

BARASAT GOVT COLLEGE
UNDER GRADUATE B.SC. GENERAL COURSE
B.Sc. (Bio-Science General) CBCS Syllabus
With effect from 2018-19

Program Outcome (PO)

PO 1	Disciplinary knowledge
PO 2	Scientific reasoning
PO 3	Problem solving
PO 4	Information/digital literacy
PO 5	Analytical reasoning
PO 6	Moral and ethical awareness/reasoning
PO 7	Cooperation/Team work
PO 8	Lifelong learning

BARASAT GOVT COLLEGE

UNDER GRADUATE B.SC. GENERAL COURSE

B.Sc. (Bio-Science General) CBCS Syllabus

With effect from 2018-19

Programme Specific Outcomes (PSO)

- **PSO1:** Students get acquainted with the fundamental principles, objectives, subject matter and scope of the subject concerned. Capable of demonstrating comprehensive knowledge and understanding of major concepts, theoretical principles and experimental findings.
- **PSO2:** The program has been designed not only to impart knowledge regarding traditional as well as interdisciplinary areas of Bio-Science, but also to develop a thorough understanding about the overall scope and importance of modern Bio science. Students will think in a critical manner and scientific temper will be developed in Students.
- **PSO3:** Through the program ability to impart complex technical knowledge relating to Bioscience in a clear and concise manner in writing and oral skills will be generated. The students can gain in-depth knowledge regarding classical as well as advanced topics like research methodology, modern techniques of experiment, recent development in Bio-Science etc.
- **PSO4:** Students learn about the role of environment in society, how to preserve environment, Learn the composition, properties and estimation techniques of environmental constituents, get acquainted with the composition of biological systems.
- **PSO5:** The course aims to make the students proficient in basic and applied aspects of science through the transfer of knowledge gathered in the classroom as well as in the laboratory to day-to-day life.
- **PSO6:** The students have developed an awareness regarding a variety of fields such as animal diversity, Environment and Public Health, Physiology and Biochemistry, Plant Diversity, Ethnobotany, Applied Zoology, Aquatic biology, Immunology, Food, Nutrition and Health and insect, vectors borne diseases.
- **PSO7:** The knowledge of biological science builds a foundation of medical education among students. They understand the physiology of human body, diseases and associated therapies. They are also acquainted with broad scale concepts of infectious diseases, illness and impacts on environment.
- **PSO8:** Students can go for a career in teaching, research institute, laboratory, different fields of industry etc.
- **PSO9:** Studying the course students are also motivated to equip themselves for facing competitive examinations. Moreover, students can choose a large variety of interdisciplinary courses for further study.

BARASAT GOVERNMENT COLLEGE
Course Outcome or Learning Outcome
Three year B.A. /B.Sc. Degree Course
Under CBCS semester system
GENERAL COURSE IN BOTANY
With effect from the session: 2018 – 2019

Course Name: Generic Elective/Department Specific Core Course-1
Course Code: BOTHGEC01T & BOTHGEC01P / BOTGCOR01T & BOTGCOR01P
Topic Name: BIODIVERSITY (MICROBES, ALGAE, FUNGI AND ARCHEGONIATE)

CO, PO & PSO Mapping					
Course Outcome:	Sl No	Course outcome	Knowledge level Blooms Level	POs Mapping	PSOs mapping
	CO1	Know the biological variety, variations and components of biodiversity as a whole.	L2 Understanding	1, 2, 3, 4, 5, 6, 8	1, 2, 4, 6, 7, 8, 9
	CO2	Familiarize with different groups of plants including viruses and bacteria.	L2 Understanding	1, 2, 3, 4, 5, 6, 8	1, 2, 4, 6, 7, 8, 9
	CO3	Understand the general structure and difference between prokaryotes and eukaryotes.	L2 Understanding	1, 2, 3, 4, 5, 6, 8	1, 2, 4, 6, 7, 8, 9
	CO4	Develop the knowledge about characteristics, diversity, growth form, classification, ecological and economic importance of algae, fungi, bryophytes, pteridophytes and gymnosperms.	L3 Applying	1, 2, 3, 4, 5, 8	1, 2, 4, 6, 7, 8, 9
	CO5	Explore the diversity of algae, fungi, bryophytes, pteridophytes and gymnosperms in various habitats and using morphological and anatomical techniques.	L2 Understanding	1, 2, 3, 4, 5, 7, 8	1, 2, 4, 6, 7, 8, 9
	CO6	Learn the biodiversity to develop sustainable environment.	L3 Applying	1, 2, 3, 4, 5, 6, 7, 8	1, 2, 3, 4, 6, 8, 9

Program Articulation Matrix (CO-PO Matrix)																			
PO, PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9
CO1	3	2	1	1	2	2		2			3	2		2	1	2	1	1	1
CO2	3	2	1	1	2	2		1			3	1		2	2	2	1	1	1
CO3	3	2	1	1	2	1		1			3	2		2	2	2	2	1	1
CO4	3	2	1	2	3			1			3	2		2	2	1	1	2	2
CO5	3	2	1	2	3			1	2		3	2		2	3	2	1	2	2
CO6	3	2	1	2	2	3		2	2		3	2	2	3	2	2		2	2
Average	3.00	2.00	1.00	1.50	2.33	2.00	1.50	1.50			3.00	1.83	2.00	2.17	2.00	1.83	1.20	1.50	1.50

