




GOVERNMENT OF WEST BENGAL
GOVERNMENT GENERAL DEGREE COLLEGE, SINGUR, ESTD:2013
OFFICE OF THE PRINCIPAL
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2.6.1. Course Outcomes (COs) for all Programmes offered by the institution are stated and displayed on website and attainment of COs are evaluated

Relevant documents provided as follows:


Principal
Govt. General Degree College, Singur

Principal
GGDC, Singur

Course Outcome of
Departments based on the
syllabus of
CCFUP

COURSE OUTCOME OF DEPARTMENT OF BOTANY

COURSE OUTCOMES :

Transformed curriculum shall develop educated, outcome-oriented candidature, fostered with discovery-learning, equipped with practice & skills to deal practical problems and versed with recent pedagogical trends in education including e-learning, flipped class and hybrid learning to develop into responsible citizen for nation-building and transforming the country towards the sustainable future with their knowledge of plant sciences.

Students would be competent plant biologists who can employ and implement their knowledge in basic and applied field that will profoundly influence the prevailing paradigm of agriculture, industry, healthcare and environment to provide sustainable development. Students would be able to think critically, develop scientific attitude, improve practical skills, enhance communication skill, social interaction, and increase awareness in judicious use of plant resources by recognizing the ethical value system. The training provided to the students will make them competent enough for doing jobs in Govt. and private sectors of academia, research and industry along with graduate preparation for national as well as international competitive examinations, especially UGC-CSIR NET.

COURSE OUTCOME (B.Sc. 1st Year Course in Botany):

This course will provide knowledge on various fields of basic Botany as well as know-how of basic cell biology and bio-molecules. Students will be given exposure to evolutionary trend in plant kingdom for a holistic knowledge and prepare to enable students for competitive exams in frontier areas of plant sciences.

Name of the Programme: 3-Year Degree/ 4-Year Honours in Botany (Under Curriculum and Credit Framework for Undergraduate Programme (CCFUP) as per **National Education Policy 2020**)

SEMESTER	COURSE TYPE & CODE	COURSE TITLE	COURSE OUTCOME
I	Major/ Minor: BOTN1011/1021	Plant Diversity and Evolution	Develop understanding about the classification and diversity of different microbes including Bacteria, Viruses, Fungi, etc. and other diverse plant groups like, Algae, Fungi, Lichens, Bryophytes, Pteridophytes, Gymnosperms and Angiosperms.
	Multi/inter disciplinary: (BOTN1031)	Biodiversity and its conservation	Students would be able to gain a deep insight into Biodiversity and conservation of natural resources and its sustainable utilization and also know the modern practices in resource management.
	Skill Enhancement Course: BOTN1051	Biofertilizer	Develop understanding about different microbes used as biofertilizers, production technology, organic fertilizers, vermicompost and concept of AM as biofertilizers
II	Major/ Minor: BOTN 2011/2021	Biomolecules and Cell Biology	Develop understanding on the basic chemistry of biomolecules, their involvement in cellular life processes. Develop knowledge on plant cell architecture, their functioning in transducing life processes. Develop practical knowledge on biomolecule identification and basic cellular processes.
	Multi/inter disciplinary BOTN 2031	Medicinal Plants and Phytochemistry	Develop concept about traditional and modern system of medicines, medicinal plants used in those systems of treatment, medicinal plant propagation, conservation, identification and active principles present therein.
	Skill Enhancement Course: BOTN 2051	Organic cultivation and Protected Agriculture	Students would be able to gain concept about organic farming using organic fertilizers, biopesticides, bioherbicides, biocontrol agents and protected agriculture. Develop concept about different physical and chemical parameters for plant growth and a basic idea about PGRs.
III	Major/DS Course: (BOTN 3011)	Microbiology	Students will learn the structure, function of microbial cell and acquire knowledge about the microbial growth, nutrition, classification and their economic importance. They will also know the structural organization of virus, viroid, prion. Students will also understand the basic principles of immunology.
	Major/DS Course: (BOTN 3012)	Archegoniate	The students will be made aware of the group of plants that have given rise to land habit and the flowering plants. Through field study they will be able to see these plants grow in nature and become familiar with the biodiversity. to my knowledge students should create their small digital reports where they can capture the zoomed in and zoomed out pictures as well as videos in case, they are able to find some rare structure or phenomenon related to these plant.
	Multi/inter disciplinary (BOTN3031)	Plant Biotechnology	The successful students will be able to: Learn the basic concepts, principles and processes in plant biotechnology. Have the ability of explanation of concepts, principles and usage of the acquired knowledge in biotechnological applications.
	Skill Enhancement Course (SEC) (BOTN3051)	Medicinal Botany	The course will help in skill development related to the contribution of medicinal plants to traditional and modern systems of medicine. The holistic mode of treatment of the Indian traditional systems will also help in developing entrepreneurship skills to establish value added products.
IV	Major/DS Course: BOTN4011	Phycology	Students would be able to understand the classification, characteristic features, cell structure, growth and reproduction in various groups of marine and fresh water algae and their ecological and economic importance.

	Major/DS Course: BOTN4012	Mycology	Upon completion of this course, the students will be able to: Understand the characteristic features of fungi, lichens and pathogens of plants with ecological and economic significance and applications of mycology in various fields of live hood.
	Major/DS Course: BOTN4013	Plant Pathology	Upon completion of this course, the students will be able to understand the basic principles for identification of common plant diseases and their control measures. Also to understand the economic and pathological importance of pathogenic microorganisms.
	Minor Course ((other than Botany) BOTN4021	Plant Physiology and Metabolism	The students will be able to correlate structure-function relationship that governs plant life processes. The chemical basis of life processes that regulate system biology of plants will also be understandable. The link between theory and practical syllabus is established, and the employability of youth would be enhanced. The youth can also begin small-scale enterprises.

Course Outcome (CO)

**Department of Anthropology
Government General Degree College, Singur**

1. Course Outcome

Name of the programme	Year of introduction	Status of implementation in CBCS and Credit Framework for Undergraduate Programme (CCFUP) curriculum (yes/no)
B.Sc. (Honors) in Anthropology	2017-18	Yes
Credit Framework for Undergraduate Programme (CCFUP) as per NEP, 2020	2023-24	Yes

B.Sc. CBCS (Honors) Credit Framework for Undergraduate Programme (CCFUP) 3/4 Year Courses in Anthropology, respectively, encompass six and eight semesters, with two semesters (SEM) in each session. SEM-I Anthropology Honours under the CBCS programme consists of Core Course (CC) -1 and CC-2. SEM-II consists of CC-3 and CC-4. SEM-III consists of CC-5, CC-6, CC-7 and Skill Enhancement Elective (SEC) -1. SEM-IV consists of CC-8, CC-9, CC-10 and SEC -2. SEM-V consists of CC-11, CC-12, DSE -1 and DSE -2. And, SEM-VI consists of CC-13, CC-14, DSE -3 and DSE -4. The university has approved the syllabus for 4 semesters under the Credit Framework for Undergraduate Programme (CCFUP) courses in anthropology as per NEP, 2020. Under which Sem I and II courses in Anthropology unlike the CBCS programme consist of one Major and one Minor and one SEC and one MDC courses. Sem III consist of two Majors, one SEC (Skill Enhancement Courses) and one MDC (Multi-Disciplinary Courses) course and Sem IV consists of three Major and one Minor courses.

Both CBCS and Credit Framework for Undergraduate Programme (CCFUP) programs, through its Semester I and II courses, aims to provide students with a foundational understanding of the core branches of anthropology: biological, socio-cultural, and archaeological

anthropology. These courses focus on two key aspects of human existence: biological and socio-cultural. The biological aspect of humans is examined across two dimensions: time and space. The time dimension, explored through the study of fossil evidence (paleoanthropology), helps students understand human evolution, from its origins to the emergence of modern humans (*Homo sapiens sapiens*). The space dimension focuses on the concept, causes, and consequences of biological variations among human populations.

In parallel, students will gain insights into the socio-cultural aspect of humanity, exploring concepts such as society, social structures, culture, and cultural practices. This understanding is also developed through the dual dimensions of time and space. The time dimension sheds light on the evolution of society and culture, while the space dimension helps students comprehend present-day variations. Meanwhile, students will learn about human past societies and culture through the study of Archaeological anthropology, which intends to offer knowledge about prehistoric climates, the geological time scale, and geochronology. These topics are essential for understanding the evolution and diversity of the biological and socio-cultural aspects of humanity. Credit Framework for Undergraduate Programme (CCFUP) in addition to the above aims to equip students with the application of anthropological knowledge in the form of tourism anthropology and visual anthropology.

Upon completing Semester III, students under the CBCS programme, will gain a clear understanding of how both natural and social environments influence human biological and socio-cultural aspects. They will learn about various types of communities, such as tribes and peasants, and acquire foundational knowledge of genetic and linguistic variability within populations. Additionally, students will explore the concept and significance of studying demography, which is vital for analyzing numerous biological and socio-cultural issues. This semester also introduces Skill Enhancement Elective (SEC) courses, equipping students with practical knowledge of the applied aspects of anthropology across a broad spectrum. Similarly, under the Credit Framework for Undergraduate Programme (CCFUP), students will gain an understanding of different dimensions of Indian society and culture other than the study of Primates and Human Ecology through two major courses and data analysis in social sciences through one SEC course.

The curriculum for Semesters IV, V, and VI under the CBCS programme focuses on theories, contemporary trends, and their application

in addressing and solving biological and social problems. These semesters emphasize sustainability through conceptual understanding and the appropriate application of research methodologies. Students will also have opportunities to connect theoretical concepts and methodologies with empirical data collected through fieldwork or secondary sources in practical classes. Meanwhile, semester IV students under Credit Framework for Undergraduate Programme (CCFUP), will learn about paleoanthropology, theories of society and culture, and Indian prehistory other than tribes and peasants in India through three major and one minor courses. A key component of Semester VI is the dissertation, which builds on training provided in earlier semesters. Through this project, students learn to identify social issues, formulate research questions, collect first-hand data, and interpret findings. They also develop practical skills in applying anthropology to areas such as genetics, forensics, food and nutrition, and more through Core papers, Discipline-Specific Electives (DSE), and SEC courses.

In summary, the B.Sc. (Honors) in Anthropology program combines conceptual knowledge with hands-on practical training to provide a holistic understanding of humanity across time and space. The program interprets human existence in terms of biological evolution, variation, and the interconnected aspects of society and culture, using methods such as holism, comparative analysis, and participant observation. It also cultivates skills essential for studying mankind using anthropological knowledge. In today's world, anthropology's academic and applied perspectives are increasingly recognized for their versatility and relevance. Graduates of anthropology programs have diverse career opportunities. They can serve as officials or fieldworkers in development agencies, consultants in government and non-government projects, or experts in national policies, tourism, management, health, sports, sustainability, and resource management. They may work as social workers, educators, researchers, or specialists in forensic investigations, prehistoric studies, genetics counseling, demography, and other fields. The program thus equips students to contribute meaningfully to various domains while advancing their understanding of human life in all its complexity.

Course Outcome (CO)
Department of Bengali
Government General Degree College, Singur

SEMESTER 1 (NEP)

Sl. No.	Name of The Programme	Year of Introduction	Core Course	Course Outcome
1	B.A. 4 year Degree with major Bengali under NEP	2023-24	Major 1 Primary concept of Literature	1.1 The students come to know about the Language and Literature of Modern Indian time. 1.2 The students learn about some representative literary genres and works of this time.
			SEC-1 Bengali Grammar	In this course the students will revise their ideas which they have been taught in their early classes on Bengali Grammar. It is also hoped that they will develop their basic skill of writing through their knowledge of grammar.
			Minor 1 Primary concept of Literature	1.1 The students come to know about the Language and Literature of Modern Indian time. 1.2 The students learn about some representative literary genres and works of this time.
			MDC 1 Primary concept of Literature	1.1 The students come to know about the Language and Literature of Modern Indian time. 1.2 The students learn about some representative literary genres and works of this time.
			AECC 1	As this course is

			Modern Indian Language (MIL)	<p>compulsory for students of all disciplines, so a concise collection of works showcasing the various aspects of Bengali language and literature is assembled here for their benefit.</p> <p>This course consists of some essays of modern times, Tagore's poems and short stories and helps to develop the writing skills of the students.</p>
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SEMESTER 2

Sl. No.	Name of The Programme	Year of Introduction	Core Course	Course Outcome
	B.A. 4 year Degree with major Bengali under NEP	2023-24	Major 2 History of Bengali Literature (Old and Medieval Age)	<p>1.1 The students come to know about the Language and Literature of Old and Medieval ages.</p> <p>1.2 The students learn about some representative literary genres and works of this time.</p>
			Minor 2 History of Bengali Literature (Old and Medieval Age)	<p>1.1 The students come to know about the Language and Literature of Old and Medieval ages.</p> <p>1.2 The students learn about some representative literary genres and works of this time.</p>
			MDC 2 Short stories, Novel	<p>Through the course, the students will be able to understand the different aspects of the new era as they are reflected in the short stories.</p> <p>Through this course the students will try to get acquainted with the complexities of the modern times, the conflict of old and new,</p>

				the position of women in Bengali family life, thoughts about environment and various tendencies of human struggle, etc. through the creations of two eminent novelists of Bengali literature:
			SEC 2 Skill Enhancement	This course will provide value based and skill based knowledge, theoretical as well as practical knowledge to provide students with life skills in the hands-on mode to increase their employability.

			CC 5 History of Bengali Literature(1801- 1950)	Through the course students will learn about the features of Nineteenth and early Twentieth century Bengali Literature.
			CC 6 Linguistics	This Programme is deals with the linguistic principles, methods and practices of the Bengali Language. To give students an idea of the linguistics features of Bengali language with the help of literary patterns at every stage of emergence and development of the Bengali language from ancient Indo-Aryan language to modern Indo-Aryan language.
			CC 7 Bengali Poetry of Nineteen Century	In the 3 rd semester, students will study the texts of Nineteenth Century Bengali Poetry, written by two eminent poets of the century – Michael Madhusudan Dutta and Biharilal Chakraborty, with their immortal creations: Meghnadbadh kavya and Saradamangal respectively.
			GE-3 History of Bengali Literature	In this part, students will acquire basic knowledge from the very beginning to the modern time of Bengali Literature with their development and in the perspective of change of literature through the change of ages.
			SEC-1 Bengali Grammar	In this course the students will revise their ideas which they have been taught in their early classes on Bengali Grammar. It is also hoped that they will develop their basic skill of writing through their knowledge of grammar.
			CC 8 Poetry	The first unit of Tagore's selected poems deals with Indian mysticism and the omnipresence of the Almighty. The latter half of this course offers to the students the knowledge of the different forms of modern Bengali poetry written by various major poets of Bengali literature.

			CC 9 Novel	Through this course the students will try to get acquainted with the complexities of the modern times, the conflict of old and new, the position of women in Bengali family life, thoughts about environment and various tendencies of human struggle, etc. through the creations of two eminent novelists of Bengali literature: Bankimchandra Chattopadhyay and Tarashankar Bandyopadhyay.
			CC 10 Drama	The course has been conducted for the purpose of considering the development with time and society with the creation of two major dramatist of nineteenth and twentieth century, Dinabandhu Mitra and Rabindranath Tagore.
			GE-4 Linguistics	This course deals with the linguistic principles, methods and practices of study of Bengali Language. To give the students an idea of the linguistic features of Bengali language with the help of literary patterns at every stage of its emergence and development, from ancient Indo-Aryan language to modern Indo-Aryan language.
			SEC-2 Skill Enhancement	This course will provide value based and skill-based knowledge, theoretical as well as practical knowledge to provide students with life skills in the hands-on mode to increase their employability.
			CC 11 Short stories	Through the course, the students will be able to understand the different aspects of the new era as they are reflected in the short stories.
			CC 12 Essay and Indian Poetics	Society, state affairs, education, science, language, literature, religion, philosophy- Bengali thinkers have expressed their thoughts on various subjects through essays. This shall be studied and analysed meticulously. The course will also offer a glimpse into the Indian poetic thoughts of various rhetoric experts.
			DSE 1 Bengali Poetry and Essays of Nineteenth Century	Nineteenth century was a golden time of poetry and essays in Bengali literature. In this paper students will learn about the celebrated poetry and essays of that golden time.
			DSE 2 Bengali Drama and Fiction of Nineteenth Century	Through this course the students will able to understand the beginning and consequent development of modern Bengali drama with special reference to their tradition. In the latter half of the course, the invention and development of modern Bengali fictional prose in relation to the development of such literature in modern world shall be discussed.
			CC 13 History of Sanskrit and English Literature	Through this course the students will be able to understand the literature of Sanskrit and English Languages and in that light they will be urged to assess Bengali literature using contemporary and comparative views of study.
			CC 14	

			Forms and genres of Literature	<p>Through this course the students will be able to understand the different genres of literature and their development. 23.2</p> <p>In addition to learning about the various forms of literature, students will also be able to gain an idea about the evolution of literature.</p>
			DSE 3 Pre -Independent 20 th Century Bengali Fiction	<p>Through various kinds of fictional prose written in the past half of 20th century, student will get a vivid idea and through knowledge on this topic. They will also get a clear picture of comprehensive development of fiction of Pre – Independent Bengali Literature.</p>
			DSE 4 Writing of Literary Essay and Folklore	<p>Creative writing is the focus on this paper. Student have to write an essay on literary evaluation of Bengali Literature on their own.</p> <p>Beside they have to learn about folklore-folk culture and various kinds of folk literature which were evolved through the ages and becoming an inspiration to the modern Bengali writers. The aim of the course is to trace preserved archaic customs and beliefs to their remote origins in order to trace the mental history of mankind.</p>

**Programme Specific Outcome (PSO) and
Course Outcome (CO)
DEPARTMENT OF SANSKRIT
GOVERNMENT GENERAL DEGREE COLLEGE**

Name of the Programme	Year of Introduction	Core Course	Programme Specific Outcome	Course Outcome
B.A. Sanskrit (Hons.) under CBCS	2017-18	CC-1	This programme aims to introduce the classical Sanskrit literature and develop an introductory knowledge about the history of classical Sanskrit poetry. Demonstrate a fair knowledge about Kālidāsa, Bhāravi, Māgha, Aśvaghōṣa, Bhaṭṭi, Śrīharṣa and their style of writing, poetry talent, creativity.	<p>1.1 Develop an idea about <i>Raghuvamśa</i> (Canto-XIV) of Kālidāsa. To help the students to know about the characteristic features of Sri Rāmacandra, Sītādevī, Lakṣhmaṇa and the cause of abandonment of Sītādevī.</p> <p>1.2 Develop an idea about <i>Kirātārjunīyam</i> (Canto-I) of Bhāravi. To help the students know about the characteristic of Yudhiṣṭhira, Duryodhana and the administrative rules of Duryodhana.</p> <p>2.1</p>

		CC-2	<p>This course aims to get students acquainted with the journey of Sanskrit Literature from Vedic period to Purāṇa along with <i>Rāmāyaṇa</i> and <i>Mahābhārata</i>.</p> <p>Develop brief knowledge about the history of Sanskrit grammar and history of Indian Philosophy.</p>	<p>Demonstrate ideas about the divisions of Veda, the society of Ṛgvedic period, position of women in Vedic period.</p> <p>2.2</p> <p>Generate broad knowledge about the characteristics, divisions and the social, economic, political and literary importance of <i>Rāmāyaṇa</i>, <i>Mahābhārata</i> and <i>Purāṇa</i>.</p> <p>2.3</p> <p>This section deals with basic idea about Indian Philosophy. The Great philosophers and their doctrines are described briefly. It helps to know about the outline of Indian Logic system and its tradition.</p> <p>2.4</p> <p>Described a general outline about the great tradition of Sanskrit Grammar, specially Trimuni-vyākaraṇa..</p>	
		CC-3	<p>This course aims to acquaint Students with classical Sanskrit Prose Literature namely <i>Kādambarī</i> and <i>Rājavāhanacarita</i>.</p> <p>In section B the history Classical Sanskrit Prose Literature and the history of Sanskrit Fables are introduced.</p>	<p>3.1</p> <p>Develop a textual study about <i>Kādambarī</i> and <i>Rājavāhanacarita</i>.</p> <p>3.2</p> <p>Origin and development of prose, importance of prose, history of prose literature.</p> <p>3.2</p>	

