



A.D.M. COLLEGE FOR WOMEN

(Autonomous)

Affiliated to Bharathidasan University

(Nationally Accredited with "A" Grade by NAAC – 3rd Cycle)

NAGAPATTINAM 611 001.

DEPARTMENT OF BIO CHEMISTRY

PROGRAMME : B.Sc., BIOCHEMISTRY

PO NO	Programme Outcomes (PO) On completion of the course the learner will be able
PO 1	Students acquired necessary knowledge and skills to undertake a career in research either industry.
PO 2	Integrate and apply the techniques Analytical Biochemistry, Clinical Biochemistry, Molecular Biology and Basics in Bioinformatics
PO 3	Handling microbial, cellular and biochemical systems.
PO 4	Facilitate placement in various clinical laboratories and biological research.
PO 5	Contribution to the betterment of the society by inculcating expertise in health sector.

PSO NO	Programme Specific Outcomes (PSO): On completion of the course the learner will be able
PSO 1	An ability to acquire in-depth theoretical and practical knowledge of Biochemistry and the ability to apply the acquired knowledge to provide cost efficient solutions in Biochemistry.
PSO 2	An ability to properly understand the technical aspects of existing technologies that help in addressing the biological and medical challenges faced by human kind.
PSO 3	To apply contextual knowledge and modern tools of biochemical research for solving problems.
PSO 4	To make them able to express ideas persuasively in written and oral form to develop their leadership qualities.
PSO 5	To demonstrate professional and ethical attitude with enormous responsibility to serve the society.

Course Title	SEMESTER-I / CORE COURSE-I BIOMOLECULES	PSOs Addressed	Cognitive Level
Code	BBA		
CO. No	Course Outcomes:		
CO 1	This paper trains students to appreciate the salient features of biomolecules the organization of life.	PSO 1	U
CO 2	It spans over the significance and methodology involved in characterizing major biomolecules.	PSO 3	AN
CO 3	It helps the students in understanding the classification functions and application aspects of biomolecules.	PSO 2	U
CO 4	Have knowledge of the structure/conformational freedom of biomolecular, e.g proteins, DNA/RNA, carbohydrates and key metabolites/co-factors, e.g. be able to draw and recognize key structures such as the 20 amino acids and major metabolites	PSO 1	U
CO 5	Understand and demonstrate how the structure of biomolecules determines their chemical properties and reactivity	PSO 3	AN

Course Title	SEMESTER-I & II / CORE COURSE-II MAJOR PRACTICAL – I	PSOs Addressed	Cognitive Level
Code	BBBY		
CO . NO	Course Outcomes		
CO 1	This paper introduces people to chemical reasoning and thinking, encouraging application of chemical rules and logic to problems.	PSO 1	AN
CO 2	Draw molecules and reaction mechanisms; understand experiments aimed at elucidating mechanism.	PSO 2	U
CO 3	Students understand various identification tests for carbohydrates and amino acids.	PSO 3	U
CO 4	Students acquire the skill to distinguish reducing and non-reducing sugars.	PSO 1	A
CO 5	Students acquire skill to perform the experiment in the real lab	PSO 1	U

Course Title	SEMESTER-II / CORE COURSE-III ANALYTICAL TECHNIQUES	PSOs Addressed	Cognitive Level
Code	BBC		
CO . NO	Course Outcomes:		
CO 1:	Students acquired the various analytical techniques.	PSO 1	U
CO 2:	On completion of this paper, the learner will be able to perform beers law calculations and calorimetry.	PSO 2	AN
CO 3:	Describe the principles of this lager chromatography (TLC) and high performance liquid chromatography (HPLC) Draw a schematic diagram of the instrumentation.	PSO 2	AN
CO 4:	Employ the knowledge for the separation of proteins/ polypeptides by selecting appropriate separation techniques, characterize certain functionalities of biomolecules by using spectroscopic techniques.	PSO 3	AP
CO 5:	Significantly enhanced Knowledge of methodologist in various laboratory techniques	PSO 1	U

