

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

Program Outcome (PO)

PO 1	Disciplinary knowledge
PO 2	Problem solving
PO 3	Information/digital literacy
PO 4	Analytical reasoning
PO 5	Sense of inquiry
PO 6	Scientific reasoning
PO 7	Scientific mindset
PO 8	Lifelong learning

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Programme Specific Outcomes (PSO)

- **PSO1:** Students get acquainted with the fundamental principles and scientific theories of Physical Sciences, Biological Science and Social Sciences. The syllabus has been formed by keeping in mind the development of scientific reasoning, analytical efficiency, IT proficiency and investigative acumen of students
- **PSO2:** The program has been designed not only to impart knowledge regarding traditional as well as interdisciplinary areas of science but also to develop a thorough understanding about the overall scope and importance of modern science.
- **PSO3:** Through the program, the students can gain in-depth knowledge regarding classical as well as advanced topics of science like research methodology, modern techniques of experiment etc.
- **PSO4:** Students learn about the importance of preserving and protecting the environment and also about its different physical, chemical, economic and biological components.
- **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 develop an awareness of the current scientific and economic theories from around the world. This develops critical thinking and help in development of scientific temper.
- **PSO7:** Students will acquire basic Practical skills & Technical knowledge of different subjects in the science stream. Investigating power, team spirit, analytical expertise etc. are some of the other skills acquired through this course.
- **PSO8 :**Students can go for a career in education sector, scientific laboratory personnel , medical, pharmaceutical, analytical industries, financial and commercial markets, corporate sectors, IT firms etc,
- **PSO9:** Studying the course student is 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 PHYSICS
With effect from the session: 2018 – 2019

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

Course Code: PSHGEC01T & PSHGEC01P/ PHSGCOR01T & PHSGCOR01P

Topic Name: MECHANICS

CO, PO & PSO Mapping					
Course Outcome:	Sl No	Course outcome	Knowledge level Blooms Level	POs Mapping	PSOs mapping
	CO1	Understand vector operations, Basic laws of mechanics i.e. Newton's laws of mechanics, about conservation of momentum & Energy, laws for Earth, Sun and other terrestrial bodies under Gravitation,	L1 Remembering	1,2,4,5,6,7,8	1,2,6,7,8,9
	CO2	Comprehend fluid movement and knowledge about streamline and turbulent motion.	L3 Applying	1,2,4,5,6,7,8	1,2,6,7,8,9
	CO3	Realize about frame of reference and not existence of absolute rest. and velocity of light is the highest velocity in this universe under special theory of relativity.	L2 Understanding	1,2,4,5,6,7,8	1,2,6,7,8,9
	CO4	Understand the applications of slide callipers and screw gauge. Students able to measure the length, breadth and width of a bar and diameter of a cylinder by slide callipers and diameter of a wire by screw gauge.	L2 Understanding	1,2,4,5,6,7,8	1,2,6,7,8,9
	CO5	Apply a stop watch to determine the time period of a body, telescope in the experiment Young's experiment.	L3 Applying	1,2,4,5,6,7,8	1,2,6,7,8,9
	CO6	Perform experiment on the moment of Inertia of a regular body using another auxiliary body and a cradle suspended by a metallic wire.	L3 Applying	1,2,4,5,6,7,8	1,2,6,7,8,9

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	2	3		2	3	2	3	3			2	3				2	3	3	3
CO2	3	3		3	3	3	3	3			1	1				1	1	1	3
CO3	1	1		1	1	1	1	1			2	2				2	2	2	2
CO4	3	3		3	3	3	3	3			3	3				3	3	3	2
CO5	2	2		2	2	2	2	2			2	2				2	2	2	3
CO6	3	2		1	3	2	3	2			3	3				3	3	3	3
Average	2.33	2.33		2.00	2.50	2.17	2.50	2.33			2.17	2.33				2.17	2.33	2.33	2.67

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

Course Code: PSHHGEC02T & PSHHGEC02P/ PSHGCOR02T & PSHGCOR02P

Topic Name: ELECTRICITY AND MAGNETISM

CO, PO & PSO Mapping					
Course Outcome:	Sl No	Course outcome	Knowledge level Blooms Level	POs Mapping	PSOs mapping
	CO1	Understand the electrostatic field, electric flux, Gauss's theorem and its applications in electrostatics., electric potential due to an electric dipole, capacitance of an isolated spherical conductor, parallel plate condenser, polarization etc.	L2 Understanding	1,2,4,5,6,7,8	1,2,6,7,8,9
	CO2	Comprehend the Biot-Savart's law its applications, Ampere's circuital law, magnetic properties of materials Faraday's laws of electromagnetic induction, Lenz's law, self and mutual inductance, L of single coil, M of two coils. energy stored in magnetic field.	L3 Applying	1,2,4,5,6,7,8	
	CO3	Apply Thevenin, Norton's, maximum power transfer, superposition theorems and basics of Anderson's bridge.	L3 Applying	1,2,4,5,6,7,8	
	CO4	Employ Maxwell's equations, Poynting's vector, electromagnetic wave (em) propagation through vacuum, transverse nature of em waves, polarization etc.	L3 Applying	1,2,4,5,6,7,8	
	CO5	Apply to measure the resistance, capacitance, current and voltages by using a multimeter. They also understand the series/parallel connections of ammeter/voltmeter and their applications to measure the currents/voltage, Carey Foster's bridge.	L3 Applying	1,2,4,5,6,7,8	
	CO6	Verify the Thevenin, Norton, superposition and maximum power transfer theorems.	L5 Evaluating	1,2,4,5,6,7,8	
	CO7	Apply the response curve of a series LCR circuit and determine its resonant frequency, impedance at resonance, quality factor Q and band width and characteristics of a series RC circuit.	L3 Applying	1,2,4,5,6,7,8	

