

GOVT. GENERAL DEGREE COLLEGE, CHAPRA
PROGRAM OUTCOMES AND COURSE OUTCOMES

Department of Bengali

Program outcomes

- PO1 – knowledge and understanding of basic Bengali literature
- PO2 – knowledge and understanding of Bengali grammar and linguistics
- PO3 – knowledge and understanding of essential Bengali vocabulary..
- P04 knowledge and understanding of the history of Bengali literature
- PO5 – Knowledge and understanding of basic idea of Bengali poetry, prose, short story, Drama and novel.

Course outcome (Honours Course)

Course code	Title	Course outcome
BENGGH-CC-T-1, BENGGH-GE-T-1, BENGGH-GE-T-3	History of Bengali literature (ancient and medieval period)	Students will have knowledge about the development of Bengali literature during the ancient and medieval period. Students will be aware about contemporary social, political and socio-political environment. Students will understand the need of studying old literature in the present time.
BENGGH-CC-T-2, BENGGH-GE-T-2, BENGGH-GE-T-4	History of Bengali literature (19th and 20th century)	Students will have knowledge about the development of 19 th century and 20 th century Bengali literature. Student will learn literary, socio-political aspect and economic influence of social condition of the period will develop the knowledge about our country and world history..
BENGGH-CC-T-1, BENGGH-H-CC-T-2, BENGGH-H-GE-T-2, BENGGH-H-GE-T-4	Linguistics	Students will have to learn about the Bengali language and grammar and the can use proper language in their colloquial version.
BENGGH-H-CC-T-3, BENGGH-H-CC-T-4, BENGGH-H-GE-T-1, BENGGH-H-GE-T-3	Rhetoric and prosody	To learn rhetoric and prosody can help the student to understand clearly the literature and can read with proper pronunciation and accent.
BENGGH-H-CC-T-3, BENGGH-H-CC-T-4, BENGGH-H-GE-T-1, BENGGH-H-GE-T-3	Ancient and medieval literature	Student can be aware about the ancient and medieval literary features and its motifs.

BENG-H-CC-T-4	Proof correction	To learn this technical method student can do work properly in press and other places.
BENG-H-CC-T-5, BENG-H-CC-T-7, BENG-H-CC-T-9, BENG-H-CC-T-9, BENG-H-CC-T-12	Definition and forms of literature	These topics can help the student to have the clear conception about many literary forms used in Bengali literature.
BENG-H-CC-T-8, BENG-H-DSE-T-1	Literary theory and criticism	It can help the student to think properly about literature in addition; try to establish their own opinion reading any books and articles.
BENG-H-CC-T-6, BENG-H-CC-T-11	Bengali novels and short stories	It can help the students to develop their ethical sense and to be a good fellow in society.
BENG-H-CC-T-7	Bengali essays	student can achieve their argumentative thought to read essays.
BENG-H-CC-T-9, BENG-H-CC-T-10	Bengali poems and poetics	student will have to think and develop their ethical thought and can feel properly the sensitive issues in society and communicate with others.
BENG-H-CC-T-12, BENG-H-CC-T-13	Bengali plays	Plays are good artistic form in Bengal also. From these plays student can feel and develop their social, political and critical thought about their society.
BENG-H-DSE-T-2	Bangladeshi Sahitya	it can help to correlate the student with their literary creation which are written in neighbour country such as Bangladesh.
BENG-H-CC-T-14	History of Sanskrit, English and Regional Indian literature	Student can get knowledge from these topics about other literature than Bengali. Sanskrit, English and regional literature has been enriching Bengali literature. Student can know the relation between Bengali literatures with others.
BENG-H-DSE-T-3	Bangla Rupkatha Shishusahitya o Goyenda Sahitya	Student can know about their tradition and old glorious literary creation and try to know our traditional literary fantasy and others.
BENG-H-DSE-T-4	Bangla Pradeshik Sahitya	From this topics student can know our Bengali literature, which are written in outer side of West Bengal and its new, special forms.

Discipline Specific Elective (DSE)

Students will know the ancient Sanskrit and English literature

Students will know the theory of translation from one literature to another literature.

Students will know the various literary movements.

Students will be able to know the basic concept of folk literature

Students will know the role of literary journals in modern literature

Student will know about the 'Rabindra sahitya'.

Students will learn the basic concept of cinema, sports and art culture.

Skill Enhancement Course (SEC)

Student will be able to know the theory of translation,

Students will learn grammatical evolution in Bengali literature,

Student will be aware about environment,

Student will be able to develop their creative writing,

Course outcome (General course)

course code	title	course outcome
1.BNGG-CC-T-1	a. History of Bengali literature (ancient and medieval) b. Rhetoric, prosody c. Boishnab Padabali (poems related to Boishnabism)	a. Student can have knowledge about the tradition and features of ancient and medieval Bengali literature. b. to learning rhetoric and prosody, the student can read and recite poems and able to understand properly. c. student will be aware about Boishanabism and related songs .
2.BNGG-AECC	a. Report writing, b. terminology, c. poetry and d. short story	a. Student can get knowledge to write report. b. get knowledge about terminology. c. student can know about poetry and its analysis. d. student can understand about the short story and its ethical analysis.
3.BNGG-LCC-T- 1	a. Shaktapadabali (poems related to shaktism), b. poetry, c. novel	a. student can understand about the late medieval poetry of Bengal. b. can have knowledge about modern poetry. c. to read novel student can know about the socio -cultural condition

		of Bengal.
4.BNGG-CC-T-2	a. History of Bengali literature(modern) b. linguistic	a. The student can have knowledge about 19th and 20 th century literature. from this student can be aware about socio economic condition of Bengal.
5.BNGG-CC-T-3	a. biography, b. autobiography and c.travel story	a .& b. student will have knowledge about biography and autobiography of renowned persons. c. from travel story student can get about a travelling spot and its importance.
6.BNGG-SEC-T-1	a. proof correction and b. prose reading	Getting knowledge about the method of proof correction, a student can be able to work in any press. b. student will be get knowledge about the language and its tradition.
7.BNGG-LCC-T- 2	a. poems, b. plays and c. short story	a. to read poems , student can develop their esthetical conception. b. student can have knowledge the social, cultural and anthropological condition of society to read drama. c. from short story student can be able to know the contemporary social condition of society.
8.BNGG—CC-T-4	a. novel, b. drama and c. essays	a. to read novel, students can know about the socio -cultural condition of Bengal and contemporary beliefs of people. b. student can have knowledge the social, cultural and anthropological condition of society to read drama. c student can achieve their argumentative thought to read essays.
9.BNG-SEC-T-2	a. report writing, b. prose reading and c. advertise writing	a. Student can get knowledge to write report and student will be get knowledge about the language and its tradition. Student will be able to know the method of advertising. To know this, they can do work any concern.
10.BNGG-DSE-T-1	a. kabyatattwa (poetics), b. literary criticism	a. from the 'kabyatattwa' (poetics) student can have knowledge

		<p>about literature and its esthetical analysis.</p> <p>b It can help the student to think properly about literature in addition; try to establish their own opinion reading any books and articles.</p>
11.BNGG-GE-T-1	a. history of Bengali theatre and b. Bengali plays	<ol style="list-style-type: none"> 1. Student will get knowledge about Bengali theatre and its tradition. 2. student will be aware about social, cultural condition to read and watching Bengali plays.
12.BNGG-SEC-T-3	a. Bengali folk song	a. to know about local folk song, student can connect with their tradition and local culture properly.
13.BNGG-DSE-T-2	a. rupkatha, b. child and c. juvenile literature	<p>a. rupkatha was an oral literature of our country. to read it, student can be aware about our tradition and oral literature.</p> <p>b &c. student will be able to know from child and juvenile literature , the absurdity, nonsense and child psychology.</p>
14.BNGG-GE-T-2	a. environment related Bengali literature	From environment related literature, a student can be aware about the value and importance of our environment.
15.BNGG-SEC-T-4	a. proof correction, b. IPA and c. Bengali essays	<p>a. to know the method of proof correction. Student can be able to work in press and any other place.</p> <p>b. student can will be able to know proper pronunciation accent of any other language.</p> <p>c. student can achieve their argumentative thought to read essays.</p>

GOVT. GEN. DEGREE COLLEGE, CHAPRA
UNDER GRADUATE DEPARTMENT OF CHEMISTRY
Three years B.Sc. Chemistry (General) CBCS Syllabus
[Programme Specific Outcomes \(P.O\)](#)

<u>Programme Outcome</u>	
PO-I	The present CBCS curriculum the students will not only able to learn the fundamental learning of the subject and advance their knowledge, but will also increase the ability of critical thinking, development of scientific attitude, handling of different instruments, improve practical skills, enhance communication skill, social interaction, recognize the ethical value system and increase awareness in environment related issues. This will definitely help the students in their profession in the future.
PO-II	To provide skills and knowledge to the students that will enable them to undertake further studies in chemistry on related areas or multi-disciplinary areas that can be helpful for self-employment.
PO-III	To provide knowledge and skills to the students in rural area that will enable them to undertake further studies in chemistry on related areas or multi-disciplinary areas that can be helpful for self-employment and entrepreneurship.
PO-IV	Achieve the skills required to succeed for doing jobs in Govt. and private sectors of academia and industry.
PO-V	Learn, identify and solve complex scientific problems, sample analysis in scientific ways at all levels.
PO-VI	The course fulfils to produce competent chemists who can think and work independently in chemical laboratories or can fit themselves in chemical industries.
PO-VII	Investigate chemical problems using scientific tools for investigation and interpretation of figures.
PO-VIII	Select, design and apply appropriate experimental techniques along with IT tools to solve chemical problems.
PO-IX	Communicate effectively through scientific report writing, documentation and effective presentations.

Course Outcome or Learning Outcome (C.O)

Generic Elective -1 Course Code:	GE-Sem-I (Theory) [CHEM-G-CC-T-01]	Atomic Structure, Chemical Periodicity, Acids and Bases, Redox Reactions, Fundamentals of Organic Chemistry, Stereochemistry & Aliphatic Hydrocarbons	<ol style="list-style-type: none"> 1. Basic knowledge of atomic models 2. Ideas about various periodic properties such as electronegativity; electron affinity; ionization energy etc. 3. Implementation of acid-base balance and pH concepts 4. Create concepts to balance a chemical equation using oxidation-reduction and ion-electron methods 5. Understand intermolecular transformations and symmetry elements and describe stereochemical properties of organic molecules and reactions. 6. Investigate the mechanisms of electrophilic addition reactions, elimination reactions and determination of reaction mechanisms using several different methods
	GE-Sem-I (Prac) [CHEM-G-CC-P-01]	Redox Titration Determination of functional groups	<ol style="list-style-type: none"> 1. Estimation of oxalic acid, Mohr salt or Fe (II) by both permanganometry and dichromatometry 2. To determine the nature of the functional groups, present in an Organic molecule.
Generic Elective -2 Course Code:	GE-Sem-II (Theo) [CHEM-G-CC-T-02]	States of Matter & Chemical Kinetics, Chemical Bonding & Molecular Structure, P- Block Elements	1. Understand the general properties of main group elements, with special attention to the synthesis and properties of main group compounds such as diborane; borazine; borazole; phosphonitrile compounds; silicates; silicone etc.
	GE-Sem-II (Pract) [CHEM-G-CC-P-02]	Inorganic Chemistry Qualitative semi-micro analysis of mixtures containing three radicals	1. Understand the various chemical reactions involved in the recognition of cationic and anionic radicals. Like a tire test; warming effect of salts; flame test; test of boraxes etc.
Generic Elective -3 Course Code:	GE-Sem-III (Theory) [CHEM-G-CC-T-03]	Chemical Energetics, Equilibria, Organic Chemistry-II	<ol style="list-style-type: none"> 1. To understand the various laws of thermodynamics 2. Applications of thermodynamics 3. To learn about ionic equilibrium 4. Mechanisms of aromatic substitution reactions. 5. Understand the carbonyl group and various reactions. 6. Knowledge of organometallic chemistry. 7. knowledge of unsaturated molecules and chemistry.
	GE-Sem-III (Practical) [CHEM-G-CC-P-03]	Expts based of thermodynamics, Identification of Organic compounds	<ol style="list-style-type: none"> 1. Measurement of pH 2. Preparation of various buffer solutions 3. Solubility of sparingly soluble salt Detection of pure organic compounds oxalic acid, succinic acid, resorcinol, urea, glucose, benzoic acid and salicylic acid, acetone, aniline and nitrobenzene

Generic Elective -4 Course Code:	GE-Sem-IV(Theo) [CHEM-G-CC-T-04]	Solutions, Phase Equilibria, Conductance, Electrochemistry & Analytical and Environmental Chemistry	Understanding 1. Ideal & non-ideal solutions 2. Phase equilibria 3. Conductance of ionic solutions 4. Electromotive force 5. Chemical analysis based on volumetric, gravimetric, chromatographic methods 4. BOD, TDS, COD, DO, hardness
	GE-Sem-IV(Prac) [CHEM-G-CC-T-04]	Solutions, Phase Equilibria, Conductance, Electrochemistry & Analytical and Environmental Chemistry	Carry out experiments for 1. Conductometric determination of the dissociation constant of a weak acid 2. Potentiometric titration 3. Total hardness of water
Generic Elective -5 Course Code:	GE-Sem-V(Theo) [CHEM-G-DSE-T-01]	Analytical, Environmental and Industrial Chemistry	Understanding 1. Chemical Analysis 2. Environmental Chemistry 3. Error Analysis and Computer Applications 4. Industrial Chemistry
	GE-Sem-V(Prac) [CHEM-G-DSC-P-01]	Analytical and Environmental Chemistry, Analytical and Industrial Chemistry	Carry out experiments for 1. Total hardness of water by EDTA titration 2. To determine the rate constant for the acid catalyzed hydrolysis of an ester. 3. Determination of the strength of the H ₂ O ₂ sample. 4. Titration of Na ₂ CO ₃ and NaHCO ₃ mixture vs HCl using phenolphthalein and methyl orange indicators. 5. Titration of HCl and CH ₃ COOH mixture vs NaOH using two different indicators to find the concentration. Estimation of available oxygen in pyrolusite
Generic Elective -6 Course Code:	GE-Sem-VI(Theo) [CHEM-G-DSE-T-02]	Advanced Organic Chemistry and Industrial Chemistry	Understanding 1. Carboxylic Acids and Their Derivatives 2. Amines and Diazonium Salts 3. Amino Acids and Carbohydrates 4. Polymers 5. Paints 6. Fermentation chemicals Food additives etc.
	GE-Sem-VI(Prac) [CHEM-G-DSE-P-02]	Advanced Organic Chemistry and Industrial Chemistry	1. Considering the yield of the crude product, the following reactions are to be performed: i. Nitration of aromatic compounds ii. Condensation reactions iii. Hydrolysis of amides/imides iv. Acetylation of aromatic amines v. Benzoylation of aromatic amines 2. Purification of the crude product is to be made by crystallisation from water/alcohol. Carry out experiments for 1. Estimation of saponification value of oil / ester / fat. 2. Estimation of available chlorine in bleaching powder. 3. Estimation of acetic acid in commercial vinegar.

Program Outcome and Course Outcome
Department of English
Government General Degree College Chapra

Program and Courses

The BA (Hons) and BA (Gen) programmes offered by the English Department caters specifically to enrich the students in generating more awareness about English language, culture and civilization . From the inception of rhe college, the Department has seen sharp increase in students interest in taking up English studies as a career option. The number of students from other related discipline willing to study in BA (Gen) varies every year as well.