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GENERAL COURSE IN BOTANY
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Course Name: Generic Elective/Department Specific Core Course-2

Course Code: BOTHGEC02T & BOTHGEC02P / BOTGCOR02T & BOTGCOR02P

Topic Name: PLANT ECOLOGY AND TAXONOMY

CO, PO & PSO Mapping					
Course Outcome:	Sl No	Course outcome	Knowledge level Blooms Level	POs Mapping	PSOs mapping
	CO1	Understand the interactions of a biotic and biotic components of environment-maintaining an equilibrium essential for the very existence of all living beings including ours.	L2 Understanding	1, 2, 3, 4, 5, 6, 8	1, 2, 4, 5, 6, 9
	CO2	Gather knowledge of plant communities and ecosystems which are the basic footsteps of environmental studies.	L2 Understanding	1, 3, 4, 5, 6, 7, 8	1, 2, 4, 5, 6, 9
	CO3	Get knowledge of different aspects of environmental issues which help us to protect biodiversity in turn sustaining ourselves.	L3 Applying	1, 2, 3, 4, 5, 6, 7, 8	1, 2, 4, 5, 6, 9
	CO4	Identify plants, learning their names and characters in plant taxonomy.	L2 Understanding	1, 2, 4, 5, 7, 8	1, 2, 4, 5, 6, 9
	CO5	Obtain sound knowledge of Plant Ecology and Taxonomy which not only help to boost knowledge but also develop bonding with the nature and environment.	L3 Applying	1, 2, 4, 5, 6, 8	1, 2, 4, 5, 6, 9
	CO6	Obtain knowledge of sustainable environment.	L2 Understanding	1, 2, 4, 6, 7, 8	1, 2, 4, 5, 6, 9

Program Articulation Matrix (CO-PO Matrix)																			
PO, PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9
CO1	3	2	1	1	2	2		1			3	3		3	2	1			1
CO2	3		1	1	2	3	1	1			3	3		3	2	1			1
CO3	3	2	2	1	2	3	1	2			3	3		3	2	1			1
CO4	3	1		1	2		1	1			3	2		2	1	1			1
CO5	3	2		1	2	3		3			3	3		2	3	1			1
CO6	3	2		1		3	1	1			3	3		3	2	1			1
Average	3.00	1.80	1.33	1.00	2.00	2.80	1.00	1.50			3.00	2.83		2.67	2.00	1.00			1.00

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GENERAL COURSE IN BOTANY
With effect from the session: 2018 – 2019

Course Name: Generic Elective/Department Specific Core Course-3

Course Code: BOTHGEC03T & BOTHGEC03P / BOTGCOR03T & BOTGCOR03P

Topic Name: PLANT ANATOMY AND EMBRYOLOGY

CO, PO & PSO Mapping					
Course Outcome:	Sl No	Course outcome	Knowledge level Blooms Level	POs Mapping	PSOs mapping
	CO1	Study the internal structure of plants and relationship of different group with their external structure as well as the surrounding environment.	L2 Understanding	1, 2, 3, 4, 5, 8	1, 2, 3, 4, 5, 6
	CO2	Reveal the adaptations mechanism of different plants to survive in different environmental conditions thus helping to protect environment.	L3 Applying	1, 2, 3, 4, 5, 6, 8	1, 2, 3, 4, 5, 6
	CO3	Elucidate the structural organization of flowers to identify plants which is in turn important for study of plant biodiversity.	L6 Creating	1, 2, 3, 4, 5, 6, 8	1, 2, 3, 4, 5, 6
	CO4	Acquire the Knowledge of pollination and fertilization to know plant reproductive behaviors which help to understand whether any plant species is vulnerable or going towards criticalness in survivorship.	L2 Understanding	1, 2, 3, 4, 5, 6, 8	1, 2, 3, 4, 5, 6
	CO5	Know about the functions of reproductive organs of plants.	L2 Understanding	1, 2, 3, 4, 5, 8	1, 2, 3, 4, 5, 6
	CO6	Understand the origin and development of reproductive organs of plants.	L2 Understanding	1, 2, 3, 4, 5, 6, 8	1, 2, 3, 4, 5, 6

Program Articulation Matrix (CO-PO Matrix)																			
PO, PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9
CO1	3	3	2	2	3			2			3	3	3	3	2	3			
CO2	3	3	3	2	3	2		2			3	3	3	3	2	3			
CO3	3	2	1	2	3	2		2			3	2	3	3	2	3			
CO4	3	3	3	2	3	2		2			3	3	2	3	2	3			
CO5	3	1	1	2	2			2			3	1	2	1	2	3			
CO6	3	2	1	2	2	1		2			3	1	2	1	2	3			
Average	3.00	2.33	1.83	2.00	2.67	1.75		2.00			3.00	2.17	2.50	2.33	2.00	3.00			

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GENERAL COURSE IN BOTANY
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Course Name: Generic Elective/Department Specific Core Course-4