				<p>To help the students know about Subandhu , Daṇḍī, Bāṇabhaṭṭa and their works.</p> <p>3.3 Recognize the characteristics, divisions and the socio-economic, political and literary importance of <i>Pañcatantra</i>, <i>Hitopadeśa</i>, <i>Vetālapañcaviṃśati</i>, <i>Siṃhāsanadvātrimśikā</i>, <i>Puruṣaparīkṣā</i>.</p> <p>4.1 To help the students understand about the theory of Dhyānayoga of <i>Srīmadbhagavadgītā</i>.</p> <p>4.2 Develop a brief sense about the meditation process, control of diet and concept of Rajaguṇa.</p> <p>4.3 Evaluate the importance of Gita in our everyday life and demonstrate the idea of self – management as reflected in the <i>Gītā</i>.</p> <p>5.1 Students would be able to learn the inner structure of Sanskrit drama by themselves.</p> <p>5.2</p>	
		CC-4	<p>The objective of this course is to study the Self-Management in <i>Srīmadbhagavadgītā</i>. Students may assimilate their daily life in spiritual path.</p> <p>This course aims to textual study of famous drama Kālidāsa's <i>Abhijñānaśakuntalam</i>. Develop an introductory knowledge about the history of classical Sanskrit drama.</p>		
		CC-5	<p>The objective of this course is to develop the knowledge of Sanskrit Meters and Alamkāra.</p>		

		CC-6	<p>This course helps to textual study of Vāmana's <i>Kāvyaḷamkārasūtravṛtti</i>, Visvanātha's <i>Sāhityadārpaṇa</i> and Gaṅgādāsa's <i>Chandomañjarī</i>.</p>	<p>Get knowledge of the ancient Indian Dramatic system.</p> <p>5.3</p> <p>Idea about the Origin and development of Sanskrit Drama.</p>
		CC-7	<p>Social institutions and Indian Polity have been highlighted in ancient <i>Dharmaśāstra</i> and <i>Arthaśāstra</i> Literature. This course has consisted of some selected portion of <i>Rājadharmaprakaraṇa</i> of <i>Manusamhitā</i> and <i>Dūtapraṇidhi</i> of <i>Kauṭīliya-arthaśāstra</i>.</p> <p>Students will be able to know about the history of Epigraphical study in India.</p> <p>Develop an idea about Śilālekha such as <i>Rudradāmanśilālipi</i>.</p> <p>Students will also be able to read <i>Meharauli</i> Iron Pillar Inscription of <i>Candra</i>.</p> <p>The purpose of this course to expose students to the rich and profound tradition of modern creative writing of Sanskrit in Bengal.</p> <p>This course also helps to the textual study of <i>Cipiṭakacarvaṇa</i> of Srījīva Nyāyatīrtha.</p>	<p>6.1</p> <p>Students would know Sanskrit poetics according to <i>Kāvyaḷamkārasūtravṛtti</i> of Vāmana.</p> <p>6.2</p> <p>Students would be able to know the definitions of meters according to <i>Chandomañjarī</i> of Gaṅgādāsa.</p> <p>6.3</p> <p>Students will be familiar with the definition and explanation of <i>Alamkāra</i>, example of <i>Alamkāra</i> according to <i>Sāhityadārpaṇa</i> (chapter– 10) of Visvanātha Kavirāja.</p> <p>7.1</p> <p>The aim of this course is to make the students acquainted with various aspects of social institutions and Indian polity as propounded in the ancient Sanskrit text such as <i>Manusamhitā</i> and <i>Kauṭīliya-arthaśāstra</i>.</p> <p>7.2</p> <p>Students may compare the administrative</p>

		CC-8	The course is aimed to provide information to students about the spread and influence of Sanskrit literature and culture through the ages in various parts of the world in medieval and modern times.	<p>policy of ancient time in India and current policies.</p> <p>8.1 This course aims to acquaint the student with the Epigraphical journey in Sanskrit, the only reliable source which directly reflects the society, economy, politics, geography, etc. of the time.</p> <p>8.2</p> <p>Students may learn the paleographic styles and languages of Inscriptions.</p> <p>8.3</p> <p>General introduction of ancient Indian chronology.</p> <p>8.4</p> <p>The course also seeks to help students to know the system of Dating the Inscriptions (Chronograms).</p> <p>9.1</p> <p>Students will expose to the rich and profound tradition of modern creative writing in Sanskrit.</p> <p>9.2</p> <p>Get idea about modern Sanskrit writers and poets.</p> <p>10.1</p> <p>Students may know Sanskrit studies across</p>
		CC-9		
		CC-10	<p>The course on Vedic Literature aims to introduce with few R̥gvedic texts. The students will also able to know about Vedic Subjunctive, Vedic Infinitive, Vedic Accent and Padapāṭha. Students will able to read one Upaniṣad, namely, <i>Īsopaniṣad</i>.</p> <p>This course is aimed to provide information to students about the various Grammatical Concepts of the Sūtra, Vārtika, Bhāṣya,</p>	

		CC-11	<p>Karmapravacanīya, Nipāta, Gati, Upasarga, Guṇa, Vṛddhi, Ṭi, Ghi, Nadī, Ghu, Upadhā, Samprasāraṇa.</p> <p>To help the students know in details about ideas of Samāsa-prakaraṇam of <i>Siddhāntakaumudī</i>.</p> <p>This course aims to get the students acquainted with the cardinal principles of the Nyāya-Vaiśeṣika philosophy through the <i>Tarkasaṃgraha</i> and to enable students to handle philosophical text in Sanskrit. To help the students know details idea about Vedānta Philosophy through the <i>Vedāntasāra</i>.</p>	<p>the world. They might know western scholars as well as eastern scholars.</p> <p>11.1</p> <p>Students will familiar with oldest Indian literary heritage. They would know Vedic mantras, their application, Vedic grammar, socio-cultural life.</p> <p>11.2</p> <p>Pronouncing of Saṃhitā-pāṭha and Pada-pāṭha of a mantra is to be taught here.</p> <p>11.3</p> <p>The highest philosophy of life is described in Upaniṣad. Therefore, students may achieve this type of knowledge in this section.</p>	
		CC-12	<p>To help the students understand about case ending and cases (from first case ending and nominative case to fifth case ending and Ablative case as in <i>Siddhāntakaumudī</i>). To help to the students learn about translation, comprehension and write reports.</p>	<p>12.1</p> <p>Students may gain knowledge about types and examples of <i>Samāsa</i>.</p> <p>12.2</p> <p>Formation of words also is to be known.</p>	
		CC-13		<p>13.1</p>	

		CC-14	<p>The objectives of this curriculum are to identify the beauty of drama and introduce classical aspects of development of Indian theatre among the students through the <i>Sāhityadarpaṇa</i> (Chapter - 6) of Āchārya Visvanātha Kavirāja.</p>	<p>This course introduces students with essentials of Indian Philosophy.</p> <p>13.2</p> <p>Students could relate the philosophical theory in their practical life.</p> <p>14.1</p> <p>Students can construct sentences properly. 14.2</p> <p>They can determine etymology of words.</p>	
		DSE-1	<p>The Purpose of this course to know the basic knowledge about the elements of linguistics and also some phonetic laws and tendencies.</p>	<p>DSE-1.1</p> <p>The objectives of this curriculum are to identify the beauty of drama and introduce classical aspects of development of Indian theatre among the students through the <i>Sāhityadarpaṇa</i> (Chapter - 6).</p> <p>DSE-1.2</p> <p>Students would be able to understand the theoretical aspect of acting.</p> <p>DSE-1.3</p> <p>Composition and presentation of a drama which can further enhance one's natural talent.</p>	

			<p>The purpose of this course to know the basic knowledge about <i>Astanga Ayurveda</i> and <i>Taittirīyopaniṣad-Bhrgubally</i></p>		
		DSE-2	<p>This course aims to get the students to know the basic knowledge about Indian logic system according to <i>Nāya-Vaiṣaṣik</i> philosophy.</p>	<p>DSE-2.1 To help the students to know about the elements of linguistics such as Primitive Indo-European, division of Indo-European, Indo-Iranian, Emergence of Indo-Aryan, non-Aryan influence on Sanskrit, Vedic and Classical Sanskrit.</p> <p>2.2 They will be able to know about some phonetic laws and tendencies.</p>	
		DSE-3	<p>The course aims to get the students to know the basics of Sanskrit Grammar including rule of Declensions (a-kārānta, i-kārānta, u-kārānta and ṛ-kārānta Masculine, Feminine and Neuter, Pronouns and Number) and conjugation. Besides, the students will be able to translate sentence and write short paras in Sanskrit and know about Brāhmī Scripts.</p>	<p>DSE-3.1 Students will be able to know about concept of <i>Astanga Ayurveda</i> .</p> <p>3.2 Students will be able to read one <i>Upanisad</i>, namely, <i>Taittirīyopaniṣad-Bhrgubally</i> (1 -3) , where the Food (Anna) has been worshiped as the symbol of Brahma.</p>	
		DSE-4	<p>Political thought in Sanskrit literature</p>	<p>DSE-4.1 To help the students know about the concept of Indian system of Logic (Anumankanda and Upamankanda) through <i>Tarkasamgraha</i> of Annmbhaṭṭa</p>	
				SEC 1.1	

		SEC-1	<p>This programme aims to introduce the classical Sanskrit literature and develop an introductory knowledge about the history of classical Sanskrit poetry. Demonstrate a fair knowledge about Kālidāsa, Bhāravi, Māgha, Aśvaghoṣa, Bhaṭṭi, Śrīharṣa and their style of writing, poetry talent, creativity.</p>	<p>This is an elementary course in Sanskrit Language designed for students who wish to learn Sanskrit from the very beginning.</p> <p>SEC 1.2</p> <p>Students may read various inscriptions written in Brāhmi scripts.</p>
		SEC-2	<p>This course aims to acquaint Students with classical Sanskrit prose literature . Origin and development of prose, important of prose, history of prose literature and the history of fables.</p>	<p>SEC-2.1 To help the students about the political thought in Sanskrit Literature through the <i>Arthasāsthra</i> (<i>Śasanādhikāra</i>) and <i>Mudrārakṣasa</i> (Acts 1 & 2).</p>
		GE-1	<p>This course aims to textual study of famous drama Kālidāsa's <i>Abhijñānaśakuntalam</i>. Develop an introductory knowledge about the history of classical Sanskrit drama.</p>	<p>1.1</p> <p>Develop an idea about <i>Raghuvamśa</i> (Canto-XIV) of Kālidāsa. To help the students to know about the characteristic features of Sri Rāmacandra, Sītādevī, Lakṣhmaṇa and the cause of abandonment of Sītādevī.</p> <p>1.2</p> <p>Develop an idea about <i>Kirātārjunīyam</i> (Canto-</p>

				<p>I) of Bhāravi. To help the students know about the characteristic of Yudhiṣṭhira, Duryodhana and the administrative rules of Duryodhana.</p> <p>GE-2.1</p> <p>To help the students know about Subandhu , Dandin, Banabhatta and their works. Recognize the characteristics, divisions and the socio-economic, political and literary importance of <i>Panchantantra</i> , <i>Hitopadesa</i>, <i>Vetalapancavimsati</i>, <i>sinhasanadvatimsika</i>, <i>purusapariksa</i>. The concepts of history of Sanskrit literature(Historical kavyas)</p> <p>2.2 Develop a broad sense of <i>Dwijaprakriti</i> of Acharya Dandi.</p>
		GE-2	<p>This programme aims to introduce some grammatical Sanjñās, Potential participles, Nominal suffixes (Matvarthīya), Causative verbs, Desiderative verbs, Frequentative verbs, Indeclinable past participles and use of Ktva, Lap pratyaya. Also develop the knowledge about Comprehension.</p>	
		GE-3		<p>GE-3.1</p> <p>Develop an introductory knowledge about the history of classical Sanskrit drama. Develop a broad knowledge about Bhasa, Kalidasa, Sudraka, Visakhadatta, Sriharsha, Bhavabhuti,</p>

		GE-4		<p>Bhattacharayana and their poetry talents.</p> <p>3.2 To help the students know about the <i>Abhiñānaśakuntalam</i> of Kāidasa.</p> <p>GE-4.1 : This course is aimed to provide information to students about the various Grammatical Concept of the Sūtra, Vārtika, Bhāsyā, Karmapravachanīya, Nipāta, Gati, Upasarga, Ghi, Nadī, Ghu, Upadhā, Samprasāraṇa, Potential participles, Nominal suffixes(Matvarthīya), Causative verbs, Desidarative verbs, Frequentative verbs, Indeclinable past participles, Use of Ktva & Lap.</p> <p>4.2 To help the students learn in details about comprehension.</p>
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4-Year Honours in Sanskrit

under Curriculum and Credit Framework for Undergraduate Programmes (CCFUP) as per NEP, 2020 with effect from 2023-24

Name of the Semester	Year of Introduction	Core Course	Course Title	Programme Specific Outcome	Course Outcome
SEM I	2023-24	Major/DS Course (Core) Code: SANS1011	Kāvya Literature	1. Students will have to go through the Sanskrit literature 2. Students will require to recite Sanskrit verses with proper accent, correct pronunciation.	1. Students will have the knowledge of Indian culture and society reflected in the Sanskrit Kāvya of different great Sanskrit poets. 2. They will have the knowledge of poetic excellence reflected in Sanskrit Literature.
		Minor Course Code: SANS1021	Kāvya Literature		Students will be able to read, write and understand the Sanskrit Language.
		Multi/Inter disciplinary Code: SANS1031	Fundamentals of Grammar and its applications	Students will communicate with Sanskrit Language as per requirement or demand. 1. Student will have to translate the Sanskrit verses which have no translation.	1. Students will be able to read and understand Sanskrit Texts ; make sentences in Sanskrit; develop the ideas about grammatical structure of sentences and appraise the poetical
		Ability Enhancement Course (AEC) [L1-1			

SEM II	MIL] Code: SANS 1041	Language Skill	2.Student will have to communicate with Sanskrit language as per requirement or demand.	compositions in Sanskrit; develop the power of speaking in Sanskrit.
	Skill Enhancement Course (SEC) Code: SANS1051	General Grammar	Students will communicate with Sanskrit Language as per requirement or demand.	Students will be able to read, write and understand the Sanskrit Language.
	Major/DS Course (Core) Code: SANS2011	Sanskrit Drama	1.Students will require to analyse the creations of great dramatist like Bhāsa, Aśvaghoṣa, Kālidāsa, Śūdraka, Viśākhadatta, Śrīharṣa, Bhavabhūti, Bhaṭṭanārāyaṇa etc. 2. Students will have to analyse the inner message of the drama Abhijñānaśakuntal am.	Students will acquire basic knowledge of Sanskrit Literature. • The dramatists like Bhāsa, Aśvaghoṣa, Kālidāsa, Śūdraka, Viśākhadatta, Śrīharṣa, Bhavabhūti, Bhaṭṭanārāyaṇa etc. will be known to the students and their creations will be highlighted. • They will be able to know the philosophical outlook of Kalidasa through the drama Abhijñānaśakuntal am. • They will be able to gain
	Minor Course Code: SANS2021	Sanskrit Drama		

		Multi/Interdisciplinary Code: SANS2031	Self-Management in the Gita	Students will be able to prepare a project work on Śrīmadbhagavadgītā. • Students will demonstrate their understanding by participating in group discussion on Śrīmadbhagavadgītā.	different knowledge regarding the then society and culture. have the knowledge of poetic excellence reflected in Sanskrit Literature.
		Skill Enhancement Course (SEC) Code: SANS2051	Critical survey of Sanskrit Literature	<ul style="list-style-type: none"> • Students will have to understand the Indian Society and Culture through the Vedic Literature and the Purāṇa. • Students will have to know the causes of the origin of different types of grammar. • They will have to recognize the ancient grammarians and their creations. • They will have to acquire knowledge of different 	<p>Students will achieve the core message of the Śrīmadbhagavadgītā. • They will understand the theory of applied vedānta as reflected in the Śrīmadbhagavadgītā.</p> <ul style="list-style-type: none"> • Students will be able to understand the culture and society reflected in the Vedic Literature and also in the Purāṇas. • They will be able to know the origin of different types of grammar. • They will be able to understand the philosophical thoughts of different sections of Philosophy.

SEM III		Major/DS Course (Core)	SANS3011 Sanskrit Prose Literature	philosophical thoughts. Students will get an idea about Social structure, Literary style, Grammatik innovation & Story elements.	Readers get good exposure to the prose Literature of different period.
			SANS3012 Indian Epic and Wisdom	Students will penetrate themselves with knowledge domains like History, Geography, Science and Culture of Ancient India.	Students get specific knowledge system that depicted in Epic and Purāṇas.
		Multi/ Interdisciplinary	SANS3031 Health Science & Architecture	<ul style="list-style-type: none"> • Students will know how advanced medical science was in ancient times. • Students will be able to understand the scientific aspects of ancient city planning. 	<ul style="list-style-type: none"> • Can protect health and cure diseases without any side effects. • Understand the importance of maintaining a sound physical and mental health.
		AEC (MIL)	SANS3041 Communicati ve Sanskrit	<ul style="list-style-type: none"> • Sanskrit is introduced as living language. • Use Sanskrit in day to day life. • Make familiar all Indian to Indian 	<ul style="list-style-type: none"> • To get detailed and thorough knowledge of Sanskrit Language and Grammar. • To speak and write

SEM IV		Skill Enhancement Course (SEC)	SANS3051 Scripts & Composition	<p>Knowledge System.</p> <ul style="list-style-type: none"> • Students will develop skills in writing various scripts from ancient times to present day. • Systematic practice of communication in Sanskrit will be encouraged in the classes. • Regular assessment of translation skill of the students should be made by the class teacher/ coordinator of the course. 	<p>Sanskrit with more confidence.</p> <ul style="list-style-type: none"> • To make conversations with others in their day to day life. • Gradually gain proficiency in writing various scripts • Initially predict the meaning of the Sanskrit sentences spoken in the class • Predict the connotation of Sanskrit text without the support of any available translation.
		Major/DS Course (Core)	SANS4011 Ancient Principles for Self-Management	To educate the ethics and value system for making of complete human being.	Indian system of man making mechanism to be explore from the texts
			SANS4012 Poetics and Literary Criticism	Shall enhance the ability of students on rhetoric, aesthetics, poetics and theories of	A student can analyse any piece of creative writing and can trace the rhetoric as well as

				<p>creative writings. This can also equip a student to write perfect and correct creative writing.</p> <p>Shall promote the students to know the indigenous Indian social principals. Knowledge of these texts shall bring progressive ideas for co-existence.</p>	<p>poetic value of the existing creative writing.</p> <ul style="list-style-type: none"> • With the knowledge a co-operative social being has been apprehended. • Know about the role of Saṃskāras in ancient Indian lifestyle. • Estimate modern relevance of Kautilya's ideas on management. • Will know about the ancient educational system
		Minor Course	<p>SANS4013 Indian Social Institution and Polity</p>	<ul style="list-style-type: none"> • To give students knowledge related to nīti and to make them aware of the timelessness of texts related to nīti. • To impart a sense of duty through short and interesting stories. • Moral education can be given to students through Pañcatantra and Hitopadeśa. 	<ul style="list-style-type: none"> • The feeling of public welfare will be awakened among the students. • The character of the students will be developed. • There will be moral development of students. • Students will gain maturity in thinking.
			<p>SANS4021 Ethics & Moral Values</p>		

Programme Specific Outcome (PSO) and Course Outcome (CO)

Department of Computer Science

Government General Degree College Singur

Name of The Programme	Year of Introduction	Core Course	Programme Specific Outcome	Course Outcome
B.Sc. Computer (Hons.) under CBCS	2017-18	CC 1: Programming Fundamentals using C/C++	This programme aims to introduce to the fundamentals of programming using C and C++ languages	<p align="center">1.1</p> <p>Introduces to the basics of Procedure Oriented Programming and Object oriented programming</p> <p align="center">1.2</p> <p>Discusses about various data types, constants, different types of operators</p> <p align="center">1.3</p> <p>Brief introduction about precedence of operators and associativity, loops and conditional statements</p> <p align="center">1.4</p> <p>Extensive use of library and user-defined functions. Use of array with different array related operations. Introduction to multidimensional arrays.</p> <p align="center">1.5</p> <p>Use of structures and Unions</p> <p align="center">1.6</p> <p>Extensive use of pointers within the program.</p> <p align="center">1.7</p> <p>Dynamic Memory allocation using in-built function malloc and calloc.</p> <p align="center">1.8</p> <p>File handling in programs using in-built file related functions. Use of Macros in programs. Difference between macro and function.</p> <p align="center">1.9</p> <p>Use of Class and object in OOP with different access specifiers. Different characteristics of OOP.</p> <p align="center">1.10</p> <p>Brief introduction to polymorphism using function overloading and operator overloading.</p> <p align="center">1.11</p> <p>Necessity of Inheritance in OOP. Significance of exception handling in programs using try-catch statements.</p>