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	3	2		3	3	2	2	3			3	2				3	2	3	
CO2	1	3		1	1	1	1	1			2	1				2	3	2	
CO3	2	1		2	2	2	2	2			2	2				3	2	3	
CO4	3	2		3	3	3	3	3			3	3				2	2	2	
CO5	2	3		2	2	2	2	2			3	2				1	2	3	
CO6	3	2		1	1	1	1	1			2	1				3	2	2	
CO7	2	3		3	2	3	3	3			2	3				2	2	2	
Average	2.29	2.29		2.14	2.00	2.00	2.00	2.14			2.43	2.00				2.29	2.14	2.43	

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

Course Code: PSHHGEC03T & PSHHGEC03P / PHSGCOR03T & PHSGCOR03P

Topic Name: THERMAL PHYSICS STATISTICAL MECHANICS

CO, PO & PSO Mapping					
Course Outcome:	Sl No	Course outcome	Knowledge level Blooms Level	POs Mapping	PSOs mapping
	CO1	Understand different thermodynamical processes, the application of first and second law of thermodynamics, entropy of a system, Carnot cycle.	L2 Understanding	1,2,4,5,6,7,8	1,2,6,7,8
	CO2	Comprehend Maxwell's law of distribution of velocities and its application to find out the average, r.m.s. (root mean square) and most probable velocities, different transport phenomena; e.g. viscosity, conduction and diffusion. Black body radiation, Planck's law, Wien's distribution law, Rayleigh- Jeans law, Stefan-Boltzmann law and Wien's displacement law etc.	L2 Understanding	1,2,4,5,6,7,8	1,2,6,7,8
	CO3	Apply basics of Statistical Mechanics (phase space, macro state and micro state, entropy and thermodynamic probability). Also understand basics of Fermi-Dirac and Bose-Einstein statistics.	L3 Applying	1,2,4,5,6,7,8	1,2,6,7,8
	CO4	Employ traveling microscope to determine the width of a disc (in the coefficient of thermal conductivity experiment), use a thermometer to measure temperature.	L3 Applying	1,2,4,5,6,7,8	1,2,6,7,8
	CO5	Verify Stefan's law by using a torch bulb.	L5 Evaluating	1,2,4,5,6,7,8	1,2,6,7,8
	CO6	Determine the coefficient of thermal conductivity of a bad conductor by Lee and Charlton's disc method. They also understand the Newton's law of cooling in this experiment.	L4 Annalysing	1,2,4,5,6,7,8	1,2,6,7,8
	CO7	Apply the variation of thermo-emf of a thermocouple with difference of temperature of its two junctions.	L3 Applying	1,2,4,5,6,7,8	1,2,6,7,8

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	3		2	2	3	3	3			3	2				3	3	3	
CO2	2	2		3	3	2	2	2			2	3				2	3	2	
CO3	3	3		3	3	3	2	3			3	3				3	3	3	
CO4	1	1		2	3	2	3	1			1	1				1	1	1	
CO5	2	2		1	1	1	2	2			2	2				2	2	2	
CO6	3	3		2	2	3	2	3			3	3				3	3	3	
CO7	3	2		3	3	2	3	2			3	3				3	2	3	
Average	2.29	2.29		2.29	2.43	2.29	2.43	2.29			2.43	2.43				2.43	2.43	2.43	

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

Course Code: PSHHGEC04T & PSHHGEC04P / PHSGCOR04T & PHSGCOR04P

Topic Name: WAVES AND OPTICS

CO, PO & PSO Mapping					
Course Outcome:	Sl No	Course outcome	Knowledge level Blooms Level	POs Mapping	PSOs mapping
	CO1	Understand superposition of two Collinear and perpendicular harmonic oscillations, Lissajous figures with equal an unequal frequency and their uses,	L1 Remembering	1,2,4,5,6,7,8	1,2,6,7,8
	CO2	Comprehend the properties surface tension and viscosity of liquids.	L3 Applying	1,2,4,5,6,7,8	1,2,3,7,8
	CO3	Understand the Huygens principle, Interference of light (Fresnel's biprism, phase change on reflection: Stokes' treatment, interference in thin films, Newtons rings).	L2 Understanding	1,2,4,5,6,7,8	1,2,3,7,8
	CO4	Comprehend the diffraction of light (half-period zones, zone plate, single and double slits, plane transmission grating), polarization of light (transverse nature of light waves, plane polarized light – production and analysis, circular and elliptical polarization).	L3 Applying	1,2,4,5,6,7,8	1,2,3,7,8
	CO5	Apply Michelson's interferometer (To determine the wavelength, wavelength difference etc.).	L3 Applying	1,2,4,5,6,7,8	1,2,3,7,8
	CO6	Understand basics of spectrometer, and microscope and how to apply them for optical measurement. Students understand the use of prism and able to know how to to measure the angle of a prism. They are familiarized with the Schuster's focusing for the measurement of the minimum deviation for different colours.	L2 Understanding	1,2,4,5,6,7,8	1,2,3,7,8
	CO7	Determine the frequency of an electric tuning fork by Melde's experiment and verify $\lambda^2 \propto T$ law, refractive index of the Material of a prism using sodium source, dispersive power and Cauchy constants of the material of a prism using mercury source, Newton's rings and hence find the wavelength of sodium light.	L4 Annalysing	1,2,4,5,6,7,8	1,2,3,7,8

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	3	2		3	2	3	2	3			3	3	2				3	3	
CO2	2	1		1	3	2	3	2			2	2	3				3	2	
CO3	3	3		2	2	1	2	1			1	1	2				2	3	
CO4	2	2		3	3	2	1	3			2	3	1				3	2	
CO5	2	3		2	2	3	2	2			3	2	2				1	1	
CO6	3	2		3	3	2	3	2			2	3	3				3	2	
CO7	3	3		2	2	3	2	3			3	2	2				2	3	
Average	2.57	2.29		2.29	2.43	2.29	2.14	2.29			2.29	2.29	2.14				2.43	2.29	