The English syllabus has been revised in 2016. As decided by the University of Kalyani, the Programme is to be revised in Academic Year 2017-18.

Passion and curiosity marks the beginning of serious intellectual endeavour. The Department of English is a place where faculty and students freely and in spirit of learning discuss what they love—novels, poems, plays, and share ideas on paintings, films, and other art forms—along with theoretical and philosophical questions related to the study of literature and culture. To spark immediate intellectual excitement is the aim of intensive study, with the greater aim to build toward the larger end of a liberal education through these conversations. Through the wide variety of literary-critical approaches they encounter in classes, students of English Honours cultivate the analytical capacities that will continue to serve them in their personal and professional lives long after graduation.

Studying English at Govt Gen Degree College Chapra is very much like attending a liberal arts college: most courses are discussion-based classes, and professors closely mentor undergraduate students' writing and intellectual development.

The mission of the Department of English undergraduate curriculum is to provide students with a thorough grounding in humanistic knowledge. Our students analyze fundamental questions about such topics as the formal qualities of individual works and literary genres, the status of literature within culture, the achievements of a particular author, the methods of literary scholarship and research, and the application of theory to literature. Drawing on the interdisciplinary tradition, the department encourages our students to integrate the concerns of other fields into their English studies along with other academic programs.

Program Specific Outcomes (PSO)

1. Creates a profound knowledge on History of English Language, English in India, Use of English, Composition and Communication, Anglo-Saxon Literature, Anglo-Norman and Middle English Literature, and Literary terms.

2. Helps in conceiving a sound knowledge on English Literature from 1485 CE to 1640 CE and from 1641 CE to 1788 CE with special emphasis on socio-cultural history and history of ideas along with different genres of the concerned periods with detailed study of some of the recommended texts.
3. Incorporates a detailed study of English Literature for the period 1789-1831, 1832-1913, 1914-2000, and conceptualizing Literary Theory, Critical Appreciation and Literatures outside UK.

Methodology of teaching-learning includes conventional methods like Lecture and Discussions as also ICT. A Smart Class Room and English Language Laboratory is in the offing to upgrade and modernize the teaching-learning process.

Program Specific Outcomes are deeply linked with the Mission and Vision of the College.

COURSE OUTCOMES (CO)

CO1. Focussing on English Language: History and Usage

CO2. Comprehends English Literature from 408CE-1484 CE

CO3. Explores English Literature from 1485CE to 1640 CE

CO4. Enlightens on English Literature (1641-1788)

CO5. Elaborates English Literature (1789-1831)

CO6. Illustrates English Literature (1832-1913)

CO7. Explores English Literature (1914-2000)

CO8. Exemplifies Literary Theory, Critical Appreciation and Literatures outside the UK

GOVT. GENERAL DEGREE COLLEGE, CHAPRA
UNDER GRADUATE DEPARTMENT OF HISTORY
B.A. HISTORY (HONS) CBCS SYLLABUS

With effect from 2018-19

HISTORY HONOURS: PROGRAM OUTCOMES

Courses that are taught in History Honours from Semester 1 to Semester 6 is about the progress of Human civilization in Europe and India. By studying history -

- Students can know about the pre-historic and proto-historic past of mankind.
- Students get to know the evolutionary stages of India's society, economics, education, art and architecture.
- Students will be eligible for various private and public sector jobs.
- They can teach at academic institutions.
- They can pursue higher academic degrees like M.A, B.Ed, M.Ed, Ph.D etc.
- Students can be aware of the interdisciplinary aspect of the subject in the field of social sciences and literature.
- Students develop critical thinking, rational ideas by studying history.
- Interests can be developed towards allied subjects like area studies, women studies, subaltern studies etc.
- They will learn about great historical figures and their contributions to make the world a better place to live in.
- The Program helps students to know the struggle of mankind towards civilizational progress and thus makes them responsible citizen.

PROGRAM SPECIFIC OUTCOME (PSO)

Δ Students acquire knowledge of India's cultural heritage, historical tradition, religion, customs etc.

Δ Students can gain skill based knowledge by studying history.

*They can prepare charts, diagrams, draw maps of India and Europe of different historical periods, locations etc.

*Can Prepare models of historical monuments, tools etc.

ΔStudents can grow interest in history through various activities -

: Visit historical places and museums.

: perform in historical plays, dramas etc.

: collect coins, artefacts, paintings of historical significance.

: Collect newspaper cuttings, documents to create a personal repository of historical materials.

ΔThey can analyse various historical debates and theories and develop their own analytical ability.

Δ They gain knowledge about world politics, political ideas through the ages.

GOVERNMENT GENERAL DEGREE COLLEGE, CHAPRA

COURSE OUTCOME OR LEARNING OUTCOME

UNDER GRADUATE DEPARTMENT OF HISTORY

B.A. History (Hons.) 3-Years CBCS Semester System

CC I- History of Early India, from remote past to the end of the Vedic Policy

- Students of history will come to know about the notion of history, meaning of pre-history, proto-history and history.
- Students understand how tough was the life of the primitive men and their journey from the stage of food gatherers to food producers.
- Students can gain knowledge about the greatness of Indian civilization with the advent of Harappan civilization, Vedic civilizations. They also learn the social, political, cultural changes that people of ancient India was going through the ages.
- Students also learn non-Vedic political economy, the 16 Mahajanapadas, spread of protestant religions, Ajivikism, Jainism and Buddhism, rise of Magadha as an imperial power.

CC II- Social Formations and Cultural Patterns of the Ancient and early Medieval World

- Students understand the evolution of humankind & how the nomadic prehistoric people settled down with time and became civilized. The hard attempts of human beings gave birth to ancient civilizations.
- Students can compare among the civilizations & understand their differences.
- By studying the paper Students can understand that they can achieve success with hard work and dedication like the ancient people.

CC III - Ancient India from the Maurya to Late Gupta period

- Students will come to know the rise of state in ancient India by studying the Mauryan rule in Magadha and they will learn to recognize the distinctiveness of Indian polity by knowing about Asoka's *Dhamma*.
- Students will understand that India had never been isolated from the world once they learn about the empire of Kushanas and the maritime activities of Cholas. They will know about various regional powers of early Christian centuries like Saavahanas, Cheras and Pandyas along with the rise of various religious sects like Vaishnavism, Saivism and Tantrism, which had enriched Indian philosophy and had expanded the spiritual belief system of India and thus they will understand the evolution of a distinct Indian culture in the ancient and early- mediaeval periods. Besides they will come to

know the consolidation of Indian society through the process of transformation of non-agricultural indigenous communities (called “tribes” in colonial term) into sedentary agricultural communities or peasants and the changes it had brought into caste hierarchy.

- Students will learn about the Guptan empire. They will learn to evaluate any historical period on the basis of its own merit. They will be engaged in the critical study of Indian feudalism and political decentralization of India after the fall of the imperial Guptas. They will learn to estimate the achievements of Harshavardhana.
- Students will get to know early India in retrospect, its society and culture and environment; its literature and philosophy; its art and architecture; its science, technology and its trade and industry.

CC IV - History of Early Medieval India

- Students will learn about the contemporary texts and travelogues, particularly the indigenous literature, and archaeology to develop a sound understanding of the sources of history and historiography of early medieval India.
- Students will conceptualize the transition from centralized to decentralized India by knowing the histories of the Rajputs of North India, the Palas and the Senas in Bengal and the kingdoms of the South – the Pallavas, the Rashtrakutas, the Chalukyas and the Cholas.
- Students will get a picture of the condition of India before the invasion of the Turks – its polity, society, economy, religion and culture.
- Students will learn about the Turkish invasions from 997 to 1206 AD, consolidation of the Turkish rule in Delhi from 1206 to 1286 AD, the reality of the Khalji revolution and the omnipotent state under the Khaljis, reforms and counter reforms under the Tughluqs and the decline of the Delhi Sultanate.

CC V - The Delhi Sultanate in Retrospect

- Students will understand the history of the society, economy, art, architecture and literature in the successor states of Bijaynagar, Bahmani and Bengal.
- Students will come to know the dynastic histories of the Sayyids and Lodis of Delhi and they will understand why and how Babur invaded India. They will understand the misfortune of Humayun’s misfortune and the achievements of his adversary, Sher Shah Sur.
- Students will comprehend different areas of the economy during the sultans of Delhi - changes in land revenue administration, new agrarian relations, industry and urbanization and trade and currency.
- Students will grasp the ideas of state and kingship during the sultans of Delhi. They will learn about the development of bhakti and sufi philosophies and the condition of language, literature, art and architecture during the Sultans of Delhi.

CC VI - Rise of the Modern West

- Students will understand the structural features of European feudalism, the Crusades and the decline of feudalism in western Europe but its survival in eastern Europe.
- Students will comprehend the socio-economic roots of Renaissance; the spread of new social ideas like secularism; humanism and art, architecture, science and literature during Renaissance and the printing revolution.

- Students will come to know the origin, course and results of Reformation, the progress of the movement from Luther to Calvin the counter Reformation.
- Students will study and grasp the history of Europe from Thirty Years' War to Seven Years' War and the rise of early nation states like Spain, France, England and Russia.

CC VII - Europe in Transition

- Students will come to know the history of geographical explorations and overseas empires of Portugal and Spain and, as its result, shift of economic balance from the Mediterranean to the Atlantic ocean and commercial and price revolution.
- Students will comprehend different trends in European history, e.g., the seventeenth century crisis in Europe; growth of mercantilism and economic transition; Glorious Revolution in England and changes in political, economic and state structure; scientific revolution; industrial revolution and the rise of industrial societies in Europe.
- Students will grasp the history of American War of Independence and the birth of new democratic politics.
- Students will understand the history of changes from the age of Enlightenment to the Age of Liberalism and from feudalism to capitalism and they will grasp the transition debate.

CC VIII - History of Mughal India

- Students will come to know the sources and different aspects of historiography of Mughal India. They will understand the history of Mughal period by reading primary sources like the texts of AbulFazal, Badauni, Abdul Hamid Lahori and Bernier and the secondary sources like the writings of Sir Jadunath Sarkar and historians from Delhi and Aligarh schools.
- Students will understand different aspects of the Mughal state during the great Mughals, e.g., state and religion, management of land and agriculture, evolution of the administrative system (mansab and jagir), the Mughal ruling classes (nobility and zamindars) and the peasants and village community.
- Students will come to know the history of trade, commerce, and monetary system during Mughal period.
- Students will comprehend the history of urban centres, morphology of cities, urban economy, crafts, technology, industry (*karkhanas*), urban social structure, merchant communities, bankers, artisans, craftsmen and labourers.

CC IX - History of Late Mediaeval India

- Students will understand different aspects of society and culture like religion of the masses, language, music, literature, art and architecture in India during late mediaeval period.
- Students will understand the nature of different regional polities, e.g., the Marathas under *Shivaji* and the *Peshwas* and the Sikh state.
- Students will understand how the Mughal Empire declined and the eighteenth century debate.
- Students will come to know the history of the emergence of different regional states, e.g., Bengal, *Awadh*, Mysore and Hyderabad in eighteenth century India.

CC X - Rise of Modern Europe

- Students will understand the historiography of modern Europe by reading the writings of Alfred Cobban, Lefebvre, Eric Hobsbawm, E.P.Thompson, David Thomson and A.J.P. Taylor.

- Students will come to know the eighteenth century background of the French Revolution and the contribution of philosophers to the revolution.
- Students will understand the history of the role of different social classes, i.e., aristocracy, bourgeois, peasants and workers in the French Revolution; the role of the Constituent Assembly and its achievements; the role of the Girondins and Jacobins, the history of the Reign of Terror and the Rise and fall of the Jacobin Republic; the history of the Thermidorian reaction and the role of Directory. The students will know the history of the Napoleonic Era. They will understand different interpretation of the French Revolution.
- The students will comprehend the nature of the unity and disunity in Europe in 1815, the history of the Vienna Congress and rise of Metternich and the struggle between forces of continuity and change.

CC XI -History of Modern India from the beginning of colonial rule to the Great Revolt

- Students will understand historiography, concepts, terminologies and approaches of modern Indian history.
- Students will understand how the British rule expanded and consolidated in India and the ideology of colonial state, e.g., rule of law, orientalism and utilitarianism.
- Students will comprehend different aspects of colonial economy, e.g., land revenue settlements, agrarian structure and transformation debate, commercialization of agriculture, rural stratification thesis, peasants and landless labourers, detribalization and the environmental question, de-industrialization and rural credit and indebtedness.
- Students will come to know the nature of colonial exploitation, e.g, drain of wealth, famines in India, monetization and entitlement debate. They will understand the history of resistance from the tribes and peasants till the Revolt of 1857 and they will analytically comprehend the history of the Revolt of 1857 and its aftermath.

CC XII - History of Modern India from Renaissance to Independence

- Students will understand the history of the cultural revolution in nineteenth century India with critical evaluation of Young Bengal Movement, Bengal Renaissance, social and religious reforms, colonisation of education and the women's question.
- Students will understand the history of re-industrialisation of India following the spread of railway network, colonial fiscal policy and the balance of Indian trade, and the rise and growth of the Indian capitalist and working class.
- Students will come to know different interpretations of Indian nationalism, e.g., messianic and developmental. They will understand the history of different phases of the nationalist struggle, politics of association and politics of union, different political parties and their ideologies. They will comprehend the role of Gandhi, Tagore, Subhas Chandra Bose, Jawaharlal Nehru and M.A. Jinnah in national movement and the history of workers' and peasants' movements.
- Students will understand the colonial policy of divide and rule, religious polarisation of the nationalist leaders, demand for Pakistan and partition of 1947, the refugee question, struggle for new developmental economy, democracy and security in the bipolar world.

CC XIII - Modern Europe : From Nationalism to Socialism

- Students will come to know the history of the national revolutions (1830-1850), the liberal revolutions and the transformation of Russian society and the remaking of eastern Europe in the age of revolutions.
- Students will understand the history of the economic revolutions, consolidation of capitalism and formation of big national states in Germany and Italy; imperial advances

before and after Bismarck; developments in eastern Europe and the new balance of power in Europe.

- Students will comprehend the politics of democracy; industrial society and its critics; new concept of welfare state and revolution in medical science; reason, social change and social reform; the new woman and arts transformed.
- Students will come to know the socialist challenge - from utopian to Marxian socialism - the German, French and Russian variety of socialist politics.

CC XIV - Trends in World Politics from the First to the Second World War

- Students will comprehend different theories of world politics, i.e., the Marxist and non-Marxist approaches.
- Students will come to know the roots of European imperialism and the World Wars as the total war, impact of war on European mind, peace settlement of 1919 and the search for the collective security and the League of Nations.
- Students will understand the different aspects of the war economy in the inter-war period, e.g., the depression and new theories of mixed economy. They will come to know the history of the collapse of the Weimer state in Germany and the rise of the Nazis to power and fascism in Italy.
- Students will understand the history of the World after 1945, the theories of the Cold War and the division of Europe, the emergence of the American and Soviet spheres of influence, various military and economic alliances and different regional conflicts in the bi-polar world, e.g., Vietnam, Korea, Cuba, the Middle East and Afghanistan.