		<p>CC 2: Computer System Architecture</p>	<p>This course is aimed at the basic idea on Computer System architecture</p>	<p>2.1 This unit discusses in some detail the boolean algebra, logic gates and combinational and sequential circuits.</p> <p>2.2 Focuses on representation of numbers; both fixed and floating point with basic operations on them.</p> <p>2.3 This section discusses the basic computer organisation highlighting on bus systems, instruction cycle and interrupt.</p> <p>2.4 This unit deals with different types of CPU architectures like RISC and CISC. Advanced topics like pipelining are introduced.</p> <p>2.5 This unit deals with cache memory, main memory and its related different mapping techniques.</p> <p>2.6 This section discusses different I/O devices and how it is connected with memory. Topics like DMA is also briefly introduced.</p>
		<p>CC 3: Programmin g in Java</p>	<p>This paper is a study on OOP using Java (J2SE) Programming language.</p>	<p>3.1 The first unit is an introduction to the Core JAVA programming language with its history. This section also discusses different operators, keywords, data types, and decision making statements. Also introduces Java methods.</p> <p>3.2 This unit is about the Array class, String class and creation of objects of these classes. Also I/O related classes use is also introduced using Scanner and StreamBuffer..</p> <p>3.3 This unit deals with principles of OOP, use of constructors , method overloading, garbage collections etc.</p> <p>3.4 This unit is about the use of different types of Inheritance, interface. Use of standard Java packages, Wrapper classes is also introduced.</p> <p>3.5 This unit is dedicated to the use of different types of exceptions using built-in exceptions and user created exceptions. Use of Thread and its related different operations is also introduced.</p> <p>3.6</p>

				The unit deals with applets creation with graphics.
		CC 4: Discrete Structure	This program deals with the portion of mathematics that belongs to discrete structures.	<p>4.1</p> <p>The first unit is an introduction to Sets, Relations, and different counting mechanisms like Pigeonhole principle.</p> <p>4.2</p> <p>The second unit deals with the different asymptotic notations for growth of functions.</p> <p>4.3</p> <p>This unit introduces Recurrence relations and Generating functions. Solution methods of recurrence relations is also discussed with the help of recurrence tree and Master theorem.</p> <p>4.4</p> <p>This portion introduces Graph theory. Use of different types of graphs and their applications are discussed. Topics like Planar graphs and Graph colouring are also briefly highlighted.</p> <p>4.5</p> <p>This section discusses about propositional logic and different connectives.</p> <p>4.6</p> <p>The final unit studies the rise of Islamic states in the east after the fall of Roman civilization. It discusses the Caliphate and its overall authority as an embodiment of state</p>
		CC 5: Data Structure	This programme aims to teach students about the different Data Structures available for implementation in programming languages.	<p>5.1</p> <p>The first unit offers to understand the use of array data structures and its implementation.</p> <p>5.2</p> <p>This unit explains the importance of Stack data structure and its applications.</p> <p>5.3</p> <p>This unit deals with linked lists implementation.</p> <p>5.4</p> <p>This unit teaches the implementation of a queue using array and linked lists. Different types of queues are also discussed.</p> <p>5.5</p> <p>This unit introduces recursion and its implementation to programs. Advantages and disadvantages of recursion are also discussed.</p> <p>5.6</p>

			<p>This final unit is introduced to Tree data structure, especially binary tree. Different operations related to tree are also explained in the introduction to threaded binary tree.</p> <p style="text-align: center;">5.7</p> <p>This unit introduces searching operations using linear and binary search. Different sorting operation is also explained like Bubble, Insertion, Shell.</p>
		<p>CC 6: Operating System</p>	<p>This Programme is related to the operating system and its overall working principle.</p> <p style="text-align: center;">6.1</p> <p>The first unit introduces to the basics functions of an operating system and different types of operating systems are also mentioned.</p> <p style="text-align: center;">6.2</p> <p>This unit focuses on the internal organisation of operating systems like kernel, shell.</p> <p style="text-align: center;">6.3</p> <p>This unit extensively discusses processes and different types of processes. Process management is also elaborated with process scheduling algorithms</p> <p style="text-align: center;">6.4</p> <p>This unit discusses different memory management strategies that deal with paging and segmentation.</p> <p style="text-align: center;">6.5</p> <p>This unit briefly discusses the directory structure, file related operations and file allocation methods.</p> <p style="text-align: center;">6.6</p> <p>The final unit deals with protection and security mechanisms of a system.</p>
		<p>CC 7: Computer Networks</p>	<p>This programme deals with the network of computers and its different aspects.</p> <p style="text-align: center;">7.1</p> <p>The first unit offers the introduction to the computer network and its different types. Concept of OSI and TCP/IP model is also briefly discussed in order to understand the layered architecture of computer networks.</p> <p style="text-align: center;">7.2</p> <p>This unit describes the basics of data communications with different types of data like Analog and Digital. Different encoding schemes are also introduced. Use of multiplexing techniques is briefly explained. Use of different types of transmission medium is also highlighted.</p> <p style="text-align: center;">7.3</p> <p>This unit studies the different types of switching like: circuit-switching, packet switching.</p> <p style="text-align: center;">7.4</p> <p>This unit discusses the functions and protocols of the Data link layer. Error detection and correction techniques are discussed with error recovery protocols.</p>

				<p>7.5</p> <p>This unit deals with Medium access protocols like ALOHA & CMSA . Different networking devices are also introduced like repeaters, hubs, switches etc.</p> <p>7.6</p> <p>The unit deals with the different routing algorithms .</p> <p>7.7</p> <p>This unit discusses on Transport layer service like error and flow control. Introduction of 3-way handshake.</p> <p>7.8</p> <p>The final unit gives overview on different protocols: HTTP, FTP, DNS etc.</p>
		CC 8: Design and Analysis of Algorithms	This paper deals with the art of designing algorithms and its analysis	<p>8.1</p> <p>The first unit gives a brief introduction design and analysis of algorithms and its correctness.</p> <p>8.2</p> <p>This unit elaborated the different algorithm design techniques like Divide-and-Conquer, Dynamic programming, Greedy method with popular real life applications.</p> <p>8.3</p> <p>This sections discusses different algorithms on Searching and Sorting techniques.</p> <p>8.4 & 8.5</p> <p>Here, trees like Decision tree, AVL tree and Red-black tree are discussed with applications.</p> <p>8.6</p> <p>This unit gives a brief introduction on amortised analysis techniques.</p> <p>8.7</p> <p>This section is focused on on Graph related algorithms like: BFS, DFS, Dijkstra, Bellman-ford etc.</p> <p>8.8</p> <p>This unit gives stress on String related operations and its corresponding popular algorithm techniques.</p> <p>8.9</p> <p>This final unit is focused on basic cryptographic algorithms like DSA and RSA. Different classes of algorithms are also discussed: P, NP, NP-Hard and NP-Complete.</p>
		CC 9: Software Engineering	This paper studies the basics of software and how it is being made with the sequence of different steps.	<p>9.1</p> <p>This unit introduces the role of software and its characteristics. Software process framework, different process models SMMI is also discussed.</p> <p>9.2</p>

			<p>The second unit deals with the requirement analysis of software. Characteristics and Components of SRS are also discussed.</p> <p>9.3</p> <p>This unit briefly discusses the software project planning and scheduling.</p> <p>9.4</p> <p>This unit focuses on different software risks and risk identification, risk projection and risk refinement.</p> <p>9.5</p> <p>This unit focuses on software quality management</p> <p>9.6</p> <p>This unit deals with DFD design and its different aspects</p> <p>9.7</p> <p>The final portion focuses on the necessity of software testing and different types of testing like: Black-box testing, White box testing etc.</p>
		<p>CC 10: Database Management System</p>	<p>This program is about the Database Management system that is used in everyday life</p> <p>10.1</p> <p>The first unit introduces different data models and database architecture. It Also focuses on data independence.</p> <p>10.2</p> <p>This section explains the use of ER modelling in database design and its different aspects.</p> <p>10.3</p> <p>Next section discusses Relational model and relational calculus and SQL queries.</p> <p>10.4</p> <p>This portion demonstrates the mapping of ER/EER model to relational database. Extensive use of functional dependencies and normalisation is also explained.</p> <p>10.5</p> <p>This section gives a brief introduction to Transaction processing.</p> <p>10.6</p> <p>This section highlights on File organisations and different File Indexing structures.</p>
		<p>CC 11: Internet Technologies</p>	<p>This program deals with the use of different technologies for designing web related elements.</p> <p>11.1</p> <p>The first unit deals with creation of Java objects and use of Array and Array List class.</p> <p>11.2</p>

				<p>This unit helps to learn the use of Javascript to design web pages using available Data types, Operators, functions, control structures etc.</p> <p>11.3 This section deals with the fundamentals of JDBC, connectivity and use of SQL statements.</p> <p>11.4 This section deals with Java Server pages and use of its different components</p> <p>11.5 The final sections introduces Java Beans and its connection to the database.</p>
		CC 12: Theory of Computation	The paper is a theoretical one that highlights the different types language and its grammar and processing it using computer system.	<p>12.1 The first unit delas with the basics of languages and its operations.</p> <p>12.2 The second unit describes the deterministic and non-deterministic finite automata and regular languages and their relationship with finite automata. Introduction to Melay and Moore machines are also given.</p> <p>12.3 Philosophy of history, its meaning and evolution, nature and objective of history, narratives</p> <p>12.4 Next section deals with context-free languages and its different properties, use of pushdown automata. Brief introduction to Pumping Lemma.</p> <p>12.5 The final section deals with Turing machines, Universal Turing machines and different types of languages.</p>
		CC 13: Artificial Intelligence	The program is an introduction to AI for undergraduate students.	<p>13.1 The section deals with the background of AI and its applications with the introduction to intelligent agents and their behaviour with respect to their environment.</p> <p>13.2 This portion deals with different types of problem solving techniques and searching techniques like: heuristic search, A* algorithm etc.</p> <p>13.3</p>

			<p>This section deals with knowledge representation using first order predicate logic. Use of Prolog/LISP is also done.</p> <p>13.4</p> <p>This portion deals with uncertainty and inconsistencies</p> <p>13.5</p> <p>Different parsing techniques are discussed along with context-free and transformational grammars.</p>
		<p>CC 14: Computer Graphics</p>	<p>This program introduces UG students to basics of Computer Graphics and its real life applications</p> <p>14.1</p> <p>The first unit deals with the basic elements of Computer graphics and its applications.</p> <p>14.2</p> <p>This section discusses different hardware devices used in computer graphics.</p> <p>14.3</p> <p>The unit describes the fundamental algorithms to plot basic geometric shapes like straight lines, circle, ellipse etc. Next, polygon filling along with line and polygon clipping is discussed with algorithms. 2D and 3D transformations are explained. Finally this section ends with a brief introduction on different types of projections.</p> <p>14.4</p> <p>This section deals with Geometric modelling of curves and surfaces.</p> <p>14.5</p> <p>This portion describes the techniques of elimination of hidden surfaces.</p> <p>14.6</p> <p>The final section concludes with different shading models. Also a brief description of different colour models and computer animation.</p>
		<p>DSE 1: Microprocessors</p>	<p>This program gives an extensive overview of Intel 8085 microprocessor</p> <p>1.1</p> <p>The first unit gives an overview of Intel 8085 microprocessor's internal architecture and system bus architecture and the interfaces between memory and I/O.</p> <p>1.2</p> <p>The next unit gives description of register organisation, instruction formats and 8085 assembly language programming.</p> <p>1.3</p> <p>This unit deals with memory address decoding, I/O interface and keyboard and display interface, DMA controller etc.</p>

		DSE 2: Numerical Methods	This program gives extensive details on numerical methods used in different realw-orld problems.	<p>2.1 The first unit introduces different types of errors in numerical computations.</p> <p>2.2 The next unit deals with finding roots of algebraic and transcendental equations using methods like Bisection, Newton-Raphson etc.</p> <p>2.3 The next section deals with Gauss-elimination method, Gauss-Jordon method, Gauss Thomas method for tridiagonal systems. Jacobi and Gauss- Seidel methods are also discussed. Later, Cubic spline interpolation methods is also mentioned briefly</p> <p>2.4 This section deals with numerical differentiation with first-order and second order derivatives.</p> <p>2.5 In this section numerical integration is explained with the help of Trapezoidal rule and Simpson's rule. Romberg integration method is also described.</p> <p>2.6 This section highlights numerical methods to solve differential equations using the Euler method and R-K method of 2nd and 4th order..</p>
		DSE 3 Soft Computing	This program an introduction to soft computing, Neural Networks and Genetic algorithms	<p>3.1 The module-I gives an introduction to fuzzy sets and fuzzy logic.</p> <p>3.2 This section deals with fuzzy sets operations and properties of fuzzy sets.Membership functions are also explained along with fuzzy to crisp set conversion. Finally a fuzzy rule based system is introduced.</p> <p>3.3 Module 3 introduces Neural Networks and its different learning models. Different neural network models are also discussed.</p>
		DSE 4 Project Work	This program is to engage students to solve real life problems using computer based approach	
		SEC-1 Programmin g in Python	This program aims to teach theoretical and practical aspects of Python programming	<p>1.1 The first unit deals with the use of programming in problem solving.</p> <p>1.2 This unit deals with different techniques of problem solving with the help of flowchart and algorithms.</p>

				<p>1.3</p> <p>This unit gives an introduction to Python programming.</p> <p>1.4</p> <p>This unit briefs on different keywords, operators, identifiers of python.</p> <p>1.5</p> <p>This unit shows the usage of I/O statements, different control statements and use of functions in Python.</p>
		<p>SEC 2 UNIX/LINUX Programming</p>	<p>This program aims to teach the basic interaction with UNIX/LINUX Operating system with shell programming techniques</p>	<p>2.1</p> <p>This unit gives a brief introduction to the UNIX/LINUX Operating system. Also introduces basic internal and external commands.</p> <p>2.2</p> <p>This unit briefs about file types and different types of users.</p> <p>2.3</p> <p>This portion deals with writing shell programs using system calls, pipes, filters, loops, functions and using different utilities.</p>

Course Outcome (CO)

1. **Literary and Linguistic Competence:** The course is aimed to train students into developing abilities to "close read" and analyze both high and popular literary texts apart from honing their basic communicative reading and writing skills.
2. **Systematic Knowledge of English Literature:** Students acquire a thorough grounding in the various genres of literatures that also include important examples of literatures in translation.
3. **Focus on Contemporary Critical and Theoretical Developments:** The course is designed to make students have a preliminary grasp of contemporary facets of English literary studies with a focus on critical theory that overlap with important areas of other branches of humanities.

Programme Specific Outcome (PSO) and Course Outcome (CO)

Department of History

Government General Degree College, Singur

Name of The Programme	Year of Introduction	Core Course	Programme Specific Outcome	Course Outcome
B.A. History (Hons.) under CBCS	2017-18	CC 1	This programme aims to introduce Indian history to the students by laying out the prehistoric and protohistoric foundations of India as a civilization. It also discusses the patterns of earliest state formation in the subcontinent	<p align="center">1.1</p> <p>Focuses on sources and historical methods that have been deployed to uncover ancient Indian history</p> <p align="center">1.2</p> <p>Discusses the earliest signs of settlements and human cultures found on the subcontinent</p> <p align="center">1.3</p> <p>Detailed and nuanced discussion on the historicity of the Harappan civilization including culture, economy and technology. Its relations with pre-harappan and proto-harappan cultures found in India</p> <p align="center">1.4</p> <p>Covers a large period from the Aryan cultures to the growth of mahajanapadas which focus mostly on the earliest tenets of state formation</p> <p align="center">1.5</p> <p>Discusses the era of the first pan-Indian</p>

				<p>states in history with emphasis on the Mauryas and the Imperial Guptas</p> <p>1.6</p> <p>This unit is a critical analysis of the societal formations and its relation to economy with reference to agriculture, land relations and trade.</p>
		CC 2	<p>This course is aimed at familiarizing students with the larger global context of prehistory and origins of earliest civilization, with special reference to the origins of modern man, their technological innovations of and its impact on human culture.</p>	<p>2.1</p> <p>This unit discusses in some detail the evolution of humans and the beginnings of settled agriculture, with special reference to the Neolithic Revolution</p> <p>2.2</p> <p>Focuses on Mesopotamia as the epitome of Bronze Age culture, including its economy and social stratification</p> <p>2.3</p> <p>The advent of Iron Age in civilized world is analysed with special reference to the nomadic races of the Steppe region, who introduced techniques of crafting the metal to the sedentary humans.</p> <p>2.4</p> <p>This unit deals with Iron Age empires in</p>

				<p>Greece, mostly during the Archaic and the Classical age, with emphasis on the features of functions of the Polis.</p> <p>2.5</p> <p>This unit is a detailed study of The Peloponnesian War between Athens and Sparta, the war that shaped not only the course of Hellenic Greece but also the writing of history in general</p> <p>2.6</p> <p>The final unit deals with Greek culture in general during the pre-Hellenic age, with special focus on the philosophers and dramatists.</p>
		CC 3	<p>This paper is a study of Indian state formation during the middle ages. It aspires to introduce students to the complex processes and factors involved in the establishment of state structure at an age when multiple political powers were engaged in constant struggle for supremacy.</p>	<p>3.1</p> <p>The first unit is a discussion of different sources and types of historical data on medieval India. It also deals with the historiographic debate on Indian Feudalism</p> <p>3.2</p> <p>This unit is an empirical assessment of the many states that rose during the medieval period across India, with special focus on the</p>

				<p>variations of kingship.</p> <p>3.3</p> <p>This unit studies the new trends in state formation and societal reorganization that was affected by the arrival of Islam in India, with special reference to the Arab invasion of Sindh and the Turkish adventures especially that of Mahmud of Gazni.</p> <p>3.4</p> <p>This unit is a critical analysis of the societal formations of medieval India and its relation to economy with reference to agriculture</p> <p>3.5</p> <p>This unit is dedicated to the growth of trading network in India, along with a process of urbanization, that connected India to the medieval world and economy</p> <p>3.6</p> <p>The final unit is cultural in general, studying various religious traditions including the sufi and bhakti movements, and their relation to the medieval socio-political structure in centre and in</p>
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				regions.
				4.1
		CC 4	<p>This programme deals mostly with the cultural, legal and political foundations of the Roman Empire, especially the Republic era, and its connections to Medieval Europe which followed the fall of the Empire. This programme seeks to make students aware of the essence of medieval European history</p>	<p>The first unit is an overall assessment of the Roman republican constitution, law, economy and political trends, with special reference to the agrarian reformations that brought about the downfall of the republic</p>
				4.2
				<p>The second unit deals with philosophical and cultural trends of the period.</p>
				4.3
				<p>This unit traces the transformation of the republic into principate, with special reference to the civil war between Caesar and Pompey</p>
				4.4
				<p>Discusses Europe just after the fall of the Roman empire, focuses on the origins and growth of feudalism</p>
				4.5
				<p>Discusses the growth and expansion of Christianity and its relations to medieval state formation in Europe</p>
				4.6

				<p>The final unit studies the rise of Islamic states in the east after the fall of Roman civilization. It discusses the Caliphate and its overall authority as an embodiment of state</p>
		CC 5	<p>This programme aims to instruct students in Indian medieval history, with primary focus on the Delhi Sultanate as the central state in medieval India. The programme also include a study of the regional powers during this time</p>	<p>5.1</p> <p>The first unit offers to understand the sources as well as the historiography, both Indian and Persian, that is imperative in the reconstruction of Delhi Sultanate</p> <p>5.2</p> <p>This unit explains the importance of the Sultanate in Indian historical progression, both as a political specimen as well as from historiographic perspective. It traces the history of the Sultanate during its heyday, from Iltutmish to the Lodis, focusing on the evolution of kingship</p> <p>5.3</p> <p>This unit studies political structures and states contemporary to the Sultanate, including the Vijayanagara and Bahamani empires.</p> <p>5.4</p> <p>This unit the first of</p>

				<p>the two units dedicated to a study of the economic characteristics of the Sultanate era, with special focus on the Iqta</p> <p>5.5</p> <p>The second unit on the economy discusses everything other than landed economic structures, including trade, growth of towns and market regulations</p> <p>5.6</p> <p>The final unit is cultural in general, studying various religious traditions including the sufi and bhakti movements, and their relation to the medieval socio-political structure in centre and in regions</p>
		CC 6	<p>This Programme is related to the advent of modernity in Europe. By studying the cultural rejuvenation in the 14th century, it traces revolutionary changes in economy, polity and society of the continent in general and the creation of a global order in mercantilism augured by Absolutist states</p>	<p>6.1</p> <p>The first unit is specific in scope and deals with the Marxist historiographic debate on the transition from feudalism to capitalism</p> <p>6.2</p> <p>This unit focuses on the rise of a global order augmented by colonialist expansions and related developments in maritime economy</p>