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Course Name: Department Specific Elective-1
Course Code: PHSGDSE01T
Topic Name: DIGITAL, ANALOG CIRCUITS AND INSTRUMENTATION

CO, PO & PSO Mapping					
Course Outcome:	Sl No	Course outcome	Knowledge level Blooms Level	POs Mapping	PSOs mapping
	CO1	Understand binary to decimal conversion and vice-versa, addition, subtraction, multiplications and division of binary numbers, OR, AND, NOT, NOR, NAND, XOR, XNOR gates, application of De Morgan's theorems, half and full adders/subtractors.	L2 Understanding	1,2,4,5,6,7,8	1,2,3,7,8,9
	CO2	Comprehend biasing of p-n diode and mechanism of operations, the operations and applications of LEDs, photodiodes and solar cells. Also understand characteristics of transistors in different biasing (CB, CE and CC) and their application in implementation of different kinds of amplifiers (A, B, AB and C).	L4 Analysing	1,2,4,5,6,7,8	1,2,3,7,8,9
	CO3	Understand characteristics of OPAMPs.	L1 Remembering	1,2,4,5,6,7,8	1,2,3,7,8,9
	CO4	Perform applications in inverting and non-inverting amplifiers, adder, subtractor, differentiator, integrator and oscillators.	L3 Applying	1,2,4,5,6,7,8	1,2,3,7,8,9
	CO5	Apply CRO, half-wave, full-wave and bridge rectifiers, OPAMP, OR, AND, NOT, NAND, NOR, XOR and XNOR gates.	L3 Applying	1,2,4,5,6,7,8	1,2,3,7,8,9
	CO6	Verify and design AND, OR, NOT and XOR gates using NAND gates. They also able to minimize a given logic circuit, design it and prepare its truth table. Further, they able to verify De Morgan's theorems by implementing circuits with different ICs, the outputs of half adder/subtractor, full adder/subtractor and prepare respective truth tables.	L5 Evaluating	1,2,4,5,6,7,8	1,2,3,7,8,9

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	2	3		2	3	2	3	2			3	2	3				3	2	3
CO2	3	3		3	2	3	2	3			1	3	2				2	3	2
CO3	2	2		2	1	1	2	1			2	2	1				3	2	3
CO4	3	2		1	3	3	3	2			3	2	2				3	3	1
CO5	3	2		3	3	3	3	3			2	3	3				2	3	3
CO6	2	3		3	2	2	2	2			3	2	3				2	2	2
Average	2.50	2.50		2.33	2.33	2.33	2.50	2.17			2.33	2.33	2.33				2.50	2.50	2.33

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

Course Name: Department Specific Elective-2

Course Code: PHSGDSE03T

Topic Name: SOLID STATE PHYSICS

CO, PO & PSO Mapping					
Course Outcome:	Sl No	Course outcome	Knowledge level Blooms Level	POs Mapping	PSOs mapping
	CO1	Understand Classification of solid materials into crystal and amorphous; their difference in aspect of structure, electrical, optical etc	L1 Remembering	1,2,4,5,6,7,8	1,2,5,6,7,8,9
	CO2	Comprehend atoms or molecules of all materials are always oscillating though bulk matter may be in rest.	L2 Understanding	1,2,4,5,6,7,8	1,2,5,6,7,8,9
	CO3	Know magnetic properties of matters, types of magnetic properties and their uses.	L2 Understanding	1,2,4,5,6,7,8	1,2,5,6,7,8,9
	CO4	Understand after the failure of free electron theory to explain the measured/observed properties of matter, how band theory able to explain major measured/observed properties of matter including classification of matter into conductor, semi- conductor and insulator, Superconductivity,	L2 Understanding	1,2,4,5,6,7,8	1,2,5,6,7,8,9
	CO5	Verify the basics and biasing of p-n junction diodes and their characteristics.	L5 Evaluating	1,2,4,5,6,7,8	1,2,5,6,7,8,9
	CO6	Apply the variation of resistivity of a semiconductor with temperature. In this purpose, they able to design the required circuit arrangement o measure the resistivity of a Ge-semiconductor with temperature (in the reverse bias) and hence determine its band gap.	L3 Applying	1,2,4,5,6,7,8	1,2,5,6,7,8,9
	CO7	Create and Design design the required circuit arrangement for the study of the temperature coefficient of a semiconductor (NTC thermistor).	L6 Creating	1,2,4,5,6,7,8	1,2,5,6,7,8,9

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	2		2	3	3	2	3			3	2			3	2	2	3	2
CO2	2	3		3	2	2	3	2			2	3			2	3	3	2	3
CO3	2	2		1	2	2	1	3			1	2			1	1	2	1	1
CO4	1	1		2	1	1	3	2			2	2			2	3	2	2	3
CO5	3	2		3	3	2	2	1			3	1			3	2	3	3	2
CO6	2	3		3	3	3	2	3			3	2			2	3	2	2	3
CO7	3	3		3	3	3	3	2			3	3			3	2	2	3	2
Average	2.29	2.29		2.43	2.43	2.29	2.29	2.29			2.43	2.14			2.29	2.29	2.29	2.29	2.29

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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

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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	

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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
Under CBCS semester system
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
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: Department Specific Elective-1

Course Code: CEMGDSE01T

Topic Name: POLYMER CHEMISTRY

CO, PO & PSO Mapping					
Course Outcome:	SI 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 polymers	L3 Applying	1, 2, 4, 5, 6, 7, 8	1, 2, 5, 6, 7, 8
	CO5	Analyze and classify the polymers	L4 Analysing	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
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: 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