Course Code: BOTHGEC04T & BOTHGEC04P / BOTGCOR04T & BOTGCOR04P

Topic Name: PLANT PHYSIOLOGY AND METABOLISM

CO, PO & PSO Mapping					
Course Outcome:	Sl No	Course outcome	Knowledge level Blooms Level	POs Mapping	PSOs mapping
	CO1	General concepts of Plant Physiology and Metabolism which includes water relations, photosynthesis, respiration and nitrogen metabolism.	L2 Understanding	1, 2, 3, 4, 5, 8	1, 2, 3, 4, 5, 6, 8, 9
	CO2	Structure function and synthesis of plant hormones as plant growth regulators.	L2 Understanding	1, 2, 3, 4, 8	1, 2, 3, 4, 5, 6, 9
	CO3	Students will learn to carry out different plant physiological experiments photosynthesis, respiration, transpiration, plasmolysis etc.	L2 Understanding	1, 2, 3, 4, 5, 7, 8	1, 2, 3, 4, 5, 8, 9
	CO4	Understand the structure and function of enzyme and concept of enzyme activity and enzyme inhibition.	L2 Understanding	1, 2, 3, 4, 5, 8	1, 2, 3, 4, 5, 8, 9
	CO5	Understand the mechanism of dormancy and plant movements.	L2 Understanding	1, 2, 3, 4, 5, 8	1, 2, 3, 4, 5, 9
	CO6	Know the role of micronutrients in plant growth and development.	L2 Understanding	1, 2, 3, 4, 5, 8	1, 2, 3, 4, 5, 6, 8, 9

Program Articulation Matrix (CO-PO Matrix)																			
PO, PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9
CO1	3	2	1	2	2			1			3	3	2	1	2	1		1	1
CO2	3	2	1	1				1			3	3	2	1	2	1			1
CO3	2	3	3	1	2		1	1			3	3	3	1	3			2	1
CO4	3	3	2	2	3			1			3	3	2	1	1			1	2
CO5	2	3	1	1	2			1			2	3	2	1	1				1
CO6	3	2	1	1	2			1			3	3	1	1	1	3		1	1
Average	2.67	2.50	1.50	1.33	2.20			1.00	1.00		2.83	3.00	2.00	1.00	1.67	1.67		1.25	1.17

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Course Name: Department Specific Elective-1

Course Code: BOTGDSE01T

Topic Name: CELL AND MOLECULAR BIOLOGY

CO, PO & PSO Mapping					
Course Outcome:	Sl No	Course outcome	Knowledge level Blooms Level	POs Mapping	PSOs mapping
	CO1	This course will familiarize the students with very basic aspects of cell biology.	L2 Understanding	1, 2, 4, 8	1, 2, 8, 9
	CO2	Through this course the students will get a basic idea on the structural details and functional aspects of major cell organelles.	L2 Understanding	1, 2, 4, 5, 8	1, 2, 8, 9
	CO3	This course will also focus on understanding the fundamental mechanisms for the organization, replication, expression, variation, and evolution of the genetic material at a molecular level.	L2 Understanding	1, 2, 5, 8	1, 2, 8, 9
	CO4	To acquire hands on training to different experiments of cell and molecular biology	L6 Creating	1, 3, 4, 7, 8	1, 2, 3, 5, 8
	CO5	Understand the intra molecular and intermolecular relationship.	L2 Understanding	1, 2, 5, 8	1, 2, 8, 9
	CO6	Understand various microscopic techniques.	L2 Understanding	1, 3, 4, 5, 6, 8	1, 2, 3, 8, 9

Program Articulation Matrix (CO-PO Matrix)																			
PO, PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9
CO1	3	3		1				1			3	3						1	1
CO2	3	2		1	2			1			3	3						1	2
CO3	3	3			2			1			3	3						2	1
CO4	3		3	3			2	2			3	3	2		3			2	
CO5	3	3			3			1			3	3						2	2
CO6	3		2	3	1	3		2			3	3	2					2	1
Average	3.00	2.75	2.50	2.00	2.00	3.00	2.00	1.33			3.00	3.00	2.00		3.00			1.67	1.40

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GENERAL COURSE IN BOTANY
With effect from the session: 2018 – 2019

Course Name: Department Specific Elective-2
Course Code: BOTGDSE04T
Topic Name: ANALYTICAL TECHNIQUES IN PLANT SCIENCES

CO, PO & PSO Mapping					
Course Outcome:	Sl No	Course outcome	Knowledge level Blooms Level	POs Mapping	PSOs mapping
	CO1	Understand the analytical techniques used in plant Sciences like imaging, Flow cytometry, FACS, FISH, centrifugation, use of radio isotopes, spectrophotometry.	L2 Understanding	1, 2, 3, 4, 5, 8	1, 2, 5, 8, 9
	CO2	Execute different analytical techniques used in plant sciences like Paper Chromatography, TLC, Column Chromatography, Spectrophotometry etc.	L6 Creating	1, 2, 3, 5, 8	1, 2, 3, 5, 8, 9
	CO3	Apply statistical techniques in different fields of biology.	L5 Evaluating	1, 2, 3, 5, 8	1, 2, 5, 8, 9
	CO4	Execute the knowledge of gel electrophoresis in the detail study of protein and DNA.	L6 Creating	1, 2, 4, 5, 8	1, 2, 3, 5, 8, 9
	CO5	Apply the principles of Light microscopy, compound microscopy, Fluorescence microscopy and confocal microscopy in understanding various biological studies.	L5 Evaluating	1, 2, 4, 5, 8	1, 2, 5, 8, 9
	CO6	Develop conceptual understanding of cell wall degradation enzymes and cell fractionation.	L2 Understanding	1, 2, 4, 5, 8	1, 2, 5, 8, 9