				<p>6.3</p> <p>Discusses the cultural phenomenon of the Renaissance</p> <p>6.4</p> <p>Discusses the Reformation movements in Early Modern Europe</p> <p>6.5</p> <p>This unit traces the evolution of the mercantilist economy with special reference to the Price Revolution</p> <p>6.6</p> <p>The final unit studies the rise of Absolutist States in England, France and Spain</p>
		CC 7	<p>This programme is mostly empirical and instructs the students into the Mughal state, an advanced form of statecraft in pre-colonial world.</p>	<p>7.1</p> <p>The first unit offers to understand the sources as well as the historiography, both Indian and Persian, that is imperative in the reconstruction of Mughal Empire</p> <p>7.2</p> <p>This unit discusses the initial establishment of the Mughal state by the adventures of Babur and Humayun</p> <p>7.3</p> <p>This unit studies the</p>

				<p>consolidation of the Mughal empire under Akbar, his political ideology, religious reforms and the maturing of the Mughal state under Jahangir and Shah Jahan</p> <p>7.4</p> <p>This unit discusses the crisis of the Empire during the reign of Aurungzeb, the subsequent decay of the military fiscal system.</p> <p>7.5</p> <p>Study of Mughal art, architecture and painting. Their context to state-building</p> <p>7.6</p> <p>The final unit studies the rise of regional powers, with special reference to Bengal, Awadh and Marathas. It also studies the historical circumstances which led to the rise of the East India Company's political power.</p>
		CC 8	<p>This paper deals with post-Enlightenment Europe and introduces students with the rise of modernity, economic, political and intellectual</p>	<p>8.1</p> <p>The first unit studies the historiographic debate around the 17th century crisis</p> <p>8.2</p> <p>focuses on the English Revolution</p>

				<p>8.3</p> <p>Studies the scientific revolution and its impact on modernity</p> <p>8.4</p> <p>Discusses the growth of mercantilism as a global economic order</p> <p>8.5</p> <p>Discusses pre-revolution Europe in its entire political dimension, including the rise of parliamentary politics</p> <p>8.6</p> <p>Traces in general the characteristics of the pre-Industrial society</p>
		CC 9	<p>This paper studies the History of India from 1757 to 1857 and follows the origins, growth and termination of the British East India Company era.</p>	<p>9.1</p> <p>Discusses the foundations of colonial rule from the military conflicts between different companies to the battle of Buxar. Also traces the consolidation of the East India Company's regime through wars with various other regional contenders.</p> <p>9.2</p> <p>Focuses primarily on the constitutional</p>

				<p>legitimization of the colonial rule in India through then promulgation of various charters and acts.</p> <p>9.3</p> <p>Economic changes under colonial rule and its impact of social structure of India with special reference to the land revenue systems</p> <p>9.4</p> <p>The debate on de-industrialization and Drain of Wealth leading to the financial nature of colonial India</p> <p>9.5</p> <p>Re-appraisal of socio-cultural/intellectual resurgence in Bengal led by the middle class intelligentsia of the 19th century</p> <p>9.6</p> <p>An assessment of the initial resistance against British rule in the form of peasant and tribal movements of the 19th century</p>
		CC 10	This paper follows the previous one from the Mutiny to Independence and covers wide array of discourses from the birth of Indian nationalism to the rise of communal political identities	<p>10.1</p> <p>Follows the first decades of Crown's Rule after the Sepoy Mutiny including multiple resistance movements as well as changes in ruling ideology</p>

			leading to liberty and partition.	<p>10.2</p> <p>Covers a large period from the origin of political associations in India to the seeds of communal differences, including the first partition of Bengal and the Swadesi movement</p> <p>10.3</p> <p>From 1916 to 1935, discusses the era when Gandhi and his political philosophy became the mainstream congress ideology and dominated other strands of thought and action</p> <p>10.4</p> <p>Follows the empirical history from 1935 to 1947 and covers all the major developments from the Govt. of India Act 1935 to the partition and independence of the nation</p> <p>10.5</p> <p>Gives separate attention to communal politics in Gandhian era, the rise of Jinnah, and the subsequent demand for Pakistan which led to partition</p> <p>10.6</p> <p>A discussion on the identity of India</p>
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				Post-independence. Covers Nehruvian foreign policy, operation of parliamentary democracy and economic ideas.
		CC 11	The history of Europe from the French Revolution to the unification of Germany. Follows the rise and evolution of nationalism and conflict in the modern age.	<p>11.1</p> <p>The origins, character and reasons of the French Revolution, its course and outcome till the Jacobian republic and the reign of terror</p> <p>11.2</p> <p>The age of Napoleon Bonaparte, his rise to power, dominance over Europe, the failure of the continental system and his downfall.</p> <p>11.3</p> <p>The revolution continued after Napoleon, Metternich's will to impose status quo, failure and subsequent re-organization of the continent after 1848</p> <p>11.4</p> <p>A complete assessment of Industrialization, its impact and changes that it brought in Europe's historical course</p> <p>11.5</p> <p>The Unifications of</p>

				Germany and Italy 11.6 Prelude to the first world war as the Balkan problem intensifies and gives rise to intercontinental power struggle
		CC 12	The paper is theoretical in scope and addresses the historiographical and philosophical enquiries that surrounds the cultivation of the discipline	12.1 Temporality in history 12.2 The types and uses of different sources 12.3 Philosophy of history, its meaning and evolution, nature and objective of history, narratives 12.4 The different schools of Indian and western historiography 12.5 Relationships between history and other disciplines 12.6 Methodology and research in History
		CC 13	The History of Modern Europe during the ages of the two world wars. Discusses the evolution of warfare, international conflict, global geo-	13.1 The growth of diplomacy under Bismarck and its impact on European politics and geography, leading to the first world

			<p>politics and the maturity of International Relations</p>	<p>war</p> <p>13.2</p> <p>The first world war in historical perspective, its impact on the world, the treaty of Versailles and further seeds of discontent. The Russian revolution and a counter world-order in the making</p> <p>13.3</p> <p>Discontent leading to extremist regimes in the forms of Nazi Germany and Soviet Russia, two opposing world orders and the desire for domination leading to the second world war, fed by economic tension</p> <p>13.4</p> <p>The Nazi regime in Germany, fascists in Italy, aggressive foreign policies and the outbreak of World war 2</p> <p>13.5</p> <p>Devastation of the 2nd world war</p> <p>13.6</p> <p>The United Nations Organization in detail</p>
		CC 14	<p>Understanding the making of the Contemporary World by studying the forces which</p>	<p>14.1</p> <p>A history of the Cold War, the origin of the bipolar</p>

			<p>conflicted and collaborated to create the world that we live in today</p>	<p>world order, with special reference to the activities of the USA and USSR in global politics</p> <p>14.2</p> <p>Decolonization and the Third World, with special mention of the Non Alignment Movement</p> <p>14.3</p> <p>The Détente of the 1960s, re-escalation of Cold War, impact on Global Politics in the 1970s</p> <p>14.4</p> <p>Globalization as a bi-product of cold war politics, liberalism, neo-liberalism and Information revolution</p> <p>14.5</p> <p>The birth of consumerism in global culture, rise of global media.</p> <p>14.6</p> <p>The collapse of soviet and the end of Cold War in the 1990s. Uni-polarism and threats of Terrorism</p>
		<p>DSE 1 Life and Culture in Pre-Colonial Bengal</p>	<p>This program introduces students to the historical geography, culture and politics of Bengal till the coming of the</p>	<p>1.1</p> <p>The historical geography of Bengal, its different names in the ancient sources, locations of</p>

			British in brief outline	<p>importance</p> <p>1.2</p> <p>The demography and ethnicity of Bengal, culture in general since ancient times</p> <p>1.3</p> <p>Political history in two parts, upto Gupta period and the rise of regional Bengal after the guptas till the Nawabs in the post-Mughal era</p> <p>1.4</p> <p>Agriculture, trade, arts and crafts, economic features of Bengal</p> <p>1.5</p> <p>Religious history and trends of Bengal, Buddhism, Vaishnavism, Sufism, monastic architectures, art and religious fervour</p> <p>1.6</p> <p>Literature of Ancient and Medieval Bengal. the main texts, their literary characteristics, folk traditions.</p>
		DSE 2 Life and Culture in Colonial Bengal	This program continues the discussion on Bengal from 1757 to modern times.	<p>2.1</p> <p>Discusses the foundations of colonial rule from the military conflicts between different companies</p>

				<p>to the battle of Buxar. Also traces the consolidation of the East India Company's regime through wars with various other regional contenders. Economic changes under colonial rule and its impact of social structure of India with special reference to the land revenue systems</p> <p>2.2</p> <p>Discusses the processes of colonial urbanization in Bengal with special focus on Calcutta, the village culture and resistance against colonialism through Farazi and Wahabi movements</p> <p>2.3</p> <p>The debate on de-industrialization and Drain of Wealth leading to the financial nature of colonial India. Re-appraisal of socio-cultural/intellectual resurgence in Bengal led by the middle class intelligentsia of the 19th century</p> <p>2.4</p> <p>The trends in popular and high culture of Bengal in the 19th century, literature, press, popular religions,</p>
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				<p>science technology and medicine</p> <p>2.5</p> <p>The impact of nationalism and Gandhian politics in Bengal, rise of extremism and communalism. Mass movements in Bengal</p> <p>2.6</p> <p>Nationalist trends, writings and nationalist figures in Bengal in the 20th century, with special focus on Rabindranath Tagore. Socio-cultural impact of partition</p>
		<p>DSE 3 History of Modern South East Asia</p>	<p>This program focuses on the history of south east asia, especially China and Japan during 1840-1919.</p>	<p>3.1</p> <p>A background on pre-colonial China, its polity, economy, culture</p> <p>3.2</p> <p>The Opium War and the beginning of colonialism in China</p> <p>3.3</p> <p>The resistance against colonialism through revolutions, especially Taiping, Buxar rebellions. The revolution of 1911 led by San yat sen and the overthrow of Chinese Monarchy.</p> <p>3.4</p>

				<p>The Shogunate system in Japan, its structure and economy and crisis during the 19th century. The coming of the Europeans in Japan</p> <p>3.5</p> <p>The overthrow of the Shogunate and the Meiji Restoration.</p> <p>3.6</p> <p>The remarkable swiftness of Japanese modernization, the changes in polity, economy and society. Emergence of Japan as a global power. Contests with Russia over Asian supremacy</p>
		DSE 4 History of China and Japan	This program follows the history of China and Japan till the end of second world war	<p>4.1</p> <p>The rise of nationalist power in China under Yuan-Shi-Kai. The May 4th revolution and the fall of Yuan</p> <p>4.2</p> <p>The Kuomintang nationalism in China, its conflicts with the emerging communist party of China under Mao-ze Dong.</p> <p>4.3</p> <p>The CCP, its ideology, functions, and the subsequent victory over Kuomintang, establishment of the</p>

				<p>People's Republic of China</p> <p>4.4</p> <p>Japan in 20th Century, especially after the 1st world war, her desire for pan-Asian dominance and the economic changes propelling such desire</p> <p>4.5</p> <p>Japan's ambition on Chinese territory leading to Twenty One Demands and the subsequent capture of Manchuria, the failure of parliamentary democracy and the rise of militant Japan in the 1930s</p> <p>4.6</p> <p>Japans' bid for supremacy in 2nd world war and defeat. The dropping of the atomic bombs and destruction of Asian ideal.</p>
		<p>SEC-1 Archives and Museums in India</p>	<p>This program aims to introduce students to the practice of History beyond classrooms. It focuses on the functioning of archives and museums to show the students how history can be perceived and written</p>	<p>1.1</p> <p>Definitions and History of development of Museums in India</p> <p>1.2</p> <p>The types of archives and museums with their various functions, practical and theoretical, documentation,</p>

				<p>digitization, display, curatorial care etc.</p> <p>1.3</p> <p>Shows how exhibitions are held in Museums</p> <p>1.4</p> <p>Discusses the role of these institutions in spreading historical consciousness</p>
		<p>SEC 2 Art Appreciation: An Understanding to Indian Art</p>	<p>This program aims to introduce students to the various forms of arts and architecture in India since ancient times and their relation to historical processes in general</p>	<p>2.1</p> <p>Indian art from 600 BCE to 600 CE, mainly Buddhist forms of arts, stupas, caves, temple arts</p> <p>2.2</p> <p>Art from 600 to 1200 CE, the development of temple architecture, Nagara, Dravida styles. Iconography</p> <p>2.3</p> <p>Art and architecture during medieval India, mausoleums, mosques, temples, palaces in their regional variations during Sultanate and Mughal era</p> <p>2.4</p> <p>Modern and contemporary Indian art and architecture during the colonial period, major artists and their works</p>

Course Outcome

MAJOR COURSES

Course Code: MATH1011

Course Name: Calculus, Geometry & Vector Calculus

On completion of the course, the student should have the following learning outcomes defined in terms of knowledge, skills and general competence:

Knowledge: The students would gain knowledge about

- higher order derivatives and its applications, concavity of curves, asymptotes and curve tracing techniques.
- reduction formula for integration of functions like $\sin nx$, $\sin m x \sin n x$ etc., area of surface of revolution, parametric curves etc.
- classification of conics and conicoids, polar equation of conics.
- vector valued functions and vector calculus.

Skills: The students would be able to

- parametrize curves, sketch functions and plot them.
- visualize standard quadratic surfaces like cone, ellipsoid etc.
- apply calculus on vector valued functions.
- find gradient of scalar functions, divergence and curl of vector valued functions.

General competence: The students would gain

- a general idea of advance calculus and its applications.
- the idea of solving complex problems using vector calculus and geometry.
- analytical and reasoning skills, which improve their thinking power and enhance their problem-solving ability.

Course Code: MATH2011
Course Name: Introductory Algebra and Number Theory

On completion of the course, the student should have the following learning outcomes defined in terms of knowledge, skills and general competence:

Knowledge: The students would gain knowledge about

- number theory which has wide applicability in advanced mathematics and also in various practical field, e.g., cryptography, computer science and many competitive exams.
- complex number and its properties which are equally indispensable tools for advanced studies and different practical field.
- a basic introduction to modern algebra which has wide applicability in different branch of sciences.

Skills: The students would be able to

- access and also generate different tricky examples and counter examples involving integers during their advanced study of ring theory and field theory.
- simplify a mathematical problem in different field of science using complex number.
- motivate themselves for future research after getting the glimpse of gateway of modern algebra from classical algebra and number theory and relate use of group, ring and field in different field of science.

General competence: The students would gain

- descriptive idea of various properties of complex number.
- knowledge of richness in number theory.
- understanding in basic concepts of group, ring and field.
- expertise in solving many tricky problems in number theory, complex numbers.

Course Code: MATH3011
Course Name: Real Analysis I

On completion of the course, the student should have the following learning outcomes defined in terms of knowledge, skills and general competence:

Knowledge: The students would gain knowledge about

- Order property, Archimedean property, completeness property of \mathbb{R} .
- Countable set, uncountable set, limit point, interior point, open set, closed set, compact set in \mathbb{R} .
- Sequences, subsequence and series of real numbers.
- Limit, continuity and uniform continuity of real valued functions defined on subsets of \mathbb{R} including their interrelationship.

Skills: The students would be able to

- Characterize subsets of \mathbb{R} which are open, closed, countable, uncountable, compact.
- Characterize sequences and subsequences in \mathbb{R} which are convergent or divergent.
- Determine which infinite series of real numbers is convergent and which is not by using various test in their course.
- Calculate limit of real valued functions defined on subsets of \mathbb{R} .
- Characterize real valued functions defined on subsets of \mathbb{R} which are discontinuous, which continuous and which are uniformly continuous.

General Competence: The students would gain

- Some fundamental concepts of real analysis which help them to learn all the branches of mathematics smoothly.
- Analytical and reasoning skills, which improve their thinking power.

Course Code: MATH3012
Course Name: Linear Algebra

On completion of the course, the student should have the following learning outcomes defined in terms of knowledge, skills and general competence. Linear algebra is a basic course in almost all branches of science.

Knowledge: The students would gain knowledge about

- vector space and its dimension.
- linear transformation, transpose of a linear transformation and their matrix representation.
- system of linear equations and various methods to solve them.
- eigenvalues, eigenvectors, diagonalizability, canonical forms of a matrix.
- inner product space, orthogonalization process, normal and self-adjoint operators.

Skills: The students would be able to

- compute a basis and dimension of a vector space.
- compute matrix representation of matrix and its transpose.
- compute the characteristic polynomial, minimal polynomial, eigen value, eigen vector of a matrix as well as of a linear operator and use them in the basic diagonalization result.
- find canonical forms of a matrix.
- compute orthogonality of vectors in an inner product and applying Gram–Schmidt orthogonalization process they will obtain an orthonormal basis of an inner product space.
- solve system of linear equations using Gaussian elimination method and matrix inversion method.

General competence: The students would gain

- fundamental concepts of vector space, linear transformation, matrix representation of a linear transformation, solution methods of a system of equations, canonical forms of a matrix, diagonalization, orthogonalization, which will be useful for further studies in every branch of mathematics.
- analytical and reasoning skills, which improve their thinking power.

Course Code: MATH4011
Course Name: Metric Spaces

Students will be able to understand and appreciate the concept of a metric space by recognizing suitable examples. Students will be familiar with the fundamental notions of continuity, convergence and properties of completeness and compactness in a metric space.

Knowledge: Students will

- be able to understand the distance function over the Euclidean spaces, space of all real valued continuous functions, sequence spaces etc.
- be able to learn the geometrical meaning of each of the metric properties.
- be able to classify the notion of open and closed balls for a given metric space.
- get exposure to the concept of continuity of functions.
- learn the convergence of a sequence, the Cauchyness of a sequence in a given metric space.
- get exposure to the general notion of compactness property on a metric space and its analogue results in classical real and complex analysis.

Skills: Students would be

- able to study the metric properties on a given metric space.
- able to study the topological properties of a metric space.
- motivated to work out various problems independently on the allied topics.
- influenced to study the analogue properties of a metric space in the space of real and complex numbers.

General Competence:

- It helps the students to read and to learn further topics in analysis.
- It motivates the students to make easier at understanding the use of functional analysis in applied problems.

Course Code: MATH4012
Course Name: Group Theory & Ring Theory

On completion of the course, the student should have the following learning outcomes defined in terms of knowledge, skills and general competence:

Knowledge: The students would gain knowledge about

- group theory which is enough for a student to appear at different competitive examination within India and abroad.
- ring theory which almost covers its basic areas that helps students to grasp advanced areas related to this subject by themselves.
- its wide applicability in different branch of sciences.

Skills: The students would be able to

- understand the beauty of structures and structure preserving maps.
- simplify a mathematical problem in different field of science using group and ring theory.
- initiate tricks of action of groups on a set or set with one or more structures to crack intricate problems.
- identify nature of a groups, specifically finite or finitely generated abelian groups.

General competence: The students would gain

- descriptive idea of group and ring theory.
- to properly analyze algebraic properties of ring of integers.
- knowledge of loss and gain in generalizing the algebraic concept of integers.
- of understanding categorical similarities of structures and their commonness in properties.
- expertized in solving many tricky problems in group and ring theory.

Course Code: MATH4013
Course Name: Multivariate Calculus & Tensor Calculus

On completion of the course, the student should have the following learning outcomes defined in terms of knowledge, skills and general competence:

Knowledge: The students would gain knowledge about

- functions of several variables, their calculus
- extrema of functions of n variables
- multiple integrals and their properties
- tensor calculus

Skills: The students would be able to

- evaluate double limit, repeated limit etc. of functions of several variables,
- examine continuity of functions of several variables
- find partial and total derivatives of multivariate functions
- find extreme values of such functions, if they exist
- calculate multiple integral of multivariate functions over certain domains, and so to find surface area and volumes of various shapes and bodies
- calculate various problems on tensor algebra and tensor calculus

General competence: The students would gain

- general idea on limit, continuity, derivatives, integration of multivariate functions and general idea of tensors
- analytical and computing skills, which improve their visual and calculating powers.

MINOR COURSES

Course Code: MATH1021

Course Name: Calculus, Geometry & Vector Calculus

On completion of the course, the student should have the following learning outcomes defined in terms of knowledge, skills and general competence:

Knowledge: The students would gain knowledge about

- higher order derivatives and its applications, concavity of curves, asymptotes and curve tracing techniques.
- reduction formula for integration of functions like $\sin nx$, $\sin m x \sin n x$ etc., area of surface of revolution, parametric curves etc.
- classification of conics and conicoids, polar equation of conics.
- vector valued functions and vector calculus.

