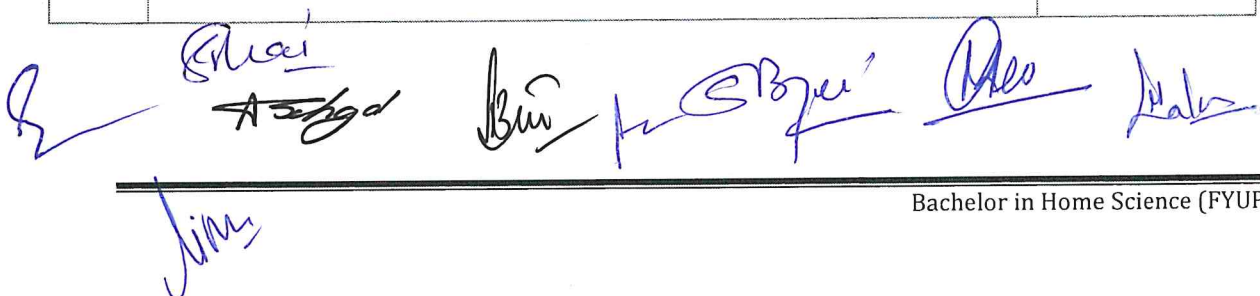


**FOUR YEAR UNDERGRADUATE PROGRAM 2024-28**  
**FACULTY OF Home Science**  
**COURSE CURRICULUM**

<b>PART A: Introduction</b>			
Program: <b>Bachelor in Home Science</b> (Degree/Honors)		Semester : <b>V</b>	
		Session: <b>2024-25</b>	
1	Course Code	<b>HSSC- 13T</b>	
2	Course Title	<b>Nutritional Biochemistry</b>	
3	Course Type	<b>DSC</b>	
4	Pre-requisite (if any)	<b>As per Program</b>	
5	Course Learning Outcomes (CLO)	<ul style="list-style-type: none"> <li>• To understand concepts of Biochemistry.</li> <li>• To classify metabolic cycles related to Carbohydrates.</li> <li>• To identify metabolic cycles related to Protein &amp; Lipids.</li> <li>• To assess Chemistry and functions of Hormones.</li> <li>• To examine kinetics of Enzymes.</li> </ul>	
6	Credit Value	<b>3 C</b>	<b>1 Credit = 15 Hours - learning &amp; Observation</b>
7	Total Marks	<b>Max. Marks: 100</b>	<b>Min Passing Marks : 40</b>

<b>PART B: Content of the Course</b>		
<b>Total No. of Teaching – learning Periods (01 hr per period) : 45 Period ( 45 hours)</b>		
<b>Unit</b>	<b>Topics (Course Contents)</b>	<b>No. of Period</b>
<b>I</b>	<b>Introduction to Biochemistry</b> - definition, objectives, scope and Inter-relationship between Biochemistry and other biological sciences. <b>Carbohydrates</b> - Definition, classifications functions and properties of Monosaccharide's - Glucose, Fructose, Galactose , Disaccharides- Maltose, Lactose, Sucrose Polysaccharides Dextrin, Starch, Glycogen <b>Glycolysis, Gluconeogenesis, Glycogenesis, Glycogenolysis, citric and cycle. Blood sugar regulation.</b>	12
<b>II</b>	<b>Lipids</b> - Definition, composition, importance and classification <b>Fatty Acids</b> - Functions, properties Significance of Acid value, Iodine value and saponification value. Chemistry and function of Phospholipids, Glycolipids and sterols. Metabolism - B (Beta) Oxidation. Aspects of transport-Passive diffusion, Facilitated diffusion, Active transport.	11



III	<b>Proteins</b> - Definition composition function and classification. Amino acids- Essential and Nonessential. Metabolism - Urea cycle, Nitrogen balance, Amino acid pool. Enzymes- Definition, properties, classification, Mode of action of enzymes, factors affecting velocity of enzyme catalyzed reactions, coenzymes.	11
IV	<b>Hormones</b> - Biological roles of hormones of Pituitary, Adrenal cortex and medulla, Thyroid, Parathyroid, Pancreas, Sex glands. Urine - Formation and Composition. <b>Energy</b> - Definition, Unit, calorimeter, caloric value of foods, BMR, RQ, SDA of Foods. Nucleic Acid and Nucleo-proteins - Chemistry, composition, structure, Functions.	11
<b>Keywords:</b> - Biochemistry, Carbohydrate Metabolism, Gluconeogenesis, Glycogenolysis, Urea Cycle, Beta Oxidation of Fatty Acids, Energy Metabolism, Nucleic Acid, Hormones, Urine synthesis, Enzymes.		

