

SNDT Women's University

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Syllabus for Degree of Bachelor of Science Food Science and Nutrition (Faculty of Home Science)



With effect from
Academic Year 2013-14

**Shreemati Nathibai Damodar Thackersey Women's University
1, Nathibai Thackersey Road, Mumbai – 400 020.**

Degree of Bachelor of Science
Food Science and Nutrition
(Faculty of Home Science)

**Semester V
Biochemistry**

Objectives:

This course will enable students to:

- 1. Know the fundamentals of metabolic processes / pathways occurring in the body.**
- 2. Understand the significance of various metabolic processes / pathways.**
- 3. Understand the integration of these metabolic processes.**
- 4. Develop the ability to apply the significance of these processes to different physiological / metabolic conditions.**

Subject	Total Credits	Th	Pr	Int	Ext	Total
Biochemistry	4	3	1	25	75	100

Biochemistry Theory

Module No.	Objectives	Content	Evaluation
1	<p>This module will enable students to:</p> <ol style="list-style-type: none"> 1. Understand the various ways of carbohydrate utilization in the body. 2. Create awareness of regulation of the pathways. 3. Realize the significance of the pathways. 4. Understand the process of energy yield from the organic substrates. 	<p>Carbohydrate metabolism:</p> <ul style="list-style-type: none"> • Various Biological pathways -- site, significance, intermediates with chemical structures, enzymes, coenzymes involved, Regulation and energetic • Glycolysis, TCA [Kreb's cycle], Pentose phosphate pathway Gluconeogenesis, Glycogenesis Glycogenolysis. • Alcohol metabolism and biochemical alterations in alcoholism • Biological oxidation and electron transport chain 	<p>25 marks</p> <p>Power point presentations/ Assignments / Displays on various pathways</p>

<p>2</p>	<p>This module will enable students to:</p> <ol style="list-style-type: none"> 1. To understand the various ways of utilization of lipids in the body. 2. Create awareness of regulation of the pathways. 3. Realize the significance of the pathways. 	<p>Lipid Metabolism:</p> <ul style="list-style-type: none"> • Lipogenesis and Lipolysis • Oxidation of saturated, unsaturated and odd chain fatty acids, regulation, energetics • Biosynthesis of fatty acids, regulation of synthesis. • Elongation and desaturation of fatty acid chains • Ketosis and Ketogenesis • Triglycerides synthesis --- Intestinal resynthesis of triglycerides, synthesis in Liver. • Introduction of Cholesterol – Parent steroid sources, Cholesterol biosynthesis with structures, mode of utilization, Control of cholesterol metabolism • Plasma Lipoproteins, Metabolism of Chylomicrons, LDL, HDL and VLDL 	<p>25 marks Power point presentations/ Assignments/ Displays on various pathways</p>
<p>3</p>	<p>This module will enable the students to</p> <ol style="list-style-type: none"> 1. Explain the various metabolic pathways 2. Understand the significance, regulatory mechanisms and synthesis of various essential non nitrogenous compounds synthesized from amino acids. 	<p>Protein Metabolism</p> <ul style="list-style-type: none"> • Trans-amination – with diagrammatic representation, role of pyridoxine, significance • Oxidative and non oxidative De-amination. • Metabolic fate of Ammonia-- Formation of glutamate, Formation of Glutamine • Urea cycle –pathway with structures. • Metabolism of non protein nitrogenous compounds: Structures of purines, pyrimidines and uric acid, catabolic pathways without structures of the intermediates <ul style="list-style-type: none"> • Uric acid and gout. <p>Synthesis (without structures) and significance of glutathione. Synthesis, catabolism and significance of Creatine.</p> <ul style="list-style-type: none"> • Transmethylation and one carbon transfer –scheme of inter conversion and disposition of one carbon fragments 	<p>25 marks Power point presentations/ Assignments/ Displays On various pathways</p>

		derived from catabolism of amino acids (without structures) <ul style="list-style-type: none"> • Metabolic fate of the carbon skeleton of amino acids – glucogenic, ketogenic and glucogenic and ketogenic amino acids. 	
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References:

1. Rastogi S.C. (2003) , 2nd Edition “Biochemistry”, , Tata MacGraw Hill Publishing Co. Ltd., New Delhi
2. Jain, J, L., S. Jain and N. Jain (2005) “Fundamentals of Biochemistry”. 6th Edition,. S. Chand Company Ltd.
3. Plummer, D.T., (1971) “An Introduction to Practical Biochemistry”. 2nd Edition, McGraw-Hill Publishing Co. Ltd.
4. Apps D.K. and Cohen B.B. and Steel C.M. (1992), “Biochemistry: A Concise Text for Medical Students” Bailliere Tindall,
5. Debajyoti D, “Biochemistry” 2nd Edition, (1980) Academic Publishers,.
6. Satyanarayana U and Chakrapani U “Biochemistry”, 3rd Edition, (2008), Books & Allied Publishers.
7. Chatterjee M.N., Shinde R. “Textbook of Medical Biochemistry” 8th Edition (2012) Jaypee Brothers, Medical Publishers.
8. Nelson DL & Cox MM. 5th Edition, (2009). “Lehninger’s Principles of Biochemistry”. Freeman and Co.
9. Berg J.M. Tymoczko J.L., and Stryer. L. “Biochemistry”, 5th edition, (2002). W.H. Freeman.
10. Vasudevan D.M. and Sreekumari S – (2007) “Textbook of Biochemistry for Medical Students”. 5th Edition, Jaypee Brothers, Medical Publishers.
11. “Murray Harper’s Illustrated Biochemistry” 29th Edition, (2012) Prentice Hall Int. Voet D, and Voet J.G “Biochemistry” 4th Edition. (2011), *John Wiley*