Program Articulation Matrix (CO-PO Matrix)																			
PO, PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9
CO1	3	3	2	3	3			1			3	3			2			2	3
CO2	3	2	3		3			1			3	3	1		2			2	3
CO3	3	3	2		2			1			3	3			2			3	3
CO4	3	3	2		3			1			3	3	1		3			3	3
CO5	3	3	2	3	3			1			3	3			3			3	3
CO6	3	3	1		3			1			3	3			3			3	2
Average	3.00	2.83	2.00	3.00	2.83			1.00			3.00	3.00	1.00		2.50			2.67	2.83

BARASAT GOVERNMENT COLLEGE
Course Outcome or Learning Outcome
Three year B.A. /B.Sc. Degree Course
Under CBCS semester system
GENERAL COURSE IN ZOOLOGY
With effect from the session: 2018 – 2019

Course Name: Generic Elective/Department Specific Core Course-1
Course Code: ZOOHGEC01T & ZOOHGEC01P/ ZOOGCOR01T & ZOOGCOR01P
Topic Name: ANIMAL DIVERSITY

CO, PO & PSO Mapping					
Course Outcome:	Sl No	Course outcome	Knowledge level Blooms Level	POs Mapping	PSOs mapping
	CO1	Develop understanding on the diversity of life with regard to protists, non-chordates and chordates.	L2 understanding	1	1
	CO2	Group animals on the basis of their morphological characteristics/structure.	L3 Applying	1, 2	1, 2
	CO3	Develop critical understanding how animals changed from a primitive cell to a collection of simple cells to form a complex body plan.	L4 analysing	1, 2	1, 2, 3
	CO4	Examine the diversity and evolutionary history of a taxon through the construction of a basic phylogenetic /cladistics tree.	L5 Evaluating	1, 2, 3, 5	1, 2, 3
	CO5	Understand how morphological change due to change in environment helps drive evolution over a long period of time.	L4 analysing	1, 2, 3, 5	1, 2, 3
	CO6	The project assignment will also give them a flavor of research to find the process involved in studying biodiversity and taxonomy besides improving their writing skills.	L6 Creating	1, 2, 3, 4	1, 2, 3, 9

Program Articulation Matrix (CO-PO Matrix)																			
PO, PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9
CO1	3										3								
CO2	3	3									3	2							
CO3	3	3									3	3	3						
CO4	3	3	3		2						3	2	3						
CO5	3	3	3		2						3	1	3						
CO6	3	3	3	2							3	2	3						2
Average	3.00	3.00	3.00	2.00	2.00						3.00	2.00	3.00						2.00

BARASAT GOVERNMENT COLLEGE
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Three year B.A. /B.Sc. Degree Course
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GENERAL COURSE IN ZOOLOGY
With effect from the session: 2018 – 2019

Course Name: Generic Elective/Department Specific Core Course-2
Course Code: ZOOHGEC02T & ZOOHGEC02P/ ZOOGCOR02T & ZOOGCOR02P
Topic Name: HUMAN PHYSIOLOGY & BIOCHEMISTRY

CO, PO & PSO Mapping					
Course Outcome:	Sl No	Course outcome	Knowledge level Blooms Level	POs Mapping	PSOs mapping
	CO1	Understand the process of digestion and its control.	L2 understanding	1	1, 4
	CO2	Develop understanding in muscle structure and contraction mechanism.	L2 understanding	1	1, 4
	CO3	Learn the process of respiration and transport of gases.	L2 understanding	1, 2	1, 4
	CO4	Understand kidney structure and regulation of urine formation.	L2 understanding	1, 2	1, 4
	CO5	Understand heart structure and functioning.	L2 understanding	1, 2	1, 4
	CO6	Understand function of endocrine glands and formation of gametes.	L2 understanding	1, 2	1, 4
	CO7	Understand about the importance and scope of biochemistry.	L3 Applying	1, 5, 6	1, 2, 8

Program Articulation Matrix (CO-PO Matrix)																			
PO, PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9
CO1	3										3			3					
CO2	3										3			3					
CO3	3	3									3			3					
CO4	3	3									3			3					
CO5	3	3									3			3					
CO6	3	3									3			3					
CO7	3				3	1					3	3						2	
Average	3.00	3.00			3.00	1.00					3.00	3.00		3.00				2.00	

BARASAT GOVERNMENT COLLEGE
Course Outcome or Learning Outcome
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GENERAL COURSE IN ZOOLOGY
With effect from the session: 2018 – 2019

