A.D.M. COLLEGE FOR WOMEN

(Autonomous)

Affiliated to Bharathidasan University

(Nationally Accredited with "A" Grade by NAAC – 4th Cycle)

NAGAPATTINAM 611 001.

LOCAL/NATIONAL/REGIONAL/GLOBAL RELEVANCE

DEPARTMENT OF BIOCHEMISTRY

Programme: B.Sc Bio Chemistry **Year: 2022-2023**

Course Code	Title of the Course	Local/Regional/ National /Global	Rationale	Course Outcomes	PSOs Addressed	Cognitive Level
BUA	CC- Core Course I Biomolecules	National	To enable the students can get knowledge about structure, classification of carbohydrate, amino acids, lipids & vitamins	• CO1: This paper trains students to appreciate the salient features of biomolecules the organization of life.	**PSO1**	**U**
				• CO2: It spans over the significance and methodology involved in characterizing major biomolecules	PSO3	AN

				• CO3:It helps the students in understanding the classification functions and application aspects of biomolecules	PSO2	U
				• CO4: Have knowledge of the structure/ conformational freedom of bimolecular,e.g proteins,DNA/RNA, Carbohydrate and key metabolites/co-factors ,e.g. be able to draw and recognize key structures such as the 20amino acids and 5 major metabolites	PSO3	AN
BBY	CC- Core Course II Major Practical-I	National	To enable the students can get practical	• CO1: This paper introduces people to	PSO1	AN

			knowledge about the qualitative and quantitative analysis of biomolecules	chemical reasoning and thinking, encouraging application of chemical rules and logic to problems.		
				• CO2: Draw molecules and reaction mechanisms; understand experiments aimedatelucidating mechanism.	PSO2	U
				• CO3:Students understand various identification tests for carbohydrate sand amino acids	PSO3	U
				• CO4: Students acquire the skill to distinguish reducing and reducing sugars.	PSO1	A
				• CO5: Students acquire skill to perform the experiment in there all lab.	PSO1	U

BBC	CC - Core Course III Analytical Techniques	National	The Students to have a deep knowledge on the principles and applications of chromatography.	• CO1: Students acquired the various analytical techniques.	PSO1	U
				• CO2:On completion of this paper, the learner will be able to perform beers law calculations and calorimetric	PSO2	AN
				• CO3: Describe the principles of this lager chromatography (TLC) and high performance liquid chromatography(HPLC) Draw as schematic diagram of the instrumentation.	PSO2	AN
				• CO4: Employ the knowledge for the separation o proteins/polypeptides by selecting appropriate	PSO3	AP

				separation techniques characterize certain functionalities o biomolecules by using spectroscopic techniques.		
BBD	CC - Core Course IV- Human Physiology	Global	To enable the students can get knowledge about various physiological system and their function in human anatomy.	• CO1: Ensure the Students to acquire Knowledge On Composition And Function of body fluid	PSO1	U
				• CO2: understand the apply the various concepts of digestive	PSO2	AP
				• CO3: To understand The anatomy and physiolo and cardiovascular a respiratory system	PSO2	U
				• CO4:To classify different type of muscle and anatomy of excretory and nervous system.	PSO1	AN

				• CO5:To understand the general anatomy and function of the male and female reproductive organs	PSO2	U
BBEY	CC - Core Course V Major Practical II	Global	The student gets knowledge about the principles in various analytical techniques	• CO1: The student gets knowledge about the principles in various analytical techniques.	PSO2	AP
				• CO2: To understand the different types of buffer preparation and measurement of pH.	PSO2	AN
				• CO3: To estimate the RNA and DNA used in specific methods.	PSO2	AN
				• CO4: To learn the different types chromatography in separation of amino acid	PSO2	U

				and sugar.		
				• CO5: To understand the isolating the DNA from animal tissue.	PSO1	U
BBA1	AC - Allied Course III Biology I	National	To learn the energy and information flow living system and analyze the structure and function of cellular organelles	• CO1: To learn the energy and information flow living system.	PSO2	AN
				• CO2:Gain the knowledge in them embrace and properties of membrane	PSO1	AP
				• CO3:Form and function of cells organelles	PSO2	AN
				• CO4:To understand then animal biology	PSO3	AN
				• CO5:To understand the development of plant biology	PSO5	U
BBA2Y	AC -Allied Practical II	National	To enable the student	• CO1: To determine the	PSO2	AN