Biochemistry Practical

Objectives

- To enable students learn the principles and procedures of biochemical analysis of blood and urine.
- To develop ability to interpret the results of the estimations of the common constituents of biological fluids.

Module No	Objectives	Content	Assessment
4	<p>This module will enable students to:</p> <ol style="list-style-type: none">1. To know the principles on which the selected estimations are based.2. To know the procedures used for the estimations.3. To draw inferences from the results.	<ol style="list-style-type: none">1. Qualitative Estimation of Normal Constituents of Urine.2. Qualitative Estimation of Abnormal Constituents of Urine. <p>Quantitative Estimation in Urine.</p> <ol style="list-style-type: none">1. Urea2. Uric acid3. Glucose <p>Quantitative Estimation in Serum / Blood.</p> <ol style="list-style-type: none">1. Urea2. Uric acid3. Total protein4. Albumin, Globulin, A/G Ratio.5. Glucose6. Cholesterol	25 Marks Quiz Journal Practical Tests Interpretation of case studies

References

1. Oser, B. L. Ed (1979),“Hawk's Physiological Chemistry”, 14th.Rep. ed _ Tata McGraw-Hill Publishing Company Ltd.
2. H. Varley, A. H. Gowenlock, and M. Bell, “Practical Biochemistry, Vol. 1”, London, UK, 5th Edition, (1976), Edited by: I. W. Heinemann.
3. Godkar P.B. Godkar D.P. (2006) Textbook of Medical Laboratory Technology 2nd Edition, Bhalani Publishing House.
4. Burtis C.A, Ashwood E.R, Bruns D.E. (2007), “Tietz Fundamentals of Clinical Chemistry”, 6th Edition, Elsevier Health Sciences.

5. Davidsohn, I (Editor) & Henry, J B (Editor) (1984), “Todd-Sanford Clinical Diagnosis by Laboratory Methods” 17th Edition. W.B. Saunders.

Semester V

Human Nutrition - II

Objectives:

The course enables students to:

1. Explain the differences between water and fat-soluble vitamins, including how each one functions in the body, the deficiency/toxicity symptoms, and major food sources.
2. Explain the differences between major and minor minerals, including how each one functions in the body, the deficiency/toxicity symptoms, and major food sources.
3. Understand the interrelationship between nutrients.

	Subject	Total Credits	Th	Pr	Int	Ext	Total
	Human Nutrition II	4	4	-	25	75	100

Module No.	Objectives	Content	Assessment
1	<p>This module will enable students to:</p> <ol style="list-style-type: none"> 1. Understand the functions, sources, effects of deficiencies and excess of fat soluble vitamins in the body. 	<p>VITAMINS - Introduction- History and Classification Fat soluble vitamins Forms, Sources, Requirements Functions, Deficiency, Toxicity of</p> <ol style="list-style-type: none"> 1. Vitamin A 2. Vitamin D 3. Vitamin E 4. Vitamin K 	<p>Quiz Assignments Projects</p>

2	<p>This module will enable students to: Understand the functions, sources, effects of deficiencies and excess of water soluble vitamins in the body</p>	<p>Water Soluble Vitamins Sources, Requirements, Functions and Deficiency of</p> <ol style="list-style-type: none"> 1. Vitamin C 2. Thiamin 3. Riboflavin 4. Niacin (Tryptophan conversion and Niacin Equivalent) 5. Pyridoxin 6. Cynocobalamin 7. Folic acid 	<p>Quiz Assignments Projects</p>
3	<p>This module will enable students to: Understand the functions, sources, effects of deficiencies and excess of macro minerals in the body</p>	<p>Macro Minerals : Sources, RDA, Functions, Deficiency and Toxicity of:</p> <ol style="list-style-type: none"> 1. Calcium 2. Phosphorus 3. Sodium 4. Potassium 	<p>Quiz Assignments Projects</p>
4	<p>This module will enable students to: Understand the functions, sources, effects of deficiencies and excess of micro minerals in the body</p>	<p>Micro Minerals and Trace Elements Sources, RDA, Functions, Deficiency and Toxicity of:</p> <ol style="list-style-type: none"> 1. Iron 2. Iodine 3. Zinc 4. Selenium 5. Copper 6. Chromium 	<p>Quiz Assignments Projects</p>