Skills: The students would be able to

- parametrize curves, sketch functions and plot them.
- visualize standard quadratic surfaces like cone, ellipsoid etc.
- apply calculus on vector valued functions.
- find gradient of scalar functions, divergence and curl of vector valued functions.

General competence: The students would gain

- a general idea of advance calculus and its applications.
- the idea of solving complex problems using vector calculus and geometry.
- analytical and reasoning skills, which improve their thinking power and enhance their problem-solving ability.

Course Code: MATH2021
Course Name: Introductory Algebra and Number Theory

On completion of the course, the student should have the following learning outcomes defined in terms of knowledge, skills and general competence:

Knowledge: The students would gain knowledge about

- number theory which has wide applicability in advanced mathematics and also in various practical field, e.g., cryptography, computer science and many competitive exams.
- complex number and its properties which are equally indispensable tools for advanced studies and different practical field.
- a basic introduction to modern algebra which has wide applicability in different branch of sciences.

Skills: The students would be able to

- access and also generate different tricky examples and counter examples involving integers during their advanced study of ring theory and field theory.
- simplify a mathematical problem in different field of science using complex number.
- motivate themselves for future research after getting the glimpse of gateway of modern algebra from classical algebra and number theory and relate use of group, ring and field in different field of science.

General competence: The students would gain

- descriptive idea of various properties of complex number.
- knowledge of richness in number theory.
- understanding in basic concepts of group, ring and field.
- expertise in solving many tricky problems in number theory, complex numbers.

Course Code: MATH4021
Course Name: Ordinary Differential Equations

On completion of the course, the student should have the following learning outcomes defined in terms of knowledge, skills and general competence:

Knowledge: The students would gain knowledge about

- qualitative analysis of the ordinary differential equations.
- use of ordinary differential equations in different areas of mathematics.

Skills: The students would be able to

- apply the solution techniques of the ordinary differential equations in different physical problems.
- solve the ordinary differential equations in different methods.
- apply the ordinary differential equations in different areas.

General competence: The students would gain

- general idea about the solution techniques of ordinary differential equations.
- the distinct features of various types of ordinary differential equations.
- experience to solve differential equations using analytical approach.

MULTIDISCIPLINARY COURSES

Course Code: MATH1031

Course Name: Trigonometry and Coordinate Geometry

On completion of the course, the student should have the following learning outcomes defined in terms of knowledge, skills and general competence:

Knowledge: The students would gain knowledge about

- Trigonometric Functions .
- Straight Lines .
- Conic Sections .
- Introduction to Three - dimensional Geometry.

Skills: The students would be able to

- solve the problem of Trigonometric Functions .
- solve the problem of Straight Lines.
- solve the problem of Conic Sections .
- solve the problem of Three - dimensional Geometry .

General competence: The students would gain

- general idea of Trigonometric Functions, Straight Lines, Conic Sections and Introduction to Three - dimensional Geometry.
- analytical and reasoning skills, which improve their thinking power.

Course Code: MATH2031
Course Name: Algebra

On completion of the course, the student should have the following learning outcomes defined in terms of knowledge, skills and general competence:

Knowledge: The students would gain knowledge about

- Principle of Mathematical Induction .
- Complex Numbers and Quadratic Equations .
- Linear Inequality, Permutation and Combinations .
- Binomial Theorem.
- Sequence and Series .
- Matrices and Determinants

Skills: The students would be able to

- solve the problem by using Principle of Mathematical Induction .
- solve the problem of Complex Numbers and Quadratic Equations.
- solve Linear Inequality, Permutation and Combinations .
- calculate Binomial Theorem, Sequence and Series .
- calculate Matrices and Determinants .

General competence: The students would gain

- general idea of Principle of Mathematical Induction, Complex Numbers and Quadratic Equations, Linear Inequality, Permutation and Combinations, Binomial Theorem, Sequence and Series, Matrices and Determinants .
- analytical and reasoning skills, which improve their thinking power.

Course Code: MATH3031
Course Name: Calculus

On completion of the course, the student should have the following learning outcomes defined in terms of knowledge, skills and general competence:

Knowledge: The students would gain knowledge about

- limits and continuity of a function.
- derivative of a function
- integration of a function
- applications of differential and integral calculus
- first order ordinary differential equations.

Skills: The students would be able to

- find the limits of a function
- check the continuity of a function
- find the derivatives of a real function
- find the maximum or minimum values of a function
- integrate standard algebraic and trigonometric functions
- find the area enclosed by a curve.

General competence:

- The students would understand the importance of studying calculus
- They will gain a general idea of limits, continuity, derivatives and integration of a real functions. Also, students will understand the basic notion of differential equations
- Students analytical and reasoning skills will be improved, which ultimately enhance their thinking power.

SKILL ENHANCEMENT COURSES

Course Code: MATH1051
Course Name: Graph Theory

On completion of the course, the student should have the following learning outcomes defined in terms of knowledge, skills and general competence:

Knowledge: The students would gain knowledge about

- undirected and directed graphs.
- isomorphism of graphs.
- Eulerian graphs, Hamiltonian graphs.
- various characterizations of trees with applications.
- bipartite graph and its characterization.
- planar and non-planar graphs.
- colouring of a graph.
- matrix representation of graphs.

Skills: The students would be able to

- assimilate various graph theoretic concepts and familiarize with their applications.
- efficiency in handling with discrete structures.
- efficiency in notions of matrix representation of graph, planarity.
- efficiency in solving concrete graph colouring problems.
- solve real world problems that can be modelled by graphs.

General competence: The students would gain

- general idea of graph theory and its real-life applications.
- understanding about graphic sequence.
- experience to apply Euler's formula.
- ability to use graphs for various map colouring problems.
- idea about the application of graphs in computer science.

Course Code: MATH2051
Course Name: Programming in C

On completion of the course, the student should have the following outcomes defined in terms of knowledge, skills and general competence:

Knowledge: The students would gain knowledge about the

- basics of C programming i.e., basic structure, keywords, identifiers, operators with operator precedence and associativity, input-output statements.
- concepts of branching & looping and array.
- user defined functions and their use.
- use of structures and pointers.

Skills: The students would be able to

- learn the keywords, identifiers, different types of operators with precedence and associativity, use of formatted and non-formatted input-output statements.
- use branching and looping statements for decision making.
- learn the concepts of array, string handling arrays.
- use library and user-defined functions along with string handling functions.
- write programs using structures and pointers.

General Competence: The students would gain

- general idea about the writing of different C programs using branching & looping statements, arrays, functions, structures and pointers.
- program writing and reasoning skills which improve their thinking power.

Course Code: MATH3051
Course Name: Mathematical Modelling

On successful completion of the course, the student will be well-conversed with the following outcomes

- i. To gain knowledge about modelling
- ii. To develop skill of model formation
- iii. To update general competence

Knowledge:

- Students to acquire basic knowledge concerning formation of various models
- Linear models help students to identify and estimate the relationship between variables, to analyze trends, to predict and make decisions from outcomes
- Exponential models help students to comprehend the rapid and often accelerating changes that occur in diverse natural and social systems
- Logistic model concerning real-world problems promote students to understand the limitations and saturation points of various processes
- Optimization models empower students to take optimal decision and maximize the desired outcomes while considering real-world limitations and constraints
- Probabilistic/Stochastic models help students to handle uncertainty and make reasonable decisions by quantifying the likelihood of different outcomes
- Time series models facilitate students to analyze data, identify patterns, and make accurate predictions crucial for forecasting and understanding trends
- Simulation models provide powerful approach to study those systems in the event of non-availability of analytical solutions, support performance evaluation, risk analysis and decision support

Skill: Students to be

- exposed to various mathematical models and their real-life applications
- benefited in simulations, understanding and predicting complex systems.

General competence:

- To empower students the to understand the construction/framing mathematical models
- To analyze and solve the real-world problems mathematically
- To employ the usage of mathematical tools and techniques for the outcomes of those problems.

Course Course	Course Title	Course Objectives
CC-4	Physical Chemistry I (Fall)	<ol style="list-style-type: none"> To understand molecular structure and energy changes, as well as to describe the thermodynamic characteristics of phase equilibria and reactions. To understand the fundamental physical properties of various organic molecules. To explain solubilities, acid-baseities, reactions, reactivity, and mechanisms of the chemical reactions. To learn about primary effects and the effect of structure on organic compound reactivity. Regarding the NMR theory and the Valence Bond Theory: <ol style="list-style-type: none"> Identification of organic compounds. Assignment of groups with IR and NMR spectra. Determine values of boiling points.
	Physical Chemistry II (Fall)	<ol style="list-style-type: none"> Identification of organic compounds. Assignment of groups with IR and NMR spectra. Determine values of boiling points.

Course Course	Course Title	Course Objectives
CC-2	Physical Chemistry I (Fall)	<p>To understand:</p> <ol style="list-style-type: none"> Basic applications of kinetic theory: the derivation of physical characteristics of molecular velocities and energy. Limit collisions are taught. Diffusion and osmosis related to its practical applications are studied. Order, reactivity, of chemical processes, chemical reactions, homogeneous and heterogeneous catalytic processes. Thermodynamic are studied.
	Physical Chemistry I (Fall)	<p>Students learn about:</p> <ol style="list-style-type: none"> Rate constant and order of a chemical reaction. Yield of an industrial facility. Scientific method of IChO. In general.

Case Course	Course Title	Course Objectives
(1,2)	Biogenic Amines and Alkaloids	<ol style="list-style-type: none"> 1. Conceptualization of 1,2,3,4,5,6-substitution of amines 2. Different sources of aromatic amines, problems, derivatization, applications 3. Concept of amines, alkaloids, configuration 4. Very briefly, biogenic amines, secondary amine, relation between amine and amine 5. Reaction of amines to primary, secondary, tertiary, quaternary ammonium salts, different properties of various alkaloids 6. Understand the synthesis and uses of the amine 7. Biogenic amines, applications 8. Biogenic alkaloids of different alkaloids, their synthesis 9. Biogenic alkaloids 10. Identification of different amines
	Biogenic Amines and Alkaloids	<ol style="list-style-type: none"> 1. General idea of qualitative and quantitative experiments in practical chemistry 2. Real time critical experiments and recording of Biogenic alkaloids 3. Quantitative analysis of different amines, their identification

Course Course	Course Title	Course Objectives
CC-4	Organic Chemistry-I (Theor)	<ol style="list-style-type: none"> To understand about the mechanisms of electrophilic aromatic and aliphatic, electrophilic substitution reactions, as well as the impact of different substituents on reaction rates. To understand about the synthesis, stability, and processes of various named reactions. To understand the IUPAC and chemical nomenclature of a particular molecule. To identify various processes and their intermediates are approached mechanistically.
	Organic Chemistry-I (Prac)	<ol style="list-style-type: none"> to train the work with laboratory procedures. to improve students's research related skills. Make use of contemporary chemical tools, such as models, literature, books, and equipment. To experience Synthetic Organic Chemistry's analysis. Using Acrylonitrile copolymerization, determine physical constants and purity of chemical organic molecules.

Course Course	Course Title	Course Objectives
CC-2	Physical Chemistry-I (Theor)	<p>to impart with:</p> <ol style="list-style-type: none"> Transport processes like viscosity of liquids and conductance of weak solutions are studied. Chemical equilibrium as an application of chemical thermodynamics, are taught. Introductory quantum mechanics and application to chemical science are studied.
	Physical Chemistry-I (Prac)	<p>Students, studying practical classes, understand how to determine:</p> <ol style="list-style-type: none"> viscosity coefficients of solutions are liquid, logarithmic constant of the reaction $K = (1 - K_1) + K_2$... rate constant of saponification reaction and equilibrium constant of a weak acid.

Course	Course Title	Course Objectives
CC-7	Organic Chemistry- (I) (1hour)	<ol style="list-style-type: none"> 1. Mechanisms of aromatic substitution reactions. 2. Understanding the carbon / group's different reactions. 3. Basic formal / tertiary concepts. 4. Knowledge of the chemistry of organometallics. <p>Knowledge of structural molecules' identity.</p>
	Organic Chemistry- (II) (1hour)	<ol style="list-style-type: none"> 1. To identify the nature of the functional groups present in a typical molecule.

Course	Course Title	Course Objectives
CC-11	Basic Analytical Chemistry	<ol style="list-style-type: none"> 1. Analysis of solid compounds, especially the metal ions by complexometric titration. 2. Building knowledge on colorimetric process. 3. Separation of metal ions by different chromatographic methods. 4. Introduction to product analysis. 5. Analysis of various products like antacids, analgesics and antiseptics etc. and their harmful effects on human body as well as on environment.

Course	Course Title	Course Objectives
CC-8	Physical Chemistry- (I) (1hour)	<ol style="list-style-type: none"> 1. As a result of course stress on the application part of thermodynamics, students get acquainted with various areas of Physical Chemistry such as equilibrium processes, phase rule, Henry's law, two level system, Debye-Huckel equation, etc.

		2. Students become conversant with the general structure of members of hydrogen bonds.
	Physical Chemistry (10Prac)	<ol style="list-style-type: none"> 1. Students can carry out potentiometric titration. 2. Students can draw phase diagram of phase transition system.

Course Code	Course Title	Course Objectives
11CA	Inorganic Chemistry (10Prac)	<p>1. Learning the Central Principles of Metallurgy</p> <p>1.1 Fundamentals of occurrence of metals, extraction, refining, Methods of purification of metals, Electrolysis, leaching process, Purifying process, use of Archie's Line process and Mond's process. Zone refining.</p> <p>2. Chemistry of s and p Block Elements, Noble gases</p> <p>3. Knowledge building on Inorganic Polymers, their types, comparison with organic polymers, synthesis, structural aspects and applications of ethylene and diene polymers, thiazones, siloxanes and phosphazenes.</p> <p>4. Introduction to Coordination chemistry</p>
	Inorganic Chemistry (10Prac)	<ol style="list-style-type: none"> 1. Understanding how to choose metal and ligand for complex synthesis. 2. Use of formal and crystal field parameters in complexation. 3. Calculate property of complex ion with preliminary idea of colour generation. 4. Application of complex synthesis in complementary structures of different metal ions. Data table on complex.

Course Code	Course Title	Course Objectives
CC-90	Organic Chemistry-IV (Theo)	<ol style="list-style-type: none"> 1. Mechanisms underlying rearrangement reactions. 2. Developments of Organic Synthesis logic. 3. Synthetic synthesis knowledge. 4. Understanding of organic electrocyclic with a focus on UV-Vis, IR, and NMR spectroscopy and their applications. 5. To comprehend the significance of retrosynthesis in the design of organic synthesis routes. 6. To enable students about the reactions and significance of new synthetic reactions.
	Organic Chemistry-IV (Pha.)	<ol style="list-style-type: none"> 1. To enable course experiments in order to develop organic synthesis skills and strategic approaches. 2. Using retrosynthetic analysis to synthesize organic compounds.

Course Code	Course Title	Course Objectives
MC-2	Pharmaceuticals (Chemistry) -analysis (Clinical Biochemistry)	<ol style="list-style-type: none"> 1. Developments of various drug molecules. 2. Applications of drugs. 3. Knowledge of the concepts of proton acids and participation. 4. Gaining knowledge of how proteins and enzymes are made. 5. Fundamental ideas behind the Watson-Crick model of DNA. 6. To create a conceptual framework for the biochemistry of clinical.

Course Code	Course Title	Course Objectives
CI-1	organic chemistry-III	<ol style="list-style-type: none"> 1. Conceptual approach on basic theories of coordination chemistry including VSEPR, CFT and MFT. 2. Distortion of complexes can be understood on the basis of Jahn-Teller theorem. 3. Understanding of the range of colors of the complexes. Students take crystal diagrams, IR spectra.

		<p>4. Investigation of organic reactions, of different classes cover lead to the completion. Major materials like for example, acetic acid, acetylacetone etc. Most of the organic reactions can be understood with correct examples.</p> <p>5. Study on the comparisons of different general properties like electronic configuration, oxidation state, reduction, optical, magnetic properties, etc. of s, and f block elements.</p>
Organic Chemistry: IV (New)		<p>1. Develop the technique for the separation of different metal ions like N^{+} & U^{+} from the mixture by paper chromatography.</p> <p>2. Determination of metal ion quantitatively by gravimetric precipitation method.</p>

Course Name	Course Title	Course Details
(U-1)	Organic Chemistry: V (New)	<p>1. Study in depth of hydrocarbons and carbonyl compounds.</p> <p>2. Understanding of cyclic compound stereochemistry.</p> <p>3. Characterization of pericyclic reactions.</p> <p>4. Study of carbohydrates in detail.</p> <p>5. Study of peptides, nucleic acids, and vitamins in detail.</p> <p>6. Develop an interest in and comprehension of the theoretical basis for pericyclic reactions, as well as theories for their use in organic synthesis.</p>
	Organic Chemistry: V (New)	<p>1. To illustrate the use of Thin layer chromatography, Column chromatography and Paper chromatography to separate a mixture.</p> <p>2. Determination of the structure of various organic molecules using spectroscopic methods.</p>

Course Name	Course Title	Course Details
(U-1)	Inorganic Physical Chemistry: I (New)	<p>1. Students learn the basis of crystallography, lattice structure of crystals and the basic theory behind the X-ray crystallography.</p> <p>2. They become acquainted with preliminary concepts of molecular thermodynamics.</p> <p>3. The students get introduced to the subject of polymer science and discuss properties of molecules.</p>

Advanced Physical Chemistry (Prac)	1. Understanding various methods of comparison with the help of Computer Programming in the Laboratory Lab
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Course Code	Course Title	Course Objectives
UPLU 2	Analytical Methods in Chemistry (Prac)	1. To acquire skills 1. Sampling techniques 2. Spectroscopic methods of analysis 3. Thermogravimetry, estimation of metals 4. Different electroanalytical methods e.g., potentiometric methods, pH metric methods, conductometric methods
	Analytical Methods in Chemistry (Prac)	Learning 1. To learn systematic separation of inorganic & organic materials 2. Spectroscopic methods, determination of pK_a 3. pH determination of acid

Course Code	Course Title	Course Objectives
CU-01	Inorganic Chemistry-V (Theor)	<ol style="list-style-type: none"> 1. Understanding of different redox processes in transition metal (3d, 4d & 5d) transition metal ions and role of metal ions in different redox active metal complexes. 2. Mechanism of air-liquid fixation and photosynthesis in transition metal process (PS-I & PS-II) 3. Effects of metal density in human beings and hence necessary by administering different chelating drugs in 1st position 2nd position drug. 4. Understanding of synthesis and reactivity of different organometallic complexes with special reference to the metal-carbon σ-bonds. 5. Understanding of different catalytic reactions (e.g. olefin hydrogenation, carbonylation, Vaska's Process, Synthesis gasification, Zeigler-Natta catalyst etc.) (focus on organometallic complexes) 6. Finding a complex in inorganic structure mechanism with special attention on % s, p, d, f/C/E for substitution reaction of octahedral and square planar complexes. 7. Understanding of kinetic and thermodynamic stability of complexes.
	Inorganic Chemistry-VI (Prac)	<ol style="list-style-type: none"> 1. Different inorganic metal ions and their use as identified by various chemical tests. 2. Understanding of solubility products principle in the precipitation of different group metal ions. 3. Heating effect of simple inorganic salts. Kinetic study chemistry. Henry law's secondary can be known. 4. Technique of organic metal acid catalyst like V, H₂O₂ etc.,

Course Code	Course Title	Course Objectives
18UC11	Polymer Chemistry (Theor)	<ol style="list-style-type: none"> 1. To acquaint with 1. Different polymerisation processes Step-growth, chain-growth polymerisation. 2. Viscometric, osmometric determination of molecular wt. 3. Thermodynamics of poly(olefin) radicals. 4. Properties and applications of different polymers.
	Polymer Chemistry (Prac)	<ol style="list-style-type: none"> 1. Potentiometric measurement of molecular weight of polymer. 2. Separation of copolymer.

199.4	Students will be trained by power point presentation	1. Building sites to write a proper report on different materials (such as special or on inorganic chemistry) and also explain or present (by PPT) the topic as a seminar presentation slide.
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Course Outcome

Philosophy

The course is developed under Curriculum and Credit Framework for Undergraduate Programmes (CCFUP) as per NEP, 2020. It introduces young minds to the world of philosophical discourse by nurturing the fundamental questions of “*why*” and “*how*.” Through the art of questioning, students develop the critical foundation necessary for higher studies and research.

Courses such as **Psychology** provide students with insights that can serve as a stepping stone for exploring emerging fields like **Cognitive Science**, which has gained significant prominence in contemporary research.