Discipline Specific Elective Course (DSE)

DSE I - History of China from Tradition to Revolution

- China is an important country in the modern world and its civilization is one of the few oldest ones. So it is crucial for our students to know the history of China. By studying this paper they will develop a sound knowledge about Chinese society, economy, culture and politics. They will learn about the ancient background of Chinese civilization; Confucianism; the canton trade; Chinese confrontation of the foreigners and Opium Wars; China as an 'informal colony' and increasing western pressure on China; the open door policy; transformation of China from a feudal society to a semi-colonial and semi-feudal society; various popular movements, e.g. Taiping and Boxer rebellions, self-strengthening movement and reforms, revolution of 1911, revolt of the Chinese working class and the May Fourth Movement; development of Chinese industrial economy and growth of the Chinese proletariat; spread of communism among the proletariat in between the world wars; Chiang Kai Shek; Kuomintang and the united front; break with the front and the mature phase of Chinese communist movement under Mao Tse Tung; the Long March and the Communist Revolution of China.

DSE II - History of Japan from Meiji Restoration to the Second World War

- Japan is one of the undisputed leaders in world economy and a significant country of Asia. Therefore our students need to learn about the history of the countries like Japan. In this paper they will come to know about Tokugawa Baku-han system of Japan; encounter with the west; Meiji restoration; processes of modernization; popular and democratic movements, e.g. Satsuma rebellion, popular rights movement and Meiji constitution; growth of militarism in Japan and her imperialist projects; Sino-Japanese relations; Anglo-Japanese alliance; Russo-Japanese war; the Manchurian crisis; rise of political parties in Japan and their failure to sustain democratic system; and Japan and the two World Wars.

DSC III - Issues of the Contemporary World

- In this paper students will learn about de-colonization of Asia and Africa; emergence of the Third World; struggle for survival in Asia and apartheid in Africa; crisis in the socialist block; impact of the rise of China as a new socialist state; the sino-soviet rift and tensions within the east European Soviet Bloc : Hungary, Czechoslovakia, and Poland ; glasnost- perestroika and collapse of Soviet socialism; end of the cold war and German reunification; oil politics and the Arabian world : Israel, Palestine, Iran and Iraq ; nuclear diplomacy in the twentieth century world; shift of world politics from bi-polarism to uni-polarism; globalization and its impact on culture and society; information revolution and its impact of the present day world.

DSC IV - History of Bangladesh from Liberation to the present day

- Bangladesh is an important neighbouring country of India. So it is important to know the history of Bangladesh. In this paper students will learn about the background of the birth of Bangladesh - issues of conflict between Pakistani non-Bengali elite group and the rising Bengali middle class of East Pakistan; political transformation in East Pakistan; emergence of linguistic nationalism since 1952; resistance against Pakistani militarism; rise of Sheikh Mujibur Rahaman as the new mass leader; Awami League Movement, 1966 to 1970; Bangladesh liberation movement of 1971; birth of Bangladesh in 1972; Bangladesh after independence - its society, economy and politics; and the foreign policy of Bangladesh - its relations with India, its role of Bangladesh in the SAARC and ASEAN.

DSC V - History of Africa, 1500 to 2000 A.D.

- In this paper students will come to know the main issues in the Historiography of Africa. They will understand history of Africa and African societies before colonization; informal empire of the 19th century; European imperialism and partition of Africa in the 20th century - the French in the Maghreb and West Africa, the British in the East, West and Southern Africa and the Belgians in Congo; socio-economic transformation, e.g. structural changes in agriculture, forest management and mining, changing patterns of trade, trans-Atlantic slave trade and migration of capital of labour with special reference to Southern Africa; race, class and religions in colonial South Africa; Apartheid; language, education and cultural forms; popular protests, Rebellions and National Liberation Movements; role of peasants and workers; and nationalist movements in Algeria, Ghana, Kenya, Congo, Angola and South Africa.

DSC VI - History of Women in India

- In this paper students will learn about women in the Indian tradition; different socio-religious movements in pre-colonial India and women's position re-defined; feminism revisited in the Indian context; the women's question in 19th century India during colonial modernization; the debates on Sati and Purdah; the nationalist resolution on the women's question; women in the freedom movement in India; emerging new woman in post-colonial India; women's organizations and fight against their marginalization; and women in Indian literature and performing art.

Generic Elective (GE)

GE I - Human Rights in India

- In the modern world issues related to human rights have become very important. So for our students it is important to know about human rights from historical perspective. In this paper they will learn about the basic concepts and theories of human rights; social structure and the question of human rights in India; gender, caste, class and religion; state and human rights, politics and economic policies; International Conventions and Charters on human rights; Constitution of India and provisions for protection of human rights; legislation and landmark court judgments on human rights in India; history of human right movements in India; intensity and impact; women's rights in India; the question of women's empowerment; women's access to resources of the country; violence against women, protective laws, protests and movements.

GE II - History of Indian Environment

- Now environment is one of the vital issues in every discipline of humanities and social sciences. So, by studying this paper, students of history can build a sound understanding about this issue. Students will be aware of the concepts and theories of environment and ecology developed in India, idealist, materialist, non-materialist and post-materialist philosophies. They will learn about indigenous knowledge system; animal ethics; social formation and collective management of rivers, forests and hills in pre-colonial India; the colonial impact, structural changes in land and environment of India; jangalmahals and jalmahals; spread of railway network and environmental degradation and problems of public health; political economy of environment in post-colonial India; industry and pollution; development versus environment debate and various environmental movements.

GE III - Making of Contemporary India

- In this paper students will come to know about the history of the events on the eve of India's independence, e.g. Government of India Act (1935), the Mountbatten Plan; partition and the birth of the new State of India in 1947; communal riots, influx of refugees and their rehabilitation. They will learn about the history of the events related to the making of the republic of India, e.g. the Constituent Assembly and framing of the Constitution, integration of princely states, electoral politics and the changing party system. They will learn about the history of setting the tone for new foreign policy, non-aligned movement, issues of Pakistan, Bangladesh and China. They will develop a sound understanding about different economic, social and cultural issues, e.g. planned economy; the land question; industry and labour; the demography and public health; caste, religion and gender; movements and legislations; education; cultural trends; institutions and ideas; literature; media and performing arts.

GE IV - Social and Cultural History of Bengal ,14th to 20th centuries

- In this paper students will learn about the history of different aspects of social and cultural life of Bengal during the period from the 14th century to 20th century. They will develop an understanding about the geographical and socio-economic formation of Bengal in 14th century, the Chaitanya Movement and aspects of social transformation. They will develop a knowledge base on the history of colonial rule in Bengal and debates on the imperial impact; structural changes in rural and urban economy; Bengal's response to the western impact; social and religious reforms in 19th and 20th centuries; trends of politics, nationalism, leftism and communalism. They will come to know about the pangs of partition; the refugee question; development of Bengali literature in the 19th and 20th centuries; performing arts; and urban and rural societies.

GE V - Regional History of Bengal – Nadia and Murshidabad

- In this paper students will come to know the history of their own districts, Nadia and Murshidabad. They will learn about the history of Nadia through different ages, i.e. the post-Gupta period, the mediaeval period, the colonial period and post-colonial period. They will develop an understanding about different aspects of the economic, social and cultural history of Nadia and Murshidabad, e.g., the Chaitanya Movement and revolution in culture and literature; the rich tradition of indigenous education ; minor religious sects and folk culture of Nadia; rise and fall of the Nawabi state in Murshidabad; the colonial confrontation; socio-economic transformation of the region during colonial period; growth of small towns during colonial and post-colonial period; and the history of art, architecture and culture of Nadia and Murshidabad.

GE VI - Great Historians of the World and their Philosophy of History

- In this paper students will learn about the great historians of the world and their philosophy of history. They will come to know the essentials of renaissance historiography. They will learn about Bodin, Bacon, Descartes and Vico. They will come to know about Gibbon and development of enlightened historiography; about Hegel and the aspects of Romantic historiography; about Ranke and the Berlin Revolution; about Auguste Comte and positivism; about Karl Marx and historical materialism; about the growth of scientific historiography in the 20th century; about Trevelyan and renewed interest in philosophy; about Spengler and Toynbee and the idealist view of history; about Croce and Collingwood and the trend towards total historiography; about Marc Bloch, Fernand Braudel and the Annales School. They will learn about the shift from modernism to post-modernism; about the Marxist historiography of Christopher Hill, E.H. Hosbawm and E.P. Thompson; about structuralism in history; about Antonio Gramsci; and about the post-modern interpretation of history, Michel Foucault and Jacques Derrida.

Ability Enhancement Compulsory Course (AECC)

AECC I - Essentials of the Environmental Science

- In this paper students will learn about different aspects of environmental science. They will learn about essentials of ecology and environment; ecosystem and biosphere; environmental support systems; pollution, air, water, soil and noise; climatic change and related issues; global warming and sustainability; world water resources; biodiversity; understanding the problem; endangered species; habitats in danger; accounts of Indian biodiversity; current environmental issues; trends in world population; global ocean resources and global human migration.

AECC II - Communicative and Interpretative English

- In this paper students will learn about verbal and non-verbal (Spoken and Written) communication; personal, social and business communication; barriers and strategies of communication; intra-personal, inter-personal and group communication. They will develop English speaking skills, e.g. monologue, dialogue, group discussion. They will be prepared for effective communication, interview and public Speech. They will develop skills in reading, comprehension, summary paraphrasing, analysis and interpretation, translation (from Indian language to English and vice-versa) literary/knowledge texts. They will develop writing skills, e.g. documenting, report writing, making notes and letter writing.

Skill Enhancement Elective Course (SEEC)

SEEC I - Understanding Heritage, Art and architecture of India

- In this paper students will develop a knowledge base about heritage, art and architecture of India. They will learn about definition of heritage; an overview of cultural and heritage of India; notions of art and craft; about pre-colonial Indian Art and Architecture; about early illustrated manuscripts and mural painting traditions; about medieval sculpture, style and iconography; about numismatic art and miniature painting; about early Indian architecture; and about the Mughal and Indo-Persian architecture. The students will learn about the western influences on Indian Art and architecture in colonial period and changes in the post-colonial period. They will come to know about the Bengal School of art and architecture; about Birbhum, Bankura and Bishnupur Gharana; art movements; Santiniketan style; Progressive Artists' Group; about major artists and their works; popular art forms and folk art traditions.

SEEC II - Sports and Society in India in Historical Perspective

- In this paper students will learn about the concepts and theories of sports and sports history, Greek philosophy of Sports, Greek and Roman traditions of sports and the Olympics, ideas of sports from ancient and medieval texts of India, sociology of pre-colonial Indian sports, colonization of Indian sports in the 19th and 20th centuries, imposition of European sports on Indian society, commercialization of sports, impact of sports on mind and body, sports in post-colonial India, sports in education, sports and economy, sports and politics, sports and diplomacy and effects of globalization on Indian sports.

SEEC III - The Bengal Music

- Students will develop a knowledge base about History of Music in Bengal. They will learn about influence of Vaishnava poetry of the 13th – 14th centuries; mixture of Hindu and Islamic trends; patronage of Nawabs and big landlords particularly the Baro Bhuiyans; consolidation of the elite society in Bengal and growth of different forms of music in the 18th, 19th and early 20th centuries; Bishnupur Gharana; Rabindrasangeet; Nazrulgeeti; Dwijendrageeti; Atulprasadi and Rajanikanter Gaan; swadeshi and nationalist songs. They will learn about aspects of folk culture and folk music of Bengal, e.g. Baul, Bhatiali, Bhawaiya, Dhamali, Gambhira, Jhumur, Kavigaan and Jatra. They will learn about modern Bengali music, about post-colonial western influences, about middle class romanticism and transformation of Bengali music, about leftist movements and new forms of music, about media and music, about Bengali music in theatre and film, about globalization and changes in musical forms, and rock and band music.

SEEC IV - Studies in Electronic Communication System

- In this paper students will learn about different communication theories, about communication in a globalized society and economy, about aspects of electronic communication, about technologies and instruments of electronic communication state and administration, about people and their culture. In this paper they will be introduced to computer networks, data communications, components, data representation(ASCII,ISO etc.) and direction of data flow(simplex, half duplex, full duplex), networks - distributed processing, network criteria, physical structure (type of connection, topology), categories of network (LAN, MAN,WAN). They will learn about internet, its brief history, internet today - protocols and standards, reference models: OSI reference model, TCP/IP reference model and their comparative study.

B.A. History (Programme) 3-Years CBCS Semester System

CC I - History of India from the Earliest times to the Early Medieval Period

- After studying this paper students will learn about the sources and interpretation of early and early mediaeval history of India; about paleolithic, mesolithic and neolithic cultures; about the Harappan Civilisation; about the Vedic polity; about the 16 Mahajanapadas; about the Jainism and Buddhism; about the Maurya rule in Magadha, Asoka's Dhamma and administration; about post-Maurya India and the Kushanas, Satavahanas and Tamil powers; about the splits in Jainism and Buddhism and the rise of Vaishnavism and Saivism; about the age of the Guptas and the debates on golden age; about the brahminical revival and growth of feudalism; about the decline of the Gupta power and the beginning of the political decentralization of India; about Harshavardhana as the last great emperor; about the shift from centralized to decentralized India; about the Rajputs of North India, the Palas and Senas in Bengal, Kingdoms of the South, e.g. the Pallavas, Rashtrakutas, Chalukyas and Cholas; and about the changes in polity, society, economy, religion and culture.

CC II - History of Mediaeval India

- In this paper students will learn about different aspects of the mediaeval history of India. They will come to know about the condition of Northern India under the Delhi Sultanate; about the consolidation of the Sultanate between AD1206 to AD1286; about the Khalji Revolution and the omnipotent state under the Khaljis ; about the Tughluq period of reforms and counter reforms; about the decline of the Delhi Sultanate; about the successor states of Bijohnagar, Bahmani and Bengal; and about the society, economy, art, architecture and literature of India in mediaeval period.

CC III - History of Modern India till Independence

- In this paper students will come to know the history of modern India up to its independence. They will learn about the expansion and consolidation of British rule with special reference to Bengal, Maharashtra, Mysore, Punjab and Awadh; about the colonial state and development of its administration; about the colonial ideologies like, orientalism and utilitarianism; and colonial land revenue settlements and results thereof. Students will make an understanding about the British exploitation, e.g. de-peasantization, de-industrialization, drain of wealth and famines in India; about Indian resistance, e.g. resistance from the tribes and peasants till the Revolt of 1857; about the Revolt of 1857 and its aftermath; and about the colonial policy of further exploitation through railways and industrial network.
- The students will learn about the cultural revolution of the nineteenth century; about the critique of Young Bengal Movement, Bengal Renaissance, social and religious reforms and colonisation of education; and about the women's question.
- The students will develop an understanding about different interpretation of Indian nationalism; about the swadeshi movement and different phases of the nationalist struggle; about the roles of Gandhi, Tagore, Subhas Bose, Nehru and Jinnah; about workers' and peasants' movements; about the religious polarisation of national politics; and about the partition and independence (1947).

CC IV - History of Europe from the Fifteenth to the Twentieth Century

- By studying this paper students will develop an understanding about different aspects of European history from 15th to 20th centuries. They will learn about the Renaissance and Reformation; ideas like secularism and humanism; about art, architecture, science

and literature during renaissance; and about the printing revolution. They will learn about seventeenth century crisis; Glorious Revolution in England and great changes in political, economic and state structure; about American War of Independence and the birth of new democratic politics; about scientific to industrial revolutions; about the rise of industrial societies in Europe; and the transition debate.