Reference

1. Whitney E.N., Rolfes S.R. (1996) Understanding nutrition – St. Paul, Minneapolis: West Publishing Co.
2. Wardlaw G. (2001): Perspectives in nutrition – St. Lous Mosby – Year Book
3. Sizer F.S., Whitey E.N. (2001) Nutrition – concepts ad controversies – Belmont (CA): Wadsworth (Thomson learning).
4. Smolin L.A.(1994) Nutrition – science and applications, Saunders College Publishing.
5. Helen Guthrie, Introductory Nutrition, Times Mirror pub.
6. M. Swaminathan (1985) Advanced Text book on Food and Nutrition Vol.-I & Vol– II, BAPPCO, Bangalore.
7. Margaret S. Chaney, Mararet L Ross,(2014) Nutrition. Houghton, Mifflin.
8. Bamji M.N., Rao P.and Reddy V.(2003) Textbook of Human Nutrition, Oxford and IBH Publishing Co. Pvt.Ltd., New Del

Semester V

Food Science

OBJECTIVES:

This course will enable students to:

1. Understand nature and composition of food
2. Know the role of different ingredients along with methods and principles used in food preparation
3. Understand the changes occurring in foods during cooking.
4. Learnt the sensory evaluation and its applications.

	Subject	Total Credits	Th	Pr	Internal	External	Total
	Food Science	4	3	1	25	75	100

Food Science Theory

Module No	Objectives	Content	Assessment
1	<p>This module will enable students to:</p> <ol style="list-style-type: none">1. Understand the importance of Sensory evaluation and use different sensory evaluation Techniques.2. Understand the role of water and be familiar with composition of different beverages.3. Understand the stages of sugar cookery and their uses in food preparations.	<ul style="list-style-type: none">• Introduction to Food Science.• Sensory Evaluation Sensory characteristics of food, Importance and objectives of Sensory evaluation and its Prerequisites, Tests for Sensory Evaluation: Sensitivity Threshold test Difference test – paired comparison, triangle and Duo-trio test, Rating test – Hedonic, Numerical, Composite scoring and ranking test• Water: Role of water in cookery, Forms of water – Bound and free water. Types of water - Hard and Soft.• Beverages: Types and Classification. Coffee, Tea, Cocoa Processing. (In Brief)• Sugar Cookery: Types of sugar, stages of sugar cookery and inversion of sugar. Crystallization and factors affecting crystallization. Crystalline candies and Non Crystalline candies• Fats and Oils: Physical properties –	25 Marks Quiz/ Assignments/ Projects/ Presentations

	4. Know the composition and properties of fats and their role in food preparation and processing.	plasticity, smoke point and flash point. Functional role of fats – flavor, texture, tenderness, emulsification, shortening and leavening effects. Emulsions – Types of Emulsions. Rancidity - types and prevention. Antioxidants flavor reversion. Fat absorption and factors affecting it	
2	<p>This module will enable students to: Know the composition of specific foods of plant origin</p> <p>1. Understand the changes occurring in various food components during cooking with their applications. 2. Know the role of various foods in cookery</p>	<ul style="list-style-type: none"> • Cereals : Structure and composition of a cereal grain, Properties of starch – Thickening and Gelatinization, Gel Formation, syneresis, Retrogradation and Lump formation, Dextrinization, Identity of grains, Gluten formation – Factors affecting Gluten formation. • Leavening agents: Natural and Chemical and their action. • Pulses and legumes: Composition, toxic factors, their effects, and elimination, soaking, fermentation and germination, • Vegetable and Fruits: Composition, color pigments and effect of cooking on them Pectic substances: forms – Pectin, Protopectin, Pectic acid, Pectinic acid, Theory of gel formation. Vegetable gums and their commercial uses. 	25 Marks Quiz/ Assignments/ Projects/ Presentations
3	<p>This module will enable students to: 1. Know the composition of specific foods of animal origin 2. Understand the changes occurring in various food components during cooking with their applications.</p>	<ul style="list-style-type: none"> • Milk: Composition, effect of heat, acid, alkali and enzymes on milk, scum formation, maillard reaction • Egg: Structure and composition of egg, protein in egg white and egg yolk. Methods to judge egg quality (grading). Physical and chemical changes during egg storage, Egg foams and uses. Role of egg in cookery and methods of cooking egg. • Meat, Fish and Poultry-Composition, Structure, post mortem changes, ripening of meat, tenderization of meat and changes during meat cooking. • Fish: Classification, quality indicators of fish, types of fish spoilage, gelatin, and Fish Protein Concentrate (FPC). 	25 Marks Quiz/ Assignments/ Projects/ Presentations

Evaluation:

1. Internal – Theory 25 marks + Practical 25 marks = 50 /2 = 25 marks
2. External – Theory 75 marks

References

1. Srilakshmi, B: (2010) Food Science, 5th Edition, New Age International Pvt Ltd Publishers
2. Shadaksharaswamy, M, Manay, S, (2010): Food facts and Principles, 3rd Edition, New Age International Publishers
3. Bennion, M. Scheule, B.: (2009): Introductory Foods, 13th Edition, Prentice Hall Publications
4. Manay, S. (2009) Foods Facts, New Age International Pvt. Ltd Publishers
5. Subbulakshmi, G, Udipi, S. A (2006): Food processing and Preservation, New Age International Pvt Ltd Publishers
6. Potter, N. N., Hotchkiss J. H: 5th Edition (1999), Food Science, Springer Publications
7. Freeland-Graves, J., Peckham, G. C, 6th Edition, (1995): Foundations of Food Preparation, Prentice Hall Publishers.
8. Rao E., and Sethi M., (2011) CBS Publications and Distributors.
9. Rao E., 2nd Edition, (2011) Food Quality Evaluation, Variety Books Publication and Distributors.

