

GOVERNMENT DEGREE COLLEGE FOR WOMEN (AUTONOMOUS)

BEGUMPET, HYDERABAD-16

Affiliated To Osmania University, Re-Accredited With 'B+' Grade by NAAC



DEPARTMENT OF APPLIED NUTRITION AND PUBLIC HEALTH

SYLLABUS (2019-20)

GOVERNMENT DEGREE COLLEGE FOR WOMEN (A) BEGUMPET
HYDERABAD.

DEPARTMENT OF APPLIED NUTRITION

FIRST YEAR		SEMESTER I		
CODE	COURSE TITLE	COURSE TYPE	HPW	CREDITS
BS101	ENVIRONMENTAL STUDIES	AECC I	2	2
BS102	ENGLISH	CC- I A	4	4
BS103	SECOND LANGUAGE	CC -2 A	4	4
BS104	BASICS OF BIOCHEMISTRY	DSC-IA	4T+2P=6	4+1=5
BS105	OPTIONAL II	DSC -2A	4T+2P=6	4+1=5
BS 106	OPTIONAL III	DSC- 3A	4T+2P=6	4+1=5
	TOTAL			25
FIRST YEAR		SEMESTER II		
BS 201	GENDER SENSITIZATION	AECC 2	2	2
BS 202	ENGLISH	CC- I B	4	4
BS 203	SECOND LANGUAGE	CC -2 B	4	4
BS 204	NUTRITIONAL BIOCHEMISTRY	DSC- IB	4T+2P=6	4+1=5
BS 205	OPTIONALII	DSC- 2B	4T+2P=6	4+1=5
BS 206	OPTIONALIII	DSC- 3B	4T+2P=6	4+1=5
	TOTAL			25

**GOVERNMENT DEGREE COLLEGE FOR WOMEN
(AUTONOMOUS)
BEGUMPET HYDERABAD.
B.Sc. CBCS
DEPARTMENT OF APPLIED NUTRITION**

S.NO	COURSE CATEGORY	NO.OF COURSES	CREDITS PER COURSE	CREDITS
1.	AECC	2	2	4
2.	SEC	4	2	8
3.	CC	2	4 (I YEAR), 3 (II YEAR), 3 (III YEAR)	40
4.	DSC	20	5	60
6.	DSE	10	5	30
7.	GE	1	4	4
8.	PROJECT WORK	1	4	4
	TOTAL	37		150
	CREDITS UNDER NON CGPA			
	NSS / NCC/ SPORTS/ EXTRA CURRICULAR		UPTO 6 (2 IN EACH YEAR)	
	SUMMER INTERNSHIP		UPTO 4 (2 IN EACH YEAR)	

SEMESTER 1 -BASICS OF BIOCHEMISTRY

COURSE CODE : AN 101

Credits: Theory-4, Practicals-2 Theory: 60 Lectures

COURSE OUTCOMES

Unit 1: Introduction to Nutrition& Carbohydrates -

CO1: Understanding of nutrition basics - food groups, body needs for nutrients and carbohydrates – sources, process of digestion, metabolism and utilization.

CO 2: Gain knowledge about carbohydrates, their role and utilization in body processes and understand biological cycles involved in carbohydrate metabolism.

Unit 2: Proteins & Nucleic Acids -

CO3: Understand proteins and their role and utilization in body processes and learn about the metabolism of amino acids.

CO 4: Gain Knowledge on basic structure and functional significance of nucleic acids.

Unit 3: Lipids

CO5: Understand lipid metabolism and their role in human nutrition. Learn about the consequences of high fat consumption in the diet.

CO 6: Gain Knowledge about essential fatty acids and their deficiency.

Unit 4: Energy Metabolism

CO7: Gain knowledge about types of energy and principles of calorimetry. Understand the concept of Recommended Dietary Allowance.

CO 8: Determines energy value of various and understand the concept of Basal Metabolic Rate.

YEAR I – SEMESTER-II
COURSE CODE : AN 201

BS104 DISCIPLINE SPECIFIC COURSE IA-
(DSC IA) **BASICS OF BIOCHEMISTRY**

CREDITS-4

60 HOURS

UNIT 1- INTRODUCTION TO NUTRITION & CARBOHYDRATES
16 HOURS

- 1.1 Introductory Nutrition, Definition of Nutrition, Food, Nutrients, or Proximate Principles, Nutritional needs of body, specific role of nutrients, classification of foods, food groups.
- 1.2 **Carbohydrates** — Composition and chemistry, classification, sources, nutritional significance, digestion, absorption and metabolism - Glycolysis, TCA Cycle with bioenergetics.

Unit II- PROTEINS & NUCLEIC ACIDS

18 HOURS

- 2.1 **Proteins:** Composition and chemistry, classification sources, functions, digestion and absorption, denaturation. Nutritional significance of some amino acids. General properties of proteins, metabolism, deamination, transamination, decarboxylation. Outlines supplementary value of amino acids. Deficiency of Protein — PEM definition, classification, and age groups affected
- 2.2 **Nucleic acids:** Composition — purine and pyrimidine bases DNA, RNA — structure and biological functions

Unit III- LIPIDS

14 HOURS

- 3.1 Composition Chemistry classification- simple, compound & derived lipids with functions, cholesterol functions & ranges sources, chemical properties. Digestion and Absorption,
- 3.2 Essential fatty acids-omega3 & omega 6: functions and deficiency,
Elements of fat analysis, Metabolism: Beta- oxidation of fatty acids. Types of Rancidity, Ketosis

Unit IV-ENERGY METABOLISM

12 HOURS

- 4.1 Types of energy, energy yielding food factors, RDA & factors affecting RDA, energy units.
Principle of direct& indirect calorimetry

4.2 Determination of energy value of food using bomb calorimeter. PFV (Physiological Fuel Value) of foods, RQ, SDA of food.