	Microbial, plant and cell biology practical		understand the microscopic techniques, determine the various type of techniques microscopic and gram staining	various type of techniques microscopic and gram staining		
				• CO2: To estimate the various plant cell type and onion root mitosis	PSO1	AP
				• CO3: To improve the culture medium identification	PSO2	AN
				• CO4:Students will be able to observe and correctly identify different cell types, cellular structures using different microscopic techniques	PSO3	AN
				• CO5:students will be able to differentiate the cells of	PSO5	U

				variouslivingorganismsandgetawarenessofphysiologicalprocessesofcelle.g.cell divisions		
BBF	CC - Core Course VI Cell and Molecular Biology	National	To bring understanding of structure and function of cells.	• CO1: To understand the cell and types of signal transduction system.	PSO 2	AC
				• CO2: Ensure the students to understand structure and function of plant and animal cell organelles.	PSO 5	U
				• CO3:To study the basic types of replication and replication mechanism	PSO1	AN
				• CO4: To understand the different stage of mechanism if transcription	PSO2	U

				• CO5:Tounderstandthe differentstage of mechanism if transcription	PSO5	AN
BBA3	AC - Allied Course IV Biology II	National	To learn about the evolutionary biology and ensure the students basic concepts and methods of taxonomy	• CO1: To ensure the students basic concepts and method soft taxonomy.	PSO1	U
				• CO2:To understand the principle of mandolin and inheritance of mitochondrial genes	PSO2	U
				• CO3:To study about the pathway of plant physiology and photo chemical of plants	PSO1	AN
				• CO4:To ensure the students understand the physical environmental of biology	PSO3	AC

				• CO5:Study about the basic concepts of evolutionary bio	PSO3	U
BBE2	NME - Non Major Elective II Cosmetology	Regional	To ensure the students basic concepts of beauty culture and health care	• CO1:To ensure the students basic concepts of beauty culture and healthcare	PSO5	U
				• CO2:To understand the skill in the areas of skin, makeup, manicuring	PSO1	U
				• CO3:To study about the hair analysis such as hair cutting, coloring, styling	PSO3	AP
				• CO4:Tounderstandthecos meticallergy for skin, hair and nail	PSO2	AN
				• CO5:To ensure the student understand the Physical, mental and healthcare.	PSO5	U
BBS1	SBE – Skill- Based Elective I	Regional	To learn the history of herbal medicine. and	• CO1:To ensure the students scope and	PSO3	U

	Herbal Medicine		understand the source of herbal materials	application of herbal medicine		
				• CO2:To ensure the studen scope and application herbal medicine		AN
				• CO3: To study about the drug yielding in fungi and algae.	PSO2	AN
				• CO4:Tounderstandthedetermination ofphysicalandchemicalconstants.	PSO3	AN
				• CO5:To unders and the determination of physical and chemical on stants.	PSO3	AN
BUG	CC - Core Course VII Introduction to Enzymogy	National	To enable the students can get knowledge about the enzymes such as classification, purification method and kinetics	• CO1:Planandexecuteanenzyme assay	PSO3	U
				• CO2Analyzeenzymekineticdata	PSO2	AN

				• CO3:Analyze kinetic inhibition data and to determine the mechanism of inhibition	PSO2	AN
				• CO4: Perform library research on a specific enzyme topic	PSO1	AN
				• CO5: To study about application of enzyme in different industries	PSO2	U
BUH	CC- Core Course VIII Bioenergetics and Metabolism	National	To learn about the structure of amino acids, proteins, enzymes, chemical messengers, carbohydrates, lipids and nucleic acids	• CO1: Describe the structure of amino acids, proteins, enzymes, chemical messengers, carbohydrates, lipids and nucleic acids	PSO2	U
				• CO2: Explain the function of the above listed biomolecules	PSO3	AN
				• CO3: Explain how biochemical energy is	PSO2	U

				generated in the cells using principles of thermo dynamics (free energy, enthalpy). Write coupled reactions to show how an ender gonicre action can occur By coupling it with a very exergonic action.		
				• CO4: Write the chemical reactions involved in biochemical pathways that produce ATP, such ascetic acid cycle and electron transport.	PSO1	AC
				• CO5: Describe them metabolism of carbohydrates, lipids, proteins and amino acids. Write chemical reactions for the individual step sin each pathway	PSO3	AN