- Students will come to know about different aspects of 18th and 19th century Europe, e.g. the French Revolution; society, economy, and polity of revolutionary France; the philosophers and the ideological revolution in France; the Napoleonic era; the Vienna Settlement and the Metternich system; the revolutions of 1830 and 1848; birth of the nation states of Germany and Italy; about Karl Marx and the socialist challenge in Europe.
- Students will understand various aspects of the history of 20th century Europe. They will learn about the roots of European imperialism; Nazism and Fascism; the World Wars as the total wars; the roles of the League of Nations and the UNO; the Cold War after 1945; various military and economic alliances; and regional conflicts in the bipolar world, e.g. Vietnam, Korea, Cuba, the middle East and Afghanistan.

Government General Degree College, Chapra

Department of Mathematics

B.Sc. (General) with mathematics	
Programme outcomes	<p>Construct and elaborate various mathematical arguments in a logical manner. Further, when information is needed, the student will be able to identify, evaluate, locate and effectively use that knowledge for handling issues or solving problems at hand. Achieve good understanding and knowledge in advanced areas of mathematics and its applications. More specifically-</p> <ol style="list-style-type: none"> 1. Enabling students to develop a very positive attitude towards mathematics as a precious and attractive subject of study. 2. A student should acquire a relational knowledge of mathematical concepts and concerned structures, and should be able to chase the patterns involved, mathematical reasoning. 3. Having enough concepts to analyze a problem, identify and define the computing requirements, which may be adequate to its solution. 4. Introduction to various courses like group theory, ring theory, field theory, Real Analysis, Complex Analysis, metric spaces and number theory. 5. Enhancing students' overall development and to equip them with mathematical modelling abilities, problem solving skills, creative talent and power of communication necessary for various kinds of employment. 6. Having enough knowledge to pursue advanced studies and research in pure and applied mathematical science.
	<p>Students will be able to implement their knowledgeable thinking skills to analyze problems that can be modeled mathematically, to critically interpret numerical and graphical data, to understand and construct mathematical arguments and proofs, to use computer technology appropriately to solve problems and to promote understanding, to apply mathematical knowledge to a career related to mathematical sciences thus cultivating a proper attitude for higher learning in mathematics. Students will be able to</p> <ol style="list-style-type: none"> 1. Think in a critical manner. 2. Know when the information is needed, to be able to identify, locate, evaluate, and effectively use that information for the issue or problem at hand. 3. Formulate and develop mathematical arguments in a logical manner. 4. Acquire good knowledge and understanding in advanced areas of mathematics and statistics, chosen by the student from the given courses. 5. Understand, formulate and use quantitative models arising in social science, business and other contexts.

Class/Paper/Semester	Title	Course Outcome (CO)
Mathematics UG (CBCS) Semester-I		
Mathematics-UG Paper-MATH-G-CC-T-01 (Theory) Sem-I	Algebra & Analytical Geometry	<p>Upon completion of the course, students will be able to learn the concept of Algebra like as:</p> <ul style="list-style-type: none"> • Complex numbers De Moivre's theorem and its applications. Exponential, Sine, Cosine and Logarithm of a complex number. Inverse circular and hyperbolic functions. • Polynomials: Fundamental theorem of algebra (Statement only). Polynomials with real coefficients. Statement of Descartes rule of signs and its applications. Relation between roots and coefficients, transformations of equations. Cardan's method. • Rank of a matrix. System of linear equations with not more than 3 variables. • Equivalence relations and partitions. Functions and cardinality of a set. • Elementary group Theory. Some important finite • Groups: S_3 V_3 and Z_n. Order of an element, order of a group, Subgroups. <p>Upon completion of the course, students will be able to learn the concept of Analytical Geometry as like:</p> <ul style="list-style-type: none"> • Transformations of rectangular axes. Invariants. • General equation of second degree, Canonical forms. • Classification of conics. • Pair of straight lines. Equation of bisectors. Equation of two lines joining the origin to the points in which a line meets a conic. • Polar equation of straight lines, circles, a conic refers to a focus as a pole, chord joining two points, tangents and normals.
Mathematics UG (CBCS) Semester-II		
Mathematics-UG Paper- MATH-G-CC-T-02 (Theory) Sem-II	Calculus & Differential Equations	<p>Upon completion of the course, students will be able to learn the concept of Calculus like as:</p> <ul style="list-style-type: none"> • Real-valued functions defined on an interval, limit and Continuity of a function (using ϵ-δ). Algebra of limits. Differentiability of a function. Successive derivative Leibnitz's theorem and its applications. Partial derivatives. Euler's theorem. Indeterminate Forms L'Hospital's Rule (Statement and Problems only). • Statement of Rolle's Theorem and its geometrical interpretation. Mean value theorems of Lagrange and Cauchy.

		<p>Statements of Taylor's and Maclaurin's theorems with Lagrange's and Cauchy's forms of remainders. Taylor's and Maclaurin's infinite series of functions.</p> <ul style="list-style-type: none"> • Application of the principle of maxima and minima for a function of a single variable. • Reduction formulae, derivations and illustrations of reduction formulae. <p>Upon completion of the course, students will be able to learn the concept of Differential Equations like as:</p> <ul style="list-style-type: none"> • First order equations: (i) Exact equations and those reducible to such equations. (ii) Euler's and Bernoulli's equations (Linear). (iii) Clairaut's Equations General and Singular solutions. • Second order differential equation: (i) Method of variation of parameters, (ii) Method of undetermined coefficients.
Mathematics UG (CBCS) Semester-III		
<p>Mathematics-UG Paper- MATH-G-CC-T-03 (Theory) Sem-III</p>	<p>Real Analysis</p>	<p>Upon completion of the course, students will be able to learn the concept of Real Analysis like as:</p> <ul style="list-style-type: none"> • Review of algebraic and order properties of \mathbb{R}. Idea of countable sets, uncountable sets and uncountability of \mathbb{R}. Countability of \mathbb{Q}. Bounded sets, unbounded sets. Suprema and infima. Completeness property of \mathbb{R} and its equivalent properties. The Archimedean property, density of rational (and Irrational) numbers in \mathbb{R}, intervals. • Intervals, ε-neighborhood of a point in \mathbb{R}, Interior points, Limit points of a set, isolated points, open set, closed set, union and intersection of open and closed sets. Derived set, Closure of a set, Interior of a set. Bolzano-Weierstrass theorem for sets (statement only). • Sequences, bounded sequence, convergent sequence, Sandwich theorem. Cauchy's convergence criterion for sequences. Cauchy's theorem on limits. Monotone sequences, monotone convergence theorem (without proof). • Infinite series, Convergence and divergence of infinite series, Cauchy's criterion. Series of positive terms, Geometric Series, p-Series. Tests for convergence: comparison test, limit comparison test, ratio test: D'Alembert's ratio test, Raabe's test, Cauchy's root test. • Alternating series, Leibnitz test (without proof), definition and examples of Absolute and conditional convergence. Power series and

		radius of convergence (problems only).
Mathematics-UG Paper-MATH-G-SEC- T-1A (Theory) Sem-III	Logic & Sets	<p>Upon completion of the course, students will be able to learn the concept of Logic like as:</p> <ul style="list-style-type: none"> • Introduction, propositions, truth table, negation, conjunction and disjunction. Implications, biconditional propositions, converse, contrapositive and inverse proportions and precedence of logical operators. Propositional equivalence: Logical equivalences. Predicates and quantifiers: Introduction, quantifiers, binding variables and negations. <p>Upon completion of the course, students will be able to learn the concept of Sets like as:</p> <ul style="list-style-type: none"> • Sets, subsets, set operations and the laws of set theory and Venn diagrams. Examples of finite and infinite sets. Finite sets and counting principle. Empty set, properties of empty set. Standard set operations. Classes of sets. Power set of a set. • Difference and Symmetric difference of two sets. Set identities, generalized union and intersections. Relation: Product set. Composition of relations, types of relations, partitions, equivalence Relations with example of congruence modulo relation. Partial ordering relations, n-ary relations.
Mathematics-UG Paper-MATH-G-SEC- T-1B (Theory) Sem-III	Vector Calculus	<p>Upon completion of the course, students will be able to learn the concept of Vector Calculus like as:</p> <ul style="list-style-type: none"> • Differentiation and partial differentiation of a vector function. Derivative of sum, dot product and cross product of two vectors. Gradient, divergence and curl with applications. • Vector integration: Line, surface and volume integrals. Green's theorem (statement only), surface integrals, integrals over parametrically defined surfaces. Stoke's theorem (statement only), divergence theorem (statement only). Applications of Green's, Stoke's and divergence theorems.
Mathematics UG (CBCS) Semester-IV		
Mathematics-UG Paper- MATH-G-CC-T- 04 (Theory) Sem-IV	Linear Programming Problems & Game Theory	<p>Upon completion of the course, students will be able to learn the concept of Vector Calculus like as:</p> <ul style="list-style-type: none"> • Introduction to linear programming problems, Graphical solution of LPP. Convex sets. Basic solutions and non-basic solutions. Reduction of B.F.S from B.S. • Simplex method, two-phase method, Big-M-method and their comparison. Duality, formulation of the dual problem, primal-dual relationships, economic interpretation of the

		<p>dual.</p> <ul style="list-style-type: none"> • Transportation problem and its mathematical formulation, northwest-corner method, least cost method and Vogel's approximation method for determination of initial basic solution. Algorithms for solving transportation problems. Assignment problem and its mathematical formulation, Hungarian method for solving assignment problem. <p>Upon completion of the course, students will be able to learn the concept of Game Theory like as:</p> <ul style="list-style-type: none"> • Game theory: formulation of two-person zero sum games. Solving two-person zero sum games. Games with mixed strategies. Graphical solution procedure. Solving game Using Simplex Algorithm.
<p>Mathematics-UG Paper-MATH-G-SEC-T-2A (Theory) Sem-IV</p>	<p>Graph Theory</p>	<p>Upon completion of the course, students will be able to learn the concept of Game Theory like as:</p> <ul style="list-style-type: none"> • Definition, examples and basic properties of graphs, pseudo graphs, complete graphs, bipartite graphs isomorphism of graphs. • Eulerian circuits, Eulerian graphs, semi-Eulerian graphs, Hamiltonian cycles. Representation of a graph by matrix, the adjacency matrix, incidence matrix, weighted graph. • Travelling salesman's problem, shortest path, Tree and their properties, spanning tree, Dijkstra's algorithm, Warshall algorithm.
<p>Mathematics-UG Paper-MATH-G-SEC-T-2B (Theory) Sem-IV</p>	<p>Operating System (Linux)</p>	<p>Upon completion of the course, students will be able to learn the concept of Operating System (Linux) like as:</p> <ul style="list-style-type: none"> • Linux – The operating system: Linux history, Linux features, Linux distributions, Linux's relationship to Unix, overview of Linux architecture, installation, startup scripts, system processes (an overview), Linux security. • The Ext2 and Ext3 file systems: General characteristics of the Ext3 file system, file permissions. User management: types of users, the powers of root, managing users (adding and deleting): using the command line and GUI tools. • Resource management in Linux: file and directory management, system calls for files process Management, signals, IPC: Pipes, FIFOs, System V IPC, message queues, system calls for processes, memory management, library and system calls for memory.

Mathematics UG (CBCS) Semester-V		
Mathematics-UG Paper- MATH-G-DSE- T-1A (Theory) Sem-V	Group Theory & Linear Algebra	<p>Upon completion of the course, students will be able to learn the concept of Group Theory like as:</p> <ul style="list-style-type: none"> • Definition and examples of groups, cyclic subgroups, the concept of a subgroup generated by a subset and the commutator subgroup of a group, examples of subgroups including the center of a group. Cosets, Index of subgroups, Lagrange's theorem, order of an element. Normal subgroups, their definition, examples, and characterizations, Quotient groups. <p>Upon completion of the course, students will be able to learn the concept of Linear Algebra like as:</p> <ul style="list-style-type: none"> • Vector spaces, subspaces, algebra of subspaces, quotient spaces, linear combination of vectors, linear span, linear independence, basis and dimension, dimension of subspaces. • Characteristic Polynomial, Eigen values and Eigenvectors. Linear transformations, null space, range, rank and nullity of a linear transformation, matrix representation of a linear transformation, algebra of linear transformations. Dual Space, Dual Basis, Change of basis. Matrices in diagonal form. Reduction to diagonal form up to matrices of order 3.
Mathematics-UG Paper- MATH-G-DSE- T-1B (Theory) Sem-V	Complex Analysis	<p>Upon completion of the course, students will be able to learn the concept of Complex Analysis like as:</p> <ul style="list-style-type: none"> • Regions in the complex plane, functions of complex variables, limits, limit involving the point at infinity, continuity. • Derivatives of functions, analytic functions, examples of analytic functions, differentiation formulas, Cauchy-Riemann equations, sufficient conditions for differentiability. • Definite integrals of functions. Contours, Contour integrals and its examples, upper bounds for moduli of contour integrals. Cauchy-Goursat theorem (Statement only), Cauchy integral formula and applications. • Liouville's theorem and the fundamental theorem of algebra. • Convergence of sequences and series. Absolute and uniform convergence of power series. Taylor series and its examples.
Mathematics-UG Paper-MATH-G-SEC- T-3A (Theory)	Theory of Probability	<p>Upon completion of the course, students will be able to learn the concept of Theory of Probability like as:</p> <ul style="list-style-type: none"> • Sample space, probability axioms, real random

Sem-V		<p>variables (discrete and continuous). Cumulative distribution function, probability mass/density functions. Mathematical expectation, moments, moment generating function, characteristic function, discrete distributions: uniform, binomial, Poisson, continuous distributions: uniform, normal, exponential.</p> <ul style="list-style-type: none"> • Joint cumulative distribution function and its properties, joint probability density functions, marginal and conditional distributions. Expectation of function of two random variables, conditional expectations, independent random variables.
Mathematics-UG Paper-MATH-G-SEC-T-3B (Theory) Sem-V	Boolean Algebra	<p>Upon completion of the course, students will be able to learn the concept of Boolean Algebra like as:</p> <ul style="list-style-type: none"> • Definition, examples and basic properties of ordered sets, maps between ordered sets, duality principle, maximal and minimal elements. Lattices as ordered sets, complete lattices, lattices as algebraic structures, sublattices, products and homomorphisms. • Definition, examples and properties of modular and distributive lattices, Boolean algebras, Boolean polynomials, minimal forms of Boolean polynomials. Quinn-McCluskey method, Karnaugh diagrams, switching circuits and applications of switching circuits.
Mathematics UG (CBCS) Semester-VI		
Mathematics-UG Paper- MATH-G-DSE-T-2A (Theory) Sem-VI	Dynamics of a Particle	<p>Upon completion of the course, students will be able to learn the concept of Dynamics of a Particle like as:</p> <ul style="list-style-type: none"> • Motion in a straight line, motion under attractive and repulsive forces, motion under acceleration due to gravity. • Simple Harmonic Motion, Horizontal Oscillation, Composition of two S.H.M.'s, damped harmonic motion, forced oscillation, damped forced oscillation. • Motion in a resisting medium: Vertical and curvilinear motion in a resisting medium. Motion of varying mass: Equations of motion. • Work, Power and Energy: Definitions. Work done in stretching an elastic string. Conservative forces. Conservation of energy. Impulse and impulsive forces: Impulse of a force. Impulsive forces. Conservation of linear momentum. • Collision of elastic bodies: Elasticity. Impact of smooth bodies. Impact on a fixed plane. Direct and oblique impact of two smooth