Course Name: Generic Elective/Department Specific Core Course-3

Course Code: ZOOHGEC03T & ZOOHGEC03P/ ZOOGCOR03T & ZOOGCOR03P

Topic Name: INSECT VECTORS AND DISEASES

CO, PO & PSO Mapping					
Course Outcome:	SI No	Course outcome	Knowledge level Blooms Level	POs Mapping	PSOs mapping
	CO1	To learn understand the general features of insects and gain knowledge about their distribution and success on Planet Earth and to learn Insect's taxonomy, general morphology and physiology.	L2 understanding	1	1
	CO2	Learn about vector and vector borne diseases.	L2 understanding	1, 2	1
	CO3	Describe the mechanisms for transmission, virulence and pathogenicity in pathogenic micro-organisms.	L2 understanding	1, 2, 5	1, 6
	CO4	Diagnose the causative agents, describe pathogenesis and treatment for important diseases like malaria, leishmaniasis, Dengue, Chikungunya, Viral encephalitis, Filariasis.	L3 Applying	1, 2, 5	1, 2, 6
	CO5	Explain how the infectious disease can transmit to human.	L4 analysing	1, 2, 5	1, 2, 6
	CO6	Properly understand the prevention and control mechanism of infectious diseases.	L4 analysing	1, 2, 3	1, 2, 3, 6
	CO7	Develop education, communication programme and learn how to maintain proper WHO guidelines about infectious diseases.	L5 Evaluating	1, 2, 3, 4	1, 3, 9

Program Articulation Matrix (CO-PO Matrix)																			
PO, PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9
CO1	3										3								
CO2	3	3									3								
CO3	3	3			2						3					2			
CO4	3	3			2						3	3				3			
CO5	3	3			2						3	3				2			
CO6	3	3	3								3	3	3			2			
CO7	3	3	3	2							3	0	3			0			3
Average	3.00	3.00	3.00	2.00	2.00						3.00	2.25	3.00			1.80			3.00

BARASAT GOVERNMENT COLLEGE
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Three year B.A. /B.Sc. Degree Course
Under CBCS semester system
GENERAL COURSE IN ZOOLOGY
With effect from the session: 2018 – 2019

Course Name: Generic Elective/Department Specific Core Course-4
Course Code: ZOOHGEC04T & ZOOHGEC04P/ ZOOGCOR04T & ZOOGCOR04P
Topic Name: ENVIRONMENT AND PUBLIC HEALTH

CO, PO & PSO Mapping					
Course Outcome:	Sl No	Course outcome	Knowledge level Blooms Level	POs Mapping	PSOs mapping
	CO1	Understand different causes of environmental pollution.	L2 understanding	1	1
	CO2	Predict about the causes and remedies of different types of environmental pollution	L2 understanding	1, 2,	1, 2, 3
	CO3	Learn about the depletion and contamination of natural resources.	L2 understanding	1, 2	1
	CO4	To learn waste management technologies and its applications.	L3 Applying	1, 2, 5	1, 2
	CO5	Develop awareness about the causative agents.	L3 Applying	1, 2, 3	1, 3
	CO6	Recommend control measures of many commonly occurring diseases.	L4 analysing	1, 2, 3, 4, 5	1, 2, 4

Program Articulation Matrix (CO-PO Matrix)																			
PO, PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9
CO1	3										1								
CO2	3	3									1	1	1						
CO3	3	3									1								
CO4	3	3			3						1	1							
CO5	3	3	3								1		1						
CO6	3	3	3	1	3						1	1		1					
Average	3.00	3.00	3.00	1.00	3.00						1.00	1.00	1.00	1.00					

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Three year B.A. /B.Sc. Degree Course
Under CBCS semester system
GENERAL COURSE IN ZOOLOGY
With effect from the session: 2018 – 2019

Course Name: Department Specific Elective-1

Course Code: ZOOGDSE01T & ZOOGDSE01P

Topic Name: APPLIED ZOOLOGY

CO, PO & PSO Mapping					
Course Outcome:	Sl No	Course outcome	Knowledge level Blooms Level	POs Mapping	PSOs mapping
	CO1	Describe the mechanisms for transmission, virulence and pathogenicity in pathogenic micro-organisms.	L2 understanding	1	1
	CO2	Diagnose the causative agents; describe pathogenesis and treatment for important diseases like Tuberculosis, Typhoid, Entamoeba histolytica, Plasmodium vivax and Trypanosoma gambiense, Ancylostoma duodenale and Wuchereria bancrofti etc.	L2 understanding	1, 2	1, 2, 6
	CO3	Develop an understanding of the classification of fishes and integrating structure, function and physiology.	L2 understanding	1, 2,	1, 4
	CO4	Gain an overview of the fishery and aquaculture industry.	L3 Applying	1, 2	1, 5
	CO5	Express the importance of aquaculture.	L3 Applying	1, 3, 5	1, 5
	CO6	Understand the techniques involved in aquaculture practices.	L3 Applying	1, 4	1, 5, 7

Program Articulation Matrix (CO-PO Matrix)																			
PO, PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9
CO1	3										3								
CO2	3	3									3	2				3			
CO3	3	3									3			1	0				
CO4	3	3									3				3				
CO5	3		3		3						3				3				
CO6	3			3							3				3		2		
Average	3.00	3.00	3.00	3.00	3.00						3.00	2.00		1.00	2.25	3.00	2.00		

BARASAT GOVERNMENT COLLEGE
Course Outcome or Learning Outcome
Three year B.A. /B.Sc. Degree Course
Under CBCS semester system
GENERAL COURSE IN ZOOLOGY
With effect from the session: 2018 – 2019

