

# M.V.R. DEGREE COLLEGE

## (UG And PG Courses)

(Affiliated to Andhra University)

An Institution of Priyadarshini Educational Academy

NAAC ACCREDITED COLLEGE

Dr.V.Rama Rao, M.A.,Ph.D.,  
Secretary & Correspondent

Dr.A.Balakrishna, M.Sc.,Ph.D.,  
Principal

### Department of Biochemistry

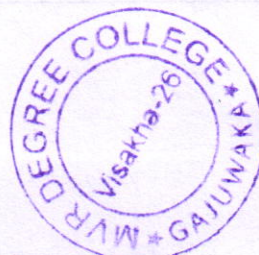
#### Bachelor of science

#### APSCHE, Revised Syllabus of Biochemistry under CBCS Framework

w.e.f 2015-2016

#### Course outcomes (COs) for Biochemistry

Course Code	Title of the paper	Outcomes
Course 1 (TH)	Biomolecules	<p><b>CO1:</b> Student gains knowledge in the chemistry of biomolecules such as water, carbohydrates lipids, proteins which make up all the living organisms and effects of their alterations in diseases occurring in plants, animals and humans.</p> <p><b>CO 2:</b> It determines the amino acids structures</p> <p><b>CO 3:</b> It determines protein classification</p> <p><b>CO 4:</b>It determines the classification of lipids and its structure and micelle formation</p> <p><b>CO 5:</b>It determines the biological role of water in daily life</p>
Course 1 (Pr)	Qualitative Analysis	<p><b>CO1:</b>The practicals will give the expertise to the student for analysis of any biological or non biological sample for identification of its chemical composition.</p>
Course 2 (TH)	Nucleic acids and Biochemical Techniques	<p><b>CO1:</b>It enables the students to understand the structure and properties of nucleic acids</p> <p><b>CO2:</b>The student will learn the various analytical techniques and their applications in separation and isolation of cells and tissues for studying their functional abnormalities</p> <p><b>CO3:</b>The knowledge in the analytical</p>





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		<p>techniques will enable the student for isolation ,purification and chemical characterization of compounds.</p> <p><b>CO4:</b>It determines the plants and microbes which will have medical or commercial importance.</p> <p><b>CO5:</b> It determines the isotopes and its inhibitors</p>
<b>Course 2 (Pr)</b>	Nucleic acids and Biochemical Techniques	<p><b>CO1:</b>The practicals will provide the expertise to the student for quantification of electrolytes and other metal ions, hormones and identification of bacteria.</p> <p><b>CO2:</b>The expertise gained by the student in this course can be useful in food industries ,pharma industries, clinical and microbiological labs</p>
<b>Course 3 (TH)</b>	Enzymology and Bioenergetics	<p><b>CO1:</b> The student will get knowledge in enzymes, their physiological importance and other applications.</p> <p><b>CO2:</b>The ability in classifying Enzymes. Understand the mechanism of catalysis employed by the most well characterized enzymes. Identify the methods of enzyme purification</p> <p><b>CO3:</b> Apply the knowledge of immobilized systems and application of enzymes to Industrial and clinical processes.</p> <p><b>CO4:</b> Describe the chemical nature of enzymes and their functions in biochemical reactions.</p> <p><b>CO5:</b> Explain how the enzyme activity is regulated and affected by temperature, PH and concentration. Explain enzyme function with reference to the lock and key ,induced fit models.</p> <p><b>CO6:</b> Explain the roles of enzymes inhibitors activators and coenzymes.</p> <p><b>CO7:</b> Recognize enzyme specificity,</p>



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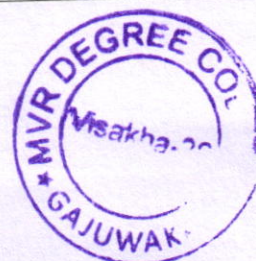
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		allosteric enzymes, km. Express the important coenzymes and the groups they transfer. <b>CO8:</b> Describe what happens in citric acid cycle, ETC, oxidative phosphorylation and explain the role of each process in energy production.
<b>Course 3 (Pr)</b>	Enzymology	<b>CO1:</b> The practicals will provide the expertise for quantification of enzymes activities, glucose, proteins and lipid levels in blood which will have clinical applications.
<b>Course 4 (TH)</b>	Intermediary Metabolism	<b>CO1:</b> The student will know how the nutrients such as carbohydrates, lipids and proteins get metabolized for the purpose of energy and other physiological functions in the body. <b>CO2:</b> This will enable the student to understand the pathophysiology of metabolic diseases such as diabetes, atherosclerosis etc. which occur due to alterations in metabolisms. <b>CO3 :</b> Explain and give examples of the strategies of metabolism, emphasizing role of ATP coupled reaction. <b>CO4:</b> Define catabolism , anabolism and which type of reactions involved. <b>CO5:</b> It determines the structure of heme
<b>Course 4 (Pr)</b>	Quantitative Analysis	<b>CO1:</b> Hands on experience in estimating the quantitative analysis of biomolecules like protein, carbohydrates and nucleic acids.
<b>Course 5 (TH)</b>	Physiology, Clinical Biochemistry and Immunology	<b>CO1:</b> The student will get knowledge in the different physiological systems and their functions in the human body. By studying blood, its composition and its functions the student will understand the importance of