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

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

Course Code: MTMHGEC01T / MTMGCOR01T

Topic Name: DIFFERENTIAL CALCULUS

CO, PO & PSO Mapping					
Course Outcome:	Sl No	Course outcome	Knowledge level Blooms Level	POs Mapping	PSOs mapping
	CO1	Determine the limit and investigate the continuity, grasping the geometrical interpretation of differentiability.	L3 Applying	1, 2, 4, 6	1, 2, 7
	CO2	Grasp the implications of various mean value theorems and calculate maxima-minima and indeterminate forms.	L3 Applying	1, 2, 4	1, 2, 6, 7
	CO3	Generate curves in Cartesian and polar coordinate systems.	L6 Creating	1, 2, 4	1, 2
	CO4	Gain insight into successive differentiation, partial differentiation, and homogeneous functions.	L2 Understanding	1, 4	1, 2, 7
	CO5	Comprehend and calculate Tangents and Normals, Curvature, Asymptotes, and Singular points.	L4 Annalysing	1, 4	1, 2, 7, 9
	CO6	Enhance the capacity to solve different types of numerical problems.	L4 Annalysing	1, 2	1, 2, 6, 7, 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					3	3						2	
CO2	3	3		3							3	3				2	2		
CO3	2	2		2							2	2							
CO4	3			3							3	3						2	
CO5	3			3							3	2						1	1
CO6	2	2									2	3				2	1		2
Average	2.67	2.25		2.80		3.00					2.67	2.67				2.00	1.60		1.50

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

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

Course Code: MTMHGEC02T / MTMGCOR02T

Topic Name: DIFFERENTIAL EQUATION

CO, PO & PSO Mapping					
Course Outcome:	Sl No	Course outcome	Knowledge level Blooms Level	POs Mapping	PSOs mapping
	CO1	Examine the origins of ordinary and partial differential equations.	L2 Understanding	1, 2, 4, 5, 6, 7, 8	1, 2, 3, 5, 6, 8
	CO2	Explore various methodologies for determining precise solutions of select solvable first-order differential equations and second-order linear differential equations.	L5 Evaluating	1, 2, 4, 5, 6, 7, 8	1, 2, 3, 5, 6, 8
	CO3	Familiarize yourself with the Wronskian and its characteristics.	L2 Understanding	1, 2, 4, 5, 6, 7, 8	1, 2, 3, 5, 6, 8
	CO4	Acquire knowledge of the variation of parameters technique for determining solutions of differential equations.	L4 Annalysing	1, 2, 4, 5, 6, 7	1, 2, 3, 5, 6, 8
	CO5	Gain insight into the Cauchy-Euler equation, simultaneous differential equations, and total differential equations.	L3 Applying	1, 2, 4, 5, 6, 7, 8	1, 2, 3, 5, 6, 8
	CO6	Utilize Lagrange's method to ascertain solutions of first-order linear partial differential equations.	L3 Applying	1, 2, 4, 5, 6, 7, 8	1, 2, 3, 5, 6, 8
	CO7	Employ Charpit's method to assess non-linear partial differential equations.	L5 Evaluating	1, 2, 4, 5, 6, 7, 8	1, 2, 3, 5, 6, 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	1		2	3	2	3	2			3	3	2		2	3		2	
CO2	3	3		3	2	3	3	2			3	3	2		2	3		3	
CO3	2	1		2	2	2	2	2			2	2	2		1	2		1	
CO4	3	3		3	2	2	3				3	3	1		2	3		3	
CO5	3	2		3	3	3	3	2			3	3	2		2	3		3	
CO6	3	2		3	2	3	3	2			3	3	1		2	3		3	
CO7	3	2		3	2	3	3	1			3	3	2		1	3		3	
Average	2.86	2.00		2.71	2.29	2.57	2.86	1.83			2.86	2.86	1.71		1.71	2.86		2.57	

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

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

Course Code: MTMHGEC03T / MTMGCOR03T

Topic Name: REAL ANALYSIS

CO, PO & PSO Mapping					
Course Outcome:	Sl No	Course outcome	Knowledge level Blooms Level	POs Mapping	PSOs mapping
	CO1	Acquire a thorough understanding of binary relations.	L2 Understanding	1, 2, 4,	1, 2, 8
	CO2	Acquire a thorough understanding of functions.	L2 Understanding	1, 2, 4	1, 2, 8
	CO3	Gain familiarity with the concept of a group.	L2 Understanding	1, 2, 4	1, 2, 8
	CO4	Understand cyclic groups, the general linear group, and the group of symmetries.	L2 Understanding	1, 2, 4	1, 2, 8
	CO5	Learn about the permutation group, subgroup, and their basic properties and examples.	L2 Understanding	1, 2, 4	1, 2, 8
	CO6	Comprehend the concept of a ring, subring, ideal, integral domain, and field along with their basic properties and examples.	L2 Understanding	1, 2, 4	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	1		2							3	2							2
CO2	3	1		2							3	2							2
CO3	3	1		2							3	2							2
CO4	3	1		2							3	2							2
CO5	3	1		2							3	2							2
CO6	3	1		2							3	2							2
Average	3.00	1.00		2.00							3.00	2.00							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 MATHEMATICS
With effect from the session: 2018 – 2019