Western Philosophy and **Logic** nurture students' logical and critical reasoning abilities while acquainting them with the profound ideas of great philosophical thinkers. These disciplines encourage sensitivity towards life, existence, and the immediate world around them, fostering both intellectual and empathetic growth. Additionally, logical reasoning plays a pivotal role in various competitive examinations and prepares students for careers in public and private sectors, legal studies, and prestigious bureaucratic roles such as **I.A.S.**, **W.B.E.S.**, and academic professions in schools, colleges, and universities.

The **Philosophy of Language** sharpens analytical skills, enabling students to interpret language and its nuances with precision. This rigorous method of analysis cultivates a reflective outlook on life, encouraging deeper understanding and engagement with the world.

Ethics explores human conduct by addressing vital questions, such as the extent to which societal ethical norms should be embraced. The study of moral philosophy offers students a profound exploration of why morality is essential, helping them navigate the complexities of modern life and the challenges posed by an increasingly chaotic world.

Courses on **Ancient Indian Philosophical Schools** instill moral values and a sense of cultural heritage by introducing students to traditional philosophies enriched with robust argumentation. These courses help students appreciate India's rich cultural traditions and value systems while fostering a deeper understanding of their own identity.

Designed thoughtfully, this course equips students not only with logical aptitude and critical thinking skills for academic and professional success but also with a deeper analytical and empathetic perspective to engage meaningfully with life and its limitations. By the end of this journey, students will have the ability to pose meaningful questions about life, the world, and the nature of human existence, embodying a well-rounded understanding of philosophy as both a practical and contemplative discipline.

GOVERNMENT GENERAL DEGREE COLLEGE SINGUR

DEPARTMENT OF PHYSICS

Course Outcome

Name of The Programme: B.Sc. Physics (Hons.) Under Curriculum and Credit Framework for Undergraduate Programmes (CCFUP) as per NEP, 2020

Semestar I

Course: Major Code: PHYS1011;

Name of the Course: Mathematical Physics I(Theory)

Course Outcome

It equips the students with mathematical methods that are important prerequisites for physics courses.

Name of the Course: Mathematical Physics I(Practical)

Course Outcome

It familiarizes students with computer architecture and organization, memory and input/output devices.Reviews C programming fundamentals.

Course: Minor Code: PHYS1021;

Name of the Course: Mathematical Physics I(Theory)

Course Outcome

It equips the students with mathematical methods that are important prerequisites for physics courses.

Name of the Course: Mathematical Physics I(Practical)

Course Outcome

This course helps students to learn computer programming and numerical analysis and to emphasize its role in solving problems in Physics

Course: Multi/Inter disciplinary Code: PHYS1031

Name of the course: Concepts of Physics I

Course Outcome

Students will develop the problem-solving capability and also learn the applications of Newtonian mechanics in daily life.

Course: SEC-1: Code: PHYS1051

Name of the course: RENEWABLE ENERGY AND ENERGY HARVESTING

Course Outcome

The students are expected to learn not only the theories of the renewable sources of energy, but also to have hands on experiences on them wherever possible.

Semestar II

Course: Major Code: PHYS2011;

Name of the Course: Mechanics (Theory)

Course Outcome

This course in Mechanics serves as the foundation for further progress towards the study of physics at graduate or post-graduate level. Upon completion of the course, the student will be able to apply Newton's laws of motion to different force fields for a single particle and for a system of particles.

Course: Major Code: PHYS2011

Name of the Course: Mechanics (Practical)

Course Outcome

Students will be able to apply theoretical concepts in practical life.

Course: MINOR II :code PHYS2021: MECHANICS

Course Outcome

This course in Mechanics serves as the foundation for further progress towards the study of physics at graduate or post-graduate level. Upon completion of the course, the student will be able to apply Newton's laws of motion to different force fields for a single particle and for a system of particles.

MINOR II: PHYS2021: MECHANICS (Practical):

Course Outcome

Students will be able to apply theoretical concepts in practical life.

MULTI-DISCIPLINARY-2: Code: PHYS2031 CNCEPTS OF PHYSICS 2

Course Outcome

Students will develop the problem-solving capability and also learn the applications of Newtonian mechanics in daily life.

Skill Enhancement Course, Code: PHYS2051, ELECTRICAL CIRCUITS AND NETWORK SKILLS

Course Outcome

After the completion of the course the student will acquire necessary skills/ hands on experience /working knowledge on Multimeter, voltmeters, ammeters, electric circuit elements, dc power sources. With the knowledge of basic electronics a student can able to detect troubleshoot and repair some of the electronic instruments used in our daily life.

Semestar III

Course: Major Code: PHYS3011;

Name of the Course: Electricity and magnetism (Theory)

Course Outcome

At the end of this course, students will be able to comprehend the concept of electric field, electric flux, magnetic field and their origin. They will learn to apply the Gauss's theorem to find the electric fields for different types of charge distribution. The students will develop a sound perception about Electrostatics, Magneto-statics, Electric current and electromagnetic induction.

Course: Major Code: PHYS3011;

Name of the Course: Electricity and magnetism (Practical)

Course Outcome

Students will be able to apply the real behavior of electricity in their daily life.

MAJOR-III: Code: PHYS3012: Name of the course: Waves and Optics (theory)

Course Outcome:

The outcome of the paper includes the knowledge of vibrations, propagation of waves, vibrations of air column, and harmonics of the strings. The paper has another outcome of offering knowledge of wave properties of light & corresponding phenomena.

MAJOR-III: Code: PHYS3012: Name of the course: Waves and Optics (Practical)

Course Outcome:

From this course students will learn-

1. To draw $n-l$ curve with the help of a sonometer and hence find the frequency of an unknown fork
2. To determine the frequency of ac mains with a sonometer using a magnetic wire
3. To determination of the velocity of ultrasonic waves in a given liquid
4. To determine the refractive index of the material of a prism using sodium source
5. To determine the dispersive power and Cauchy constants of the material of a prism
6. To determine the wavelength of sodium light using Fresnel Biprism
7. To determine the wavelength of sodium light using Newton's Rings
8. Determination of the width of a single slit producing a Fraunhofer diffraction pattern
9. To determine wavelength of (1) Na source and (2) spectral lines of Hg source using a plane diffraction grating
10. Calibration of a polarimeter and determination of the concentration of an active solution
11. To determine the resolving power of a plane diffraction grating.

MULTI-DISCIPLINARY-3: Code: PHYS3031 Electricity, Magnetism and Electronics

Course Outcome

After successful completion of this paper students of other disciplines will be able to comprehend the basics of electricity, magnetism and electronics. The students will be acquainted with basic electrical and electronic devices.

SEC-3: Code: PHYS3051: Name: Basic Instruments and their Usage

Course Outcome:

After completion of this course, the students will gain knowledge the in setting up electrical and optical experiments.

SEM IV

MAJOR-IV: Code: PHYS4011: Name: Heat and Thermodynamics

Course Outcome

On completion of this course, the students will learn the kinetic theory of gases, the basic laws of thermodynamics, the applications of the well-known Maxwell's relations, the underlying Physics behind the Joule Thompson effect and the spectral distribution of the blackbody radiation.

MAJOR-IV: Code: PHYS4011: Name: Heat and Thermodynamics (Practical)

Course Outcome

From this course students will learn-

1. To determine the coefficient of thermal conductivity of copper using Searle's apparatus
2. To determine the coefficient of thermal conductivity of a bad conductor by Lee and Charlton's disc method
3. Determination of the value of the Stefan's constant
4. To study the variation of thermo-emf across two junctions of a thermocouple with temperature
5. To determine the temperature coefficient of resistance and the boiling point of a given liquid using Platinum resistance thermometer
6. To calibrate a thermocouple for measuring the temperature in a specified range using i) null method, ii) direct measurement using OP AMP difference amplifiers
7. To determine the coefficient of thermal expansion of a metallic rod using an optical lever
8. To determine the temperature coefficient of resistance using the Carry Foster bridge
9. To determine the coefficient of thermal expansion of a metallic rod using travelling microscope
10. To determine the pressure coefficient of air by constant volume method

MAJOR IV: Code: PHYS4012: Name: Mathematical Physics-II (Theory)

Course Outcome

After successful completion of this course, students will be able to formulate problems of Physics in the language of Mathematics.

MAJOR IV: Code: PHYS4012: Mathematical Physics-II (Practical)

Course Outcome

After completion of the course learners will be able to execute scilab program on Inverse of a Matrix, Eigen Vectors and Eigen Values, ordinary differential equation and XCOS.

MAJOR-IV:Code: PHYS4013: Name: Classical Mechanics and Special Theory of Relativity

Course Outcome

On successful completion of this course the students will have in-depth understanding of Lagrangian and the Hamiltonian formulation of mechanics rigid body dynamics, and Special theory of relativity.

MINOR IV: Code: PHYS4021: Name: Thermal Physics (Theory)

Course Outcome

Upon completion of this course, the students will grasp the idea of laws of thermodynamics, the Blackbody the basics of Statistical mechanics.

MINOR-IV: Code: PHYS4021: Name: Thermal Physics (Practical)

Course Outcome

From this course students will learn-

1. To determine the coefficient of thermal conductivity of copper using Searle's apparatus
2. To determine the coefficient of thermal conductivity of a bad conductor by Lee and Charlton's disc method
3. Determination of the value of the Stefan's constant
4. To study the variation of thermo-emf across two junctions of a thermocouple with temperature
5. To determine the temperature coefficient of resistance and the boiling point of a given liquid using Platinum resistance thermometer
6. To calibrate a thermocouple for measuring the temperature in a specified range using i) null method, ii) direct measurement using OP AMP difference amplifiers
7. To determine the coefficient of thermal expansion of a metallic rod using an optical lever
8. To determine the temperature coefficient of resistance using the Carry Foster bridge
9. To determine the coefficient of thermal expansion of a metallic rod using travelling microscope
10. To determine the pressure coefficient of air by constant volume method

CBCS
Semestar V

Paper code CC XI, Name: Quantum mechanics and applications (Theory)

Course Outcome:

Students will learn about quantum mechanical nature of atomic dimensions.

Paper code CC XI, Name: Quantum mechanics and applications (Practical)

Course Outcome:

Students will learn to solve equation by scilab programming.

Paper code CC XII, Name: Solid state (Theory)

Course Outcome:

Students will learn about crystal structure, magnetic properties, band theory and superconductivity.

Paper code CC XII, Name: Solid state (Practical)

Course Outcome:

1. This practical is per-formed to measure the Dielectric Constant of a dielectric Materials with frequency.
2. This practical is performed to determine the band gap using a thermistor.
3. This practical is performed to study the PE Hysteresis loop of a Ferroelectric Crystal.
4. This practical is performed to draw the BH curve of Ferro-magnetic material using Sole-noid& determine energy loss from Hysteresis.

5. This practical is performed to measure the resistivity of a semiconductor (Ge) with temperature by four-probe method (room temperature to 150 0C) and to determine its band gap.

6. This practical is performed to determine the Hall coefficient of a semiconductor sample.

Paper code: DSE I Name: Advanced Mathematical Physics (Theory)

Course Outcome:

Students will learn about Linear vector space, metrics and tensors.

Paper code: DSE I Name: Advanced Mathematical Physics (Practical)

Course Outcome:

Students will learn about Scilab base programmes for matrix multiplication, eigen value and eigen vector

Orthogonal polynomials as eigen functions of hermitian differential operators, principal axes of moment of inertia by matrix diagonalization,

Paper code: DSE II Name: Classical Dynamics (Theory)

Course Outcome:

Students will learn about

Classical mechanics of point particles.

Theory of small amplitude oscillations.

Special theory of relativity.

Fundamentals of fluid dynamics.

SEM 6

Paper code: CC XIII Name: Electromagnetic Theory (Theory)

Course Outcome:

Students will learn about electromagnetic waves, polarization, wave guides and optical fibres.

Paper code: CC XIII Name: Electromagnetic Theory (Practical)

Course Outcome:

Students will learn practically about specific rotation of sugar, Babinet's compensator, ultrasonic waves, PN junction diode.

Paper code: CC XIV Name: Statistical mechanics (Theory)

Course Outcome:

Students will learn about

T14.1 The classical statistics.

T14.2 The classical theory of radiation.

T14.3 Quantum theory of radiation.

T14.4 Bose-Einstein statistics.

T14.5 Fermi-Dirac statistics.

Paper code: CC XIV Name: Statistical mechanics (Practical)

Course Outcome:

Students will run scilab code to plot various functions of statistical mechanics.

Paper code: DSE3 Name: Nuclear and Particle Physics(Theory)

Course Outcome:

Students will learn about, General properties of Nuclei, Nuclear models, Radioactivity.
Nuclear reactions.

Paper code: DSE4 Name: Astronomy & Astrophysics(Theory)

Course Outcome:

Students will learn about astronomical scales, telescopes, Theory of the Sun, Large scale structure.

COURSE OUTCOME

B.A. POLITICAL SCIENCE (HONOURS) COURSE

Sl. No.	Semester	Paper Code/ Name	Course Outcome
1.	Sem 1	CC – 1 Western Political Thought	The paper imparts thorough knowledge of Greek, Medieval, and Renaissance political thought concepts. It also deals with fundamental political concepts like Sovereignty, Liberalism, State, General Will, and Marxist concepts of Dialectical and Historical Materialism. These ideas shaped and broadened the horizon of Western Political Thought. Students will get a view of the ideas of prominent philosophers of Western Political Thought and their opinions from this paper.
		CC – 2 Political Theory	Political Theory prepares the basic structural framework on which the entire discipline evolves. The paper deals with the meaning, importance, Decline and Resurgence of Political Theory. Students also learn about major theoretical approaches from behaviouralism, post-social revolution, the theories of sovereignty, and similarities and differences in the concepts of liberty and equality. Ideology and the End of Ideology debates also bring the students into the arena of modern approaches to Political Theory through the writings of Daniel Bell and Francis Fukuyama.
		Generic Elective (G.E.) 1: Western Political Thought.	The paper imparts knowledge of the basic concepts of Western Political Thought from the Greeks and Medieval Period to Modern-Day Thinkers like Karl Marx and J.S. Mill. Lessons on state, statecraft, sovereignty, Imperialism, and Marxism provide an exhaustive knowledge of Western Political Thought to the students.

2.	Semester 2	<p>CC- 3 Indian Political Thought.</p> <p>CC- 4 Indian Government and Politics.</p> <p>Generic Elective(G.E.) 2:Political Theory</p> <p>CC- 5: Comparative Politics</p>	<p>Since students became acquainted with Western political thought the previous semester, it has become easier to comprehend the basics of Indian political thought and political thinkers in this paper. Starting with the features of Ancient Indian Political Thought, the paper covers a vast horizon through Medieval Muslim Political Thought till the period of Indian Reformation and Nationalism. The later part covers the contributions of prominent social reformers like Rammohan Roy, Swami Vivekananda, Mahatma Gandhi and B.R . Ambedkar. From this paper, students learn about the rich heritage of Indian Philosophers and their thoughts that serve as beacons of Indian Political philosophy.</p> <p>In this paper, students are introduced to the concepts of the Constitution, constitutional procedures, the running of the government, and the federal structure, which details the workings of the legislature, executive branch, and judiciary. Features and trends of the Indian party system, coalition government and politics, Election Commission and Electoral reforms provide the students with information about the proper functioning of the constitutional and extra-constitutional bodies.</p> <p>This paper aims to introduce the conceptual analyses of the key concepts of Political Theory to the students. It makes them aware of concepts like Democracy, Liberty, and Equality and about ideologies like Marxism, Ideology, Political Parties, and Pressure groups.</p> <p>Students will be able to compare and contrast the functioning of the political systems in this paper. They will be able to understand the importance of Comparative Methods in making the discipline more scientific in approach. Political systems never function in isolation. This paper introduces the students who are used in the UK, the USA, France, and China political systems. Students will be able to critically evaluate key features of the electoral processes and the relationship between these countries' three wings of government. They will also learn about the rights and duties of the citizens and the role of public opinion in these countries.</p>
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3.	Semester 3	<p>CC- 6: Public Administration (Basic Theories)</p> <p>CC-7: Local Government in India.</p> <p>Generic Elective (G.E.) 3: Indian Political Thought.</p>	<p>This paper seeks to familiarise the students with the meaning, key concepts, and various schools of Thought in Public Administration. The basic theories in this discipline formulated by public administration Theorists like Gullick, Urwick, Fayol, Elton Mayo, Herzberg, Maslow, Fred Riggs and Peter Drucker help understand the development of the subject since its emergence up to modern times. Students are informed about administration through employer-employee relationships and the facts that incentive and motivation play a great role in boosting production. Students will also be able to understand the principles of organization and how the formal ones differ from the informal ones.</p> <p>The dreams of Nationalist leaders like Mahatma Gandhi and Bal Gangadhar Tilak on Swaraj and the development of the local self-government in India found their pride of place in the 73rd and 74th Amendment Acts of the Indian Constitution. In this paper students get introduced to the three tiered Panchayat system and Municipalities and Municipal Commissions, their modes of operation, election of members ,and codes of conduct. The paper also includes the powers and functions of important officials associated with the sysyem like the DM, SP, SDO, BDO , etc. This paper also enlightens students on the administrative reforms, the functioning of the Lokpal and the Lokayukta , RTI and impact of globalization.</p> <p>Starting with the features of Ancient Indian Political Thought, the paper covers a wide horizon through Medieval Muslim Political Thought till the period of Indian Reformation and Nationalism. The later part covers the contributions of prominent social reformers like Rammohan Roy, Swami Vivekananda, Mahatma Gandhi and B.R . Ambedkar. From this paper students come to know about the rich heritage of Indian Philosophers and their thoughts that serve as beacons of Indian Political philosophy.</p>
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4.	Semester 4	<p>Skill Enhancement Course(SEC) 1: Legislative Support</p> <p>CC – 8: International Relations</p> <p>CC – 9: Sociology and Politics.</p> <p>CC –10: International Organizations.</p>	<p>This paper deals with the powers and functions of the peoples in different tiers of administration in the legislature, like the MPs, MLAs, the role of the Committees and legislative procedures, budgeting and working of the ministries. The students already having gone through the paper on Indian Government and Politics, learns the processes of administration and legislation in details in this paper. They are also introduced to the importance of budgeting in the working of the government .</p> <p>The students are informed about the nature and scope of International Relations along with several important concepts such as National Power, Balance of Power, Collective security, Disarmament, Foreign Policy, Diplomacy and Indian Foreign Policy. The students could analyse different theories that determine the course of International Relations. They also develop a keen interest towards analysing international events that affects individuals, state and society and could critically analyse international developments.</p> <p>This paper deals with the individual and his interactions with the society. How society influences and shapes the role of the individual through Political participation, Political socialization, political culture , Power and Authority, is the main theme of this paper. The paper helps the students to understand and develop a positive outlook towards their social milieu, and make them acquainted with the ways these factors influence the lives of individuals in society.</p> <p>The paper focusses on the history and development of International organizations with special reference to the United Nations. Students study the course of development of the public and private international organizations and thereafter the League of Nations with its evolution and failures. They also study the backdrop of the birth of the United Nations, its major organs and</p>
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5.	Semester 5	<p>Generic Elective (G.E.) 4: Indian Government and Politics.</p> <p>Skill Enhancement Course (SEC) 2: Public Opinion And Survey Research.</p> <p>CC – 11: Social Movements In India.</p>	<p>their functioning , the role of UN in peace keeping and peace building and a critical ananalysis of the performance of the UN till date. The students are also informed about regional cooperation on the economic and security issues in organizations like the APEC,OPEC,NATO,ARF, and SAARC and their goals and functioning. Students gain knowledge about the complexities involved in maintaining world peace and security.</p> <p>Students are introduced to the concepts of the Constitution, constitutional procedures, the running of the government and the Federal structure that details the working of the legislature, executive and the Judiciary in this paper. Features and trends of the Indian party system , coalition government and politics, Election Commission and Electoral reforms provides the students information about proper functioning of the constitutional and extra constitutional bodies.</p> <p>This paper introduces the students to the principles and practices of public opinion polls in democracies with special reference to India. Students conceptualize the measurements of public opinion using quantitative methods and learns to prepare questionnaires, take interviews. The students come to know the basic concepts of correlational research , prediction and inferential statistics.</p> <p>The students are introduced to social movements, old and new, their features and types along with features of Peasant Movements, Dalit Movements, Trade Union Movements, Womens’ Movements and Environmental movements in this paper. The students come to know about the prospects and constraints of these social movements and their importance in society. The paper deals with the question as to why social movements are organized and the role of government in mitigating such social movements. The paper imparts knowledge on the interactions between the society and the government in regard to social movements.</p>
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6.	Semester 6	<p>CC- 12: Elementary Research Methods In Political Science.</p> <p>Discipline Specific Elective (DSE) 1: Select Comparative Political Thought.</p> <p>Discipline Specific Elective (DSE) 2: Democracy and Decentralized Governance.</p> <p>CC 13 : Indian Foreign Policy.</p>	<p>This paper provides a comprehensive understanding of how to conduct research in Political Science. Research in Political Science follows various methods. The students are imparted knowledge about Research Methodology. This paper also familiarizes students with survey research techniques through regular assignments and presentations.</p> <p>Political Thinkers of the East and the West are the contents of this paper. Students learn about the basic features and differences between Indian and Western Philosophy along with the ideas of state, statecraft, nationalism, swaraj, democracy, liberty, rights and social justice given by Kautilya, Mahatma Gandhi, Jawaharlal Nehru, Lokmanya Tilak and Western Thinkers like Aristotle, Locke, Rousseau, and John Stuart Mill. Students compare and contrast the ideas given by these renowned philosophers and can realise the rich heritage that Political philosophy has to offer.</p> <p>The paper explains the institutional aspects of democracy and how institutions function within a democratic framework. It delves deep into democracy as a governance model and whether that can be complemented by institution building. The paper acquaints students with the decentralizations and institutions of Public Administration.</p> <p>The study of foreign policy forms an integral part of the study of Politics and Political Science. A country's policies towards its neighbours far and near are significant for itself. Strategies, plans, and programmes are designed based on such policies. India, with its rich heritage and secular outlook, has always followed a non-aggressionist and non-aligned foreign policy governed by the Panchsheel principles.</p> <p>This paper helps students become acquainted with the guiding principles of Indian foreign policy and the factors that influence its formulation. It discusses India's foreign Relations with its immediate neighbours and also with the superpowers USA, China, and Russia.</p>
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		<p>CC- 14: Contemporary Issues in India.</p>	<p>Study of Politics is not complete without the study of contemporary issues that are important both for the society and the government. This paper imparts knowledge about the issues that continue to plague India since independence. Maladies of caste system, violence and discrimination against women, communalism and secularism, Inequality, Social backwardness and risk of disaster are to mention only a few which this paper deals with. Students learn about the causes and consequences of these issues and the probable ways to mitigate them. The role of the Government in handling such issues is also dealt with in this paper. The paper imparts knowledge of the Indian social scenario and the challenges lurking therein.</p>
		<p>Discipline Specific Elective(DSE) 3: Local Government in West Bengal.</p>	<p>This paper comes as more specialized part of Paper CC 7 (Local Government and Politics in India). It specializes on West Bengal. Students get to know the evolution, structure and functions of the rural and urban local government in West Bengal since independence. The paper also deals with special provisions for the SCs and STs and empowerment of women. Students also come to know the financial relations between the local self government institutions and the state.</p>
		<p>Discipline Specific Elective(DSE) 4: Political Economy of International Relations..</p>	<p>Students learn about the dominant role that economy plays in world politics and the relationship between Politics and economics. The paper includes approaches given by eminent Political Economists like Robert Gilpin. Also students come to know about the global trade regime IMF, GATT and the World Bank. Trends in Global trade and finance is also included in this paper to impart a thorough knowledge of political economy to the students.</p>