Course Name: Department Specific Elective-2

Course Code: ZOOGDSE03T & ZOOGDSE03P

Topic Name: AQUATIC BIOLOGY

CO, PO & PSO Mapping					
Course Outcome:	Sl No	Course outcome	Knowledge level Blooms Level	POs Mapping	PSOs mapping
	CO1	Understand scientific principles in the area of Immunobiology and functioning of immune system.	L2 understanding	1	1
	CO2	Understand the basic structure, classes and function of antibodies, types of immunity (Innate and Adaptive, Humoral and Cellular), Complements and MHC.	L2 understanding	1, 2	1, 4, 6
	CO3	Understand the basic immune mechanisms in disease control.	L2 understanding	1, 2	1, 2, 4, 6
	CO4	Understand antigen-antibody interaction, types of hypersensitivity reactions, autoimmune diseases, types of vaccine and its applications.	L2 understanding	1, 2, 3	1, 2, 3, 4
	CO5	Develop skill in preparation of blood film, cell identification and blood group determination	L3 Applying	1, 2, 4	1, 2, 8
	CO6	Develop employable skills in identification of lymphoid organs and histological sections in human	L3 Applying	4, 5	1, 2, 8, 9

Program Articulation Matrix (CO-PO Matrix)																				
PO, PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	
CO1	3										3									
CO2	3	3									3			3	0	3				
CO3	3	3									3	3		3	0	2				
CO4	3	3	3								3	3	3	3						
CO5	3	3		2							3	3							3	
CO6				2	3						3	3							3	2
Average	3.00	3.00	3.00	2.00	3.00						3.00	3.00	3.00	3.00		2.50		3.00	2.00	

BARASAT GOVERNMENT COLLEGE
Course Outcome or Learning Outcome
Three year B.A. /B.Sc. Degree Course
Under CBCS semester system
GENERAL COURSE IN CHEMISTRY
With effect from the session: 2018 – 2019

Course Name: Generic Elective/Department Specific Core Course-1

Course Code: CEMHGEC01T & CEMHGEC01P / CEMGCOR01T & CEMGCOR01

Topic Name: ATOMIC STRUCTURE, CHEMICAL PERIODICITY, ACID AND BASE, REDOX REACTIONS, GENERAL CHEMISTRY & ALIPHATIC HYDROCARBONS

CO, PO & PSO Mapping					
Course Outcome:	Sl No	Course outcome	Knowledge level Blooms Level	POs Mapping	PSOs mapping
	CO1	Learn about the fundamental principles of Quantum mechanics and atomic structure, chemical periodicity, acid & base, redox reactions	L2 Understanding	1, 2, 6, 7, 8	1, 2, 5, 6
	CO2	Understand the fundamentals of organic chemistry, concept of Stereochemistry, elementary mechanistic aspects of nucleophilic substitution and Elimination Reactions, fundamental group approach of Aliphatic Hydrocarbons.	L2 Understanding	1, 2, 6, 7, 8	1, 2, 5, 6
	CO3	Apply the knowledge to identify and classify reactions	L3 Applying	1, 2, 4, 6, 7, 8	1, 2, 5
	CO4	Estimate sodium carbonate and sodium bicarbonate present in a mixture, oxalic acid, water of crystallization in Mohr's salt, Fe (II) ions and Cu (II) ions by different methods	L4 Annalysing	1, 2, 4, 6, 7, 8	1, 2, 3, 5, 7, 9
	CO5	Qualitatively Analyze Single Organic Compounds	L4 Annalysing	1, 2, 4, 6, 7, 8	1, 2, 3, 5, 7, 9
	CO6	Create table of solubility of different organic compound	L6 Creating	1, 2, 3, 6, 7, 8	1, 2, 9

Program Articulation Matrix (CO-PO Matrix)																			
PO, PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9
CO1	3	2				3	3	2			3	3			3	2			
CO2	3	2				3	2	3			3	2			2	2			
CO3	3	3		3		3	3	2			3	3			3				
CO4	3	3		3		3	2	3			2	2	3		2		3		2
CO5	3	2		3		3	3	3			2	2	3		3		3		3
CO6	3	2	1			3	2	1			2	2							3
Average	3.00	2.33	1.00	3.00		3.00	2.50	2.33			2.50	2.33	3.00		2.60	2.00	3.00		2.67

BARASAT GOVERNMENT COLLEGE
Course Outcome or Learning Outcome
Three year B.A. /B.Sc. Degree Course
Under CBCS semester system
GENERAL COURSE IN CHEMISTRY
With effect from the session: 2018 – 2019