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

Course Code: MTMHGEC04T / MTMGCOR04T

Topic Name: ALGEBRA

CO, PO & PSO Mapping					
Course Outcome:	SI No	Course outcome	Knowledge level Blooms Level	POs Mapping	PSOs mapping
	CO1	Understand and apply the concepts of equivalence relations and partitions, as well as the various types of functions, including composition, invertibility, and one-to-one correspondence, to solve mathematical problems.	L2 Understanding	1, 2, 4, 7	1, 2, 3
	CO2	Gain a thorough understanding of group theory, including the identification and properties of abelian and non-abelian groups, and explore specific examples such as Z_n , $U(n)$, cyclic groups, roots of unity, and various symmetry groups.	L3 Applying	1, 2, 4, 7	1, 2, 3
	CO3	Develop the ability to identify and work with subgroups, cyclic subgroups, and commutator subgroups, including understanding the center of a group, and utilize Lagrange's theorem to determine the order of elements and subgroups.	L3 Applying	1, 2, 4, 7	1, 2, 3
	CO4	Learn to recognize and construct quotient groups and normal subgroups, including understanding their definitions, examples, and characterizations, and apply these concepts to solve related algebraic problems.	L2 Understanding	1, 2, 4, 7	1, 2, 3
	CO5	Acquire knowledge of ring theory, including the definitions and examples of both commutative and non-commutative rings, and explore specific rings such as Z_n , the ring of real quaternions, matrix rings, polynomial rings and rings of continuous functions.	L2 Understanding	1, 2, 4, 7	1, 2, 3
	CO6	Understand the structure of subrings and ideals, and study the properties and examples of integral domains and fields, including Z_p , Q , R , C , and the field of rational functions, to enhance problem-solving skills in algebra.	L2 Understanding	1, 2, 4, 7	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		3			2				3	1	3						
CO2	3	2		1			2				3	3	3						
CO3	3	3		3			2				3	1	3						
CO4	3	2		2			3				3	3	2						
CO5	3	2		1			2				3	3	2						
CO6	3	3		3			2				3	2	3						
Average	3.00	2.50		2.17			2.17				3.00	2.17	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 MATHEMATICS
With effect from the session: 2018 – 2019

Course Name: Department Specific Elective-1

Course Code: MTMGDSE01T

Topic Name: MATRICES

CO, PO & PSO Mapping					
Course Outcome:	Sl No	Course outcome	Knowledge level Blooms Level	POs Mapping	PSOs mapping
	CO1	Acquire knowledge of vector spaces over R, standard basis.	L2 Understanding	1, 2, 4, 7, 8	1, 2, 4, 5
	CO2	Familiarize yourself with various properties of matrices including inverse, rank.	L2 Understanding	1, 2, 3, 6	1, 2, 4, 5
	CO3	Utilize the matrix method to determine solutions of a system of linear equations.	L2 Understanding	1, 2, 4, 6, 7	1, 2, 4, 5
	CO4	Grasp the concept of Linear Independence and dependence.	L2 Understanding	1, 2, 4, 5, 6, 7	1, 2, 4, 5
	CO5	Acquire concept of eigenvalues and eigenvectors, and diagonalization of a matrix.	L2 Understanding	1, 2, 4, 5, 6, 7	1, 2, 4, 5
	CO6	Familiarize with Gauss Jordan, Gauss Elimination and Gauss Jacobi method.	L2 Understanding	1, 2, 4, 6	1, 2, 4, 5

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			2	1			3	2		2	1			1	
CO2	3	2		2		2					3	2		1	2			2	
CO3	3	3		3		1	2				3	3		2	1			1	
CO4	3	2		2	2	2	1				3	2		2	2			2	
CO5	3	2		2	2	1	2				3	2		2	2			1	
CO6	2	3		3		2					2	3		2	2			2	
Average	2.83	2.33		2.50	2.00	1.60	1.75	1.00			2.83	2.33		1.83	1.67			1.50	

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

Course Name: Department Specific Elective-2

Course Code: MTMGDSE04T

Topic Name: LINEAR PROGRAMMING

CO, PO & PSO Mapping					
Course Outcome:	Sl No	Course outcome	Knowledge level Blooms Level	POs Mapping	PSOs mapping
	CO1	Examine and assess linear programming models of real-life situations.	L4 Annalysing	1, 2, 4, 5, 6, 7, 8	1, 2, 5, 6, 7, 8, 9
	CO2	Construct graphical solutions of linear programming problems with two variables, and demonstrate the concept of convex sets and extreme points.	L3 Applying	1, 2, 4, 5, 6, 7, 8	1, 2, 5, 6, 7, 8, 9
	CO3	Gain insight into the theory of the simplex method, two-phase method, Big-M method, and compare them.	L2 Understanding	1, 2, 4, 5, 6, 7, 8	1, 2, 5, 6, 7, 8, 9
	CO4	Explore the relationships between the primal and dual problems.	L4 Annalysing	1, 2, 4, 5, 6, 7, 8	1, 2, 5, 6, 7, 8, 9
	CO5	Employ economic interpretation of the dual and sensitivity analysis.	L3 Applying	1, 2, 4, 5, 6, 7, 8	1, 2, 5, 6, 7, 8, 9
	CO6	Enhance the capacity to solve different types of numerical problems.	L3 Applying	1, 2, 4, 5, 6, 7, 8	1, 2, 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	3		3	2	2	2	1			3	2			3	2	1	1	2
CO2	3	3		3	3	2	2	1			3	3			3	2	1	1	1
CO3	3	2		1	3	2	2	1			3	2			2	2	1	1	1
CO4	3	2		1	3	2	2	1			3	3			2	2	1	1	1
CO5	3	2		1	3	2	2	1			3	2			3	2	1	2	1
CO6	3	3		1	2	2	2	1			2	3			2	2	1	3	2
Average	3.00	2.50		1.67	2.67	2.00	2.00	1.00			2.83	2.50			2.50	2.00	1.00	1.50	1.33

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

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

Course Code: GEOHGEC01T / GEOGCOR01T

Topic Name: PHYSICAL GEOGRAPHY

CO, PO & PSO Mapping					
Course Outcome:	SI No	Course outcome	Knowledge level Blooms Level	POs Mapping	PSOs mapping
	CO1	Understand the basic concept of physical geography.	L2 Understanding	1,2,4,5	1,2,3,4
	CO2	Learn internal structure of the earth, Plate Tectonics.	L4 Analyzing	1,2,4,7	2,3,4,6
	CO3	Understand the influence of rocks on topography.	L1 Remembering	3,4,5,6	4,5,7,9
	CO4	Learn about the fluvial processes and landforms, cycle of erosion.	L2 Understanding	2,4,5,6	3,4,5,6
	CO5	Understand about climatic phenomenon, planetary wind system, tropical cyclone.	L2 Understanding	1,3,4,6	2,4,6,7
	CO6	Learn about Hydrological cycle, Ocean surface characteristics.	L2 Understanding	1,2,3,7	1,3,5,8