Course Title	SEMESTER-III / CORE COURSE-IV HUMAN PHYSIOLOGY	PSOs Addressed	Cognitive Level
Code	BBD		
CO . NO	Course Outcomes:		
CO 1:	Ensure the students to acquire knowledge on composition and function of body fluid.	PSO 1	U
CO 2:	To understand the apply the various concepts of digestive system.	PSO 2	AP
CO 3:	To understand the general anatomy and function of the male and female reproductive organs.	PSO 2	U
CO 4:	To classify different type of muscle and anatomy of excretory and nervous system.	PSO 1	AN
CO 5:	To understand the anatomy and physiology and cardiovascular and respiratory system.	PSO 2	U

Course Title	SEMESTER-III & IV / CORE COURSE-V MAJOR PRACTICAL II	PSOs Addressed	Cognitive Level
Code	BBEY		
CO . NO	Course Outcomes:		
CO 1:	To understand the importance and types of communication.	PSO 1	U
CO 2:	To understand the isolating the DNA from animal tissue	PSO 2	AN
CO 3:	To understand the different types of buffer preparation and measurement of pH	PSO 2	AN
CO 4:	To estimate the RNA and DNA used in specific methods.	PSO 2	U
CO 5:	To learn the different types chromatography in separation of amino acid and sugar.	PSO 2	AP

Course Title	SEMESTER-III & IV / ALLIED PRACTICAL-II MICROBIAL, PLANT AND CELL BIOLOGY PRACTICAL	PSOs Addressed	Cognitive Level
Code	BBA2Y		
CO . NO	Course Outcomes:		
CO 1:	To determine the various type of techniques microscopic and gram staining.	PSO 2	U
CO 2:	To estimate the various plant cell type and onion root mitosis.	PSO 1	AP
CO 3:	To improve the culture medium identification.	PSO 2	AN
CO 4:	Students will be able to observe and correctly identify different cell types, cellular structures using different microscopic techniques	PSO 3	AN
CO 5:	Students will be able to differentiate the cells of various living organisms and get awareness of physiological processes of cell e.g. cell divisions	PSO 5	AN

Course Title	SEMESTER-III / ALLIED COURSE-III BIOLOGY I	PSOs Addressed	Cognitive Level
Code	BBA1		
CO . NO	Course Outcomes:		
CO 1:	Gain the knowledge in the membrane and properties of membrane	PSO 1	U
CO 2:	To learn the energy and information flow living system.	PSO 2	AN
CO 3:	Form and function of cells organelles.	PSO 1	U
CO 4:	Gain the knowledge in the membrane and properties of membrane.	PSO 2	U
CO 5:	To learn the energy and information flow living system.	PSO 2	AN

Course Title	SEMESTER-III / NON MAJOR ELECTIVE-I WOMEN AND HEALTH	PSOs Addressed	Cognitive Level
Code	BBE1		
CO . NO	Course Outcomes:		
CO 1:	Ensure the students to acquire knowledge on anatomy of female reproductive system and related diseases.	PSO 2	U
CO 2:	To understand the concepts of vaccines and genetic complication during the pregnancy	PSO 1	AN
CO 3:	To understand acquire knowledge on different types of parturition and vaccination for infants.	PSO 2	AC
CO 4:	Ensure the students to understand acquire knowledge on diagnosis and treatment in health problem for women	PSO 5	U
CO 5:	Ensure the students to understand acquire knowledge on balanced diet and physical activity for women .	PSO 5	AN

Course Title	SEMESTER-III / NON MAJOR ELECTIVE-I HEALTH AND DISEASE	PSOs Addressed	Cognitive Level
Code	BBE1		
CO .NO	Course Outcomes:		
CO 1:	Evaluate the quality and rigor of evidence presented to support an idea.	PSO 2	AN
CO 2:	Evaluate and interpret case study information to understand clinical signs and symptoms	PSO 5	AN
CO 3:	Discuss gaps in our knowledge of health and disease and gain insight into the contemporary process of medical science research	PSO 2	AC
CO 4:	Locate relevant information using on-line search tools and databases.	PSO 5	U
CO 5:	Explain at an introductory level, biological processes essential for the maintenance of health and the mechanisms underlying the cause, consequence	PSO 1	U

Course Title	SEMESTER-IV / CORE COURSE-VI CELL AND MOLECULAR BIOLOGY	PSOs Addressed	Cognitive Level
Code	BBF		
CO .NO	Course Outcomes:		
CO 1:	To understand the cell and types of signal transduction system.	PSO-2	AC
CO 2:	Ensure the students to understand structure and function of plant and animal cell organelles.	PSO-4	U
CO 3:	To study the basic types	PSO-4	AN
CO 4:	of replication and replication mechanism	PSO-5	U
CO 5:	To understand the different stage of mechanism if transcription.	PSO-4	AN