**Part C :****Learning Resources : Text Books. Reference Books, Other Resources****Text books Recommended –**

1. Biochemistry-O.P Agrawal, 5<sup>th</sup> Edition, Prasad's Publication.
2. Lehninger's Principles of Biochemistry-H. Lehninger, 6<sup>th</sup> Edition, Macmillan publication.
3. Biochemistry- Harper Illustrated Biochemistry, 31<sup>st</sup> Edition, Mac Graw Hill publication.
4. Biochemistry- Asha Chaudhary, , 11<sup>th</sup> edition, Shiva Publication.
5. Microbiology- RC Dubey & Maheswari, 4<sup>th</sup> Edition, S.Chand Publication.
6. Biochemistry- Ranjana Chawala & Sushmita Nyer, 5<sup>th</sup> Edition, Jaytee Brothers publication
7. Textbook of Biochemistry & Human Biology - G.P. Talwar, 3<sup>rd</sup> edition, PHI Publication.
8. Fundamentals of Biochemistry - A.C. Deb,6<sup>th</sup> Edition, NCBI Publication.
9. Text book of Microbiology – Purohit, 6<sup>th</sup> edition, Agrobios Publication.
10. Food Microbiology – M J Pelzar, Indian Edition, Mac Graw Hill education publisher.
11. Food Microbiology – W.C.Frazier, 5<sup>th</sup> edition, Mac Graw Hill education publisher.

**Online Resources:**

- The Active Site of enzymes : [https://youtu.be/x\\_KvWqdzSII](https://youtu.be/x_KvWqdzSII)
- Applications and importance of factors affecting enzyme action : <https://youtu.be/LbXx3j7b7hE>
- Coenzymes and cofactors : <https://youtu.be/bubY2Nm7hVM>
- Sources of Ammonia : <https://youtu.be/gSB4bshZcMU>
- Ammonia detoxification : <https://youtu.be/x0BANbfK5f8>
- Disorders of ammonia metabolism : <https://youtu.be/WVhbn6OspZk>
- Overview of neurotransmitter metabolism with emphasis on myasthenia gravis and Parkinson disease : <https://youtu.be/N6OpSyzyOJY>
- Formation and fate of bilirubin : <https://youtu.be/r2s0RPnCfZA>
- Disorders of ammonia metabolism : <https://youtu.be/WVhbn6OspZk>
- Bilirubin formation : [https://youtu.be/qX0\\_q0ZJtCA](https://youtu.be/qX0_q0ZJtCA)
- Biochemical basis for jaundice : <https://youtu.be/bBUCKxeqeAQ>
- Jaundice: A introduction classification & causes of each type with emphasis on physiologic jaundice : <https://youtu.be/wmlt0D2nY8>
- Investigations for differential diagnosis of jaundice : <https://youtu.be/Y11f9xQVHlo>
- Alcohol metabolism : <https://youtu.be/TMbGjTsRQpk>

<b>PART D: Assessment and Evaluation</b>		
<b>Suggested Continuous Evaluation Methods:</b>		
<b>Maximum Marks:</b>	<b>100 marks</b>	
<b>Continuous Comprehensive Evaluation(CCE):</b>	<b>30 Marks</b>	
<b>Semester End Exam (SEE):</b>	<b>70 Marks</b>	
<b>Internal Assessment:</b>	Internal Test / Quiz(2) –20+20	Better marks out of the two tests/ Quiz + Obtained marks in assignment shall be considered against <b>30</b> Marks
Continuous Internal Assessment ( CIA)	Assignment/Seminar – 10	
	Total Marks– 30	
<b>End Semester Exam (ESE):</b>	<b>Two section – A &amp; B</b> Section A: Q1. Objective – 10 x1= 10 Mark; Q2. Short answer type- 5x4=20Marks Section B: Descriptive answer type qts.,1 out of 2 from each unit-4x10=40 Marks	

*Name and Signature of Convener & Members of BOS*

*[Handwritten signatures of BOS members]*

Dr. B. Sethi

**FOUR YEAR UNDERGRADUATE PROGRAM**  
**FACULTY OF Home Science**  
**COURSE CURRICULUM - 2024-25**

<b>PART A: Introduction</b>			
Program: <b>Bachelor in Home Science (Degree/Honors)</b>		Semester : <b>V</b>	Session: <b>2024-25</b>
1	Course Code	HSSC – 13P	
2	Course Title	Nutritional Biochemistry ( <i>Practical</i> )	
3	Course Type	DSC	
4	Pre-requisite (if any)	<i>As per Program</i>	
5	Course Learning Outcomes (CLO)	<ul style="list-style-type: none"> <li>To define concepts of Biochemistry based identification tests.</li> <li>To apply various qualitative tests of major nutrients.</li> <li>To evaluate quantitative tests of nutrients.</li> <li>To identify Titration methodology.</li> <li>To learn formation and uses of Haemin crystals from human blood.</li> <li>To assess Idiometric method for quantative estimation of Ascorbic Acid.</li> <li>To understand quantative estimation of Serum Hemoglobin level to assess the condition of anemia.</li> </ul>	
6	Credit Value	<b>1 C</b>	<i>1 Credit = 15 Hours - learning &amp; Observation and</i>
7	Total Marks	<b>Max. Marks: 50</b>	<b>Min Passing Marks : 20</b>

