



# CVM UNIVERSITY

Aegis: Charutar Vidya Mandal (Estd.1945)

## FACULTY OF ENGINEERING & TECHNOLOGY

Effective from Academic Batch: 2022-23

**Programme:** Bachelor of Technology (Food Processing Technology)

**Semester:** IV

**Course Code:** 202070403

**Course Title:** Food Nutrition & Biochemistry

**Course Group:** Professional Core Course

**Course Objectives:** To understand fundamentals of nutrition and biochemistry and the course enables the making of informed choices regarding food consumption and physical activity patterns that contribute to optimal health, and prevention of diseases. The subject knowledge can be utilized effectively as a basis to design food product and menu planning.

### Teaching & Examination Scheme:

Contact hours per week			Course Credits	Examination Marks (Maximum / Passing)				
Lecture	Tutorial	Practical		Theory		J/V/P*		Total
				Internal	External	Internal	External	
3	0	2	4	50/18	50/17	25/9	25/9	150/53

\* J: Jury; V: Viva; P: Practical

### Detailed Syllabus:

Sr.	Contents	Hours
1	<b>Food &amp; Nutrition:</b> Introduction to the course, Definitions of nutrient, nutrition, food, Factors affecting human nutrition, Functions of food, Classification of food, Food Groups, Food guide pyramid, Nutrient wheel Definitions, functions, deficiency symptoms and excessive consumption consequences of macronutrients, water, dietary fiber	10
2	<b>Management of Nutrients:</b> RDA for individuals, Balance diets for infants, children, adults; Basal metabolism rate and factors affecting	04
3	<b>Vitamins and Minerals:</b> Introduction, Classification of vitamins, major source, functions and deficiency symptoms, requirement	09
4	<b>Digestion and Absorption of Food in Human System:</b> Digestion and Absorption of protein, carbohydrate, lipids; Factor affecting on digestion and absorption	07
5	<b>Management of nutrient during processing:</b> Effect of heat processing on carbohydrate, protein and fat; Addition of nutrients like fortification, supplementation, enrichment, restoration	05



6	<b>Enzymes:</b> Introduction, Structure & characteristics, Specificities, Nomenclature & classification, Co-factors, mechanism of enzyme action, Michaelis Menten Equation, Factors affecting enzyme catalysed reactions, Enzyme competitive and uncompetitive, Application of enzymes in food industries	05
7	<b>Metabolism:</b> Glycolysis, TCA cycle, $\beta$ -oxidation of fatty acids	05
	Total	45

### List of Practicals / Tutorials:

1	Calculation of calorific value of food products
2	Preparation of specified pH and ionic concentrations biological buffers and to verify the pH of prepared Buffer using digital pH meter
3	Determination of ascorbic acid content in food samples
4	Study of enzymatic browning reaction and factors affecting on it
5	Study of Balanced Diet
6	Assessment of obesity by determining Body Mass Index (BMI) and determination of calorific need of an individual
7	Qualitative tests for Carbohydrates
8	Determination of reducing carbohydrates by DNSA reagent method
9	To study the effect of substrate concentration on enzymatic reactions
10	To study the effect of temperature on the activity of enzyme ( $\alpha$ -amylase)

### Reference Books:

1	Advanced Text Book on Food and Nutrition Vol. 1 by M. Swaminathan (The Bangalore Printing and Publishing Co. Ltd., Bangalore)
2	Food Nutrition and Dietetics 2nd Edn. by Shubhangini Joshi (Tata McGraw Hill Education Pvt. Ltd., New Delhi)
3	Food Chemistry by L H Meyor (CBS Publisher, Delhi)

### Supplementary learning Material:

1	Role of antioxidants in human nutrition
2	Therapeutics diets for health disorders
3	Anthropometric measurements for assessing nutritional status of human being
4	Industrial applications of carbohydrates, proteins, fat, vitamins and enzymes in food processing
5	Role of phyto-nutrients in human nutrition
6	<a href="http://pressbooks.oer.hawaii.edu/humannutrition2/">http://pressbooks.oer.hawaii.edu/humannutrition2/</a>
7	<a href="https://www.brainkart.com/subject/Introduction-to-Human-Nutrition_244/">https://www.brainkart.com/subject/Introduction-to-Human-Nutrition_244/</a>
8	<a href="https://onlinecourses.swayam2.ac.in/cec19_ag02/preview">https://onlinecourses.swayam2.ac.in/cec19_ag02/preview</a>

### Pedagogy:

- Direct classroom teaching
- Audio Visual presentations/demonstrations
- Assignments/Quiz



- Continuous assessment
- Interactive methods
- Industrial/ Field visits
- Course Projects

### Internal Evaluation:

The internal evaluation comprised of written exam (40% weightage) along with combination of various components such as Certification courses, Assignments, Mini Project, Simulation, Model making, Case study, Group activity, Seminar, Poster Presentation, Unit test, Quiz, Class Participation, Attendance, Achievements etc. where individual component weightage should not exceed 20%.

### Suggested Specification table with Marks (Theory) (Revised Bloom's Taxonomy):

Distribution of Theory Marks in %						R: Remembering; U: Understanding; A: Applying; N: Analyzing; E: Evaluating; C: Creating
R	U	A	N	E	C	
35%	35%	10%	10%	10%	0%	

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

### Course Outcomes (CO):

Sr.	Course Outcome Statements	%weightage
CO-1	Evaluate the dietary sources, roles and functions of key nutrients	30
CO-2	Understanding diet, nutritional requirement and other life style practices play role in the management of health and prevention of diseases / disorders	30
CO-3	Explain the digestion, absorption and utilization of nutrients in managing human health	25
CO-4	Understanding fundamentals of enzymes and its application in food industries	15

### Curriculum Revision:

Version:	2
Drafted on (Month-Year):	June-2022
Last Reviewed on (Month-Year):	
Next Review on (Month-Year):	June-2025