		<p>spheres. Loss of kinetic energy. Angle of deflection.</p> <ul style="list-style-type: none"> • Motion in a Plane: Velocity and acceleration of a particle moving on a plane in Cartesian and polar coordinates. Motion of a particle moving on a plane refers to a set of rotating rectangular axes. Angular velocity and acceleration. Circular motion. Tangential and normal accelerations. • Central orbit: Characteristics of central orbits. Areal velocity. Law of force for elliptic, parabolic and hyperbolic orbits. Velocity under central forces. Orbit under radial and transverse accelerations. Stability of nearly circular orbits. • Planetary motion: Newtonian law. Orbit under inverse square law. Kepler's laws of planetary motion. Time of description of an arc of an elliptic, Parabolic and hyperbolic orbit. Effect of disturbing forces on the orbit. Artificial Satellites: orbit round the earth. Parking orbits. Escape velocity.
<p>Mathematics-UG Paper- MATH-G-DSE- T-2B (Theory) Sem-VI</p>	<p>Numerical Methods</p>	<p>Upon completion of the course, students will be able to learn the concept of Numerical Methods like as:</p> <ul style="list-style-type: none"> • Errors, relative, absolute, round-off, truncation errors. Interpolation, Lagrange and Newton's methods. Finite difference operators. Gregory forward and backward difference interpolation. Numerical differentiation, Methods based on interpolations, methods based on finite differences. • Numerical Integration, Newton Cotes formula, Trapezoidal rule, Simpson's 1/3rd rule, composite trapezoidal rule, composite Simpson's 1/3rd rule. • Transcendental and polynomial equations, Bisection method, Regula-Falsi method, Fixed point iteration, Newton-Raphson method, Rate of convergence of these methods. System of linear algebraic equations, Gaussian elimination and Gauss Jordan methods, Gauss Jacobi method, Gauss Seidel method. • The method of successive approximations, Euler's method, the modified Euler method, Runge-Kutta method of order two.
<p>Mathematics-UG Paper-MATH-G-SEC- T-4A (Theory) Sem-VI</p>	<p>Programming in 'C'</p>	<p>Upon completion of the course, students will be able to learn the concept of Programming in 'C' like as:</p> <ul style="list-style-type: none"> • Brief historical development. Computer generation. Basic structure and elementary ideas of computer systems, operating systems,

		<p>hardware and software. Positional number systems: binary, octal, decimal, hexadecimal systems. Binary arithmetic. BIT, BYTE, WORD. Coding of data -ASCII, EBCDIC, etc.</p> <ul style="list-style-type: none"> • Algorithms and Flow chart: Important features, Ideas about complexities of algorithms. Application in simple problems. • Programming language and importance of C programming. Constants, Variables and Datatype of C-Program: Character set. Constants and variables data types, expression, assignment statements, declaration. • Operation and Expressions: Arithmetic operators, relational operators, logical operators. Decision Making and Branching: decision making with if statement, if-else statement, Nesting if statement, switch statement, break and continue statement. • Control Statements: While statement, do-while statement, for statement. Arrays: One-dimension, two-dimensional and multidimensional arrays, declaration of arrays, initialization of one and multi-dimensional arrays. • User-defined Functions: Definition of functions, Scope of variables, return values and their types, function declaration, function call by value, Nesting of functions, passing of arrays to functions, Recurrence of function. • Programming in 'C' <ul style="list-style-type: none"> a) Calculate the area of a triangle. b) Solution of quadratic equation. c) Sum of n numbers. d) A.M. and G.M. of n numbers. e) Find the magnitude of a Vector. f) Arrange the numbers in ascending and descending orders. g) Addition and Subtraction of two matrices. h) Multiplication of two matrices.
<p>Mathematics-UG Paper-MATH-G-SEC-T-4A (Theory) Sem-VI</p>	<p>Programming in Python</p>	<p>Upon completion of the course, students will be able to learn the concept of Programming in Python like as:</p> <ul style="list-style-type: none"> • Brief historical development. Computer generation. Basic structure and elementary ideas of computer systems, operating systems, hardware and software. Positional number systems: binary, octal, decimal, hexadecimal systems. Binary arithmetic • BIT, BYTE, WORD. Coding of data -ASCII, EBCDIC, etc. Algorithms and Flow chart: Important features, Ideas about complexities of algorithms. Application in simple problems.

		<ul style="list-style-type: none">• Overview of Programming: Structure of a Python Program, Elements of Python. Introduction to Python: Python Interpreter, Using Python as calculator, Python shell, Indentation. Atoms, Identifiers and keywords, Literals, Strings, Operators (Arithmetic operator, Relational operator, Logical or Boolean operator, Assignment, Operator, Ternary operator, Bit wise operator, Increment or Decrement operator).• Creating Python Programs: Input and Output Statements, Control statements (Branching, Looping, Conditional Statement, Exit function, Difference between break, continue and pass.), Defining Functions, default arguments.
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GOVT. GEN. DEGREE COLLEGE, CHAPRA

UNDER GRADUATE DEPARTMENT OF PHYSICS

B.Sc. Physics (General) CBCS Syllabus

Programme Specific Outcomes

- After completion of the UG physics course, the students will be able to learn not only the basic knowledge of the subject but also get knowledge in the working of different scientific as well as engineering instruments, which will help the students in their profession in the future . The very basic nature of Physics is to illuminate a student in the development of analytical mind, who never believes in anything without logic.
- PSO 1: The outcome lies in the daily life of human being. Here a person learns basic principles of the properties of matter and relationship between different principles. To know this the students are exposed to mathematical and analytical physics. The basic properties of matter are unveiled to them in the name of mechanics, general properties of matter, sound, optics etc.
- PSO 2: This activates the students to perform experiments in mechanics, general properties of matter, optics, electronics etc and compare the values with theoretical results.
- PSO 3: This course is designed in such a way that students can learn different Laboratory Experiments on each theoretical concept which may help to built a clear concept on the subject. Students can also learn about varies application based topic such as Workshop skill, Weather, Forecasting, Radiation Hazards etc.
- PSO 4: Students are also motivated to equip themselves for facing competitive examinations.

GOVT. GEN. DEGREE COLLEGE, CHAPRA

Course Outcome or Learning Outcome
Three year B.Sc. degree course
Under CBCS semester system
GENERAL COURSE IN PHYSICS

Course Code: PHY-G-CC-T-01 & PHY-G-CC-P-01

Semester : Sem I

Topic Name : Mechanics and LAB

Course Outcome: After successful completion of this course students should be able to learn about:

- Vector operations,
- Fundamentals of Dynamics: Reference frames. Inertial frames; Galilean transformations; Galilean invariance.
- Conservation of momentum; Work and energy: Work and kinetic theorem. Conservative and non conservative forces. Potential Energy. Energy diagram. Stable and unstable equilibrium. Motion of Rockets
- Collisions: Elastic and inelastic collisions between particle particles. Centre of Mass and Laboratory frame
- Rotational Dynamics: Angular momentum of a particle and system of particles. Torque. Principle conservation of angular momentum. Rotation about a fixed axis. Moment of Inertia .
- Elasticity: Relation between Elastic constants. Twisting torque on a Cylinder or wire
- Simple harmonic motion. Damped oscillation. Forced oscillations: Transient and steady states; Resonance, Sharpness of resonance , Power dissipation and Quality factor .
- Coriolis force and its applications. Components of velocity and accelerations in cylindrical and spherical coordinate systems.
- Special Theory of Relativity: Michelson-Morley Experiment and its outcome. Postulates of Special Theory of Relativity. Lorentz Transformations.

➤ **After going through the practical course, the students should be able**

- To Measure of length (or diameter) using vernier caliper, screw gauge and travelling microscope.
- To study the random error in observations.
- To determine the Modulus of Rigidity of a wire.
- To determine the Moment of Inertia of a rigid body.
- Modulus of the material of a bar by flexure method .

- To determine the value of g using Bar Pendulum.
- To determine the value of g using Kater's Pendulum
- To determine the height of a building using a Sextant.

Course Code: PHY-G-CC-T-02 & PHY-G-CC-P-02

Semester : Sem II

Topic Name : Electricity and Magnetism & LAB

Course Outcome: After completion of this course student should be able to learn:

- 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 etc.
- Magnetic force between current elements and definition of Magnetic Field B .
- Biot-Savart's Law and its applications, Ampere circuital law, Magnetic properties of materials etc.
- Faraday's law of electromagnetic induction, Lenz's law, Self and mutual inductance, L of single coil, M of two coils, Energy stored in magnetic field.
- Maxwell's equations, Poynting's vector, Electromagnetic wave (em) propagation through vacuum, Transverse nature of em waves, Polarization etc.

➤ **In laboratory, the students able to**

- Measure the resistance, capacitance, current and voltage by using a multimeter. They also understand the series /Parallel connections of ammeter/ voltmeter and their applications to measure the currents/voltages.
- Study the characteristics of a series RC Circuit.
- Determine an unknown Low Resistance using Potentiometer.
- Determine an unknown Low Resistance using Carey Foster's Bridge.
- Verify the Thevenin and Norton theorems.
- Verify the Superposition, and Maximum power transfer theorems.

Course Code: PHY-G-CC-T-03 & PHY-G-CC-P-03

Semester : Sem III

Topic Name : Thermal Physics and Statistical Mechanics & LAB

Course Outcome: After completion of this course student should be able to learn:

- Different thermo dynamical processes, Zeroth law of thermodynamics and temperature, The application of first and second law of thermodynamics, Entropy of a system, Carnot's cycle.
- Enthalpy, Gibbs, Helmholtz and Internal Energy functions, Maxwell's relations and applications - Joule-Thompson Effect
- Derivation of Maxwell's law of distribution of velocities and its application to find out the average ,R.M.S. (Root mean squar velocity) and most probable velocity, Mean free path (Zeroth Order), Different transport Phenomena: Viscosity, Conduction and Diffusion
- Blackbody radiation, Spectral distribution, Concept of Energy density, Derivation of Planck's law , Wien's distribution law, Rayleigh-Jeans law, Stefan Boltzmann law and Wien's displacement law etc.
- Maxwell-Boltzmann law - distribution of velocity – Quantum statistics - Phase space - Fermi-Dirac distribution law , Bose-Einstein distribution law, Comparison of three statistics.

➤ **In laboratory, the students able to**

- Determine Mechanical Equivalent of Heat, J, by Callender and Barne's constant flow method.
- Measurement of Planck's constant using black body radiation.
- Determine Stefan's Constant.
- Determine the coefficient of thermal conductivity of Cu by Searle's Apparatus.
- Determine the coefficient of thermal conductivity of a bad conductor by Lee and Charlton's disc method.
- Determine the temperature co-efficient of resistance by Platinum resistance thermometer.
- Study the variation of thermo e.m.f across two junctions of a thermocouple with temperature.

Course Code: PHY-G-CC-T-04 & PHY-G-CC-P-04
Semester : Sem IV
Topic Name : Waves and Optics & LAB

Course Outcome: After completion of this course student should be able to learn:

- Superposition of two collinear and perpendicular harmonic oscillations, Lissajous figures with equal and unequal frequency and their uses, Transverse waves on a string, Traveling and standing waves on a string, Also learn force vibrations and resonance, Intensity and loudness of sound, Musical notes.
- The properties of surface tension and viscosity of liquid.
- Plane and Spherical Waves. Longitudinal and Transverse Waves. Plane Progressive (Travelling) Waves. Wave Equation.
- Velocity of Transverse Vibrations of Stretched Strings. Newton's Formula for Velocity of Sound. Laplace's Correction .
- Standing (Stationary) Waves in a String: Fixed and Free Ends. Analytical Treatment. Phase and Group Velocities. Changes with respect to Position and Time. Energy of Vibrating String. Transfer of Energy. Normal Modes of Stretched Strings. Plucked and Struck Strings .
- Electromagnetic nature of light. Definition and properties of wave front. Huygens Principle. Temporal and Spatial Coherence.
- Interference (Fresnel's biprism, Phase change on reflection: Stokes' treatment, Interference in thin films, Newton's rings).
- The basic application of Michelson's interferometer(determine the wavelength, wavelength difference etc.)
- 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)

➤ **After going through the practical course, the students should be able to**

- Draw the frequency-resonance length curve of a sonometer wire and to determine an unknown frequency of a tuning fork.
- Determine the coefficient of Viscosity of water by any method.
- Determine the refractive index of the Material of a prism using Sodium light.
- Determine the wavelength of sodium light using Newton's Rings.
- Determine wavelength of (1) Na source and (2) spectral lines of Hg source using plane diffraction grating.
- Determine dispersive power and resolving power of a plane diffraction grating.
- Draw the deviation - wavelength of the material of a prism and to find the wavelength of an unknown line from its deviation.

Course Code: PHY-G-DSE-T-01 & PHY-G-DSE-P-01
Semester : Sem V
Topic Name : Digital, Analog circuits and Instrumentation & LAB

Course Outcome: After successful completion of this course, students should be able to learn:

- Binary to decimal conversion and vice versa, Addition, Subtraction, Multiplications and division of binary numbers, OR, AND, NOT, NAND, XOR, XNOR gates, Application of De Morgan's theorems, half and full adders/subtractors.
- Semiconductor Diodes: P and N type semiconductors. Barrier Formation in PN Junction Diode. Qualitative Idea of Current Flow Mechanism in Forward and Reverse Biased Diode .
- Bipolar Junction transistors: n-p-n and p-n-p Transistors. Characteristics of CB, CE and CC Configurations. Current gains α and β .
- Characteristics of an Ideal and Practical Op-Amp (IC 741), Open-loop and closed- loop Gain .
- Barkhausen's Criterion for Self-sustained Oscillations. Determination of Frequency of RC Oscillator
- Introduction to CRO: Block Diagram of CRO
- Power Supply: Half-wave Rectifiers. Centre-tapped and Bridge Full-wave Rectifiers Calculation of Ripple Factor and Rectification Efficiency, Basic idea about capacitor filter,
- Timer IC: IC 555 Pin diagram and its application as Astable and Monostable Multivibrator.

➤ **After going through the practical course, the students should be able**

- To measure (a) Voltage, and (b) Frequency of a periodic waveform using CRO .
- To verify and design AND, OR, NOT and XOR gates using NAND gates.
- To minimize a given logic circuit.
- Half adder, Full adder and 4-bit Binary Adder.
- Adder-Sub tractor using Full Adder I.C.
- To design an astable multivibrator of given specifications using 555 Timer.
- To design a monostable multivibrator of given specifications using 555 Timer.
- To study IV characteristics of PN diode, Zener and Light emitting diode
- To study the characteristics of a Transistor in CE configuration.
- To design a CE amplifier of given gain (mid-gain) using voltage divider bias.

- To design an inverting amplifier of given gain using Op-amp 741 and study its frequency response.