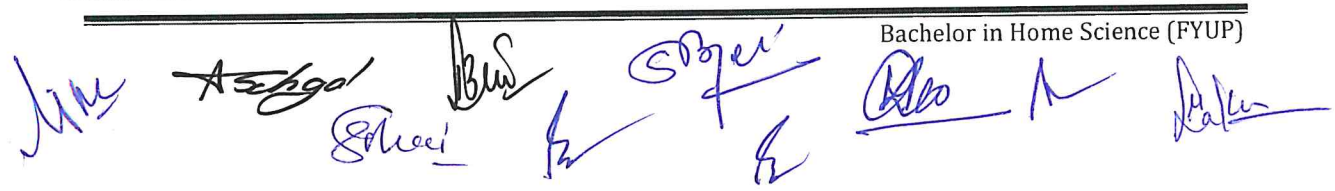
<b>PART B: Content of the Course</b>		No. of Periods
<i>1 Credit = 30 Hrs Laboratory/ Field learning/ Training</i>		
<b>Module</b>	<b>Topics ( Course Content)</b>	
Lab/ Field Training/ Experiment contents of the course	<ol style="list-style-type: none"> <li>Identification of Glucose, Fructose, Maltose, Lactose, Sucrose, Starch.</li> <li>Colour and precipitation reactions of Protein.</li> <li>Colour reactions of Cholesterol.</li> <li>Estimation of Glucose by Benedict’s method.</li> <li>Estimation of Ascorbic acid by Idiometric method.</li> <li>Estimation of Glycine by Titration.</li> <li>Estimation of Hemoglobin by Acid Hematin method.</li> <li>Preparation of Haemin crystals.</li> <li>Action of Salivary amylase on conversion of starch.</li> <li>Visit to pathology lab.</li> <li><b>Project</b>-Recording Hemoglobin level ,its correlation with age , sex, weight.</li> </ol>	30
Key Words	Titration, Sapofification Value, Bendict’smethod, Quantative estimations	

Bachelor in Home Science (FYUP)