Food Science Practical

Objectives:

This course will enable students to:

1. Understand nature and composition of food
2. Observe the principles of Food Science
3. Comprehend the role of different ingredients used in food preparation.
4. Learn various tests of sensory evaluation of and their applications.

Module No	Objectives	Content	Assessment
4	This module will enable students to: <ol style="list-style-type: none">1. Understand the importance of Sensory evaluation2. Comprehend and understand the role of ingredients and their behavior.	1. Tests for Sensory Evaluation Sensitivity Threshold test, difference test – paired comparison, triangle and duo-trio test, scoring and ranking test. 2. Sugar Cookery Preparation of sugar syrups for example: 1 thread, 2 threads, soft ball, crack stage and caramelization. 3. Starch Cookery Stiffness of starch gel and factors affecting it Factors affecting gluten formation i.e. kneading time, types of cereal and flours, effect of amount of fat etc.	25 Marks Continuous assessment.

		<p>4. Fat Cookery: Shortening effect and factors affecting fat absorption.</p> <p>5. Milk Cookery- Curd, Paneer, Maillard Reaction.</p> <p>6. Egg Cookery- Role of Egg – Boiled, Poached, Omelet, French toast and mayonnaise.</p>	
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*** Evaluation Pattern:**

- Each cooking practical to be evaluated out of 10 marks
- Average marks for each module to be aggregated at 25 marks

Semester V

Diet Therapy

Objectives

This course will enable students to:

1. Understand the etiological factors and physiological changes associated with specific disease conditions.
2. Develop an insight into the role of modified diets in specific conditions.
3. Acquire the ability to modify the normal diet to suit individuals suffering from specific diseases and lifestyle disorders.

	Subject	Total Credits	Th	Pr	Int	Ext	Total
	Diet Therapy	4	2	2	25	75	100

Diet Therapy Theory

Module No	Objectives	Content	Assessment
1	<p>This module will enable students to:</p> <p>a. Understand the basic concepts involved in formulating therapeutic diets.</p> <p>b. Understand the role and scope of the Indian Dietetic</p>	<p>Basic Concepts of Diet Therapy Principles of planning therapeutic diets.</p> <p>Modification of normal diet - consistency, nutrients Role of Registered dietitian in Nutritional care Indian Dietetic Association and its role.</p>	<p>25 marks</p> <p>Quiz Assignments Projects</p>

	<p>Association.</p> <p>c. Know the etiological factors in the development of specific physiological conditions and their nutritional management</p>	<p>Modification of diet in Fever and Infection: Fever – Definition, Classification and causes. Metabolic Changes in the body during fever. Principles of dietary planning for T.B, Typhoid and Malaria.</p> <p>Pre and Post Operative Diets: General Dietary Guidelines.</p> <p>GI disorders: Etiology, symptoms and Nutritional management of the following:</p> <ul style="list-style-type: none"> • Peptic Ulcer • Diverticulitis. <p>Terms: Achlorhydria, Dumping Syndrome, Steatorrhea.</p> <p>Liver disorders: Etiology, symptoms and Nutritional management of the following:</p> <ul style="list-style-type: none"> • Infective Hepatitis • Cirrhosis of liver. <p>Terms : Ascites, Esophageal varices and Hepatic Coma</p>	
<p>2</p>	<p>This module will enable students to:</p> <p>a. Understand the causes and implications of specific non-communicable diseases.</p> <p>b. Develop an understanding of the association of lifestyle factors</p>	<p>Weight management - underweight and overweight</p> <ul style="list-style-type: none"> • Definition of overweight and obesity, types and grades of obesity, Theories of obesity. • Causes of obesity Assessment techniques • Dietary modification • Importance of behaviour modification, limitations of fad diets (very low calories, extreme energy restrictions) <p>Underweight.</p> <ul style="list-style-type: none"> • Definition, causes, 	<p>25 marks</p> <p>Quiz Assignments Projects</p>

	<p>and specific non-communicable disease prevention.</p> <p>c. Learn the nutritional management of specific non-communicable diseases.</p> <p>d. Acquire the ability to suggest lifestyle modifications as a management methodology for NCD management and prevention</p>	<p>assessment, and dietary modification.</p> <p>Dietary management in hypertension:- Hypertension - classification (mild, moderate, severe) Blood pressure control – Renin-Angiotensin system flow diagram. Dietary modification, Low Sodium Foods and Salt Alternatives. Terms: Ischemia, Hyperproteinemia, P\S ratio, Thrombus Infarct Atherosclerosis, Myocardial Infarction, Stroke, Coronary Artery Disease, Rheumatic Heart Disease, Salt Sensitive/Resistant Hypertension.</p> <p>Diabetes Mellitus: - Classification of Diabetes, causes, diagnosis, symptoms. - Metabolic changes in NIDDM. - Dietary Management of NIDDM - Meal Exchange Glycemic Index, Glycemic Load</p> <p>Diet in Renal Disorders: Physiology of Kidney. Causes of Renal Disorders. (in brief) - Introduction to Acute and Chronic Nephritis. - Renal Calculi - types of stones, etiology , symptoms - Principles of Diet therapy - Alkaline and acid ash diet.</p>	
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References