BUI	CC - Core Course IX Pharmaceutical Biochemistry	Global	To enable the students understanding the classification, metabolism, Chemotherapeutic effect, Toxic effect of various drugs	• CO1: Describe the history of pharmacy, development of pharmacy profession and industry in India.	PSO1	U
				• CO2: Describe various routes of drug administration, concept of dosage forms, unit operations involved in preparation no f these dosage forms	PSO2	AN
				• CO3: Describes alternative system of medicines	PSO3	AN
				• CO4: Explain the factors which influence the design no pharmaceutical dosage forms	PSO2	AC

				• CO5:Summarize the factors influencing formulation o various dosage form like solution.	PSO3	AP
BUJY	CC- Core Course X Major Practical III	National	To enable the students understanding the various diagnostics method for identifying the disease	• CO1: Determination of as hand moisture content of food materials	PSO3	U
				• CO2: Determ carbohydrate, protein and content analysis	PSO2	AN
				• CO3: Estimation of iron and phosphorous in standard procedure.	PSO3	AN
				• CO4: Estimation of calcium in milk.	PSO3	AN
				• CO5: Doing estimation of specific activity pH of salivary amylase and alkaline phosphates	PSO3	AN

BUS2Y	SBE –Skill Based Elective II Herbal Medicine Practical	Regional	To enable the students can get the practical knowledge about the analysis of various phy to constituents present in materials	• CO1:Demonstratinginitiativebybeginningworkinatimelymannerwithoutbeingreminded	PSO1	U
				• CO2:Exhibiting professional appearance by adhering to laboratory dress code	PSO3	U
				• CO3:Organizing workflow and determining priorities	PSO2	U
				• CO4:Producing accurate work with in the allotted time	PSO3	U
				• CO5:Demonstrating awareness of own limitations, and seeking help when Needed	PSO3	U
BUS3	SBE – Skill Based Elective III Food and Nutrition	National	To enable students with the knowledge of basic terminology and several aspects of nutrition and	• CO1:Locate and interpret government regulations regarding the manufacture and sale of food products	PSO2	U

			the functions of food in healthy life sustenance	• CO2:Discuss the major chemical reactions that occur during food preparation and storage	PSO3	AN
				• CO3:Discuss the important path ogens and spoil age microorganisms in foods	PSO1	AN
				• CO4:Explain the effects of common food preparation methods and food storage conditions on survival and growth of microbial contaminants. Obtain food protection manager certification	PSO2	AC
				• CO5:Discuss basic principles of common food preservation methods.	PSO3	AN
BUK	CC- Core Course – XI Clinical	Global	Analyze the basic disorder of carbohydrate, lipid, protein and nucleic acid	• CO1: will be able to clinically assess the	PSO1	AP

	Biochemistry		Metabolism abnormalities	laboratory indicators of physiologic conditions and diseases		
				• CO2: will know the biochemical and molecular tools needed to accomplish preventive, diagnostic, and the rapeutic intervention on hereditary and acquired disorders Course contents	PSO2	AN
				• CO3:Assessmentofthedi agnosticperformanceofl aboratorytestsaccording totheclinicalsettingandp revalenceofdisease	PSO3	U
				• CO4:It trains the students to gain concepts of assessing the human physiology using	PSO2	AN

				biological fluid		
				• CO5: It illustrates theme chains of metabolic disorders at molecular level. It facilitates in employability in diagnostic and research institutes	PSO5	U
BUL	CC- Core Course – XIII Immunology	National	To enable the students can get knowledge about the, immune system, immune response and allergic reaction	• CO1:Locate and access immunological information relevant to area of study	PSO1	U
				• CO2:Think critically abou issues that involv immunology	PSO2	AC
				• CO3:Think critically abou issues that involve immunology	PSO3	AN