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		2	1						3	2	1	3					
CO2	3	3		1	2							1	3	3		3			
CO3			1	1	2	2								2	2		3		2
CO4		2		1	2	2							2	2		1	3		
CO5	3		1	1		2						1	2			3	2		
CO6	3	2	3				3				3		2		2			3	
Average	3.00	2.25	1.67	1.20	1.75	2.00	3.00				3.00	1.33	2.00	2.50	2.00	2.33	2.67	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 GEOGRAPHY
With effect from the session: 2018 – 2019

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

Course Code: GEOHGEC02T / GEOGCOR02T

Topic Name: HUMAN GEOGRAPHY

CO, PO & PSO Mapping					
Course Outcome:	SI No	Course outcome	Knowledge level Blooms Level	POs Mapping	PSOs mapping
	CO1	Learn about the distribution of human population in India and world and the factors that affects the distribution.	L1 Remembering	1,2,3,5	1,2,3,4
	CO2	Know the factors that affect the internal and international migration.	L2 Understanding	1,2,4,6	2,3,4,8
	CO3	Know the process of evolution of human civilization.	L2 Understanding	3,4,5,7	4,5,7,9
	CO4	Gain knowledge on Anthropological aspects of Geography.	L3 Applying	1,4,5,6	3,4,5,6
	CO5	Comprehend different contemporary social issues.	L2 Understanding	1,3,4,6	2,4,6,9
	CO6	Get knowledge about different types of agricultural system with special reference to intensive subsistence and plantation agriculture.	L1 Remembering	1,2,3,7	1,4,5,8
	CO7	Know different types of urban settlement and different trends of urbanisation.	L2 Understanding	1, 5, 7, 8	1,6,8,9

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	3							3	2	2	2					
CO2	3	2		2		3						2	2	2				3	
CO3			2	3	2	1								1	2		2		2
CO4	3			2	3	3							2	3	3	2			
CO5	3		2	2		2						2		2		3			3
CO6	3	2	1				3				3			2	2			3	
CO7	3				1		2	2			3					2		2	2
Average	3.00	2.00	1.50	2.40	2.00	2.25	2.50	2.00			3.00	2.00	2.00	2.00	2.33	2.33	2.00	2.67	2.33

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

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

Course Code: GEOHGEC03T / GEOGCOR03T

Topic Name: GENERAL CARTOGRAPHY

CO, PO & PSO Mapping					
Course Outcome:	SI No	Course outcome	Knowledge level Blooms Level	POs Mapping	PSOs mapping
	CO1	Explain how maps work, conceptually and technically and will be able to understand science.	L4 Analyzing	1,4,5,6	2,3,4,6
	CO2	Comprehend the art of cartography.	L3 Applying	3,4,5,7	4,5,7,9
	CO3	Know about the importance of map scales and processes to draw it.	L1 Remembering	1,4,5,6	3,4,5,6
	CO4	Recognize the benefits and limitations of some common map projections, their use and processes to draw.	L4 Analyzing	1,3,4,6	2,4,6,7
	CO5	Understand and perform interpretation of topographical maps.	L2 Understanding	1,2,3,7	2,4,6,9
	CO6	Learn different techniques of graphical representation of data and to draw them properly.	L1 Remembering	1,2,4,7	1,4,5,8

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	2					3	2	1		2				
CO2			2	3	2	1							3	2		2			2
CO3	3			2	3	3						2	2	3	3				
CO4	3		2	2			3				3		2		3	3			
CO5	3	2	2				2				2		3		3				3
CO6	3	3		2			3				3		2	3				2	
Average	3.00	2.50	2.00	2.20	2.67	2.00	2.67				3.00	2.67	2.00	2.17	2.67	2.75	2.50	2.00	2.50

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

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

Course Code: GEOHGEC04T / GEOGCOR04T

Topic Name: ENVIRONMENTAL GEOGRAPHY

CO, PO & PSO Mapping					
Course Outcome:	SI No	Course outcome	Knowledge level Blooms Level	POs Mapping	PSOs mapping
	CO1	Gain knowledge about the concept, scope of environmental geography and components of environment.	L3 Applying	1,2,3,4	3,4,5,6
	CO2	Develop an idea about human-environment relationships.	L6 Creating	1,4,5,6	4,5,6,8
	CO3	Build an idea about ecosystem and its components.	L2 Understanding	3,4,5,8	3,4,5,6
	CO4	Gain knowledge on current environmental issues like pollution, waste management, soil erosion etc.	L3 Applying	1,4,5,6	2,4,6,7
	CO5	Know about environmental programmes and policies.	L2 Understanding	1,3,4,6	2,4,6,9
	CO6	Learn about the objectives and status of major environmental policies of India.	L5 Evaluating	1,2,3,7	4,5,7,9

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								1	2	2	2				
CO2	3			2	2	2							2	2	2		3		
CO3			3	3	2			2					3	2	3	2			
CO4	3			1	3	3						2		2		2	3		
CO5	3		2	2		2						2		2		2			3
CO6	3	2	2					2						3	2		2		3
Average	3.00	2.00	2.50	2.20	2.33	2.33	2.00	2.00				2.00	2.00	2.17	2.25	2.00	2.50	3.00	3.00