- 1) Srilakshmi, B. 6th Edition, (2011): Dietetics, New Age International Pvt Ltd Publishers.
- 2) Mahan, K.L , Escott-Stump, S, Raymond, J.L (2011)Krause's Food and the Nutrition Care Process, 13 edition, Saunders Publishers.
- 3) Nix, S. 14 edition (2012): Williams' Basic Nutrition and Diet Therapy, Mosby publishing.
- 4) Whitney, E.N., Cataldo, C.B, Rolfes, S.R (2001): Understanding Normal and Clinical Nutrition, Brooks Cole Publishing.
- 5) IDA Manual.

Diet Therapy Practical

Objectives

The course would enable the students to

1. Apply principles of diet therapy in planning and preparing foods for specific health conditions.
2. Plan foods for specific disease conditions keeping in mind cost, availability and other factors

Module	Objectives	Content	Evaluation
3	<p>This module will enable students to:</p> <p>a. Understand the principles of dietary management for specific health conditions and apply the same to modify the diet</p>	<p>Planning and preparation of normal diet for adult sedentary man / woman</p> <p>Planning and preparation of recipes for progressive hospital diets</p> <p>Clear Liquids such as Cereal kanjis, dal water, clear vegetable soups clear fruit juices,</p>	<p>25 Marks</p> <p>Diet planning and cooking</p> <p>Assignments: Market Survey of available Nutraceuticals and nutritional supplements</p>

	<p>as per need.</p> <p>b. Become aware of the various categories of products available in the market and their potential uses.</p>	<p>beverages without milk. Full Liquid recipes such as beverages, milkshakes, and Soft diet.</p> <ul style="list-style-type: none"> -Nutritional facts of nutraceuticals and their incorporation in therapeutic diets -Protein supplements (concentrates hydrolysates and isolates), Planning and preparation of recipes using these products. - Sugar substitutes and non caloric sweeteners such as Sucralose, FOS (inulin) and Aspartame. Planning and preparation of recipes using these products - Brands and blends of oils and fats available in the market with their benefits - Weight Management. - Planning and preparation of high fibre diets. - Planning and preparation of diet for Diarrhoea. - Planning and preparation of a high caloric High Protein Diet (additional minimum 1500kcal and 20- 25 g of protein) generally used for patients with Tuberculosis / convalescence period. - Planning and preparation of foods for person with Peptic Ulcer and Constipation 	<p>Market Survey of</p> <ol style="list-style-type: none"> 1. protein supplements 2. sugar substitutes and non caloric sweeteners 3. brands and blends of oils and fats
4		- Planning and preparation of low	25 Marks

	<p>This module will enable students to:</p> <p>Understand the principles of dietary management for specific health conditions and apply the same to modify the diet as per need.</p>	<p>calorie diet providing 1200-1400 kcal and 50 g of proteins</p> <ul style="list-style-type: none"> - Planning of a diet for person with Hypertension and preparation of few selected recipes - Planning a diet for person with Diabetes Mellitus and preparation of few selected recipes - Identifying foods with low GI and low GL. - Modifying for lowering GI and GL and Preparation. 	<p>Diet planning and cooking</p>
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References

- 1) Srilakshmi, B.(2011): Dietetics, 6th Edition,New Age International Pvt Ltd Publishers
- 2) Mahan, K.L , Escott-Stump, S , Raymond, J.L (2011)Krause's Food & the Nutrition Care Process, 13 edition, Saunders Publishers.
- 3) Nix, S. (2012): Williams' Basic Nutrition & Diet Therapy, 14 edition, Mosby publishing.
- 4) Whitney, E.N., Cataldo, C.B, Rolfes, S.R (2001): Understanding Normal and Clinical Nutrition, Brooks Cole Pu

Semester V

Recent Advances in Food Science and Nutrition (Seminar) and Women's Issues

Objectives

The course enables the students to-

1. Be aware of areas of research in the field.
2. Enrich themselves with recent advances.

3. Develop competence in reviewing the research papers.
4. Develop competence in presentations.

	Subject	Total credits	Th	Pr	Int	Ext	Total
	Recent Advances in Food Science and Nutrition (Seminar) and Women's Issues	4	2	2	100	-	100

Students have to

- Refer to the research work from journals, done in the last 10 years
- Prepare a power point presentation of 15-20 min each on any recent research in the field of nutrition and dietetics
- Submit a detailed report of the presentations with bibliography

Criteria of Assessment

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| - Review of Literature | 15 |
| - Report Writing | 10 |
| - Power point Slide Preparation and Presentation | 15 |
| - Oral Communication skills | 10 |
| - Total | 50 |

WOMEN'S ISSUES

Objectives:

1. To know the demographic profile of women in India.
2. To understand the present situation and changes in the status of women.