				• CO4:Articulatescientificprocessesrelatedtoimmunologyinwrittenand/ororal format	PSO2	AN
				• CO5:Present conclusions and explain logic immunological issues	PSO2	AN
BUMY	CC - Core Course – XIII Major Practical IV	Global	To enable the students can get the practical knowledge about the urine analysis and estimation of abnormal constituent present in Blood & blood grouping.	• CO1:Discuss the fundamental biochemistry knowledge related to health	PSO1	U
				• CO2: Explain the clinical significance of the laboratory tests	PSO2	AN
				• CO3:Diagnosis of clinical disorders by estimating biomarkers	PSO3	AN
				• CO4: Determine various substances including substrates, enzymes, hormones, etc and their use	PSO3	AN

				in diagnosis and monitoring of disease are applied		
				• CO5:Evaluate the abnormalities which commonly occur in the clinical field	PSO3	E
BUE4	MBE – Major Based ElectiveII Biotechnology /plant biotechnology	National	To understand the technological aspect applied to molecular and microbial biology	• CO1: Bio technology in an historical perspective	PSO3	U
				• CO2: Scope and Importance of Biotechnology	PSO2	U
				• CO3: Familiarization of the terms associated with plant tissue culture	PSO3	AN
				• CO4: Felt applications in the different domains of biotechnology	PSO3	AP
				• CO5: The concept of recombinant DNA technology	PSO3	AN
BUE5	MBE – Major Based Elective III Genetic	Global	To understand the students can get	• CO1: Describe how microorganisms are used	PSO 3	AN

	Engineering		knowledge about sequence alignment phylogenetic studies	as model systems to study basic biology, genetics, metabolism and ecology.		
				• CO2:Identify ways microorganisms play an integral role in disease, and microbial and immunological methodologies are used in disease treatment and prevention	PSO 3	AN
				• CO3:Explain why microorganisms are ubiquitous in nature; inhabiting a multitude of habitats and occupying a wide range of ecological habitats	**PSO 3**	**AN**

				• CO4: Cite examples of the vital role of microorganisms in biotechnology, fermentation, medicine, and other industries important to human well-being	PSO3	U
				• CO5:Demonstrate that microorganisms have an indispensable role in the environment, including elemental cycles, biodegradation, etc	PSO3	AP
BBA	Biomolecules	National	Haveknowledgeofthestructure/conformationalfreedomofbimolecular,e.gproteins,DNA/RNA, carbohydrates and key metabolites/co-factors,	• CO1:This paper trains students to appreciate the Salient features of biomolecules the organization of life	PSO1	U
				• CO2: It spans over the significance and	PSO3	AN

				methodology involved in characterizing major biomolecules		
				• CO3: It spans over the significance and methodology involved in characterizing major biomolecules	PSO2	U
				• CO4: Have knowledge of the structure/ onformationalfreedomof bimolecular,e.gproteins, DNA/RNA,carbohydrate sandkeymetabolites/co-factors,e.g. be able to draw and recognize key structures such as the 20amino acids 5andmajormetabolites	PSO3	AN
				• CO5: Understand and demonstrate haw the	PSO1	U

				structure of biomolecules determines their chemical properties and reactivity.		
BBC	Analytical Techniques	National	Significantly enhanced Knowledge of methodologist in various laboratory techniques	• CO1: Students acquired the various analytical techniques	PSO1	U
				• CO2:On completion of this paper, the learner will be able to perform beers law calculations and calorimetric	PSO2	AN
				• CO3:Describe the principles of this lager chromatography(TLC) and high performance liquid chromatography(HPLC) Draw a schematic diagram of the instrumentation	PSO2	AN