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

Course Name: Department Specific Elective-1

Course Code: GEOGDSE01T

Topic Name: SOIL AND BIO GEOGRAPHY

CO, PO & PSO Mapping					
Course Outcome:	SI No	Course outcome	Knowledge level Blooms Level	POs Mapping	PSOs mapping
	CO1	Gain knowledge of soil formation processes and soil profiles.	L3 Applying	1,3,4,6	2,4,6,7
	CO2	Learn about different types of soil profiles and its formation process.	L5 Evaluating	1,2,3,4	3,4,5,6
	CO3	Learn about physical and chemical properties of soil.	L5 Evaluating	1,4,6,7	4,5,7,9
	CO4	Acquire comprehensive knowledge of soil classification.	L6 Creating	3,4,5,8	3,4,5,6
	CO5	Learn about the concept of biosphere, ecosystem, ecotone, community, niche, succession, ecology, trophic structure, food chain, food web, biomes and bio geo chemical cycles.	L5 Evaluating	1,4,5,6	2,4,6,7
	CO6	Gain knowledge of carbon dioxide and nitrogen cycles.	L3 Applying	1,3,4,6	2,4,6,9

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	2		2						1		3		2	1		
CO2	3	2	2	3									3	2	3	2			
CO3	3			2		2	3							2	2		3		3
CO4			3	2	2	2							3	1	2	3			
CO5		2		3		3	2					2		3		1	2		
CO6	3		2	2		2						3		2		3			2
Average	3.00	2.00	2.25	2.33	2.00	2.20	2.50					2.00	3.00	2.17	2.33	2.20	2.00		2.50

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

Course Name: Department Specific Elective-2
Course Code: GEOGDSE04P
Topic Name: PROJECT REPORT BASED ON FIELD WORK (GEOGDSE04P)

CO, PO & PSO Mapping					
Course Outcome:	SI No	Course outcome	Knowledge level Blooms Level	POs Mapping	PSOs mapping
	CO1	Learn how a project work executed based on specific objective(s).	L5 Evaluating	1,3,4,6	4,5,7,9
	CO2	Gain creating concept of different stages of project works: Identifying the problem, methodology of data collection, data analysis and lesson learned.	L3 Applying	3,4,5,8	3,4,5,6
	CO3	Understand the field ethics and different tools of field study.	L2 Understanding	1,4,5,6	2,4,6,9
	CO4	Conduct field work on socio-economic aspects of geographical landscapes.	L6 Creating	3,4,5,8	1,4,5,8
	CO5	Gather experiences for direct participation of the students to field test the learning.	L3 Applying	1,3,5,7	1,3,4,6
	CO6	Prepare an individual report based on primary and secondary data collected during field work.	L6 Creating	1,2,4,7	3,4,5,8

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	2		3								1	2		3		3
CO2			3	3	2			3					2	3	2	3			
CO3	3			2	2	3						2		3		1			3
CO4			3	2	2			3			3			2	3				1
CO5	3		2		3		2				3		2	3		2			
CO6	3	2		2				3					2	3	3				3
Average	3.00	2.00	2.50	2.20	2.25	3.00	2.50	3.00			3.00	2.00	2.00	2.50	2.50	2.00	3.00	2.00	3.00

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

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

Course Code: ECOHGEC01T / ECOGCOR01T

Topic Name: INTRODUCTORY MICROECONOMICS

CO, PO & PSO Mapping					
Course Outcome:	SI No	Course outcome	Knowledge level Blooms Level	POs Mapping	PSOs mapping
	CO1	Identify basic objectives, scope and subject matters of Microeconomics	L3 Applying	1,3,4,6	2,4,6,7
	CO2	Understand how the consumer takes optimum consumption decision	L3 Applying	1,3,4,6	2,4,8,9
	CO3	Realise how the producer takes optimum production decision	L5 Evaluating	1,2,3,7	4,5,7,9
	CO4	Compare between the characteristic features of different product markets	L6 Creating	2,3,4,6	1,3,7,9
	CO5	Determine of factor prices	L5 Evaluating	1,2,4,7	2,4,6,9
	CO6	Solve real world microeconomic problems	L3 Applying	1,3,4,8	2,4,7,9

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	2			3				3		2		3	3			
CO2	3		2	2		2					2		2		2		3		
CO3	3	2	2				2						3	2		3			2
CO4		3	3	2		3				3		3					2		3
CO5	3	2		3			2				2		3		3				3
CO6	2		3	3				3			3		2				3		3
Average	2.80	2.33	2.40	2.40		2.50	2.33	3.00			3.00	2.50	3.00	2.40	2.00	2.67	2.75	3.00	2.75

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

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

Course Code: ECOHGEC02T / ECOGCOR02T

Topic Name: INTRODUCTORY MACROECONOMICS

CO, PO & PSO Mapping					
Course Outcome:	SI No	Course outcome	Knowledge level Blooms Level	POs Mapping	PSOs mapping
	CO1	Identify basic objectives, scope and subject matters of Macroeconomics	L3 Applying	1,3,5,6	2,3,7,8
	CO2	Understand the basic economic issues of the nation	L3 Applying	3,4,5,7	4,5,7,9
	CO3	Acquire knowledge about definition and estimation of national income	L1 Remembering	1,4,5,6	3,4,5,6
	CO4	Determine employment, output and other macroeconomic variables	L3 Applying	1,3,4,6	2,4,6,7
	CO5	Assess different government policies to improve the condition of the economy	L5 Evaluating	1,2,3,7	2,4,6,9
	CO6	Solve real world macroeconomic problems	L5 Evaluating	1,3,4,5	2,4,6,9

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		3	2						3	3				2	3	
CO2			2	3	2	1								3	2		2		2
CO3	3			2	3	3							2	2	3	3			
CO4	3		2	2			3					3		2		3	3		
CO5	3	2	2				2					2		3		3			3
CO6	2		3	3	2							3		2		3			3
Average	2.80	2.00	2.20	2.50	2.50	2.00	2.50					2.75	2.50	2.40	2.50	3.00	2.33	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 ECONOMICS
With effect from the session: 2018 – 2019

