1.	<p>Concept of role of gut health in diet planning Gut microbiome and its influence on overall health and wellness. Importance of prebiotics and probiotics.</p>	
2.	<p>Nutrition for various age groups - concept and significance Meal planning for infants, children and adolescence. Meal planning for adults based on life style. Meal planning for old age.</p>	
3.	<p>Meal planning for women Anemia, PCOD, pregnancy and lactation.</p>	
4.	<p>Modern diet plans:</p> <ul style="list-style-type: none"> • Intermittent fasting • GM diet • Keto diet • Vegan diet 	
Sub Unit	Unit 4: Nutrition in health, fitness and wellness	15 lectures
1.	<p>Meal planning for sports nutrition Meal planning for stress, depression and addiction.</p>	
2.	<p>Meal planning for medical conditions</p> <p>Dental issues; GI disorders; Endocrine disorders; Obesity and Hypertension; Cardiovascular diseases; Liver diseases; Meal planning for cancer; Immunodeficiency and autoimmunity.</p>	
3.	<p>Modern fitness regimes: Types and Role of exercise in fitness; Exercise and calorific expenditure Exercise for all age and lifestyle (Children, women, pregnancy, old age, and special medical conditions) Yoga and fitness</p>	

<p>CA (Continuous Assessment)</p>	<p>CA1- Written test CA 2- Assignment on Diet plans</p>	
<p>References:</p>	<ul style="list-style-type: none"> • Shils, M. E., Olson, J., Shike, M. and Roos, C. (2003). Modern Nutrition in Health and Disease. 9th Edition. Williams and Williams. A Beverly Co. London. • Bodwell, C. E.. and Erdman, J. W. (2008). Nutrient Interactions. Marcel Dekker Inc. New York. • Sareen, S., and James, J. (2005). Advanced Nutrition in Human Metabolism. 4th Edition. Thomson Wordsworth Publication, USA. • Chandra, R. K. (2002). Nutrition and Immunology, ARTS Biomedical. St. John’s Newfoundland. • Gibney, J. M. (2005). Clinical Nutrition. Blackwell Publishing House. • King, K. (2003). Nutrition Therapy. 2nd Edition. Helm Publishing, Texas Bendich. • Burke, .L (2006). Clinical Sports Nutrition. 3rd Edition. McGraw Hill Co. • McArdle, W. (2005). Sports and Exercise Nutrition. 2nd Edition. Lippincot Williams and Wilkins. • Brown, .J. (2002). .Nutrition Through The Lifecycle. Wadsworth Pub Co. • Jamison, J. (2003). Clinical Guide To Nutrition and Dietary Supplements in Disease Management. Churchill – Livingstone Pub. • Jeejeebhoy, et al (1988). Nutrition and Metabolism in Patient Care. W. B. Saunders Co. • Lee, R. D. (2003). Nutritional Assessment. 3rd Edition. McGraw Hill Publication. • Vaclavik, V. A., and Christian, E. W. (2014). Essentials of Food Science. 4th Edition. Springer. • Belitz, H. D., Grosch, W., and Schieberle, P. (2009). Food Chemistry. 4th revised and extended ed. Springer-Verlag Berlin Heidelberg. 	

Semester 5 Applied Component Practical for Biotechnology

Course Code: SBTP5AC	Course Title: Practical in Nutrition and Dietetics	2.5 Credits
Learning Objectives	<ul style="list-style-type: none"> • To calculate fitness parameters BMR and BMI • To cultivate micro-greens in home garden • To separate and estimate casein from milk • To develop skills for baking using easy and healthy recipes • To learn to read nutritional labels • To acquire sensory evaluation skills • To plan lower calorie meal for good health • To design and work on a research project in the field of Nutrition and Dietetics 	
	<ol style="list-style-type: none"> 1. Measurement of BMR. 2. Measurement of BMI. 3. Identification of foods. 4. Cultivation of microgreens. 5. Estimation of glucose content in table sugar/ commercial syrups using DNSA. 6. Estimation of protein in milk 7. Separation of casein from milk. 8. Healthy concepts in baking- Bread making, cake (gluten-free). 9. Beverage making- Juices, Squashes and milk shakes. 10. Low calorie meal planning. 11. Label reading. 12. Sensory evaluation. 13. Dissertation: (Group activity) <p>Survey/ case study/ Food psychology/ Public Health Nutrition/ Mobile app for tracking fitness/ special meal planning</p>	

Evaluation Scheme

[A] Evaluation scheme for Applied Component Course

I. Continuous Assessment (C.A.) 40 Marks

- (i) C.A.-I: 20 Marks test of 40 mins. Duration
- (ii) C.A.-II: 20 Marks- Assignment/Projects/ Presentations/Case studies etc.

II. Semester End Examination (SEE) 60 Marks

[B] Evaluation scheme for Applied Component Practical courses

Semester End Practical paper (Performing experiments + Dissertation) = 100 marks