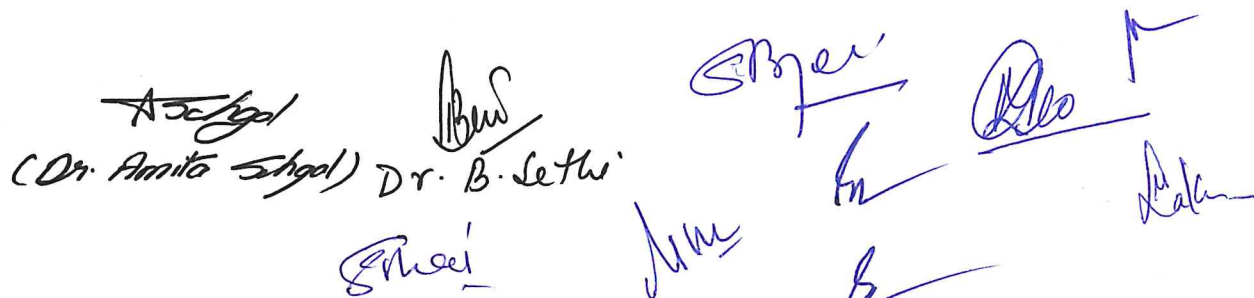
<b>PART C:</b>
<b>Learning Resources : Text Books, Reference Books, Other Resources</b>
<p><b>Text Books Recommended :</b></p> <ol style="list-style-type: none"> <li>1. Biochemistry-O.P Agrawal, 5<sup>th</sup> Edition, Prasad's Publication.</li> <li>2. Lehninger's Principles of Biochemistry-H. Lehninger, 6<sup>th</sup> Edition, Macmillan publication.</li> <li>3. Biochemistry- Harper Illustrated Biochemistry, 31<sup>st</sup> Edition, Mac Graw Hill publication.</li> <li>4. Biochemistry- Asha Chaudhary, , 11<sup>th</sup> edition, Shiva Publication.</li> <li>5. Microbiology- RC Dubey &amp; Maheswari, 4<sup>th</sup> Edition, S.Chand Publication.</li> <li>6. Biochemistry- Ranjana Chawala &amp; Sushmita Nyer, 5<sup>th</sup> Edition, Jaytee Brothers publication</li> <li>7. Textbook of Biochemistry &amp; Human Biology - G.P. Talwar, 3<sup>rd</sup> edition, PHI Publication.</li> <li>8. Fundamentals of Biochemistry - A.C. Deb,6<sup>th</sup> Edition, NCBI Publication.</li> <li>9. Text book of Microbiology – Purohit, 6<sup>th</sup> edition, Agrobios Publication.</li> <li>10. Food Microbiology – M J Pelzar, Indian Edition, Mac Graw Hill education publisher.</li> <li>11. Food Microbiology – W.C.Frazier, 5<sup>th</sup> edition, Mac Graw Hill education publisher.</li> </ol>
<p><b>Online Resources :-</b></p> <ul style="list-style-type: none"> <li>• The Active Site of enzymes <a href="https://youtu.be/x_KvWqdzSII">https://youtu.be/x_KvWqdzSII</a></li> <li>• Applications and importance of factors affecting enzyme action <a href="https://youtu.be/LbXx3j7b7hE">https://youtu.be/LbXx3j7b7hE</a></li> <li>• Coenzymes and cofactors <a href="https://youtu.be/bubY2Nm7hVM">https://youtu.be/bubY2Nm7hVM</a></li> <li>• Sources of Ammonia <a href="https://youtu.be/gSB4bshZcMU">https://youtu.be/gSB4bshZcMU</a></li> <li>• Ammonia detoxification <a href="https://youtu.be/x0BANbfK5f8">https://youtu.be/x0BANbfK5f8</a></li> <li>• Disorders of ammonia metabolism <a href="https://youtu.be/WVhbn6OspZk">https://youtu.be/WVhbn6OspZk</a></li> <li>• Overview of neurotransmitter metabolism with emphasis on myasthenia gravis and Parkinson disease <a href="https://youtu.be/N6OpSyzyOJY">https://youtu.be/N6OpSyzyOJY</a></li> <li>• Formation and fate of bilirubin <a href="https://youtu.be/r2s0RPnCFZA">https://youtu.be/r2s0RPnCFZA</a></li> <li>• Disorders of ammonia metabolism <a href="https://youtu.be/WVhbn6OspZk">https://youtu.be/WVhbn6OspZk</a></li> <li>• Bilirubin formation <a href="https://youtu.be/qX0_q0ZJtCA">https://youtu.be/qX0_q0ZJtCA</a></li> <li>• Biochemical basis for jaundice <a href="https://youtu.be/bBUCKxeqeAQ">https://youtu.be/bBUCKxeqeAQ</a></li> <li>• Jaundice: A introduction classification &amp;causes of each type with emphasis on physiologic jaundice <a href="https://youtu.be/wmlt0D2nY8">https://youtu.be/wmlt0D2nY8</a></li> <li>• Investigations for differential diagnosis of jaundice <a href="https://youtu.be/Y11f9xQVHlo">https://youtu.be/Y11f9xQVHlo</a></li> <li>• Alcohol metabolism <a href="https://youtu.be/TMbGJTsRQpk">https://youtu.be/TMbGJTsRQpk</a></li> </ul>

Bachelor in Home Science (FYUP)



<b>PART D :Assessment and Evaluation</b>		
<b>Suggested Continuous Evaluation Methods:</b>		
<b>Maximum Marks:</b>	<b>50 Marks</b>	
<b>Continuous Internal Assessment (CIA):</b>	<b>15 Marks</b>	
<b>End Semester Exam(ESE):</b>	<b>35 Marks</b>	
<b>Internal Assessment:</b>	Internal Test / Quiz (2) - <b>10 &amp; 10</b>	Better marks out of the two tests/ Quiz + Obtained marks in Assignment shall be considered against <b>15</b> Marks
Continuous Internal Assessment ( CIA)	Assignment/Seminar+ Attendance - <b>05</b>	
	Total Marks - <b>15</b>	
<b>End Semester Exam(ESE):</b>	<b>Laboratory / Field Skill Performance : on spot Assessment</b>	
	A.Performed the task based on Lab work -	<b>20 marks</b>
	B.Spotting based on tools & Technology (written) -	<b>10 marks</b>
	C.Viva –voce ( based on principle/ Technology) -	<b>05 Marks</b>

*Signature of Convener and Members (CBoS):*


  
 (Dr. Amrita Singh) Dr. B. Sethi