Course Code: PHY-G-DSE-T-02 & PHY-G-DSE-P-02

Semester : Sem VI

Topic Name : Solid State Physics & LAB

Course Outcome: After successful completion of this course, students should be able to learn:

- Classification of solid materials into Crystal and Amorphous; their difference in aspect of structure electrical , optical etc.
 - Elementary Lattice Dynamics: Lattice Vibrations and Phonons. Qualitative description of the phonon in solids.
 - Magnetic Properties of Matter: Dia-, Para-, Ferri- and Ferromagnetic Materials.
 - Dielectric Properties of Materials: Polarization. Local Electric Field at an Atom.
 - Ferroelectric Properties of Materials: Structural phase transition
 - Elementary band theory: Kronig Penny model. Band Gap
 - Superconductivity: Experimental Results. Critical Temperature
- **After going through the practical course, the students should be able**
- To determine the Coupling Coefficient of a Piezoelectric crystal.
 - To measure the Dielectric Constant of a dielectric Materials with frequency
 - To determine the refractive index of a dielectric layer using SPR
 - To draw the BH curve of Fe using Solenoid & determine energy loss from Hysteresis.
 - To measure the resistivity of a semiconductor (Ge) with temperature by four- probe method (room temperature to 150 °C) and to determine its band gap.

❖ SKILL ENHANCEMENT COURSE

Course Code: PHY-G-SEC-T-01

Topic Name : Renewable Energy and Energy Harvesting

Course Outcome: After successful completion of this course, students should be able to

1. Understand the importance of non conventional energy sources.
2. Understand basic aspects of solar energy.
3. Understand basic principles of wind energy conversion.
4. Understand the basic ideas of geothermal energy and oceans energy resources and recognize their merits and demerits.

Course Code: PHY-G-SEC-T-02

Topic Name : Weather Forecasting

Course Outcome: After successful completion of this course, students should be able to

1. Understand the causes and effects of different weather phenomenon.
2. Learn about the basic forecasting techniques.

Course Code: PHY-G-SEC-T-03

Topic Name : Electrical circuits and Network skills

Course Outcome: After successful completion of this course, students should be able to

1. Develop skills to design the electrical circuits, networks and appliances through hands-on mode.
2. Gain practical experience of troubleshooting the electrical circuits, networks and appliances.

Course Code: PHY-G-SEC-T-04

Topic Name : Basic Instrumentation skills

Course Outcome: After successful completion of this course, students should be able to

1. Get exposure with various aspects of instruments and their usage through hands-on mode.
2. Learn to use of CRO as a versatile measuring device.
3. Learn to use of Digital multimeter.

Government General Degree College, Chapra

Department of Political Science

Programme Specific Outcomes of B.A. (Hons.) And Programme/ General Course

The syllabi of B.A. (Hons.) and Programme/General course under C.B.C.S. curriculum of University of Kalyani has opened a new dimension in the teaching-learning process.

☐ The point of knowledge gathering and accumulation on the part of the beneficiaries (students) may be stated. Theoretical and practical knowledge from projects and assignments made by them discloses enough testimony to the mental development in thinking process of the students. This will of course lead them to the path of progressive thinking.

☐ The question of identification with the courses and the eagerness in translating those to the examination as well as the practical field is relevant very much. The different papers in the curriculum provide the opportunity to magnify the knowledge for the students who are thus acquainted with multifarious practices on a prolonged basis not made before.

☐ This course augments rapidly the task/area of socialisation of the students. From informal to formal, metaphysical to real situation, they experience newer values and fellow feelings, sense of cooperation accommodative spirit and overall a mentality of broadness and active participation in the sociopolitical structure of the country.

☐ The point of awareness on a large basis is an important factor in this respect. The students study state and society, political culture, modernisation public administration along with Indian socio-political thought as well as of the different political systems of the world. They are given lessons in the light of social and political development so that they can link present with the past and look forward for the future.

☐ This course further helps the students for their placement in the local, national and global field. By correct application of the theoretical knowledge to practice, they are hereby empowered to establish themselves in different areas of activity. The question of multiple choice widening the horizon of thinking and innovation thus enables them to look into the future development, economic, social and political.

☐ In this course, social and political thought is organically linked with interplay of factors involving society, economy and politics. The critical importance of the milieu in which ideas get articulated is

emphasized. Given the dialectical interaction between ideas and their context, it provides a persuasive format that is relative to the circumstances. This is an approach that gives space to the search for alternatives within a framework that adequately underlines the organic nature of ideas

which are always in constant flux and hence their fluid nature. What is most determining in the entire process is the organic link with a particular reality that always leaves an imprint in the construction of ideas. European nationalist ideas which influenced the Indian nationalists did have limitations in the particular socio-economic context of Africa and Asia due to their alien origin. Thus the European nationalist trail is indigenised substantially by inventing indigenous equivalents and investing these with additional meanings and nuances.

☑ The two basic forces or elements of nationalism and democratisation are imparted in the courses esp. Constitutional and comparative political processes. These enable and will be of great assistance for the students who will pursue higher studies in different fields. These will help them in choosing their future professions. So, this course definitely helps as a career builder for the student community.

Course Outcome of Honours Course in Political Science

Course Name : Core Course 1

Course Code : POL-H-CC-T-1

Topic Name : Understanding Political Theory: Concepts

Course Outcome :1) As a result of reading political theories, the basic thoughts of politics among the students became very clear.

2) Political theory is the main entrance to political science for the Students.

3) So there are various views on the interpretation of state and politics which is very necessary to students of political science.

4) Concept of politics is created by reading political theory. This part is very useful in the development of political knowledge.

5) After reading political theory, studying other topics of political science has become easy and logical for students.

Course Name : Core Course 2

Course Code : POL-H-CC-T-2

Topic Name : Understanding Political Theory: Approaches and Debates

Course Outcome ; 1. Familiarizes students with basic normative political theory concepts.
2. Encourages critical and reflective analysis, interpretation of social practices.
3. Familiarizes with important debates of the subject.

Course Name : Core Course 3

Course Code : POL-H-CC-T-3

Topic Name : Politics in India

Course Outcome : 1. Students can map the working of modern institutions.
2. Familiarizes students with the working of the Indian State.
3. They can understand the contradictory dynamics of modern state power.

Course Name : Core Course 4

Course Code : POL-H-CC-T-4

Topic Name : Indian Constitution

Course Outcome : 1) This course acquaints students with the constitutional design of state structures and institutions, and their actual working over time.
(2) It further encourages a study of state institutions in their mutual interaction, and in interaction with the larger extraconstitutional environment
(3) Fundamental rights are a group of rights that have been recognized by a high degree of protection from encroachment.
These rights are specifically identified in a constitution, or have been found under due process of law.
(4) Directive Principles of State Policy aim to create social and economic conditions under which the citizens can lead a good life. They also aim to establish social and economic democracy through a welfare state.

Course Name : Core Course 5

Course Code : POL-H-CC-T-5

Topic Name : Indian Political Thought (Ancient and Mediaeval)

Course Outcome : 1)This course introduces the specific elements of Indian Political Thought spanning over two millennia.

(2) The basic focus of study is on individual thinkers whose ideas are however framed by specific themes.

(3)The course as a whole is meant to provide a sense of the broad streams of Indian thought while encouraging a specific knowledge of individual thinkers and texts.

Course Name : Core Course 6

Course Code : POL-H-CC-T-6

Topic Name: Indian Political Thought (Modern)

Course Outcome : 1. Introduces a wide span of thinkers and themes that defines the modernity of Indian Political Thought.

2. Understands general themes from varied social and temporal contexts.

3. Understands the relevance and importance of these thinkers in present times.

Course Name : Core Course 7

Course Code: POL-H-CC-T-7

Topic Name : Understanding International Relations : Theories and Concepts

Course Outcome : (1)This paper seeks to equip students with the basic intellectual tools for understanding International Relations.

(2) It introduces students to some of the most important theoretical approaches for studying international relations. The

course begins by historically contextualizing the evolution of the international state system; then the students are

introduced to different theories in International Relations.

(3) It provides a fairly comprehensive overview of the major political developments and events starting from the twentieth

century. Students are expected to learn about the key milestones in world history and equip them with the tools to

understand and analyze the same from different perspectives.

(4) A key objective of the course is to make students aware of the implicit Euro - centricism of International Relations by

highlighting certain specific perspectives from the Global South.

Course Name : Core Course 8

Course Code: POL-H-CC-T-8

Topic Name : Public Administration (Theories and Concepts)

Course Outcome ; 1)The course provides an introduction to the discipline of public administration.

(2)This paper encompasses

public administration in its historical context with an emphasis on the various classical and contemporary administrative theories.

(3)The course also explores some of the recent trends, including feminism and ecological conservation and how the call for greater democratization is restructuring public administration.

(4)Students will demonstrate understanding of current issues and trends in government administrative settings and provide knowledge on addressing challenges created by those changes.

Course Name : Core Course 9

Course Code: POL-H-CC-T-9

Topic Name : Public Policy and Indian Administration

Course Outcome : 1. Understands the interface between public policy and administration in India.

2. Understands the issues of citizens, administration, decentralization, financial management, social welfare, governing philosophy from non-western perspective.

3. Understands translation of governing philosophy and principles into policies and programmes.

Course Name : Core Course 10

Course Code : POL-H-CC-T-10

Topic Name : Global Politics and Issues since 1945

Course Outcome : 1. Introduces the students to the key debates on the meaning and nature of globalization.

2. Imparts an understanding of the working of the world economy and analyzing the changing relationship between the state and non-state actors.

3. Provides insights into key contemporary global issues.

Course Name : Core Course 11

Course Code : POL-H-CC-T-11

Topic Name : Western Political Thought (Ancient and Mediaeval)

Course Outcome :

(1) One of the major objectives of this course is to introduce the students to the key debates and ideas in Classical political philosophy.

(2) The course gives an introduction to Political Thought processes and Theory making in the Western countries.

(3) From the Greek Political thinkers to down the ages including Utilitarians, this course introduces the student to the richness and variations in the political perceptions of Western Thinkers.

Course Name : Core Course 12

Course Code : POL-H-CC-T-12

Topic Name: Western Political Thought (Modern)

Course Outcome : 1. Understands the convergence between philosophy and politics.

2. Learns the manner in which to pose the political questions that have implications for larger questions of thought and existence.

Course Name : Core Course 13

Course Code : POL-H-CC-T-13

Topic Name : Introducing Political Sociology

Course Outcome : 1) Understands the sociological bases of politics

2) understands the deep relationship between society and politics

3) understands the theoretical framework for the conception of modernization and political development

Course Name : Core Course 14

Course Code : POL-H-CC-T-14

Topic Name : Comparative Government and Politics

Course Outcome : 1)As a result of studying Comparative Politics, comparative methods and their effectiveness are established in the minds of students

2) The political system of different countries of the world opens the way for political science students to know the advantages and disadvantages of political parties, constitutional structures and political culture of other states.

3) They can point out the Advantages- Disadvantages in the constitutional framework of their country's political system and express their views on the matter.

Course Name : Discipline Specific Elective Course 1

Course Code : POL-H-DSE-T-1 (A)

Topic Name : Citizenship in a Globalising World

Course Outcome : 1) Understands the basic conception of citizenship as well as its evolution over time

2) Understands the changing parameters of the conception of citizenship

3) Understands the dynamics of globalisation process with special reference to the notion of citizenship

Course Name : Discipline Specific Elective Course 1 (B)

Course Code: POL-H-DSE-T-1 B

Topic Name : Public Policy in India

Course Outcome : 1. Understands the interface between public policy and administration in India.
2. Understands the issues of citizens, administration, decentralization, financial management, social welfare,
governing philosophy from non-western perspective.
3. Understands translation of governing philosophy and principles into policies and programmes.

Course Name : Discipline Specific Elective Course 2 A

Course Code: POL-H-DSE-T-2 A

Topic Name : Development Process and Social Movements in Contemporary India

Course Outcome ; 1) understands the parameters of development process in India
2) understands the socio economic and political perspective of social movements in India

Course Name : Discipline Specific Elective Course 2 B

Course Code: POL-H-DSE-T-2 B

Topic Name : Human Rights in Comparative Perspective

Course Outcome : 1. Understands the basic concept and importance of Human Rights in human society.
2. Both from western and non-western perspectives, the students can analyze different issues relating to human rights.
3. They develop basic consciousness about human rights and equality for all.

Course Name : Discipline Specific Elective Course 3 A

Course Code : POL-H-DSE-T-3 A

Topic Name : Understanding South Asia

Course Outcome : 1) Understands the geopolitical dimensions of the region.

2) Understands the socio political and economic issues of the region.

3) Understands the challenges and prospects of the region.

Course Name : Discipline Specific Elective Course 3B

Course Code : POL-H-DSE-T-3B

Topic Name : India's Foreign Policy in a Globalising World

Course Outcome : 1) Having an insightful understanding about India's foreign policy preferences in the globalizing World.

2) Identifying the pattern of India's engagements with global powers.

Course Name : Discipline Specific Elective Course 4A

Course Code : POL-H-DSE-T-4 A

Topic Name : Dilemmas in Politics

Course Outcome : Having the ability to Explore, analyze and evaluate some of the central issues, values and debates in the/

contemporary world.

Course Name : Discipline Specific Elective Course 4B

Course Code: POL-H-DSE-T-4B

Topic Name : Dissertation

Course Outcome : Having the ability to ☑ Apply the knowledge gained through different courses in practical field.

☑ Solve problems related to his course of study.

☑ Document, calculate, analyse and interpret data.

☑ Deduce findings from different studies

☑ Write and report in standard academic formats.

Generic Elective Course

Course Name : Generic Elective Course 1 A

Course Code : POL-H-GE-T-1A

Topic Name : Reading Gandhi

Course Outcome : Having the ability to To understand the art of reading texts, to enable them to grasp its conceptual and argumentative structure and to help them acquire the skills to locate the texts in a broader intellectual and socio-historical context.

☑ Acquaint with the social and political thought of Gandhi.

Course Name : Generic Elective Course 1 B

Course Code : POL-H-GE-T-1B

Topic Name : Nationalism in India

Course Outcome ; Having the ability to Understand historically the advent of colonialism in India and the emergence of the discourse on nationalism as a response to it.

☑ Engage with theoretical explanations of colonialism and nationalism in India at the same time study the social, political and institutional practices that unfolded in that period, gradually paving way towards independence and democracy in India.

Course Name : Generic Elective Course 2 A

Course Code : POL-H-GE-T-2A

Topic Name ; Human Rights, Gender and Environment

Course Outcome : ☑ Enabling the students to understand the issues concerning the rights of citizens in general and the marginalized groups in particular.

☑ Help us to assess the institutional and policy measures which have been taken in response to the demands of various movements.

☑ Help us to understand the conceptual dimensions, international trends and the Indian experience

Course Name : Generic Elective Course 2B

Course Code : POL-H-GE-T-2B

Topic Name : Governance : Issues and Challenges

Course Outcome ; Having the ability to ☑ Identify the different dimensions of governance.

☑ Identify the Structure and process of Governance in India

☑ Identify the various good governance initiatives introduced in India

Course Name : Generic Elective Course 3A

Course Code : POL-H-GE-T-3A

Topic Name : Politics of Globalisation

Course Outcome : Having the ability to ☑ Understand the process of Globalization from a political perspective.

☑ Identify the major dimensions of Globalization and their impact on the International Order

Course Name : Generic Elective Course 3B

Course Code : POL-H-GE-T-3B

Topic Name : United Nations and Global Conflicts

Course Outcome : Having the ability to ☐ Understand the organizational structure and the political process of the UN.