Course Title	SEMESTER-IV / ALLIED COURSE-IV BIOLOGY II	PSOs Addressed	Cognitive Level
Code	BBA3		
CO . NO	Course Outcomes:		
CO 1	To study about the basic concepts of evolutionary biology	PSO 1	U
CO 2	To understand the principle of Mendel and inheritance of mitochondrial genes	PSO 2	U
CO 3	To study about the pathway of plant physiology and photochemical of plants.	PSO 1	AN
CO 4	To ensure the students understand the physical environmental of biology	PSO 3	AC
CO 5	To study about the basic concepts of evolutionary biology	PSO 3	U

Course Title	SEMESTER-IV /NON MAJOR ELECTIVE- II COSMETOLOGY	PSOs Addressed	Cognitive Level
Code	BBE2		
CO . NO	Course Outcomes:		
CO 1	To ensure the student understand the physical, mental and health care.	PSO-2	U
CO 2	To understand the skill in the areas of skin, make up, manicuring.	PSO1	U
CO 3	To study about the hair analysis such as hair cutting, coloring, styling	PSO4	AP
CO 4	To understand the cosmetic allergy for skin ,hair and nail	PSO-5	AN
CO 5	To ensure the students basic concepts of beauty culture and health care.	PSO-5	U

Course Title	SEMESTER-IV /NON MAJOR ELECTIVE-II HOSPITAL MANAGEMENT	PSOs Addressed	Cognitive Level
Code	BBE2		
CO . NO	Course Outcomes:		
CO 1	Understanding about reinsurance and its types	PSO 3	U
CO 2	To know about the basic principles of underwriting knowledge about disaster and its types.	PSO 5	AN
CO 3	To familiarize the students in disaster preparedness, planning, drill, committee in hospitals.	PSO 5	AN
CO 4	Triage area behind emergency department	PSO 3	U
CO 5	Understanding about health and management	PSO 3	U

Course Title	SEMESTER-IV / SKILL BASED ELECTIVE -I HERBAL MEDICINE	PSOs Addressed	Cognitive Level
Code	BBS1		
CO . NO	Course Outcomes:		
CO 1:	To study about the botanical description of various plants	PSO 2	U
CO 2:	To understand the raw materials of herbal medicine.	PSO 1	AN
CO 3:	To study about the drug yielding in fungi and algae.	PSO 2	AN
CO 4:	To understand the determination of physical and chemical constants.	PSO 3	AN
CO 5:	To ensure the students scope and application of herbal medicine.	PSO 3	U

Course Title	SEMESTER-V / CORE COURSE-VII INTRODUCTION TO ENZYMOLOGY	PSOs Addressed	Cognitive Level
Code	BBG		
CO . NO	Course Outcomes		
CO 1	Plan and execute an enzyme assay	PSO 3	U
CO 2	Analyze enzyme kinetic data	PSO 2	AN
CO 3	Analyze kinetic inhibition data and to determine the mechanism of inhibition	PSO 2	AN
CO 4	Perform library research on a specific enzyme topic	PSO 1	AN
CO 5	To study about application of enzyme indifferent industries.	PSO 2	U

Course Title	SEMESTER-V / CORE COURSE-II BIOENERGETICS AND METABOLISM	PSOs Addressed	Cognitive Level
Code	BBH		
CO . NO	Course Outcomes		
CO 1	Understand the structure of amino acids, proteins, enzymes, chemical messengers, carbohydrates, lipids and nucleic acids.	PSO 2	U
CO 2	To study the function of the above listed biomolecules	PSO 3	AN
CO 3	To study the biochemical energy generated in the cells using principles of thermodynamics (free energy, enthalpy).	PSO 2	U
CO 4	To understand the chemical reactions involved in biochemical pathways that produce ATP, such as citric acid cycle and electron transport.	PSO 1	AC
CO 5:	To know the metabolism of carbohydrates, lipids, proteins and amino acids.	PSO 3	AN