Module No	Objectives	Content	Evaluation
			25 Marks
3. Demographic profile of women in India and towards change	This module will enable students to: <ol style="list-style-type: none"> 1. Understand the demographic profile of women in India 2. To create awareness about the role and 	<ol style="list-style-type: none"> 1.Sex Ratio 2.Health 3.Education 4.Employment 5.National Policy of Empowerment of women 2001 6.The role and importance of media portraying women 	Debate Discussion Presentation

	importance of media portraying women		
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Module No	Objectives	Content	Evaluation
			25 Marks
4. Women, work and development	<p>1.To understand the present situation and changes in the status of women.</p> <p>2.To create awareness about Governmental policies and strategies for women's development and role of voluntary organizations and NGO's in women's development.</p>	<p>1.Women in the unorganized sector.</p> <p>2.Women in the Organized sector.</p> <p>3.Legal provision for the protection of working women</p> <p>4.Governmental policies and strategies for women's development</p> <p>5.Role of voluntary organizations and NGO's in women's development</p>	Discussion Presentation

References:

- Bansal S. (2007): Women in Developing Countries, Sumit Enterprises, New Delhi.
- Bhadoria M (1997): Women in India (Some Issues), APH Publication, New Delhi.
- Chaudhuri M (ed.) (2004): Feminism In India, Women Unlimited, New Delhi.
- Ghadially Rehana (ed.) *1998): Women In Indian Society: A Reader Sage Publications, New Delhi.
- Gopalan S.(2002): Towards Equality- The Unfinished Agenda, Status of Women in India. National Commission for Women, New Delhi.
- Iyer P (2007): women and Social Revolution: Strategies and Policy, Insights from India, Women's Press. New Delhi.
- Kumar S.A (2007): Women in the face of Globalization, Serial Publication, New Delhi.
- Mishra R.B (1992):Indian Women Challenges and Change., Commonwealth Publishers, New Delhi.
- MadunuriLaxmipatti R (ed.) (2007):Women Empowerment: Challenges and Strategies., Mayur Enterprises, New Delhi.
- Panday R. (2008): Women Welfare and Empowerment in India, New Delhi, India.
- Panday R. (2008): Women Welfare and Empowerment in India Vision for 21 century. New Century Publications,New Delhi.

Patel v (2002): Women's Challenges in the New Millennium. Gyan Publishing House, New Delhi.

Sapru R.K.(1989): Women and Development. Ashish Publication House, New Delhi.

Singh K.V (2007): Women Issues- Empowerment and Gender Discrimination. Vista International Publishing House, Delhi,

Tandon R.K. (1994): Women in Modern Indi. Indian Publication Distributors. Delhi.

Semester VI

Community Nutrition

Objectives:

The course will enable the students to:

1. Know the major nutrition- related problems currently prevailing in India and the reasons contributing to the situation.
2. Understand the sampling techniques and principles of various methods of assessment of nutritional status in the community
3. Know the intervention strategies and programmes undertaken by the Governmental and certain National and International agencies to combat malnutrition
4. Understand the principles underlying the strategies and methods that can be used to plan nutrition education programmes for at-risk populations.

	Subject	Total Credits	Th	Pr	Int	Ext	Total
	Community Nutrition	4	2	2	25	75	100

Community Nutrition Theory

Module	Objectives	Content	Evaluation
1	This module will enable students to: 1. Understand the major nutritional problems & the vicious poverty-malnutrition interaction contributing to it 2. Know the different methods of assessment of nutritional status of a community	Introduction to Nutrition- 1. Definition & characteristics of a community 2. Major Nutritional problems in India & factors contributing to it (PEM,nutritional anaemia, IDD,Vit A & D deficiency, metabolic syndrome)-explain the paradox of malnutrition. 3. Anthropometric Biochemical Clinical and Dietary surveys (including sampling techniques in brief) Vital statistics	Quiz Assignments Projects
2	This module will enable	1. Supplementary feeding	

	<p>students to:</p> <ol style="list-style-type: none"> 1. Know about the intervention strategies & programmes undertaken by the Governmental and certain National and International agencies to combat malnutrition 2. Understand principles of the strategies and methods that can be used to plan nutrition education programmes for selective population 	<p>programmes (MDMP, school lunch programmes, ICDS, NNAPP, NIDDCP, Vitamin A prophylaxis programme) Food Scurity Bill.</p> <ol style="list-style-type: none"> 1. Green and white revolution 2. Agencies and their role in Nutrition Programmes – NIN, ICMR, ICAR, FAO WHO, UNICEF, CARE. 3. Individual strategies – Woman-Woman, Child to Child. 4. Community strategies- community contact, rural school system. 5. Principles of Nutrition and health education techniques 6. Exhibition, Demonstration and Dramatization. 	<p>Quiz Assignments Projects</p>
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References

1. Rosalind.S, Gibson 2nd Edition (2005) Principles of Nutritional Assessment Oxford University Press.
2. Isobel Contento 2nd edition (2011) *Nutrition Education: Linking Research, Theory, and Practice*:. Jones and Bartlett Publishers International.
3. J E Park and K Park (1991)Textbook of preventive and social medicine.