Course Name: Generic Elective/Department Specific Core Course-2

Course Code: CEMHGEC02T & CEMHGEC02P / CEMGCOR02T & CEMGCOR02P

Topic Name: STATES OF MATTER & CHEMICAL KINETICS, CHEMICAL BONDING & MOLECULAR STRUCTURE, P-BLOCK ELEMENTS

CO, PO & PSO Mapping					
Course Outcome:	Sl No	Course outcome	Knowledge level Blooms Level	POs Mapping	PSOs mapping
	CO1	Learn about the general behavior and properties of the different state of matter viz. solid, liquid and gas.	L2 Understanding	1, 2, 3, 4, 6, 7	1, 2, 3, 8
	CO2	Understand the different factors that affect the rate of a chemical reaction and the methods of determination of rate and order	L2 Understanding	1, 2, 4, 6, 7	1, 2, 3, 8
	CO3	Analyze the various types of bonding involved in a molecular structure and the concept of resonanc	L4 Annalysing	1, 2, 4, 6, 7	1, 2, 3, 8
	CO4	Comprehend the Properties and reactions of of p-block elements	L2 Understanding	1, 2, 4, 6, 7	1, 2, 3, 8
	CO5	Gain Hands on experience in qualitative analysis of inorganic samples and measurement of properties of liquids like viscosity, surface tension etc.	L3 Applying	1, 2, 3, 5, 6, 7	1, 2, 3, 7, 8
	CO6	Evaluate the viscosity and surface tension values of liquid	L5 Evaluating	1, 2, 4, 6, 7	1, 2, 3, 8

Program Articulation Matrix (CO-PO Matrix)																			
PO, PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9
CO1	3	2	3	3		1	2				3	3	2					2	
CO2	3	3		3		3	2				3	3	2					1	
CO3	3	3		3		1	2				3	3	3					2	
CO4	3	2		3		2	2				3	3	3					2	
CO5	3	3	3		3	2	3				3	3	2				3	3	
CO6	3	3		3		3	2				3	3	3					1	
Average	3.00	2.67	3.00	3.00	3.00	2.00	2.17				3.00	3.00	2.50				3.00	1.83	

BARASAT GOVERNMENT COLLEGE
Course Outcome or Learning Outcome
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Under CBCS semester system
GENERAL COURSE IN CHEMISTRY
With effect from the session: 2018 – 2019

Course Name: Generic Elective/Department Specific Core Course-3
Course Code: CEMHGEC03T & CEMHGEC03P / CEMGCOR03T & CEMGCOR03P
Topic Name: CHEMICAL ENERGETICS, EQUILIBRIA, ORGANIC CHEMISTRY-II

CO, PO & PSO Mapping					
Course Outcome:	Sl No	Course outcome	Knowledge level Blooms Level	POs Mapping	PSOs mapping
	CO1	Learn the basic principles and laws of thermodynamics	L2 Understanding	1, 2, 4, 6	1, 2
	CO2	Understand the concept of chemical equilibrium and the factors affecting it	L2 Understanding	1, 2, 4, 6	1, 2, 3
	CO3	Apply the knowledge on the concept of ionic equilibria, pH and solubility	L3 Applying	1, 2, 4, 6	1, 2, 3
	CO4	Gain knowledge about Preparation and properties of organic compounds like alcohols, aromatic hydrocarbons	L2 Understanding	1, 2, 4, 6	1, 2, 3
	CO5	Evaluate pH of a solution	L5 Evaluating	1, 2, 4, 6	1, 2, 3, 4
	CO6	Identify different types of organic compounds	L2 Understanding	1, 2, 4, 6	1, 2, 3
	CO7	Formulate methods to solve problems based on thermodynamic principles	L3 Applying	1, 2, 4, 6	1, 2, 3

Program Articulation Matrix (CO-PO Matrix)																			
PO, PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9
CO1	3	3		2		3					3	3							
CO2	3	2		3		2					3	3	2						
CO3	3	3		3		2					3	2	3						
CO4	3	2		2		3					3	3	2						
CO5	3	3		2		2					3	2	3				2		
CO6	3	2		3		2					3	3	2						
CO7	3	3		3		2					3	3	3						
Average	3.00	2.57		2.57		2.29					3.00	2.71	2.50				2.00		

BARASAT GOVERNMENT COLLEGE
Course Outcome or Learning Outcome
Three year B.A. /B.Sc. Degree Course
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GENERAL COURSE IN CHEMISTRY
With effect from the session: 2018 – 2019

Course Name: Generic Elective/Department Specific Core Course-4

Course Code: CEMHGEC04T & CEMHGEC04P / CEMGCOR04T & CEMGCOR04P

Topic Name: SOLUTIONS,PHASE EQUILIBRIA, CONDUCTANCE, ELECTRO CHEMISTRY & ANALYTICAL AND ENVIORNMENTAL CHEMISTRY-I

CO, PO & PSO Mapping					
Course Outcome:	SI No	Course outcome	Knowledge level Blooms Level	POs Mapping	PSOs mapping
	CO1	Learn the fundamental concept of basic physical chemistry based on solution, phase equilibriu	L2 Understanding	1, 2, 4, 6	1, 2
	CO2	Understand the concept of conductanceand electromotive force	L2 Understanding	1, 2, 4, 6	1, 2
	CO3	Apply analytical concepts based on gravimetric and volumetric analysis and get acquainted with chromatographic methods of analysis using column and thin layer chromatography	L3 Applying	1, 2, 4, 7	1, 2, 3
	CO4	Evaluate impact of pollution on environment and identify probable remedies	L5 Evaluating	1, 2, 4, 5, 7	1, 2, 4
	CO5	Plot conductometric and potentiometric data and estimate strength of solution	L4 Annalysing	1, 2, 4, 6	1, 2, 5
	CO6	Design problem solving technique based on aforesaid physical phenomenon.	L6 Creating	1, 2, 5	1, 2, 6