Course Title	SEMESTER-V / CORE COURSE-II PHARMACEUTICAL BIOCHEMISTRY	PSOs Addressed	Cognitive Level
Code	BBI		
CO . NO	Course Outcomes		
CO 1	To study the history of pharmacy, development of pharmacy profession and industry in India.	PSO 1	U
CO 2	Analyze various routes of drug administration, concept of dosage forms, unit operations involved in preparation of these dosage forms.	PSO 2	AN
CO 3	To understand the alternative system of medicines.	PSO 3	AN
CO 4	To study the factors which influence the design of pharmaceutical dosage forms.	PSO 2	AC
CO 5	Summarize the factors influencing formulation of various dosage form like solution.	PSO 3	AP

Course Title	SEMESTER-V / CORE COURSE-X MAJOR PRACTICAL III	PSOs Addressed	Cognitive Level
Code	BBJY		
CO . NO	Course Outcomes		
CO 1	Determination of ash and moisture content of food materials.	PSO 3	U
CO 2	Determine carbohydrate, protein and fat content analysis	PSO 2	AN
CO 3	Estimation of iron and phosphorous in standard procedure.	PSO 3	AN
CO 4	Estimation of calcium in milk.	PSO 3	AN
CO 5	Doing estimation of specific activity pH of salivary amylase and alkaline phosphates.	PSO 3	AN

Course Title	SEMESTER-V / MAJOR BASED ELECTIVE-I MEDICAL LAB TECHNIQUES	PSOs Addressed	Cognitive Level
Code	BBE3		
CO . NO	Course Outcomes		
CO 1	Calculate and properly report laboratory data.	PSO 1	U
CO 2	Perform basic clinical laboratory procedures using appropriate laboratory techniques and instrumentation in accordance with current laboratory safety protocol.	PSO 3	AP
CO 3	Calculate and properly report laboratory data.	PSO 2	C
CO 4	Interpret laboratory results in accordance to laboratory protocol	PSO 2	AN
CO 5	Use effective written and verbal communication that represents competence and professionalism in the clinical laboratory setting.	PSO 1	AN

Course Title	SEMESTER-V / MAJOR BASED ELECTIVE-I ENDOCRINOLOGY	PSOs Addressed	Cognitive Level
Code	BBS1		
CO . NO	Course Outcome		
CO 1	Students should know the chemical nature of hormones, the relationship between structure and function of hormones	PSO 1	U
CO 2	Quantitative aspects of hormonal action in relation to endocrine disorder, the role of hormones as a regulatory factor of a living system	PSO 2	AP
CO 3	The neurotransmitters and their relation with some diseases and drug addiction.	PSO 3	AN
CO 4	To discuss the definition of a hormone in terms of its general properties.	PSO 3	U
CO 5	Students will be identify the glands, organs, tissues and cells that synthesizes and secrete hormones, hormone precursors and associated compounds.	PSO 1	U

Course Title	SEMESTER-V / SKILL BASED ELECTIVE-II HERBAL MEDICINE PRACTICAL	PSOs Addressed	Cognitive Level
Code	BBS2Y		
CO . NO	Course Outcomes		
CO 1	Demonstrating initiative by beginning work in a timely manner without being reminded	PSO 1	U
CO 2	Exhibiting professional appearance by adhering to laboratory dress code	PSO 3	U
CO 3	Organizing work flow and determining priorities	PSO 2	U
CO 4	Producing accurate work within the allotted time	PSO 3	U
CO 5	Demonstrating awareness of own limitations, and seeking help when needed	PSO 3	U

Course Title	SEMESTER-V / SKILL BASED ELECTIVE-III FOOD AND NUTRITION	PSOs Addressed	Cognitive Level
Code	BBS3		
CO . NO	Course Outcomes		
CO 1	Locate and interpret government regulations regarding the manufacture and sale of food products.	PSO 3	U
CO 2	Discuss the major chemical reactions that occur during food preparation and storage.	PSO 3	AN
CO 3	Discuss the important pathogens and spoilage microorganisms in foods.	PSO 1	AN
CO 4	Explain the effects of common food preparation methods and food storage conditions on survival and growth of microbial contaminants. Obtain food protection manager certification	PSO 2	AC
CO 5	Discuss basic principles of common food preservation methods.	PSO 2	AN