☐ Understand the evolution of the UN since 1945.

☐ Understand the role of the UN in dealing with major global issues and problems

Course Name : Generic Elective Course 4 A

Course Code : POL-H-GE-T-4A

Topic Name : Feminism : Theory and Practice

Course Outcome : Having the ability to ☐ Understand the contemporary debates on feminism and the history of feminist struggles.

☐ Understand the complexity of patriarchy and the history of feminism.

Course Name : Generic Elective Course 4 B

Course Code : POL-H-GE-T-4B

Topic Name : Understanding Ambedkar

Course Outcome : Having the ability to ☐ To Understand Ambedkar's ideas and their relevance in contemporary India, by looking beyond caste.

☐ To understand Ambedkar's philosophical contributions towards Indian economy and class question, sociological interpretations on religion, gender, caste and cultural issues.

Skill Enhancement Courses

Course Name : Skill Enhancement Course 1 A

Course Code: POL-H-SEC-T-1 A

Topic Name: Legislative Practices and Procedures

Course Outcome ; Having the ability to ☐ To Identify the legislative process in India at various levels,
☐ To understand the basic requirements of peoples' representatives in policy making process.
☐ To understand the basic skills required for understanding the political process.

Course Name : Skill Enhancement Course 1B

Course Code : POL-H-SEC-T-1 B

Topic Name : Democratic Awareness with Legal Literacy

Course Outcome : Having the ability to ☐ Understand the structure and manner of functioning of the legal system in India.

☐ Develop an understanding of the formal and Alternate Dispute Redressal (ADR) mechanisms that exist in India, public interest litigation

Course Name : Skill Enhancement Course 2A

Course Code : POL-H-SEC-T-2A

Topic Name : Public Opinion and Survey Research

Course Outcome : Having the ability to ☐ Identify the debates, principles and practices of public opinion polling in the context of democracies with special reference to India.

☐ Understand how to conceptualize and measure public opinion using quantitative methods, with particular attention being paid to developing basic skills pertaining to the collection, analysis and utilisation of quantitative data.

Course Name : Skill Enhancement Course 2B

Course Code : POL-H-SEC-T-2B

Topic Name : Peace and Conflict Resolution

Course Outcome : Having the ability to ☐ Help build an understanding of a variety of conflict situations.

☐ Understand the various dimensions of Conflict.

☐ Identify the Gandhian Techniques of Peace-Building.

☒ Develop ideas on Conflict Responses.

B.A. Political Science Programme/ General Course

Core Courses

Course Name : Core Course 1

Course Code: POL-G-CC-T-1

Topic Name: Introduction to Political Theory

Course Outcome : Having the ability to ☒ Explain what is politics and what is the relevance of Political Theory

- ☒ Understand the different approaches to the study of politics
- ☒ Understand the different theories of State
- ☒ Understand the concepts like Liberty ,Equality, Law and Rights
- ☒ Explain the Concept of Democracy.

Course Name : Core Course 2

Course Code : POL-G-CC-T-2

Topic Name : Indian Government and Politics

Course Outcome : Having the ability to ☒ Develop a basic understanding about the Indian Constitution

☒ Understand the major issues affecting politics in India

☒ Develop a basic idea about the different types of political movements in Independent India.

Course Name : Core Course 3

Course Code : POL-G-CC-T-3

Topic Name : Comparative Government and Politics

Course Outcome : Having the ability to ☐ Identify the difference between Comparative Politics and Comparative Government.

☐ Understand the scope, purpose and methods of comparison in Comparative politics.

☐ Identify the different types of Constitutional Systems.

Course Name : Core Course 4

Course Code : POL-G-CC-T-4

Topic Name : Introduction to International Relations

Course Outcome : Having the ability to ☐ Understand the important theoretical approaches to international relations.

☐ Understand the major concepts in International Relations.

☐ Comprehend the evolution of Indian foreign policy since independence and its possible future trajectory.

Discipline Specific Elective Course

Course Name : Discipline Specific Elective Course 1A

Course Code : POL-G-DSE-T-1 A

Topic Name : Citizenship in a Globalising World

Course Outcome : ☐ Understand the theories of citizenship and the historical development of the concept.

☐ Develop an idea about citizenship as a practice in an increasingly globalizing world.

Course Name : Discipline Specific Elective Course 1 B

Course Code : POL-G-DSE-T-1 B

Topic Name : Public Policy in India

Course Outcome ; Having the ability to ☐ Be familiar with different public policies in India.

☐ Understand various theories and methods of understanding public policy and governance

☐ Identify the different challenges to governance which has hampered effective implementation of public policies

Course Name : Discipline Specific Elective Course 2 A

Course Code : POL-G-DSE-T-2A

Topic Name : Understanding South Asia

Course Outcome : Having the ability to ☐ Understand the Geo-politics of South Asia as a region.

☐ Understand the nature of state system in various countries of South Asia.

☐ Understand the process of regional integration in South Asia.

☐ Identify the major environmental issues in South Asia.

Course Name : Discipline Specific Elective Course 2 B

Course Code ; POL-G-DSE-T-2 B

Topic Name : India's Foreign Policy in a Globalising World

Course Outcome : Having the ability to ☐ Have an insightful understanding about India's foreign policy preferences in the globalizing World.

☐ Identify the pattern of India's engagements with global powers

Generic Elective Course

Course Name : Generic Elective Course 1 A

Course Code : POL-G-GE-T-1 A

Topic Name ; Reading Gandhi

Course Outcome : Having the ability to ☐ To understand the art of reading texts, to enable them to grasp its conceptual and argumentative structure and to help them acquire the skills to locate the texts in a broader intellectual and socio-historical context.

☐ Acquaint with the social and political thought of Gandhi.

Course Name : Generic Elective Course 1 B

Course Code : POL-G-GE-T-1 B

Topic Name : Nationalism in India

Course Outcome : Having the ability to ☐ Understand historically the advent of colonialism in India and the emergence of the discourse on nationalism as a response to it.

☐ Engage with theoretical explanations of colonialism and nationalism in India at the same time study the social, political and institutional practices that unfolded in that period, gradually paving way towards independence and democracy in India.

Course Name ; Generic Elective Course 2 A

Course Code ; POL-G-GE-T-2A

Topic Name : Human Rights, Gender and Environment

Course Outcome : Having the ability to ☐ Enabling the students to understand the issues concerning the rights of citizens in general and the marginalized groups in particular.

☐ Help us to assess the institutional and policy measures which have been taken in response to the demands of various movements.

☐ Help us to understand the conceptual dimensions, international trends and the Indian experience

Course Name : Generic Elective Course 2 B

Course Code ; POL-G-GE-T-2B

Topic Name : Governance: Issues and Challenges

Course Outcome : Having the ability to ☐ Identify the different dimensions of governance.

☐ Identify the Structure and process of Governance in India

☐ Identify the various good governance initiatives introduced in India

Skill Enhancement Course

Course Name : Skill Enhancement Course 1

Course Code : POL-G-SEC-T-1

Topic Name : Legislative Practices and Procedures

Course Outcome : Having the ability to ☐ To Identify the legislative process in India at various levels,

☐ To understand the basic requirements of peoples' representatives in policy making process.

☐ To understand the basic skills required for understanding the political process.

Course Name : Skill Enhancement Course 2

Course Code : POL-G-SEC-T-2

Topic Name : Public Opinion and Survey Research

Course Outcome : Having the ability to ☐ Identify the debates, principles and practices of public opinion polling in the context of democracies with special reference to India.

☐ Understand how to conceptualize and measure public opinion using quantitative methods, with particular

attention being paid to developing basic skills pertaining to the collection, analysis and utilisation of quantitative data.

Course Name : Skill Enhancement Course 3

Course Code : POL-G-SEC-T-3

Topic Name : Democratic Awareness and Legal Literacy

Course Outcome : Having the ability to ☐ Understand the structure and manner of functioning of the legal system in India

☐ Develop an understanding of the formal and Alternate Dispute Redressal (ADR) mechanisms that exist in India, public interest litigation.

Course Name : Skill Enhancement Course 4

Course Code : POL-G-SEC-T-4

Topic Name : Peace and Conflict Resolution

Course Outcome : Having the ability to ☐ Help build an understanding of a variety of conflict situations.

☐ Understand the various dimensions of Conflict.

☐ Identify the Gandhian Techniques of Peace-Building.

☐ Develop ideas on Conflict Responses.

Programme Outcomes (PO):

The Undergraduate Programme BA Sociology (Honours and Programme course) under University of Kalyani offers a new syllabi under the Choice Based Credit System. The system recommended by the UGC for ensuring a uniform level and quality of higher education throughout the country breaks away from the earlier marking system and introduces a standardized way of grading throughout India.

The programme provides the students an introduction to sociology as a social science and helps them to develop a keen sociological eye in understanding everyday social reality. This programme provides them with a sociological knowledge of human society in general and more specifically of traditional Indian society and the changes it is undergoing due to Modernization. They will be able to develop a strong conceptual clarity of sociological terms and become better equipped to understand social phenomenon and to analyse the similarities and differences in the social structure of different societies and cultures. Apart from building a comprehensive theoretical base of Sociology throughout the programme through various courses, ranging from classical thought to contemporary sociological theories, the students also get an excellent opportunity to will develop a keen objective lens and the skills required to undertake fieldwork and sociological research. The completion of various courses in this programme will boost the critical thinking and analytical abilities of the students, allowing them to establish correlations and interdependence between different social elements and institutions. The programme creates awareness of pressing social issues and government policies in tackling problems of social development and change. Students can understand the linkages between different societal institutions, between the past and the present and look forward for to the future. This course further also helps the students in their placement in the future. By correct application of the theoretical knowledge to practice, they are hereby empowered to establish themselves in different areas of activity as well as carry forward their knowledge in doing their masters and PhD.

CHAPRA GOVERNMENT COLLEGE

Course Outcome or Learning Outcome

Three year B.A. degree course

Under CBCS semester system

HONOURS COURSE IN SOCIOLOGY

With effect from the session: 2018 — 2019

Course Code (SOC)	Course Name SOC (H)	Course Outcome
CC1	Introduction to Sociology	<p>After successful completion of this course students will be able to:</p> <ol style="list-style-type: none"> 1. Develop a sociological perspective and understanding of social phenomenon and also have knowledge about the factors leading to the emergence and development of sociology. 2. Understand the relationship of Sociology as a social science with other social sciences like Social Anthropology, Psychology and History. 3. Learn the basic concepts in Sociology. Students will be able to define and understand the characteristics of individual and groups. They will be able to define and understand the difference between associations and institutions, society and culture and will also be able to understand the process and factors leading to social change in human society.

Course Code (SOC)	Course Name SOC (H)	Course Outcome
CC-2	Sociology of India I	<p>After successful completion of this course students will be able to:</p>

		<p>1) Gain insight on the features of Indian society during the colonial period. Understand the nationalist narrative in understanding Indian society. Understand the critiques of the post- colonial sub- altern studies of sociologists who studied the struggles of the oppressed groups in society.</p> <p>2) Understand Indian society, the concepts and it's unique institutions such as the kinship structure and Religion, they will be able to understand the structure of Indian villages, the various tribes, and forms of social inequality and stratification found in Indian society such as the caste system and agrarian classes as well as the industry and labour in Indian society.</p>
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<p>Course Code (SOC)</p>	<p>Course Name SOC (H)</p>	<p>Course Outcome</p>
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CC-3	Sociology of India II	<p>After successful completion of this course students will be able to:</p> <ol style="list-style-type: none"> 1. Understand social thought and concepts introduced by various sociological thinkers. 2. Students will be able to understand the functionalist perspective of sociologists like Durkheim and Radcliffe Brown 3. . Understand the conflict perspective of conflict thinkers like Karl Marx and Darendhorf 4. Understand the structuralist, Interactionist and feminist perspectives of various sociological thinkers in understanding human society.
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Course Code (SOC)	Course Name SOC (H)	Course Outcome
CC-4	Sociology of India II	<p>After successful completion of this course students will be able to:</p> <ol style="list-style-type: none"> 1. Explore various ideas and studies about Indian society such as Gandhi, Ambedkar and various other indologists and ethnographers. 2. They will gain knowledge on various movement and the changes brought about by mobilization of various groups such as women, ethnic groups, peasants, Dalits.and the middle classes. 3. They will also explore various ideologies that pose challenges to human society such as communalism, secularism and nationalism

Course Code (SOC)	Course Name SOC (H)	Course Outcome
CC- 5	Sociological thinkers 1	<p>After completing the course students will become familiarized with the thoughts of major classical thinkers who shaped the discipline.</p> <ol style="list-style-type: none"> 1. Students will be introduced to the theory of Marx such as the Materialist Conception of History and the Capitalist Mode of Production. 2. Understand the concept of Ideal Type and Social Action introduced by Weber. They will also gain knowledge on his views on Religion and Economy. 3. Understand the concept of Social Facts and individual and Society given by Durkheim.

Course Code (SOC)	Course Name SOC (H)	Course Outcome
CC-6	Sociological Research Methods-I	<p>This course introduces the students to the philosophies underlying social research.</p> <ol style="list-style-type: none"> 1. Students will know what research is in social sciences and will know the idea behind Social conducting research, objectivity and reflexivity in social research 2. Understand the methodological perspectives of the comparative and feminist methods 3. Differentiate between theory and research and how to analyse both qualitative and quantitative data

Course Code (SOC)	Course Name SOC (H)	Course Outcome
CC 7	Sociology of Kinship	<p>After the completion of the course the students will be able</p> <ol style="list-style-type: none"> 1. Understand the general principles of Kinship and marriage by referring to the key concepts such as decent, consanguinity, filiations, incest taboo, affinity, family and residence. 2. Understand the various approaches to kinship such as descent, alliance and cultural 3. Understand the key concepts of family, household and marriage. 4. Learn about the new directions in studying kinship such as relatedness, gender, new forms of families and the emergence of new reproductive technologies

Course Code (SOC)	Course Name SOC (H)	Course Outcome
CC-8	Sociological thinkers II	<p>After the completion of the course Students will know about post classical sociological thoughts of</p> <ol style="list-style-type: none"> 1. Parsons, 2. Levi. Strauss, 3. Mead, Hoffman, 4. Berger and Luckmann, 5. Horkhiemar, Adorno, 6. Marcuse and 7. Bourdieu.

Course Code (SOC)	Course Name SOC (H)	Course Outcome
CC 9	Sociological Research Methods-II	This course introduces the students to research in social sciences. After

		<p>successful completion of this course students will be able to</p> <ol style="list-style-type: none">1. Learn how research is done, the process and various steps in social research, how to conceptualize and formulate a hypothesis. They will also gain basic knowledge on how fieldwork is conducted.2. They will learn about the various methods of data collection will gain basic knowledge on how to conduct both qualitative and quantitative methods of data collection.3. Students will be able to analyse the data that is collected during the field work with the application of various statistical methods using graphical and diagrammatic presentation of data (bar diagram, pie charts, histograms, measures of central tendency and dispersion. <p>After successful completion of this course students will be able to</p> <ol style="list-style-type: none">1. learn how research is done, the process and various steps in social research, how to conceptualize and formulate a hypothesis. They will also gain basic knowledge on how fieldwork is conducted.2. They will learn about the various methods of data collection will gain basic knowledge on how to conduct both qualitative and quantitative methods of data collection.
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		3. Students will be able to analyse the data that is collected during the field work with the application of various statistical methods using graphical and diagrammatic presentation of data (bar diagram, pie charts, histograms, measures of central tendency and dispersion.
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Course Code (SOC)	Course Name SOC (H)	Course Outcome
C C-10	Social Stratification	<p>After going through the course, the students will be able to</p> <ol style="list-style-type: none"> 1. Understand the sociological study of social inequalities through the concept of social stratification. 2. It introduces the students to the various theoretical perspectives on social stratification like the functionalist and conflict perspectives on social inequality. 3. They will be able to understand the diverse forms of identities like ethnic, race, caste and gender and how these identities and inequalities are culturally reinforced, mobilized and reproduced.

