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 inaddressing 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 theirleadership qualities.
PSO 5	To demonstrate professional and ethical attitude with enormous responsibility to serve thesociety.

Course Title	SEMESTER-I / CORE COURSE- I BIOMOLECULES	PSOs Addressed	Cognitive Level
Code	BUA		
CO. No	**Course Outcomes:**		
CO 1	This paper trains students to appreciate the salientfeatures 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 bimolecular, 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 5 and major metabolites	PSO 1	U
CO 5	Understand and demonstrate haw 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	**BUBY**		
CO . NO	**Course Outcomes**		
CO 1	This paper introduces people to chemical reasoningand thinking, encouraging application of chemical rules and logic to problems.	PSO 1	AN
CO 2	Draw molecules and reaction mechanisms; understandexperiments aimed at elucidating mechanism.	PSO 2	U
CO 3	Students understand various identification tests forcarbohydrates and amino acids.	PSO 3	U
CO 4	Students acquire the skill to distinguish reducing andreducing 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	**BUC**		
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	**BUD**		
CO . NO	**Course Outcomes:**		
CO 1:	Ensure the students to acquireknowledge 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 themale and female reproductive organs.	PSO 2	U
CO 4:	To classify different type of muscle and anatomy ofexcretory 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	**BUFY**		
CO . NO	**Course Outcomes:**		
CO 1:	• The student gets knowledge about the principles invarious analytical techniques.	PSO 2	AP
CO 2:	• To understand the different types of buffer preparation and measurement of pH	PSO 2	AN
CO 3:	• To estimate the RNA and DNA used in specificmethods	PSO 2	AN
CO 4:	• To learn the different types chromatography inseparation of amino acid and sugar.	PSO 2	U
CO 5:	• To understand the isolating the DNA from animaltissue.	PSO 1	U

CO No	Allied Course-IV BIOLOGY I	PSO s Addressed	Cognitive Level
Code	**BUA1**		
CO . NO	**Course Outcomes:**		
CO 1:	To learn the energy and information flow livingsystem.	PSO 1	U
CO 2:	Gain the knowledge in the membrane and properties of membrane.	PSO 2	AN
CO 3:	Form and function of cells organelles	PSO 1	U
CO 4:	To understand then animal biology.	PSO 2	U
CO 5:	To understand the development of plant biology.	PSO 2	AN

Course Title	ALLIED COURSE VI MICROBIAL, PLANT AND CELL BIOLOGY PRACTICAL	PSOs Addressed	Cognitive Level
Code	**BUA3Y**		
CO . NO	**Course Outcomes:**		
CO 1:	To determine the various type of techniques microscopic and gram staining.	PSO 2	AN
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	U

Course Title	NON MAJOR ELECTIVE-I WOMEN AND HEALTH	PSOs Addressed	Cognitive Level
Code	**BUE1**		
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 5	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 1	AN

Course Title	NON MAJOR ELECTIVE-I HEALTH AND DISEASE	PSOs Addressed	Cognitive Level
Code	**BUE1**		
CO . NO	**Course Outcomes:**		
CO 1:	Explain at an introductory level, biological processes essential for the maintenance of health and the mechanisms underlying the cause, consequence and treatment of a range of human diseases.	PSO 2	U
CO 2:	Evaluate and interpret case study information tounderstand clinical signs and symptoms	PSO 5	AN
CO 3:	Discuss gaps in our knowledge of health and diseaseand gain insight into the contemporary process of medical science research	PSO 2	AC
CO 4:	Locate relevant information using on-line search toolsand databases.	PSO 5	U
CO 5:	Evaluate the quality and rigor of evidence presented tosupport an idea.	PSO 1	AN

Course Title	CORE COURSE-IV CELL AND MOLECULAR BIOLOGY	PSOs Addressed	Cognitive Level
Code	**BUE**		
CO . NO	**Course Outcomes:**		
CO 1:	To understand the cell and types of signaltransduction system.	PSO-2	AC
CO 2:	Ensure the students to understand structure andfunction of plant and animal cell organelles.	PSO-5	U
CO 3:	To study the basic types of replication and replication mechanism	PSO-1	AN
CO 4:	To understand the different stage ofmechanism if transcription.	PSO-2	U
CO 5:	Ensure the students to understand acquireknowledge on prokaryotic and eukaryotic	PSO-5	AN

Course Title	ALLIED COURSE-V BIOLOGY II	PSOs Addressed	Cognitive Level
Code	**BUA2**		
CO . NO	**Course Outcomes:**		
CO 1:	To ensure the students basic concepts and methods of taxonomy	PSO 1	U
CO 2:	To understand the principle of mandolin and inheritanceof 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 physicalenvironmental of biology	PSO 3	AC
CO 5:	To study about the basic concepts of evolutionary biology	PSO 3	U

Course Title	NON MAJOR ELECTIVE-II COSMETOLOGY	PSOs Addressed	Cognitive Level
Code	**BUE2**		
CO . NO	**Course Outcomes:**		
CO 1:	To ensure the students basic concepts of beauty cultureand health care .	PSO-5	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	PSO 3	AP
CO 4:	To understand the cosmetic allergy for skin ,hairand nail	PSO-2	AN
CO 5:	To ensure the students basic concepts of beauty cultureand health care.	PSO-5	U

Course Title	NON MAJOR ELECTIVE-II HOSPITAL MANAGEMENT	PSOs Addressed	Cognitive Level
Code	**BUE2**		
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	SKILL BASED ELECTIVE -I HERBAL MEDICINE	PSOs Addressed	Cognitive Level
Code	**BBS1**		
CO . NO	**Course Outcomes:**		
CO 1:	To ensure the students scope and applications of herbal medicine	PSO 3	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 study about the botanical description of various plants	PSO 2	U