Community Nutrition Practical

Objectives

The course enables the students to:

1. Be aware of various vulnerable groups in society.
2. Design the questionnaire and conducting for Diet Surveys emphasizing diet pattern, Food habits, cooking practices, hygiene and environment.
3. Planning and organizing Nutrition Education in community.
4. Plan and prepare appropriate teaching aids and how to use them.
5. Identify various health related problems in various vulnerable sections

Module	Objectives	Content	Assessment
3	<p>This module will enable students to :</p> <p>1. Practically assess and interpret nutritional status of an individual or small group</p>	<p>1. Anthropometry: Weight and height measurements - Interpretation using WHO standards for children, Growth chart for infants BMI for adults (for Asians)</p> <p>2. Interpret a mock biochemical report of a malnourished child</p> <p>3. Clinical signs (Group 1 – WHO classification)</p> <p>4. Visit to aanganwadi, ANC, Hospital for practical observations</p> <p>5. Dietary survey-24-hr recall, calculations and interpretation</p>	<p>25 Marks</p> <ul style="list-style-type: none"> - Taking Anthropometric measurements - case study - PPT group presentation - Report on Visits to ANC and Anganwadi
4	<p>This module will enable students to:</p> <p>1. Plan, conduct and evaluate a nutrition education programme in the community</p>	<p>1. Conduct a baseline survey to find out the need and gaps in knowledge.</p> <p>2. Plan and conduct an appropriate nutrition education programme</p> <p>3. Evaluate the programme through a feedback mechanism</p>	<p>25 Marks</p> <ul style="list-style-type: none"> - Conduct Diet Survey - Conducting lectures and demonstrations - case study - PPT group presentation

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SEMESTER VI

Food Processing and Product Development

OBJECTIVES:

This course will enable students to:

1. Understand the principles of Food Processing.
2. Comprehend the role of different ingredients used in Food Processing.
3. Develop a discriminating appreciation of quality and standards of commodities available.

Subject	Cr	Th	Pr	Internal	External	Total
Food Processing and Product Development	4	2	2	25	75	100

Food Processing and Product Development Theory

Module No	Objectives	Content	Assessment
1	<p>This module will enable students to :</p> <ol style="list-style-type: none"> 1. Understand the importance of Food Processing of Plant based products 2. Comprehend and understand the role of ingredients and their behavior. 	<p>Principles of Food processing in Plant based products-</p> <ol style="list-style-type: none"> 1. Beverages: Coffee, cocoa carbonated Beverages (non-alcoholic), Bottled water 2. Cereals: Processing of wheat and rice Cereal products, Breakfast Cereals, Macroni / Pasta products, 1 3. Processing of Pulses: Soybean products – flour, milk, Tofu, Tempe Texture vegetable protein 4. Commercial processing of fats and oils, Hydrogenation, 	<p>One Test / assignment of 25 marks</p>

		winterization, blending of oils. Fat substitutes – discuss Specific products available. 5. Processing of fruits and Vegetables.	
2	This module will enable students to : 1. Understand the importance of Food Processing of Animal based products 2. Comprehend and understand the role of ingredients and their behavior	Principles of Food processing in Animal based products 1. Processing of milk: Various processed products of milk, cheddar cheese, paneer and icecream 2. Processing of Egg products,, pasteurization, freezing desugaring and dehydration. 3. Processing of Meat/ Fish /Poultry – Curing, Smoking, dehydration, etc. Sausages and FPC 4. Convenience Foods: Extruded products and Texturized Vegetable Protein.	One Test / assignment of 25 marks

References:

Srilakshmi, B: (2010) Food Science, 5th Edition, New Age International Pvt Ltd Publishers

Shadaksharaswamy, M, Manay, S, (2010): Food facts and Principles, 3rd Edition, New Age International Publishers

Bennion, M. Scheule, B.: (2009): Introductory Foods, 13th Edition, Prentice Hall Publications

Manay, S. (2009) Foods Facts ,New Age International Pvt Ltd Publishers

Subbulakshmi, G, Udipi, S. A (2006): Food processing and Preservation, New Age International Pvt Ltd Publishers

Potter, N. N., Hotchkiss J. H: (1999), Food Science , 5th Edition, Springer Publications

Freeland-Graves, J., Peckham, G. C, (1995): Foundations of Food Preparation (6th Edition),
Prentice Hall Publishers

Food Processing and Product Development Practicals

Objectives:

This course will enable students to:

1. Understand the market and develop new food product.
2. Formulate, prepare and conduct shelf life studies of a new product.
3. Design packaging and nutrition labeling.

Module No	Objectives	Content	Assessment
3	This module will enable students to: Understand designing and standardization of a food Product	Identify a food product to be developed using Market surveys, Standardization of the food product.	Continuous assessment. 25 marks
4	This module will enable students to : Learn and use sensory evaluation and shelf life aspects of a food product	Sensory evaluation and shelf life study of the food product. Nutrition label Budget aspects	Continuous assessment. 25 marks

Semester VI

Nutrition and Lifestyle Modifications for Wellness

Objectives

This course will enable students to:

1. Understand various aspects of health and fitness
2. Adopt a holistic approach towards health management and disease prevention.
3. Develop the ability to provide guidance on healthy diet, exercise & life style modifications for disease prevention and management.