Course Outcome (CO) Of Department of Zoology

Academic year 2023-24

Government General Degree College, Singur

Name of The Programme	Semester	Course	Programme Specific Outcome	Course Outcome
U.G Programme in Zoology (Hons.) under CBCS	III	CC-V (Chordates)	Students will learn about various vertebrate members of the animal kingdom, the complex but wonderful evolutionary processes and behaviour and special features (anatomical and physiological) of animals.	<p style="text-align: center;">1</p> Know general characteristics and classification of Chordates: from protochordates to mammals.
U.G Programme in Zoology	III	CC-VI (Animal Physiology: Controlling &	Students will learn about various important aspects of animal physiology. This programme aims to	<p style="text-align: center;">2</p> Learn about some special features in various chordate groups: Migration in fishes, Parental care in fishes, Swim bladder in fishes; Metamorphosis, Parental care in Amphibia; Poison apparatus and Biting mechanism in Snake.
				<p style="text-align: center;">3</p> Have a piece of knowledge about Exoskeleton and migration in Birds; Principles and aerodynamics of flight; Exoskeleton derivatives of mammals; Adaptive radiation in mammals with reference to locomotory appendages; Echolocation in Micro chiropterans and Cetaceans
				<p style="text-align: center;">4</p> Know about different Zoogeographical realms, Plate tectonic and Continental drift theory, distribution of birds and mammals in different realms.
				<p style="text-align: center;">1</p> Develop a concept of the structure,

(Hons.) under CBCS		Coordinating Systems)	introduce several basic concepts of different tissues, including their structure, locations, functions, and molecular mechanism of action. Moreover, they will also learn about the different physiological complexities of animal systems.	location, classification and functions of epithelial tissue, connective tissue, muscular tissue and nervous tissue, as well as bones and cartilage. 2 Have a clear understanding of the physiology of excretion, skeletal muscle contraction, nerve impulse and mammalian reproduction. 3 Know the different endocrine and neuro-endocrine glands and their functions; Endocrine regulation of oestrous and menstrual cycle. 4 Learn about the mechanism of hormone action and the signal transduction pathways for steroidal and non-steroidal hormones.
U.G Programme in Zoology (Hons.) under CBCS	III	CC-VII (Fundamentals of Biochemistry)	This programme aims to introduce several basic concepts of biochemistry, including the structure and functions of different biomolecules, their mode of action, and molecular mechanisms of different important metabolic processes. They will also learn about the detailed biochemistry of enzymes.	1 Learn the Structure and Biological importance of Carbohydrates, Lipids, Proteins and Nucleic acids; their catabolism and anabolism. 2 Students will understand the nature, mechanism, and kinetics of enzyme action. 3 Learn about Oxidative Phosphorylation: Redox systems and Mitochondrial Electron Transport Chain.
U.G Programme in	III	SEC-1 (Sericulture)	This programme aims to give the	1

<p>Zoology (Hons.) under CBCS</p>			<p>students a proper understanding of Sericulture. Students will get knowledge about mulberry plant cultivation, different silkworms, culture techniques, silk production, and the knowledge of diseases and enemies of silkworms. The students can be utilized the knowledge in starting their own enterprise after completion of the course.</p> <p>UNIT</p>	<p>Know about the history and present status of Silk in India and abroad.</p> <p>2 Learn about the biology and rearing of silkworms; Spinning, harvesting and storage of cocoons.</p> <p>3 Know about the Pests and Diseases affecting Silk Worms; Prevention and Control of such diseases.</p> <p>4 Prospect of Sericulture in India - employment, potential in mulberry and non-mulberry sericulture.</p>
<p>U.G Programme in Zoology (Hons.) under CBCS</p>	<p>IV</p>	<p>CC-VIII (Comparative Anatomy of Vertebrates)</p>	<p>Students will learn about various important aspects of the comparative anatomy of different vertebrate animals and learn about the evolutionary processes</p>	<p>1 Know about the Structure, function and derivatives of integument in amphibian, birds and mammals.</p> <p>2 Comparative anatomical account of different organs and organ systems in different Vertebrate Classes (Skeletal system, Digestive system, Respiratory system, Circulatory system, Urinogenital system, Nervous system and Sense organs).</p> <p>3 Through this students' learn the aspects of evolutionary changes that occurred to the animal's body structures.</p>
<p>U.G Programme in Zoology</p>	<p>IV</p>	<p>CC-VIII (Animal Physiology: Life Sustaining)</p>		<p>1 Study the physiology of Digestion -</p>

(Hons.) under CBCS		Systems)		<p>structural organisation and function of digestive tract (GI), Role of enzymes and absorption of Carbohydrates, Lipids, Proteins and Nucleic acids in Humans.</p> <p>2 Study the physiology of Respiration - Mechanism of Respiration, Respiratory volumes and capacities, Transport of Oxygen and Carbon dioxide in blood, Dissociation curves and the factors influencing it, Respiratory pigments and Carbon monoxide poisoning.</p> <p>3 Study the physiology of Circulation and function of Heart - Knowledge of Structure and functions of haemoglobin, Blood clotting system, Haematopoiesis, ABO Blood grouping and Rh factor, Coronary Circulation, Structure and working of myocardial fibres, Origin and conduction of cardiac impulses, Cardiac Cycle and cardiac output.</p> <p>4 Physiological classification based on thermal biology (Extreme temperature adaptations), Osmoregulation in aquatic vertebrates and invertebrates.</p>
U.G Programme in Zoology (Hons.) under CBCS	IV	CC-IX (Immunology)	This programme aims to give an overview of the Immune System with respect to health and diseases,	1 Learn in details about Antigen, Antibody, Cytokines, Adjuvants,

			<p>Historical perspective, Cells and organs associated with the Immune system, Concept of Innate and Adaptive immunity.</p>	<p>Haptens, Complement proteins and its activation, MAC formation, MHC.</p> <p>2 Know about Immuno-techniques and Immuno-assays and their applications</p> <p>3. Know about Hypersensitivity reactions; Gell and Coombs' classification.</p> <p>4 Immunology of various diseases - Malaria, Filariasis, Dengue and Tuberculosis.</p> <p>5 Learn about various types of vaccines; Active & passive immunization (Artificial and natural).</p>
<p>U.G Programme in Zoology (Hons.) under CBCS</p>	<p>IV</p>	<p>SEC-2 (Sericulture)</p>	<p>The programme will impart basic knowledge of ornamental fish Industry and inculcate its scope as an avenue for career development as an entrepreneur or as an aquari-culturist.</p>	<p>1. Students will be able to know the fundamentals of aquarium fish industry.</p> <p>2. Students will understand the biological features of aquarium fishes.</p> <p>3. Students will get to know the food and feeding habits of aquarium fishes.</p> <p>4. Students will get aware about transportation of fishes</p> <p>5. Students will have 'hands-on' experience by exposure to technology, production, functioning or operation of an aquarium in the ornamental fish farms, hatcheries, and fish</p>

				feed production plant as study tours or field visits.
U.G. Programme in Zoology (Hons.) under CBCS	V	CC-XI (Molecular biology)	Students will get knowledge about different important aspects of molecular biology including the structure and functions of DNA, central dogma, DNA repair processes, various regulations of gene expressions, and also they will learn about different molecular techniques	<p>1 Know the salient features of Nucleic acids (DNA & RNA), Chargaff's Rule, Hypo and Hyperchromic shift; Watson and Crick Model of DNA; RNA types & Functions.</p> <p>2 Develop concept about Central Dogma – Detailed mechanism of Replication, Transcription and Replication – in both prokaryotes and eukaryotes.</p> <p>3 Learn about Post Transcriptional Modifications and Processing of Eukaryotic RNA - Capping and Poly A tail, Splicing & alternative splicing, Split gene concept, RNA editing, Exon shuffling.</p> <p>4 Know about the regulation of gene expression in prokaryotes and eukaryotes; Gene silencing, Genetic imprinting.</p> <p>5 Know about the Molecular Techniques - PCR, Western blot, Southern blot, Northern Blot and DNA sequencing.</p>
U.G. Programme in Zoology (Hons.) under CBCS	V	CC-XII (Genetics)	This programme aims to provide an in-depth knowledge of several facets of genetics. Students can learn several aspects including the genetics of inheritance, method of	<p>1 Understand the principles of Mendelian Genetics and its extension - Laws of inheritance and its exceptions, Incomplete dominance</p>

			<p>gene mapping, mutations, genetic and molecular mechanism of sex determination, bacterial and viral genetics, and transposable genetic elements.</p>	<p>and co-dominance, Epistasis Multiple alleles, Lethal alleles, Pleiotropy; Sexlinked, sex-influenced and sex-limited inheritance; Polygenic Inheritance.</p> <p>2 Concept building on Linkage, Crossing Over and Chromosomal Mapping.</p> <p>3 Know about Chromosomal aberrations and its effects; Genetic and molecular basis of Mutations, effects of physical and chemical mutagens.</p> <p>4 Learn Genetic and molecular mechanism of Sex-determination in Drosophila and Humans.</p> <p>5 Study Extra-chromosomal and maternal Inheritance. Study bacterial and Phage genetics - Conjugation, Transformation, Transduction; Complementation test in Bacteriophage.</p> <p>6 Learn about Transposable Genetic Elements in bacteria, maize, Drosophila and Humans.</p>
<p>U.G. Programme in Zoology (Hons.) under CBCS</p>	V	<p>Department Specific Elective – 1 (DSE-1)</p> <p>(Animal Biotechnology)</p>	<p>This programme aims to provide an in-depth knowledge of several facets of biotechnology. Students can learn several aspects including the basics of genomics, recombinant DNA technology, various</p>	<p>1 Knowledge about the organization of prokaryotic and eukaryotic genome; Concept of genomics.</p> <p>2</p>

			<p>molecular techniques, transgenics, cell culture, genetic diagnosis and gene therapy</p>	<p>Learning Recombinant DNA Technology; Concept building on Principles of Gene manipulation, Cloning and their applications in Biotechnology.</p> <p>3 Various Molecular Biology Techniques – their principals and applications - Southern, Northern and Western blotting, DNA sequencing: Sanger method, Polymerase Chain Reaction, DNA Fingerprinting and DNA microarray.</p> <p>4 Concept of Transgenics and Genetically Modified Organisms; Applications of transgenic animals - Production of pharmaceuticals, production of donor organs, knockout mice.</p> <p>5 Know about various Cell Culture Techniques and Applications, Genetic diseases and Gene Therapy.</p>
<p>U.G. Programme in Zoology (Hons.) under CBCS</p>	V	<p>Department Specific Elective – 2 (DSE-2) (Parasitology)</p>	<p>This programme aims to provide an in-depth knowledge of parasitology including the basic concept of host, vector, and parasite.</p> <p>Moreover, they will learn about the Morphology, Life Cycle, Prevalence, Epidemiology, Pathogenicity, Diagnosis, Prophylaxis and Treatment of several clinically important parasites</p>	<p>1 Students acquire knowledge on Parasitism, Parasite, Parasitoid, Vectors and Host-Parasite relationships.</p> <p>2 Study of Morphology, Life Cycle, Prevalence, Epidemiology, Pathogenicity, Diagnosis, Prophylaxis and Treatment of some parasitic Protists and helminths</p>

				<p>3 Life Cycle, Prevalence, Epidemiology, Pathogenicity, Diagnosis, Prophylaxis and Treatment of some nematodes</p> <p>4 Study of various parasitic arthropods - ticks, mites, Lice, Flea and Bug.</p> <p>5 Study various Parasite Vertebrates - Cookicutter Shark, Hood Mocking bird, Vampire bat.</p>
<p>U.G. Programme in Zoology (Hons.) under CBCS</p>	<p>VI</p>	<p>CC-XIII (Developmental Biology)</p>	<p>This programme aims to provide a detailed knowledge of developmental biology including the process and mechanisms of gametogenesis, fertilization, blastulation, gastrulation, implantation, placentation, and brain & eye development. Moreover, they will learn about the characteristics, functions, and diverse applications of stem cells.</p>	<p>1 Students learn about gametogenesis, Fertilization and early embryonic developments - Cleavage, Blastulation, Fate map construction, Gastrulation, Embryonic induction and Organizer concept.</p> <p>2 Know about extra-embryonic membranes in birds, implantation of embryo in humans and Placentation.</p> <p>3 Students have a concept of molecular Induction in Vertebrate Brain and Eye development; Modes of regeneration, epimorphosis, morphallaxis and compensatory regeneration.</p> <p>4 Develop knowledge of In vitro fertilization (IVF), Stem cell, Applications of stem cell therapy in bone marrow transplantation,</p>

				Amniocentesis and Teratogenesis.
U.G. Programme in Zoology (Hons.) under CBCS	VI	CC-XIV (Evolutionary Biology)	This programme aims to provide a detailed knowledge of evolutionary biology including the origin of life on Earth, Darwinism and Neo-Darwinism, natural selection, Hardy-Weinberg equilibrium, Genetic drift, Speciation and adaptive radiation, extinctions. And the other important aspects of evolution.	<p>1 Students learn about the origin of life - Chemogeny, RNA world, Biogeny, Origin of photosynthesis, Evolution of Eukaryotes</p> <p>2 Know Lamarckism, Darwinism and Neo-Darwinism. Learn about the Geological time scale, Molecular Clock, evolution of horse and humans.</p> <p>3 Students have a concept of Natural selection, Synthetic theory, Hardy-Weinberg equilibrium, Genetic drift, founder effect and population bottleneck.</p> <p>4 Students develop knowledge of Speciation and adaptive radiation; have a concept of background and mass extinctions, K-T extinction.</p> <p>5 Students know of construction and interpretation of Phylogenetic tree using parsimony, convergent and divergent evolution; learn the basics of bioinformatics.</p>
U.G. Programme in Zoology (Hons.) under CBCS	VI	Discipline Specific Elective-3 (DSE-3) (Animal Behaviour)	Through this programme, students will learn about the Origin and history of Ethology; Methods and recording of a behaviour. Moreover, the students learn in detail about Patterns of Behaviour found in animals	<p>1 They learn about the Social Behaviour of animals like termites and honey bees, Altruism, and Wide Aspects of Sexual behaviour in animals.</p>

				<p>2 Students learn about Chronobiology, Circadian Rhythm, Role of Melatonin, Photoperiods and their role in animal reproduction.</p>
<p>U.G. Programme in Zoology (Hons.) under CBCS</p>	<p>VI</p>	<p>Discipline Specific Elective-4 (DSE-4) (Endocrinology)</p>	<p>Through this programme, students can get detailed knowledge about the complex endocrine system. classification, characteristics and Transport of Hormones, Neurosecretions and Neurohormones.</p> <p>Students study about pineal gland; pituitary gland, hormones, their functions; Hypothalamo-hypophysial Axis</p>	<p>1 Know the endocrine glands, their functions and disorders caused by their hypo or hypersecretions.</p> <p>2 Students learn about the molecular function of different classes of hormones (steroidal, non-steroidal hormones) and their regulation</p> <p>3 Learn about Bioassays of hormones using RIA and ELISA; hormonal control of ovulation in rats and humans.</p> <p>4 The multifaceted role of Vasopressin and Oxytocin; Hormonal regulation of parturition.</p>
<p>U.G. Programme in Zoology (Hons.) under NEP</p>	<p>I</p>	<p>Major (Non-chordates)</p>	<p>This programme aims to acquaint the students about the diversity of animals (invertebrates) of this universe specially their taxonomic position of animal kingdom as well as their physiology and organ system.</p>	<p>1 At the end of the syllabus students learn the systematics and biology of non chordates through their adaptive features and their body organization.</p> <p>2 Comprehend the identification of species and their evolutionary relationships.</p>
<p>U.G. Programme in Zoology (Hons.) under NEP</p>	<p>I</p>	<p>Skill Enhancement Course (SEC-1) (Vermiculture)</p>	<p>Vermiculture is the study Commercial application of technologies that utilize earthworms for degrading waste organic materials for sanitation and agricultural re-use. Earthworms degrade</p>	<p>1. The course has a broad scope for employability</p> <p>2. Students will gather knowledge on soil</p>

			<p>organic waste materials and convert them into vermicompost.</p> <p>The programme aims to provide the students with knowledge of vermitechnology and its application in agriculture as well as entrepreneurship.</p>	<p>earthworms, their characteristic features, occurrence, and their influence on soil fertility and solid waste management are included.</p> <p>3. Students will gather knowledge on Vermicomposting technology in respect of the global level as well as the Indian perspective.</p> <p>4. Application of Vermiculture products and their benefits in agriculture practice.</p>
<p>U.G. Programme in Zoology (Hons.) under NEP</p>	I	<p>Minor (Non-Chordate)</p>	<p>This programme aims to provide a basic knowledge of animal diversity (invertebrates). Students will learn about the salient features of the major phylum of invertebrates and major classes of vertebrates.</p>	<p>1 In this course, students can learn about the basics of taxonomy, classification and systematics.</p> <p>2 Through the understanding the biology of invertebrates they will learn about the organization and adaptive features of the studied animals.</p>
<p>U.G. Programme in Zoology (Hons.) under NEP</p>	I	<p>Multi-Disciplinary Course (MDC) (Introduction to Animalia)</p>	<p>The specific learning goal for a general zoological overview of the animal world is to provide students with a working knowledge of fundamental concepts that will help further understand the course curriculum for further advanced studies, interests and works.</p>	<p>1 This basic course makes the students familiar with animal classification schemes and associated taxonomic group diagnostic features.</p> <p>2 This will also help in developing an understanding and ability to apply basic zoological principles.</p>
<p>U.G. Programme in Zoology (Hons.) under NEP</p>	II	<p>Major (Chordates)</p>	<p>This programme is designed to give a learner the fundamental understanding of the diversity of Phylum Chordata with emphasis on their origin, key characteristics, classification, distribution, and function.</p>	<p>1 The students will get knowledge to explain the diversity of Protochordates and chordates. Identify the taxonomic position of chordates, their diversity, and their distribution.</p> <p>2</p>