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		<p>blood.</p> <p><b>CO2:</b>This course will also provide knowledge in hormones,their functions and the diseases occurring due to alterations in the levels of hormones.</p> <p><b>CO3:</b>By studying this course the student will know the nutritional importance of proteins,carbohydrates,lipids, vitamins and minerals.</p> <p><b>CO4:</b>Display knowledge of antigen, formation of antibodies, antigen antibody reaction.</p> <p>Differentiate between innate and adaptive immunity and explain the main and Defense lines as well as biological barriers to infection.</p> <p><b>CO5:</b> Illustrate the cell types and organs involved in the process of immune response.</p> <p><b>CO6:</b>Emphasize and describe antigens immunogens antibodies as well as interaction between them. Illustrate the adverse effects of the immune system including allergy and hypersensitivity.</p> <p><b>CO7:</b>Interpret the important immunological disorders and principles of autoimmunity &amp; Explain vaccination and its role in protection against disease.</p>
<b>Course 5 (Pr)</b>	<b>Nutritional and Clinical Biochemistry</b>	<p><b>CO1</b> Clinical biochemistry unit along with practicals will enable the student to do diagnostic tests for liver diseases,Gastro intestinal diseases,renal diseases and nutrititional deficiencies.</p> <p><b>CO2:</b> Conduct experiments designed for study of nutritional biochemistry</p>
<b>Course 6 (TH)</b>	<b>Molecular Basis of Infectious Diseases</b>	<p><b>CO1:</b> This course will enable the student to know various microbes such as bacteria,fungi and viruses ,their structures and other propertiesand diseases caused by them.</p> <p><b>CO2:</b>The student will also get knowledge in</p>



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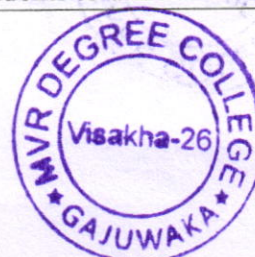
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		immune system, vaccines and also understand the pathogenesis of auto immune diseases and immune deficiency diseases. <b>CO3:</b> This course will provide knowledge and expertise in molecular biology such as genes, their structure and importance. <b>CO4:</b> This will also enable the student to know the applications of PCR in cloning and diagnosis of genetic and viral diseases. <b>CO5:</b>
<b>Course 6 (Pr)</b>	<b>Molecular Basis of Infectious Diseases</b>	<b>CO1:</b> The practicals will provide the expertise to the student to work in microbiology laboratory, food and pharma industries, and biotech companies for production of vaccines and other life saving drugs.
<b>Course 6 (TH) Elective Paper- VII(A)</b>	<b>Microbiology and Molecular Biology</b>	<b>CO1:</b> The student will also get knowledge in their commercial applications by making use of their beneficial effects such as fermentation in alcohol production, nitrogen fixation in agriculture etc. <b>CO2:</b> This course will provide knowledge and expertise in molecular biology such as genes, their structure and importance. <b>CO3:</b> It deals with the study of restriction enzymes <b>CO4:</b> It deals with nitrogen fixation and microorganisms involved in it <b>CO5:</b> Molecular biology and disease diagnosis studies
<b>Course 6 (Pr) Elective Paper- VII(A)</b>	<b>Microbiology and Molecular Biology</b>	<b>CO1:</b> These practicals enable the student to acknowledge with media preparation, culture techniques and colony isolation of microbes. <b>CO2:</b> Helps the student understand the microbial growth in the nutrient media.
<b>Course 6 (TH) Elective</b>	<b>Biochemistry of Cell</b>	<b>CO1:</b> It helps students to understand the





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Paper-VII(B)		nature of biomolecules present in the cellular environment. <b>CO2:</b> It enables the student to know the structure and function of aminoacids,carbohydrates,lipids. <b>CO3:</b> Helps to know about the vitamins, coenzymes and their function in the cell. <b>CO4 :</b> Helps to study about the signalling molecules in the cell. <b>CO5 :</b> It enables the student to know the structure and function of carbohydrates,lipids.
Course 6 (Pr)Elective Paper-VII(B)	Biochemistry of Cell	<b>CO1:</b> This practical expertises the hands in analysis of biomolecules like aminoacids, carbohydrates and lipids.
Course 6 (TH)Elective Paper-VII(C)	Biochemical Correlations in Diseases	<b>CO1:</b> It helps the student learn about the inborn errors of metabolism. <b>CO2:</b> Helps the student learn about the diseases caused due to hormonal imbalance, autoimmune diseases an infectious diseases. <b>CO3:</b> Gives awareness about distinguishing various types of diseases. <b>CO4:</b> It studies various hormonal imbalances <b>CO5:</b> Studies misfold proteins
Course 6 (Pr)Elective Paper-VII(C)	Biochemical Correlations in Diseases	<b>CO1:</b> Expertises the hands in diagnosis of diseases, based on the analysis of respective biomolecule or the substance in the given sample. <b>CO2</b> It has significant role in clinical labs.



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