Course Code (SOC)	Course Name SOC (H)	Course Outcome
C C 11	Sociology of Gender	<p>This course introduces gender is a perspective to understand various dimensions of social relations. After successful completion of this course students will be able to:</p> <ol style="list-style-type: none"> 1. Have conceptual clarity on gender as a social construct and will be able to question patriarchy and differentiate between gender, sex and sexuality and how they are used as tools for the

		<p>production of ideas of masculinity and femininity and reasoning.</p> <p>2. Understand how the concept of gender works to create differences and inequalities in caste, class, family and work. Know the strategic behaviour of oligopolistic firms</p> <p>3. Understand the dynamics of gender, power and resistance and how women's movements are born out of resistance to gender based subordination.</p>
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Course Code (SOC)	Course Name SOC (H)	Course Outcome
CC-12	Urban Sociology	<p>1 . This course is an introduction to the key concepts of urban, urbanism and city.</p> <p>2. Students are also introduced to the important theoretical perspectives on urban life, ecological, political economy, network and City as a Culture .</p> <p>3. It will help the students to relate to the experiences of complex urban living and the phenomenon of migration and settlement, politics relating to patterns of class, caste, gender etc.</p>

Course Code (SOC)	Course Name SOC (H)	Course Outcome
CC -13	Agrarian Sociology	<p>After successful completion of this course students will be able to:</p> <p>1. Explore the important studies on agrarian societies and the important issues in agrarian sociology.</p> <p>2. Learn about agrarian societies and their diversity through comparative study of peasant society. Understand subsistence economy and peasant movements as well as understand the system of food and agricultural commodities in production, processing and marketing of agricultural produce.</p>

		<p>3. Understand the issues explored by agrarian sociology in India for example land and labour, agrarian class structure, economy and market, land reforms and the Green Revolution, mobilization of agrarian groups, caste, gender etc.</p> <p>4. Understand agrarian order in the global context and the crisis faced by agrarian societies in India and other third world countries and the phenomenon of suicides by farmers in relation to the market and the state.</p>
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Course Code (SOC)	Course Name SOC (H)	Course Outcome
CC -14	Sociology of Economic Life	<p>After successful completion of this course students will be able to:</p> <ol style="list-style-type: none"> 1. Understand economic activity is based on social and cultural practices and will know about the importance of sociological study of economic institutions and processes in the local as well as global context. 2. Will explore the key perspectives in economic sociology 3. Know about the forms of exchange prevalent in different societies through the theories of reciprocity and gift and exchange and money. 4. Understand the systems of production, circulation and consumption such as hunting and gathering, domestic mode of production, peasant, capitalism and socialism. 5. Explore some of the issues of development and consumption, markets and the local realities in the age of globalisation

Course code	Course name SOC H	Course outcome
DSE 1	Sociology of Religion	<ol style="list-style-type: none"> 1. Understand the definition and importance of Religion as an important social institution 2. Understand the relationship between society and religion, economy and religion and politics and religion. 3. Know the various elements of Religion such as the sacred, ritual, myth, concept of time and space etc 4. They will also gain knowledge religious symbolism and about the techniques of Religion such as prayer, craft and body.

Course code	Course name SOC H	Course outcome
DSE 2	Social Problems and Welfare	<p>On completion of the course students will</p> <ol style="list-style-type: none"> 1. Become aware about the various social problems plaguing society. They will be able to define what social problems are, their causes and types. 2. Explore the sociological approaches to the study of social problems. 3. Learn about the various social problems such as juvenile delinquency, crime, women's trafficking, child abuse and child labour, drug addiction, suicides, domestic violence, religious fundamentalism and ethnic violence etc 4. Gain knowledge about social problems and social policy. 5. Understand the various social welfare programs that are there for children, women, family, lower castes and the tribals. 6. Gain knowledge regarding the social legislations that are there for the welfare of children, women and the ST,s and SC's

Course code	Course name SOC H	Course outcome
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DSE 3	Environmental Sociology	<p>On completion of this course students will</p> <ol style="list-style-type: none"> 1. Understand what Environmental Sociology is. 2. Explore the various theoretical approaches to the study of environment such as the Treadmill of Production theory, theory of Ecological Modernization, Risk Theory, Eco- feminism and political ecology 3. Learn about the environmental movements in India such as the forest based Chipko Movement, water based Narmada Bachao Movement and the land based Anti- Mining and Seed movement.
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Course code	Course name SOC H	Course outcome
DSE 4	Population Studies	<p>On completion of the course students will</p> <ol style="list-style-type: none"> (1) Understand the inter relationship between society and population and will understand the concept of demography and the various approaches to the study of population. (2) Learn about the role of various factors like fertility, reproduction and mortality on the age- sex structure, size and growth of the society. (3) Learn about the dangers of over population and it's implications. (4) Learn about and be able to critically analyse the population policy of the Government of India.

Course code	Course name SOC H	Course outcome
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SEC 1	Techniques of Oral Presentation on Current Social Issues	On completion of the course students will become 1. Aware of social issues found in contemporary society 2. Will know the techniques of preparing a write up and presenting it orally in the classroom. 3. The course will also enable the students to actively participate in the classroom and 4. Also to evaluate each other during the presentation.
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Course code	Course name SOC H	Course outcome
SEC 2	Report Writing, Referencing and Review of Research Articles	On completion of the course students will learn 1. the skills of reading academic texts, to summarise the text, grasping each paragraph or section and getting similar resources from other papers 2. write academic reports by building the structure construct the sections , paragraphs and sentences and quoting, citing from other academic papers and avoiding plagiarism. They will learn to use academic language and how to do research work. 3. Reviewing of research articles and making references

Course code	Course name SOC H	Course outcome
GEC 1	Rural Sociology	On completion of the course students will learn 1. The nature, scope and subject matter of rural Sociology 2. The structure of rural society 3. Explore the forms of

		<p>stratification and inequalities found in rural societies like caste and land ownership structure</p> <p>4. . Learn about the key issues like tenancy, landless labourers, land reform, Green Revolution and rural development and peasant uprisings.</p> <p>5. Understand the workings of the Panchayati Raj and learn about the various rural development programmes, micro finance and Self Help Groups</p>
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Course code	Course name SOC H	Course outcome
GEC 2	Family and Intimacy	<p>On completion of the course students will learn</p> <p>1. Understand significance of family as one of the key institutions of human society.</p> <p>2. Understand the concept of family and will be able to define in sociological terms what a family is.</p> <p>3. Explore the structure of power relations, hierarchy, marriage, gender issues and kinship structure within a family.</p>

Course code	Course name SOC H	Course outcome
GEC 3	Urban Sociology	<p>On completion of the course students will</p> <p>1. Understand and differentiate between the concepts of urban</p>

		<p>community , urbanism and urbanization</p> <p>. 2.Trace the waves of urbanization that occurred at different time periods.</p> <p>3.Explore the emergence of urban sociology in Europe and in America.</p> <p>4.Understand the different schools of urban sociology</p> <p>5.Explore key theoretical perspectives in understanding urban social life both in the historical context as well as in the present society and thereby understand the complex social life of urban areas</p>
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Course code	Course name	Course outcome
GEC 5	SOC H Gender and Violence	<p>On completion of the course students will learn</p> <p>1.Understand the concept of gender and violence. They will be able to understand the dynamics of power and violence in the context of gender relations in a stratified unequal society.</p> <p>2.Understand the logic behind the violence in a society characterized by inequalities of caste and patriarchy.</p> <p>3.Gain knowledge about domestic violence and violence and harassment in the workplace.</p> <p>4.Learn about sexual violence.</p> <p>5.Explore the politics and public policies surrounding gendered violence.</p>

. CHAPRA GOVERNMENT COLLEGE

Course Outcome or Learning Outcome

Three year B.A. degree course

Under CBCS semester system

GENERAL COURSE IN SOCIOLOGY

With effect from the session: 2018 — 2019

Course code (SOC)	Course Name SOC G	Course Outcome
CC -I	Basic Principles of Sociology	After successful completion of this course students will be able to: 1. Develop a sociological perspective and understanding of social phenomenon.

		<p>2. Understand the relationship of Sociology as a social science with other social sciences like Social Anthropology, Psychology and History.</p> <p>3. Learn the basic concepts in Sociology. Students will be able to define and understand the characteristics of individual and groups. They will be able to define and understand the difference between associations and institutions, society and culture and will also be able to understand the process and factors leading to social change in human society.</p>
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Course code	Course Name SOC G	Course Outcome
CC -2	Classical Sociological Theory	<p>After completing the course students will become familiarized with the thoughts of major classical thinkers who shaped the discipline.</p> <p>1. Students will be introduced to the theory of Marx such as the Materialist Conception of History and the Capitalist Mode of Production.</p> <p>2. Understand the concept of Ideal Type and Social Action introduced by Weber. They will also gain knowledge on his views on Religion and Economy. 3. Understand the concept of Social Facts and individual and Society given by Durkheim.</p>

Course code	Course Name SOC G	Course Outcome
CC-3	Modern Sociological Theory	After the completion of the course the students will

		<p>1. Gain knowledge about Parsons theory of social systems. 2. Understand the theory of Structuralism given by Claude Levi Strauss</p> <p>3. Learn about the theory of interactional self by Mead and Goffman</p>
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Course code	Course Name SOC G	Course Outcome
CC-4	Indian society	<p>After successful completion of this course students will be able to:</p> <p>1) Understand Indian society, the concepts and it's unique institutions such as the caste system, religion and kinship structure.</p> <p>2) they will be able to understand the structure of Indian villages and the different agrarian classes</p> <p>3) , the various tribes located in different parts of the country as well as the industry and labour in Indian society.</p>

Course code	Course Name SOC G	Course Outcome
DSE 1	Sociology of Religion	<p>1. Understand the definition and importance of Religion as an important social institution.</p> <p>2. Understand the relationship between society and religion, economy and religion and politics and religion.</p> <p>3. Know the various elements of Religion such as the sacred, ritual, myth, concept of time and space etc</p> <p>4. They will also gain knowledge religious symbolism and about the techniques of Religion such as prayer, craft and body</p>

Course code	Course Name SOC G	Course Outcome
DSE 2	Sociology of Problems and Welfare Course Outcome	<p>On completion of the course students will</p> <ol style="list-style-type: none"> 1. Become aware about the various social problems plaguing society. 2. They will be able to define what social problems are, their causes and types. 3. Explore the sociological approaches to the study of social problems. 4. Learn about the various social problems such as juvenile delinquency, crime, women's trafficking, child abuse and child labour, drug addiction, suicides, domestic violence, religious fundamentalism and ethnic violence etc. 5. Gain knowledge about social problems and social policy. 6. Understand the various social welfare programs that are there for children, women, family, lower castes and the tribals. 7. Gain knowledge regarding the social legislations that are there for the welfare of children, women and the ST,s and SC's

Course code	Course Name SOC G	Course Outcome
DSE 3	Environmental Sociology	<p>On completion of this course students will</p> <ol style="list-style-type: none"> 1. Understand what Environmental Sociology is. 2. Explore the various theoretical approaches to the study of environment such as the Treadmill of Production theory, theory of Ecological Modernization, Risk Theory, Eco-feminism and political ecology 3. Learn about the environmental movements in India such as the forest based Chipko Movement, water based

		Narmada Bachao Movement and the land based Anti- Mining and Seed movement
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Course code	Course Name SOC G	Course Outcome
DSE 4	Population Studies	<p>Studies On completion of the course students will</p> <p>(1) Understand the inter relationship between society and population and will understand the concept of demography and the various approaches to the study of population.</p> <p>(2) Learn about the role of various factors like fertility, mortality how to apply the knowledge of Economics in explaining the rel world</p> <p>(3) Learn about the role of various factors like fertility, reproduction and mortality on the age- sex structure, size and growth of the society. (4) Learn about the dangers of over population and it's implications. (5) Learn about and be able to critically analyse the population policy of the Government of India</p>

Course code	Course Name SOC G	Course Outcome
SEC 1	Techniques of Oral Presentation on Current Social Issues	<p>On completion of the course students will become</p> <p>1. Aware of social issues found in contemporary society and</p>

		<p>2. Will know the techniques of preparing a write up and presenting it orally in the classroom.</p> <p>3. The course will also enable the students to actively participate in the classroom and</p> <p>4. Also to evaluate each other during the presentation.</p>
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Course code	Course Name SOC G	Course Outcome
SEC 2	Report Writing, Referencing and Review of Research Articles	<p>: On completion of the course students will learn</p> <p>1. The skills of reading academic texts, to summarize the text, grasping each paragraph or section and getting similar resources from other papers</p> <p>2. Write academic reports by building the structure construct the sections , paragraphs and sentences and quoting, citing from other academic papers and avoiding plagiarism. They will learn to use academic language and how to do research work.</p> <p>3. Reviewing of research articles and making references.</p> <p>Skill Enhancement</p>

Course code	Course Name SOC G	Course Outcome
SEC 3	Techniques of Data Collection and Analysis	<p>After the completion of the course the students will</p> <p>1. Learn the different methods of data collection , Sampling, questionnaire and</p>

		<p>interview, Participant and non- participant observation</p> <p>2. Learn about the different techniques of analysing data both quantitative and qualitative techniques, primary and secondary data.</p> <p>3. Learn how to Classify and present Data in the form of tables, graphs, charts etc, and Measures of central tendency and dispersion</p>
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Course code	Course Name SOC G	Course Outcome
SEC 4	Formulation of Research Problem	<p>After the completion of the course the students will be</p> <ol style="list-style-type: none"> 1. Introduced to social research and how research is done. 2. Learn about the research process, research problem, concepts, formulating the hypothesis and field work.

Course code	Course Name SOC G	Course Outcome
GEC 1	Urban Sociology	<p>On completion of the course students will</p> <ol style="list-style-type: none"> 1. Understand and differentiate between the concepts of urban community , urbanism and urbanization . 2. Trace the waves of urbanization that occurred at different time periods. 3. Explore the emergence of urban sociology in Europe and in America. 4. Understand the different schools of urban sociology 5. Explore key theoretical perspectives in understanding urban social life both in the historical context as well as in the present society and thereby understand the complex social life of urban areas

Course code	Course Name SOC G	Course Outcome
GEC 2	Gender and Violence	On completion of the course students will learn

		<ol style="list-style-type: none">1. Understand the concept of gender and violence. They will be able to understand the dynamics of power and violence in the context of gender relations in a stratified unequal society.2. Understand the logic behind the violence in a society characterized by inequalities of caste and patriarchy.3. Gain knowledge about domestic violence and violence and harassment in the workplace4. Learn about sexual violence. 5. Explore the politics and public policies surrounding gendered violence
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