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

Course Code: ECOHGEC03T / ECOGCOR03T

Topic Name: DEVELOPMENT ECONOMICS

CO, PO & PSO Mapping					
Course Outcome:	SI No	Course outcome	Knowledge level Blooms Level	POs Mapping	PSOs mapping
	CO1	Understand multidimensional definition of economic development	L2 Understanding	1,4,5,6	3,4,5,6
	CO2	Compares different theories of development	L1 Remembering	1,3,4,6	2,4,6,7
	CO3	Realise the role of international institutions such as IMF and World Bank in fostering development	L2 Understanding	1,3,4,6	2,4,6,9
	CO4	Assess the difference between growth and development	L5 Evaluating	1,2,3,7	4,5,7,9
	CO5	Understand the gender specific issues and its effect from the point of view of Societal development	L2 Understanding	1,4,5,6	2,4,6,7
	CO6	Identify Role of foreign assistance specially investment for economic development of a developing country	L4 Analyzing	2,3,5,6	3,4,8,9

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	2			2	3	3							2	2	3	3			
CO2	3		2	2			3					3		2		3	1		
CO3	3		2	2		2						2		2		2			3
CO4	3	2	2				2							3	2		2		2
CO5		2		3		2	3					2		3		2	2		
CO6		3	3		2	3							3	2				2	3
Average	2.75	2.33	2.25	2.25	2.50	2.50	2.67					2.33	2.50	2.33	2.50	2.50	1.67	2.00	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 ECONOMICS
With effect from the session: 2018 – 2019

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

Course Code: ECOHGEC04T / ECOGCOR04T

Topic Name: INDIAN ECONOMY

CO, PO & PSO Mapping					
Course Outcome:	SI No	Course outcome	Knowledge level Blooms Level	POs Mapping	PSOs mapping
	CO1	Identify the characteristic features of the Indian economy	L2 Understanding	3,4,5,8	3,4,5,6
	CO2	Observe the trends of different Sector-specific key indicators in pre and post reform period and their implications	L4 Analyzing	1,4,5,6	2,4,6,7
	CO3	Realise the important issues in agriculture, industry and service sectors in Indian economy	L3 Applying	1,3,5,7	1,3,4,6
	CO4	Assess the role of government for the development of the economy	L5 Evaluating	1,2,4,7	3,4,5,8
	CO5	Understand the role of Reserve Bank of India in Indian economy	L2 Understanding	1,2,5,6	3,4,5,6
	CO6	Evaluate the impact of globalization for the development of the economy	L5 Evaluating	1,3,4,6	2,4,6,7

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	2			3					2	2	2	3			
CO2		2		2		3	2					2		3		2	2		
CO3	3		2		3		2				3		2	3		2			
CO4	3	2		2			3						2	3	3			3	
CO5	2	3			3	3							2	2	3	3			
CO6	3		2	2			3					3		2		3	2		
Average	2.75	2.33	2.33	2.25	2.67	3.00	2.50	3.00			3.00	2.50	2.00	2.50	2.67	2.60	2.00	3.00	

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

Course Name: Department Specific Elective-1

Course Code: ECOGDSE01T

Topic Name: ELEMENTARY STATISTICS

CO, PO & PSO Mapping					
Course Outcome:	SI No	Course outcome	Knowledge level Blooms Level	POs Mapping	PSOs mapping
	CO1	Identify basic objectives and scope of using statistics in economics	L2 Understanding	3,4,5,8	3,4,5,6
	CO2	Learn the method of collection of data	L2 Understanding	1,4,5,6	2,4,6,9
	CO3	Represent collected dataset using tables ,charts and diagrams	L3 Applying	3,4,5,8	1,4,5,8
	CO4	Assess characteristics such as homogeneity and heterogeneity of collected and presented data	L5 Evaluating	1,3,5,7	1,3,4,6
	CO5	Compare between the characteristic features of different data set	L3 Applying	2,3,5,8	2,4,7,9
	CO6	Solve different real world numerical problems using statistical techniques	L5 Evaluating	1,3,6,8	4,5,8,9

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			1					2	1	2	3			
CO2	3			2	3	2						2		3		1			3
CO3			3	3	2			3			3			3	2				2
CO4	3		2		3		2				1		3	2		2			
CO5		3	3		1			2				2		3			3		2
CO6	3		2			2		3						3	3				2
Average	3.00	3.00	2.60	2.67	2.20	2.00	2.00	2.25			2.00	2.00	2.50	2.50	2.33	2.00	3.00	2.00	2.33

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

Course Name: Department Specific Elective-2

Course Code: ECOGDSE03T

Topic Name: TRADE AND DEVELOPMENT

CO, PO & PSO Mapping					
Course Outcome:	SI No	Course outcome	Knowledge level Blooms Level	POs Mapping	PSOs mapping
	CO1	Realise basic objectives and scope of studying Trade and Development from the point of view of Economics	L3 Applying	3,4,5,8	1,4,5,8
	CO2	Realise the contribution of trade in fostering development	L2 Understanding	1,4,5,6	2,4,6,9
	CO3	Understand different theories of trade	L2 Understanding	3,4,5,8	3,4,5,7
	CO4	Assess gains from trade	L5 Evaluating	1,6,7,8	5,6,7,9
	CO5	Evaluate the role of international institutions in settling trade related disputes	L5 Evaluating	1,3,5,8	2,3,4,6
	CO6	Relate trade and development in the liberalized regime	L3 Applying	1,3,5,7	1,3,5,6

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			2	3	3			2			3			3	2			2	
CO2	3			3	1	2						2		3		3			2
CO3			2	3	3			2			2			3	2		2		
CO4	3					2	3	3							3	2	3		3
CO5	3		3		2			3				3	2	2		2			
CO6	3		3		2		2				1		3		2	3			
Average	3.00		2.50	3.00	2.20	2.00	2.50	2.50			2.00	2.50	2.50	2.75	2.25	2.50	2.50	2.00	2.50