Determination of BMR and factors affecting BMR

REFERENCE BOOKS

- ✓ Nutrition science- B Srilakshmi, New age international publishers, 2nd edition.
- ✓ A textbook of biochemistry, Dr. AVSS Rama Rao, 10th edition, UBS publishers Distribution pvt. Ltd.
- ✓ Biochemistry- U satyanaraya, U chakrapani, Books and Allied(P.Ltd)
- ✓ Helen A. Guthrie, Introductory Nutrition, Times Mirror Mosby
- ✓ Swaminathan M, Advance Textbook on Food and Nutrition, Volume 1, The Bangalore printing and publishing co., Ltd.
- ✓ Mudambi SR and Rajagopal M V, Fundamentals of food and Nutrition, Willey Eastern Ltd.
- ✓ Swaminathan M, Handbook of Food and Nutrition, The Bangalore Printing and Publishing Co. Ltd.

I YEAR I -SEMESTER

Course Code AN101

DISCIPLINE SPECIFIC COURSE IA- (DSC IA)
BASICS OF BIOCHEMISTRY (Practical)

PERIODS: 15

NO. OF CREDIT-1

I. Introduction to Qualitative and Quantitative of Nutrients

II. Carbohydrates:

1. Qualitative analysis of Glucose
2. Qualitative analysis of Fructose
3. Qualitative analysis of Maltose
4. Qualitative analysis of Sucrose
5. Qualitative analysis of Lactose
6. Qualitative analysis of Starch

III. PROTEINS

1. Qualitative analysis of Proteins

IV. MINERALS

1. Qualitative analysis of Minerals

SEMESTER 2 - NUTRITIONAL BIOCHEMISTRY

COURSE CODE : AN 202

Credits: Theory-4, Practicals-2 Theory: 60 Lectures

COURSE OUTCOMES

Unit 1: Vitamins-

CO1: Understand the importance of Fat-soluble vitamins in human nutrition, including their classification, sources, and the effects of excess and deficiency.

CO 2: Understand the importance of water-soluble vitamins in human nutrition, including their classification, sources, and the effects of excess and deficiency.

Unit 2:Minerals

CO3: Understand the role of minerals in human nutrition, including their classification, sources, and comprehend the functions of minerals with health

CO 4: Understand the role of Zinc and Selenium as antioxidants.

Unit 3:Water balance and Electrolyte balance

CO5: Gain knowledge on Water metabolism:Distribution of water in body fluids, Regulation of water metabolism.

CO 6: Knowledge about acid base balance & imbalance in the body. Japanese Water Therapy.

Unit 4:Enzymes and Hormones

CO7: Understand Role of Enzymes human physiology

CO 8: Understand Role of Hormones in human physiology

**I YEAR II SEMESTER
COURSE CODE : AN 201**

BS 204 DISCIPLINE SPECIFIC COURSE IB- (DSC IB)

NUTRITIONAL BIOCHEMISTRY

CREDITS 4

60 HOUR

Unit I- VITAMINS

20 HOURS

1.1 Fat soluble - A,D,E,K History, Chemistry, physiological functions, sources requirements, effects of deficiency.

1.2 Water soluble vitamins — B Complex — Thiamine, Riboflavin, Niacin, Pantothenic Acid, Folic Acid, Vitamin B 12, Biotin and Pyridoxine, Vitamin C- History, requirements, functions, sources, effect of deficiencies.

Unit II-MINERALS

16 HOURS

2.1 Calcium, Phosphorous, Iron, Fluorine, Iodine. History, Chemistry, physiological functions, sources, requirements, deficiency.

2.2 Role of Zinc and Selenium as antioxidants.

Unit III-Water balance and electrolyte balance

12 HOURS

3.1 Functions of water, water compartments in the body, distribution of water & electrolyte in the body. Regulation of water balance (over hydration & dehydration), regulation of electrolyte balance (hypo & hypernatremia, hypo & hyperkalemia), RAAS (Renin Angiotensin Aldosterone system), water intoxication

3.2 Acid base balance & imbalance, Japanese Water Therapy.

Unit IV-ENZYMES & HORMONE

12 HOURS

4.1 **Enzymes** — Definition, classification, properties, mechanism of enzyme action, factors affecting enzyme action, enzyme inhibitions.

4.2 **Hormones** — Major endocrine glands and their secretions, classification, general mode of action, functions hypo & hyper secretion of — Insulin, Thyroxin, growth hormone, sex hormones.

REFERENCE BOOKS

- ✓ Nutrition science- B srilkashmi, New age international publishers, 2nd edition.
- ✓ A textbook of biochemistry, Dr. AVSS Rama Rao, 10th edition, UBS publishers Distribution pvt. Ltd.
- ✓ Biochemistry- U satyanaraya, U chakrapani, Books and Allied(P.Ltd)
- ✓ Helen A. Guthrie, Introductory Nutrition, Times Mirror Mosby
- ✓ SwaminathanM, Advance Textbook on Food and Nutrition, Volume 1

I YEAR II SEMESTER

NUTRITIONAL BIOCHEMISTRY (PRACTICAL)

NO. OF HOURS 15

CREDITS-1

I. Quantitative analysis of carbohydrates

- Estimation of reducing sugar by Benedict's method
- Estimation of Fructose by Roe's Resorcinol method

II. Estimation of protein by Biuret method

III. Fats

Determination of saponification number of oil.

IV. Vitamins

- Estimation of ascorbic acid by 2,6, dichlorophenol, indophenols method. Estimation of ascorbic acid in lemon / cabbage / green chillies.

V. Minerals