Program Articulation Matrix (CO-PO Matrix)																			
PO, PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9
CO1	3	2		2		3					3	2							
CO2	3	2		3		2					3	3							
CO3	3	2		3			2				3	2	3						
CO4	2	2		3	3		2				2	2		3					
CO5	3	3		3		2					3	2			3				
CO6	2	3			3						3	2				3			
Average	2.67	2.33		2.80	3.00	2.33	2.00				2.83	2.17	3.00	3.00	3.00	3.00			

BARASAT GOVERNMENT COLLEGE
Course Outcome or Learning Outcome
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GENERAL COURSE IN CHEMISTRY
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Course Name: Department Specific Elective-1

Course Code: CEMGDSE01T

Topic Name: POLYMER CHEMISTRY

CO, PO & PSO Mapping					
Course Outcome:	Sl No	Course outcome	Knowledge level Blooms Level	POs Mapping	PSOs mapping
	CO1	Learn about the classification, the nature of molecular forces in polymers, the functionality of monomers, the degree of polymerization. They study the kinetic of addition and condensation polymerization	L2 Understanding	1, 2, 3, 4, 5, 6	1, 2, 6, 8, 9
	CO2	Study the method of determination of molecular weight of polymers, the concept of glass transition temperature.	L2 Understanding	1, 2, 3, 4, 5, 6	1, 2, 3, 5, 6, 8, 9
	CO3	Understand the preliminary ideas of thermodynamics of polymer solutions. They get ideas on the brief introduction to preparation, structure, properties and application of the some important polymers.	L2 Understanding	1, 2, 3, 4, 5, 6	1, 2, 5, 6, 8, 9
	CO4	Apply the knowledge gained to measure the molecular weight of polymes	L3 Applying	1, 2, 4, 5, 6, 7, 8	1, 2, 5, 6, 7, 8
	CO5	Analyze and classify the polymers	L4 Annalysing	1, 2, 4, 5, 6, 7, 8	1, 2, 5, 6, 8
	CO6	Synthesize some of the polymers in the laboratory	L6 Creating	1, 2, 3, 5, 6, 7	1, 2, 5, 6, 7, 8

Program Articulation Matrix (CO-PO Matrix)																			
PO, PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9
CO1	2	1	1	2	1	2					3	3				2		2	2
CO2	2	1	2	2	1	1					2	2	1		1	3		2	1
CO3	2	3	1	3	1	2					2	3			1	2		2	2
CO4	3	2		3	1	2	1	1			3	2			3	3	3	2	
CO5	3	2		3	1	3	1	1			2	2			3	3		2	
CO6	2	1	1		1	3	3				3	3			3	2	3	2	
Average	2.33	1.67	1.25	2.60	1.00	2.17	1.67	1.00			2.50	2.50	1.00		2.20	2.50	3.00	2.00	1.67

BARASAT GOVERNMENT COLLEGE
Course Outcome or Learning Outcome
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Under CBCS semester system
GENERAL COURSE IN CHEMISTRY
With effect from the session: 2018 – 2019

Course Name: Department Specific Elective-2
Course Code: CEMGDSE03T
Topic Name: INORGANIC MATERIALS OF INDUSTRIAL IMPORTANCE

CO, PO & PSO Mapping					
Course Outcome:	Sl No	Course outcome	Knowledge level Blooms Level	POs Mapping	PSOs mapping
	CO1	Learning the procedure of preparation of cement, ceramics and glass and their application	L2 Understanding	1, 2, 3, 4, 6, 7	1, 2, 3, 5, 7, 8, 9
	CO2	Understanding the method of preparation of important fertilizers, paints and pigments	L2 Understanding	1, 2, 3, 4, 6, 7	1, 2, 3, 5, 7, 8, 9
	CO3	Gaining knowledge about the preparation of different types of batteries, alloys and their properties	L2 Understanding	1, 2, 3, 4, 6, 7	1, 2, 3, 5, 7, 8, 9
	CO4	Utilizing different catalysts in different chemical reactions	L3 Applying	1, 2, 3, 4, 5, 6, 7	1, 2, 3, 5, 6, 7, 8, 9
	CO5	Analyzing useful materials like fertilizers, cement, plastic etc. in the laboratory	L4 Annalysing	1, 2, 3, 4, 5, 6, 7	1, 2, 3, 5, 6, 7, 8, 9
	CO6	Formulate different N-P-K fertilizer	L6 Creating	1, 2, 3, 4, 5, 6, 7	1, 2, 3, 5, 6, 7, 8, 9

Program Articulation Matrix (CO-PO Matrix)																			
PO, PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9
CO1	3	1	2	2		2	2				2	2	1		3		2	2	2
CO2	3	1	2	2		2	2				2	2	1		3		2	1	2
CO3	3	1	2	2		2	2				2	2	1		3		2	2	1
CO4	3	2	2	3	2	3	3				2	2	2		3	2	3	2	2
CO5	3	2	1	3	2	3	3				2	2	2		3	2	3	2	2
CO6	3	2	2	3	1	3	2				2	2	2		3	2	2	2	2
Average	3.00	1.50	1.83	2.50	1.67	2.50	2.33				2.00	2.00	1.50		3.00	2.00	2.33	1.83	1.83