Course Title	CORE COURSE-V INTRODUCTION TO ENZYMOLOGY	PSOs Addressed	Cognitive Level
Code	BUG		
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	CORE COURSE-VI BIOENERGETICS AND METABOLISM	PSOs Addressed	Cognitive Level
Code	**BUH**		
CO . NO	**Course Outcomes:**		
CO 1:	Describe the structure of amino acids, proteins, enzymes, chemical messengers, carbohydrates, lipids and nucleic acids.	PSO 2	U
CO 2:	Explain the function of the above listed biomolecules	PSO 3	AN
CO 3:	Explain how biochemical energy is generated in the cells using principles of thermodynamics (free energy, enthalpy). Write coupled reactions to show how an endergonic reaction can occur by coupling it with a very exergonic reaction.	PSO 2	U
CO 4:	Write the chemical reactions involved in biochemical pathways that produce ATP, such as citric acid cycle and electron transport.	PSO 1	AC
CO 5:	Describe the metabolism of carbohydrates, lipids, proteins and amino acids. Write chemical reactions for the individual steps in each pathway	PSO 3	AN

Course Title	CORE COURSE-VII PHARMACEUTICAL BIOCHEMISTRY	PSOs Addressed	Cognitive Level
Code	**BUI**		
CO . NO	**Course Outcomes:**		
CO 1:	Describe the history of pharmacy, development of pharmacy profession and industry in India.	PSO 1	U
CO 2:	Describe various routes of drug administration, concept of dosage forms, unit operations involved in preparation of these dosage forms.	PSO 2	AN
CO 3:	Describes alternative system of medicines.	PSO 3	AN
CO 4:	Explain the factors which influence the design ofpharmaceutical dosage forms.	PSO 2	AC
CO 5:	Summarize the factors influencing formulation of various dosage form like solution.	PSO 3	AP

Course Title	CORE PRACTICAL III MAJOR PRACTICAL III	PSOs Addressed	Cognitive Level
Code	**BUJY**		
CO . NO	**Course Outcomes:**		
CO 1:	Determination of ash and moisture content of foodmaterials.	PSO 3	U
CO 2:	Determine carbohydrate, protein and fat content analysis	PSO 2	AN
CO 3:	Estimation of iron and phosphorous in standardprocedure.	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	MAJOR BASED ELECTIVE-I MEDICAL LAB TECHNIQUES	PSOs Addressed	Cognitive Level
Code	**BUE3**		
CO . NO	**Course Outcomes:**		
CO 1:	Recognize the role of medical laboratory technology in the context of providing quality patient healthcare.	PSO 1	U
CO 2:	Perform basic clinical laboratory procedures using appropriate laboratory techniques and instrumentation inaccordance 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	MAJOR BASED ELECTIVE-I ENDOCRINOLOGY	PSOs Addressed	Cognitive Level
Code	**BUE3**		
CO . NO	**Course Outcomes:**		
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 withsome diseases and drug addiction.	PSO 3	AN
CO 4:	To discuss the definition of a hormone in terms of itsgeneral 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	SKILL BASED ELECTIVE-II HERBAL MEDICINE PRACTICAL	PSOs Addressed	Cognitive Level
Code	**BUS2Y**		
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	SKILL BASED ELECTIVE-III FOOD AND NUTRITION	PSOs Addressed	Cognitive Level
Code	**BUS3**		
CO . NO	**Course Outcomes:**		
CO 1:	Locate and interpret government regulations regarding the manufacture and sale of food products.	PSO 2	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 3	AN

Course Title	CORE COURSE-VIII ADVANCED CLINICAL BIOCHEMSITRY	PSOs Addressed	Cognitive Level
Code	**BUK**		
CO . NO	**Course Outcomes:**		
CO 1:	will be able to clinically assess the laboratory indicators of physiologic conditions and diseases	PSO 1	AP
CO 2:	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 4:	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-IX IMMUNOLOGY	PSOs Addressed	Cognitive Level
Code	**BUL**		
CO NO	**Course Outcomes:**		
CO 1:	Locate and access immunological informationrelevant to area of study.	PSO 1	U
CO 2:	Think critically about issues that involveimmunology.	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 toimmunological issues.	PSO 5	AN

Course Title	Semester-VI / Core Course-IV MAJOR PRACTICAL IV	PSOs Addressed	Cognitive Level
Code	**BUMY**		
CO . NO	**Course Outcomes:**		
CO 1:	Discuss the fundamental biochemistry knowledgerelated to health	PSO 1	U
CO 2:	Explain the clinical significance of the laboratorytests	PSO 2	AN
CO 3:	Diagnosis of clinical disorders by estimating biomarkers	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	**BUE4**		
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 planttissue culture.	PSO 3	AN
CO 4:	Felt applications in the different domains ofbiotechnology.	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	**BUE5**		
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 ofBioinformatics and role of internet in Bioinformatics	PSO 2	AC
CO 3:	Explain about the methods to characterize and managethe 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 andanalysis.	PSO 3	AN

Course Title	SEMESTER-VI / MAJOR BASED ELECTIVE-III GENETIC ENGINEERING	PSOs Addressed	Cognitive Level
Code	**BUE5**		
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:	Describe DNA fingerprinting, and restriction fragment length polymorphism (RFLP) analysis and their applications	PSO 3	AN
CO 4:	Explain the concept and applications of monoclonal antibody technology PSO 3	PSO 3	AP
CO 5:	Explain the general principles of generating transgenic plants, animals and microbes.	PSO 3	AN