Course Title	SEMESTER-VI / CORE COURSE-XI CLINICAL BIOCHEMISTRY	PSOs Addressed	Cognitive Level
Code	BBK		
CO . NO	Course Outcomes		
CO 1	They Will be able to clinically assess the laboratory indicators of physiologic conditions and diseases	PSO 1	AP
CO 2	Students will know the biochemical and molecular tools needed to accomplish preventive, diagnostic, and therapeutic intervention on hereditary and acquired disorders Course contents	PSO 2	AN
CO 3	Assessment of the diagnostic performance of laboratory tests according to the clinical setting and prevalence of disease	PSO 3	U
CO	It trains the students to gain concepts of assessing the human physiology using biological fluid.	PSO 2	AN
CO 5:	It illustrates the mechanism of metabolic disorders at molecular level. It facilitates in employability in diagnostic and research institutes.	PSO 5	U

Course Title	SEMESTER-VI / CORE COURSE-XII IMMUNOLOGY	PSOs Addressed	Cognitive Level
Code	BBL		
CO . NO	Course Outcomes		
CO 1	Locate and access immunological information relevant to area of study.	PSO 1	U
CO 2	Think critically about issues that involve immunology.	PSO 2	AC
CO 3	Collaborate with peers and work effectively in a group.	PSO 3	AN
CO 4	Articulate scientific processes related to immunology in written and/or oral format.	PSO 2	AN
CO 5	Present conclusions and explain logic to immunological issues.	PSO 5	AN

Course Title	SEMESTER-VI / CORE COURSE-XIII MAJOR PRACTICAL IV	PSOs Addressed	Cognitive Level
Code	BBMY		
CO . NO	Course Outcomes		
CO 1	Diagnosis of clinical disorders by estimating biomarkers	PSO 1	U
CO 2	Explain the clinical significance of the laboratory tests	PSO 2	AN
CO 3	Discuss the fundamental biochemistry knowledge related to health	PSO 3	AN
CO 4	Determine various substances including substrates, enzymes, hormones, etc and their use in diagnosis and monitoring of disease are applied	PSO 3	AN
CO 5	Evaluate the abnormalities which commonly occur in the clinical field	PSO 3	E

Course Title	SEMESTER-VI / MAJOR BASED ELECTIVE-II BIOTECHNOLOGY	PSOs Addressed	Cognitive Level
Code	BBE4		
CO . NO	Course Outcomes		
CO 1	Biotechnology in an historical perspective	PSO 3	U
CO 2	Scope and Importance of Biotechnology	PSO 2	U
CO 3	Familiarization of the terms associated with plant tissue culture.	PSO 3	AN
CO 4	Felt applications in the different domains of biotechnology.	PSO 3	AP
CO 5	The concept of recombinant DNA technology.	PSO 3	AN

Course Title	SEMESTER-VI / MAJOR BASED ELECTIVE-III BIOINFORMATICS	PSOs Addressed	Cognitive Level
Code	BBE5		
CO . NO	Course Outcomes		
CO 1	To get introduced to the basic concepts of Bioinformatics and its significance in Biological data analysis.	PSO 1	U
CO 2	Describe the history, scope and importance of Bioinformatics and role of internet in Bioinformatics	PSO 2	AC
CO 3	Explain about the methods to characterize and manage the different types of Biological data.	PSO 3	E
CO 4	Classify different types of Biological Databases.	PSO 3	E
CO 5	Introduction to the basics of sequence alignment and analysis.	PSO 3	AN

Course Title	SEMESTER-VI / MAJOR BASED ELECTIVE-III GENETIC ENGINEERING	PSOs Addressed	Cognitive Level
Code	BBE5		
CO . NO	Course Outcomes		
CO 1	Provide examples of current applications of biotechnology and advances in the different areas like medical, microbial, environmental, bioremediation, agricultural, plant, animal, and forensic.	PSO 1	U
CO 2	Understand the concept of recombinant DNA technology or genetic engineering U,R	PSO 2	AN
CO 3	DNA fingerprinting, and restriction fragment Length polymorphism (RFLP) analysis and their applications	PSO 3	AN
CO 4	To understand the concept and applications of monoclonal antibody technology PSO 3	PSO 3	AP
CO 5	To study the general principles of generating transgenic plants, animals and microbes.	PSO 3	AN