No	Subject	Total Credit	Th	Pr	Int	Ext	Total
	Nutrition and Lifestyle Modifications for Wellness	4	4	-	25	75	100

Module	Objectives	Content	Evaluation
1	<p>This module will enable students to</p> <ol style="list-style-type: none"> 1. Understand basic concepts and terms related to health and fitness. 2. Learn different methods of evaluation of body composition and physical fitness and its influence on health. 3. Identify causes of stress on health and its management strategies. 4. Establish relationship between healthy behaviors and fitness. 	<p>1. Introduction to Health and Fitness</p> <p>Definition of Health and fitness (WHO)</p> <p>Important terms – Exercise, Physical Activity Stamina, Endurance, Intensity, VO₂ max, Duration, Flexibility, Muscle strength, Muscle endurance, Agility</p> <p>Healthy behaviors: Physical activity, Healthy Food Choices, Weight Control, Stress Management.</p> <p>2. Different Aspects of Fitness</p> <p>Evaluation of fitness Wrong exercise practices and injuries</p>	<p style="text-align: center;">25 Marks</p> <p>Assignments Projects - case study - PPT group presentation</p>

		<p>Body Composition through the life span, its significance in fitness and body composition evaluation techniques.</p> <p>Stress: Its effect on health and its management through Relaxation & Meditation</p>	
2	<p>This module will enable students to:</p> <ol style="list-style-type: none"> 1. Know the mechanisms of energy turnover for various physical activities. 2. Understand the influence of nutrients and exercises on the immune system 	<ol style="list-style-type: none"> 3. Energy Systems Energy usage during anaerobic and aerobic exercises Energy usage in weight reduction and maintenance of body weight 4. Nutrition, Exercise and Immunity Role of nutrients & exercises in the promotion of immunity 	<p>25 Marks</p> <p>Assignments Projects - case study - PPT group presentation</p>
3	<p>This module will enable students to:</p> <ol style="list-style-type: none"> Understand the significance of adopting healthy behaviors for maintenance of optimum health. Establish an association between a healthy lifestyle and chronic degenerative disease prevention. 	<p>Life style modification for the following conditions:</p> <ol style="list-style-type: none"> Reproductive health before Pregnancy Polycystic ovarian disease Bone health during Life Span . Chronic Degenerative diseases: Obesity, Cardiovascular Disease, Diabetes Mellitus, Syndrome X 	<p>25 Marks</p> <p>Assignments Projects - case study - PPT group presentation</p>
4	<p>This module will enable students to:</p> <ol style="list-style-type: none"> Gain information about the various products and 	<p>Performance Enhancement through the use of Nutritional Supplements: (General information, Uses and</p>	<p>Assignments Projects - case study</p>

	<p>techniques available for performance enhancement and weight loss.</p> <p>2. Develop discretion in recommending their use.</p>	<p>Disadvantages)</p> <ol style="list-style-type: none"> 1. Ergogenic Aids 2. Protein Supplements 3. Vitamin and Mineral Supplements. <p>Popularly used slimming techniques :</p> <ol style="list-style-type: none"> 4. Meal replacers 5. Fat burners 6. Appetite Suppressants 7. Fad Diets 8. Spot reductions, Bariatric Surgery 	<p>- PPT group presentation</p>
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REFERENCES

1. Elenor N., Whitney S., Rady R. (1993): Understanding Nutrition, West Publishing Company, Minneapolis
2. Wardlaw (1993): Perspectives in Nutrition, Paul Insel Mosby.
3. Bhatia Arti: Nutrition & Dietetics- Anmol Publication Pvt. Ltd.- New Delhi.
4. Robinsson, and Lawler. (1986) Normal and Therapeutic Nutrition. Mac Millan Pub.Co.
5. McArdle, William D; (2010): Exercise Physiology, Lippincott, William and Wilkins, Philadelphia.
6. Sharkey, Brian J and Gaskill, Steven E. (2007): Fitness and Health; 6th Edition; Human Kinetics, USA
7. ACSM

Semester VI

Professional Application in Food Science and Nutrition (Internship / Project)

Objectives

The course enables the students to:

1. Get hands-on experience in working in thrust areas.
2. Develop technical and communication skills.
3. Develop confidence and enhance soft skills.

	Subject	Total credits	Th	Pr	Int	Ext	Total
	Professional Application In Food Science and Nutrition. (Internship / Project)	8	-	8	100	100	200

Duration of Internship: 30 working days

A. Criteria for Internship:

The students should complete training in any of the following:

1. Food Industries
2. Pharmaceutical /Nutraceuticals Industries
3. Analytical Labs
4. Research Organizations
5. NGO's involved in Nutrition programmes

B. Criteria for Project:

1. Students may be given projects planned and implemented by the department.
2. The project can be on Product Development / Nutrition Education / KAP Survey / Nutrition Assessment / Market Research.
3. The project should follow the specified format of : Title, Objectives, Methodology, Results and Discussion.

C. Evaluation

1. Internal assessment: Submission of report and oral presentation by the student.
2. External assessment: Evaluation criteria to be provided by the college to the organization to be filled in and submitted by the supervisor.