				• CO4:Employ the knowledge for the separation of proteins/polypeptides by selecting appropriate separation techniques, characterize certain functionalities of biomolecules by using spectroscopic techniques	PSO3	AP
				• CO5:Significantly enhanced Knowledge of methodology is tin various laboratory techniques	PSO3	AP
BBD	Human physiology And Anatomy	National	To understand the general anatomy and function	• CO1:Ensure the students To acquire knowledge on composition and function of body fluid	PSO1	U
				• CO2: To understand the apply the various concepts	PSO2	AP

				of digestive system		
				• CO3: To understand the anatomy and physiology and cardiovascular and respiratory system	PSO2	U
				• CO4:To classify different Type of muscle and anatomy of excretory and nervous system	PSO1	AN
				• CO5: To understand the general anatomy and function of the male and female reproductive organs.	PSO2	U
BBF	Cell and Molecular biology	Global	Ensurethestudentstounderstandstructureandfunctionofplantandanim	• CO1: To understand the cell and types of signal transduction system	PSO2	AC

			al cell organelles	• CO2:Ensure the students to understand structure and function of plant and animal cell organelles	PSO5	U
				• CO3:To study the basic types of replication and replication mechanism	PSO1	AN
				• CO4: To understand the different stage of mechanism if transcription.	PSO2	U
				• CO5: Ensure the students to understand acquire knowledge on prokaryotic and eukaryotic	PSO5	AN
BBG	Introduction to enzymology	National	Perform library research on a specific enzyme topic	• CO1: Plan and execute an enzyme assay	PSO3	U
				• CO2:Analyze enzyme kinetic data	PSO2	AN

				• CO3: Analyze kinetic inhibition data and to determine the mechanism of inhibition	PSO2	AN
				• CO4: Perform library research on a specific enzyme topic	PSO1	AN
				• CO5: To study about application of enzyme in different industries	PSO2	U
BBH	Bioenergetics	National	Describe The metabolism of carbohydrates, lipids, proteins and amino acids	• CO1: Describe the structure of amino acids, proteins, enzymes, chemical messengers, carbohydrates ,lipids and nucleic acids	PSO2	U
				• CO2: Explain the function of the above listed bio molecules	PSO3	AN
				• CO3: Explain how biochemical energy is	PSO2	U

				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 creation		
				• CO4: Write the chemical reactions involved in biochemical pathways that produce ATP, such as citric acid cycle and electron transport	PSO1	AC
				• CO5: Describe them Metabolism of carbohydrates, lipids, proteins and amino acids. Write chemical reactions	PSO3	AN

				for the individual steps in each pathway		
BBI	Pharmaceutical biochemistry	Global	Explains the factors which influence the design of pharmaceutical dosage forms.	• CO1:Describe the history of pharmacy, development of pharmacy profession and industry in India.	PSO1	U
				• CO2:Describe various routes of drug administration, concept of dosage forms, unit operations involved in preparation of these dosage forms	PSO2	AN
				• CO3:Describes alternative system of medicines	PSO3	AN
				• CO4:Explain the factors which influence the design of pharmaceutical dosage	PSO2	AC

				forms		
				• CO5: Summarize the factors influencing formulation of various dosage form like solution	PSO3	AP
BBK	Advanced clinical biochemistry	Global	Assessment of the diagnostic performance of laboratory tests according To the clinical setting and prevalence of Disease	• CO1: will be able to clinically assess the laboratory indicators of physiologic conditions and diseases	PSO1	AP
				• CO2:will know the biochemical and molecular tools needed to accomplish preventive, diagnostic, and the rapeutic intervention on hereditary and acquired disorders Course contents	PSO2	AN

				• CO3:Assessment of the diagnostic performance of laboratory tests according to the clinical setting and prevalence of disease	PSO3	U
				• CO4:It trains the students to gain concepts of assessing the human physiology using biological fluid	PSO3	U
				• CO5: It illustrates the mechanism of metabolic disorders at molecular level. It facilitates in employability in diagnostic and research institutes	PSO5	U

BBL	Immunology	National	Diagnosis of clinical Disorders by estimating biomarkers	• CO1: Locate and access immunological information relevant to area of study	PSO1	U
				• CO2:Think critically about issues that involve immunology	PSO2	AC
				• CO3:Collaborate with peers and work effectively in a group	PSO3	AN
				• CO4:Articulatescientificprocessesrelatedtoimmunologyinwrittenand/ororal format	PSO2	AN
				• CO5:Present conclusions and explain logic to immunological issues	PSO5	AN