			<p>This course will make the students enlightened with the concept of diversity, organization, adaptation, and taxonomic status of Chordates.</p> <p>The course will give an understanding of the systemic physiology of chordates. There will be a discussion about the affinities of chordates to different groups.</p>	<p>Gain insights about economic importance and significance Pieces and Pisciculture.</p> <p>3 Identify and distinguish between poisonous and non-poisonous snakes by observing characteristic features.</p> <p>4 Students gain knowledge about the composition and significance of venom.</p> <p>5 Gain insights About The Structural specialties of birds which will help them for Poultry (commercial application).</p> <p>6 Adaptive radiation of Mammals will give the insight into diversity and distribution of Mammals.</p>
<p>U.G. Programme in Zoology (Hons.) under NEP</p>	II	<p>Skill Enhancement Course (SEC-2) (Sericulture)</p>	<p>The main objective of this programme is to give the students a proper understanding of Sericulture.</p> <p>Students will get knowledge about mulberry plant cultivation, different silkworms, culture techniques, silk production, and the knowledge of diseases and enemies of silkworms.</p> <p>The students can be utilized the knowledge in starting their own enterprise after completion of the course.</p>	<p>1. Get complete knowledge of Silkworms and their different types.</p> <p>2. Get knowledge about technology of silkworm culture and making of silk.</p> <p>3. To know about different diseases on enemies of silkworms.</p> <p>4. Get a brief idea about entrepreneurship in sericulture.</p>
<p>U.G. Programme in Zoology (Hons.) under NEP</p>	II	<p>Minor (Chordate)</p>	<p>This programme is designed to give a learner the fundamental understanding of the diversity of Phylum Chordata with emphasis on their origin, key characteristics, classification,</p>	<p>1 The students will get knowledge to explain the diversity of Protochordates and chordates, identify the taxonomic position of chordates, their diversity and distribution.</p>

			<p>distribution and functioning.</p> <p>This course will make the students enlightened with the concept of diversity, organization, adaptation and taxonomic status of Chordates.</p> <p>The course will give the understanding of systemic physiology of chordates. There will be discussion about the affinities of chordates to different groups.</p>	<p>2 They will gain insight into the economic importance and significance of Pieces and Pisciculture, and identify and distinguish between poisonous and non-poisonous snakes by observing characteristic features.</p> <p>3 Students will gain knowledge about the composition and significance of venom and the structural specialities of birds which will help them with Poultry (commercial application).</p> <p>4 Adaptive radiation of Mammals will give them insight into the diversity and distribution of Mammals.</p>
<p>U.G. Programme in Zoology (Hons.) under NEP</p>	<p>II</p>	<p>Multi-Disciplinary Course (MDC) (Applied Zoology I)</p>	<p>Students will get knowledge about mulberry plant cultivation, different silkworms, culture techniques, silk production, and the knowledge of diseases and enemies of silkworms. The students can be utilized the knowledge in starting their own enterprise after completion of the course.</p> <p>Students will get knowledge about different bees, culture techniques, honey harvesting, and knowledge diseases enemies of honey bees. The knowledge gained by the students can be utilized in the field or even to start their own enterprise after completion of the course.</p>	<p>1. Comprehensive knowledge of different aspects of applied Zoology.</p> <p>2. Understanding about culture processes and rearing of different economically important animals.</p> <p>3. To know about different diseases on enemies of economically important animals.</p> <p>4. Get a brief idea about the advantages and limitations of different economically important animals.</p>

Course Outcome (CO) of PSYCHOLOGY

SEMESTER	MAJOR	MINOR	MULTI-DISCIPLINARY COURSE	SKILL ENHANCEMENT COURSE
<u>I</u>	Introduction to Psychology: To introduce students to the fundamental principles and scopes in Psychology and to develop a knowledge base of psychological processes.	Foundations of Psychology: To understand the basic psychological processes and their applications in everyday life.	Introduction to Forensic Psychology: To develop an understanding about the basics of Forensic Psychology and Criminal Profiling	Stress Management: Students will learn how they can adjust and manage to cope with stress more effectively.
<u>II</u>	Basic Psychological Processes: To develop a knowledge base of the basic psychological processes with an emphasis on the practical applications.	Psychology for Health and Well-Being: To understand the spectrum of health and illness for better health management.	Psychological First Aid: To develop the orientation and skills for enhancing immediate and ongoing safety, and provide psychological aid to emotionally overwhelmed or distraught survivors of disastrous events.	Behavior Modification: To understand the concept of behaviour modification and its applications.
<u>III</u>	Major1: Quantification in Psychology:	--	Positive Psychology:	Emotional Intelligence: To understand the

	<p>To develop basic understanding of quantification in psychological research.</p> <p>Major 2: Statistics in Psychological Research: To develop knowledge about application of statistics in Psychological Research.</p>		<p>To introduce the basic concepts of Positive Psychology and understand its applications in various domains.</p>	<p>concept of emotional intelligence and learn ways of developing it.</p>
<u>IV</u>	<p>Major I</p> <p>Biological Foundations of Behaviour: To develop a sound understanding of the biological processes underlying behavior.</p> <p>Major II:</p> <p>Social Psychology</p> <p>To introduce the concepts and principles of Social Psychology.</p> <p>Major III</p> <p>Research</p>	<p>Minor 1</p> <p>Basics of Developmental and Educational Psychology:</p> <p>To develop concepts and principles of developmental and educational psychology.</p>		

	Methodology: To foster a conceptual understanding of the basics of the research methods and testing approaches in Psychology.			
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Course title: History of Santali Literature

Course Code: Major/DS Course (Core) SANT1011

Program Outcome:

The syllabus for Major (Core) Course 1 (MC1) under the NEP 2020 is structured to provide students with a comprehensive idea about the development of Santali literature over the ages. It traces the path of the growth of Santali literature from the period of its ancient era.

Course Outcome: The completion of the course is supposed to benefit the students in the following ways:

1. It offers a comprehensive understanding of social and intellectual climate of santal society.
2. The course offers extensive insight into the history of Santali Ancient literature, while laying special emphasis on various literary movements, genres and writers that are held to be the representatives of their times.
3. It helps the students to evaluate the way sociocultural and historical phenomena influence the literary production of a particular period.
4. The students are also offered an in-depth understanding on the growth of the Santali Ancient literature.

Course title: History of Santali Language & Literature Credit: 4

Program Outcome:

The syllabus for Minor Elective Course 1 (MEC1) under the NEP 2020 is structured to provide students with a comprehensive idea about the development of Santali language and literature over the ages. It traces the path of the growth of Santali literature from the period of its ancient, mediaeval, to the present era.

Course Outcome: The completion of the course is supposed to benefit the students in the following ways:

1. It offers a comprehensive understanding of social and intellectual climate of santal society.
2. The course offers extensive insight into the history of Santali literature, while laying special emphasis on various literary movements, genres and writers that are held to be the representatives of their times.
3. It helps the students to evaluate the way socio-cultural and historical phenomena influence the literary production of a particular period.
4. The students are also offered an in-depth understanding on the growth of the Santali literature.

Course title: Basic Santali Grammar Credit: 3

Course code: Multidisciplinary Course SANT1031

Program Outcome: The syllabus for Interdisciplinary Course 1 under the NEP 2020 is structured to provide students with a comprehensive idea about the Structure of Santali Grammar. It increases their grammar skill. Students will understand the effective communication skill in Santali language. .

Course Outcome: The completion of the course is supposed to benefit the students in the followingways:

- 1.It offers a comprehensive understanding of Santali grammar.
- 2.Students will learn correct grammar skill In a professional context.
- 3.It helps the students to make sentence in Santali Language.
- 4.The students are also offered an in-depth understanding on the structure of the Santali grammar.

Course code: Ability Enhancement Course (L1-1 MIL) SANT 1041

Program Outcome: The syllabus for Ability Enhancement Compulsory Course 1 (AECC1) under the NEP 2020 is structured to provide the knowledge where students will learn the grammatical form of Santali and use of this form in pacific communicative context. Students will develop their reading writing and communicative skill in Santali language.

Course Outcome: The completion of the course is supposed to benefit the students in the followingways:

1. It will heighten students awareness of correct usage of Santali grammar in writing and speaking.
2. Students will improve their speaking ability in Santali both in terms of fluency and comprehensibility.
3. Students will improve their reading fluency skills through extensive reading.
4. Students will strengthen their ability to write essays and summaries using the process approach.

Course code: Skill Enhancement Course (SEC) SANT 1051

Program Outcome: The syllabus for Skill Enhancement Course 1 (SEC1) under the NEP 2020 is structured to provide idea about Translation as well as Training in translation techniques. It introduces the concept and application of translation in practice.

Course Outcome: The completion of the course is supposed to benefit the students in the followingways:

1. Students will be able to develop the translation skills.
2. Concept of translation will be clear.
3. Opportunities for work will be expend in the field.

Course title: Origin & Development of Santali Language Credit: 4

Course code: Major/DS Course (Core) SANT2011

Program Outcome: The syllabus for Major (Core) Course 2 (MC2) under the NEP 2020 is structured

to provide students with a comprehensive idea about the development of Santali language over the ages. It traces the path of the growth of Santali language from the period of its ancient, mediaeval, to the present era. The students are also offered an in-depth understanding on the growth of the Santali language under the influence of various other languages including English, Bengali, Hindi, Oria and Sanskrit, besides being mentored in the structural nitty-gritties of the language.

Course Outcome: The completion of the course is supposed to benefit the students in the following ways:

1. The course offers extensive insight into the history of Santali language, while laying special emphasis on language movements, Ol-chiki scripts invention and linguist that are held to be the representatives of their times.
3. It helps the students to evaluate the way socio-cultural and historical phenomena influence the Santali language of a particular period.
4. The students are also offered an in-depth understanding on the development of the Santali language.

Course title: Santali Folk Literature and Culture Credit: 4

Course code: Minor Course SANT 2021

Program Outcome: The syllabus for Minor Course 2 (MC2) under the NEP 2020 is structured to provide students with a comprehensive idea about the Folk life, culture and society in the context of folk literature. Students will acquire knowledge about Santal society and how it has developed as well as changes occur from hunter-gatherer societies to early modern societies.

Course Outcome: The completion of the course is supposed to benefit the students in the followingways:

1. Students will inform about the life and lifestyle through literature.
2. It helps the students to understand about folk art, folk life etc..
3. Students explain and prove the truth of folklore, oral tradition, and oral literature.

Course title: Santali Literature Credit: 3

Course code: Multidisciplinary Course SANT2031

Program Outcome: The syllabus for Interdisciplinary Course 2 under the NEP 2020 is structured to

provide students the basic knowledge about Santali literature. An attempt is made to see and understand literary culture and life in the context of selected readings.

Course Outcome: The completion of the course is supposed to benefit the students in the following ways:

1. It offers a basic understanding of social and intellectual climate of santal society.

2. Students are able to explain and formulate of the importance of Santali literature performance.
3. Students will know the basic concept of Santali literature.

Course code: Skill Enhancement Course (SEC) SANT 2051

Program Outcome: The syllabus for Skill Enhancement Course 1 (SEC1) under the NEP 2020 is structured to provide ideas about Report Writing and Designing Advertisement. Students will gain knowledge about the Writing, Editing and Proof-Reading techniques. It introduce the concept and application of Practical Writing.

Course Outcome: The completion of the course is supposed to benefit the students in the followingways:

1. Students will be able to develop the writing skills.
2. Students will be introduced with Employable Communicative Skill.
3. Opportunities for work will be expend in the field.

Course Code: Major/DS Course (Core) SANT3011

Program Outcome: The syllabus for Major (CC) Course 3 (MJ3) under the NEP 2020 is structured to provide students with a comprehensive idea about knowledge of the Grammar features of a language is essential for understanding the literature of that language. This course aims to introduce students with the basic concept of Grammar with special reference to the Grammar features of the Santali language.

Course Outcome: The completion of the course is supposed to benefit the students in the following ways:

- 1.It offers a comprehensive understanding of Santali grammar.
- 2.Students will learn correct grammar skill In a professional context.
- 3.It helps the students to make sentence in Santali Language.
- 4.The students are also offered an in-depth understanding on the structure of the Santali grammar.

Course Code: Major/DS Course (Core) SANT3012

Program Outcome: The syllabus for Major (CC) Course 4 (MJ4) under the NEP 2020 is structured to provide students with a comprehensive idea about the literary works and genres of Santali literature over the ages. It traces the path of the growth of Santali literature in the period of its mediaeval era. To familiarize students with the literary texts of Santali literature in medieval period.

Course Outcome: The completion of the course is supposed to benefit the students in the following ways:

- 1.It offers a comprehensive understanding of social and intellectual climate of santal society .
- 2.The course offers extensive insight into the history of Santali literature, while laying special emphasis on various literary

movements, genres and writers that are held to be the representatives of their times.

3. It helps the students to evaluate the way socio-cultural and historical phenomena influence the literary production of a particular period.

4. The students are also offered an in-depth understanding on the growth of the Santali literature.

Course Code: Multidisciplinary Course SANT3031

Program Outcome: The syllabus for Multidisciplinary Course 3 (MDC3) under the NEP 2020 is structured to provide

students with a comprehensive idea about Santal Culture and Society. Students will acquire knowledge about Santal society and how it has developed as well as changes occur from hunter-gatherer societies to early modern societies.

Course Outcome: The completion of the course is supposed to benefit the students in the following ways:

1. Students will be able to understand the Santali Society.
2. Students will be able to know about the culture and traditions of Santals.
3. Be aware of social, political, religious and economic context through the history.
4. Students will be aware about indigenous tribal society.

Course Code: Ability Enhancement Course (L1-2MIL) SANT3041

Program Outcome: The syllabus for Ability Enhancement Course (L1-2MIL)

Course 3 under the NEP 2020 is

structured to provide students the basic knowledge about Santali literature. An attempt is made to see and understand literary

culture and life in the context of selected readings. Students will acquire knowledge about Oral and Written Literature.

Course Outcome: The completion of the course is supposed to benefit the students in the following ways:

1. It offers a basic understanding of social and intellectual climate of Santali society.
2. Students are able to explain and formulate the importance of Santali literature performance.
3. Students will know the basic concept of Santali literature.

Course Code: Skill Enhancement Course (SEC) SANT 3051

Program Outcome: The syllabus for Skill Enhancement Course 3 (SEC3) under the NEP 2020 is structured to provide ideas

about Creative Writing. Students will gain knowledge about the Language skill, Models of Creative Writing. Students will

develop creative skills through writing.

Course Objective: The completion of the course is supposed to benefit the students in the following ways:

1. Students will be able to develop the creative skills.

2. Students will develop intellectually through creativity.
3. Students gain creative skills through this course.
4. Students can create new topics to make the society aware.

Course Code: Major/DS Course (Core) SANT4011

Program Outcome: The syllabus for Major (CC) Course 5 (MJ5) under the NEP 2020 is structured to provide students with a comprehensive idea about the Santal Rebellion. You will know the whole history of the Santal Rebellion. Students are able to understand history of Santal Rebellion in Santali Literature.

Course Outcome: The completion of the course is supposed to benefit the students in the following ways:

1. It offers a comprehensive understanding of Santal Rebellion.
2. It helps the students to evaluate the way historical phenomena influence the literary production of a Santali Literature.
3. Contribution of Santal woman in Santal Rebellion Influences Students.
4. The students are also offered an in-depth understanding on the development of the Santali Rebellion.

Course Code: Major/DS Course (Core) SANT4012

Program Outcome: The syllabus for Major (CC) Course 6 (MJ6) under the NEP 2020 is structured to provide students with a comprehensive idea about the literary works and genres of Santali literature in modern period. It traces the path of the growth of Santali literature in the period of its modern era. To familiarize students with the literary texts of Santali literature in modern period.

Course Outcome: The completion of the course is supposed to benefit the students in the following ways:

1. It offers a comprehensive understanding of social and intellectual climate of Santal society.
2. The course offers extensive insight into the history of Santali literature, while laying special emphasis on various literary movements, genres and writers that are held to be the representatives of their times.
3. It helps the students to evaluate the way socio-cultural and historical phenomena influence the literary production of a particular period.
4. The students are also offered an in-depth understanding on the development of the Santali literature.

Course Code: Major/DS Course (Core) SANT4013

Program Outcome: The syllabus for Major (CC) Course 7 (MJ7) under the NEP 2020 is structured to provide students with a

comprehensive idea about the poetics. .Students are able to understand the structures of the Santali poem. To familiarize students with the the development of Santali poetry literature. Students are able to understand the poem and poetry movement in Santali literature.

Course Outcome: The completion of the course is supposed to benefit the students in the following ways:

- 1.To understand the structures of Santali poems.
2. Analyse the poetics Theories of Western countries as well as India.
3. It helps the students to evaluate the way socio-cultural and historical phenomena influence in Santali poem and poetry

Course Code: Minor Course SANT4021

Program Outcome: The syllabus for Major (CC) Course 3 (MN3) under the NEP 2020 is structured to provide students with a comprehensive idea about the poetics and Prose.Students are able to understand the structures of the Santali poem, Novel and Short story. To familiarize students with the the development of Santali poetry, Novel and Short Story literature. Students are able to understand the poem and Prose literature movement in Santali literature.

Course Outcome: The completion of the course is supposed to benefit the students in the following ways:

- 1.To understand the structures of Santali poems, Novels and Short Storys.
- 2.Analyse the poetics Theories of Western countries as well as India.
- 3.Students are able to explain the characteristics of different story and Novel.
- 4.To analyze historical, social, economic, and political, that influenced in a Novel and short story.
5. It helps the students to evaluate the way socio-cultural and historical phenomena influence in Santali Poetry and Prose.Unit wise Lecture hour's distribution

Programme Outcome, Programme Specific Outcome (PSO) and Course Outcome (CO)

Department of Sociology

Government General Degree College, Singur

Pursuing major course in the discipline Sociology has implications that not only set to develop a deeper understanding of the society but also it helps in developing perspectives about things surrounding oneself through the 'sociological lens'. Studying the emergence of Sociology as an intellectual response to the social crisis also helps understand the background and importance of the social and historical contexts in shaping of the discipline and society. Through the understanding of various basic and advanced theories and concepts knowledge about society, human social behaviour, social life, societal institutions, social interactions and social structures are imparted and how they play a crucial role in generation and sustainance of deep rooted social inequalities in society are exposed.

Inculcating the importance of values, morals and manners it is expected that those who study the course will develop a value-neutral understanding of the world. Removing biases that create an effective disjunction of a community from another is minimized as knowledge about the culture and social life of the rural-urban, tribal and other backward communities help students understand how they stand at a juncture in society that connects every other individual in a continuum. Global as well as Indian and local Contexts are highlighted for each of the social institutions and issues so that knowledge base of the students can be effectively broadened with the use of practical examples through which they can train their minds for comparatively analysis.

This course also aims to develop aptitudes like questioning, critical thinking as well as critical analysis and interpretation of macro and micro factors related to the society. Skills of communication both written and verbal is instilled through pursuance of this course. Research methodology and statistical lessons are designed to make them understand how they can not only identify a social issue but also study them critically and analyze them so that it can have effective implications for formulation of social policies. They are also guided to develop a deep sense of observation that turns out as an effective tool for gathering data from society. Dissertation not only makes them practically learn how to make use of these social scientific research methods but also prepares them to undertake future research works.

Students are made to sensitize about their knowledge about folkways, mores, culture, population studies and policies that make them instill a sense of ethical and social responsibility. Through this programme students can not only be prepared for higher academic orientations and research but also such academic background aims at enhancing skills, capacities, capabilities and employment opportunities in and across Sociology and allied fields of Social work, Rural Development, Social Welfare and others.

Name of The Programme	Year of Introduction	Semester	Paper	Programme Specific Outcome	Course Outcome
NEP	2023-2024	I	Major	This programme aims to introduce Sociology to the students by defining ideas and concepts as well as impart foundational ideas, events and stalwarts which are most common in any discourse related to the discipline.	SOCI1011: 1.Explaining basic foundational ideas, concepts, events that have played a pivotal role in the birth of the discipline of Sociology. 2.Discussions about theorists also play a crucial role in this section.
B.A. Sociology (Hons.) under CBCS	2017-18	<i>Semester 1</i>	Core Course 1 Title: Introductory Sociology I	This programme aims to introduce Sociology as a discipline to the students by defining notions which are most common in any discourse related to the discipline.	1.1 Explaining the scope of Sociology as distinct from other social sciences; Developing sociological imagination and distinguishing the discipline from Common Sense; Role of sociology in doing social criticism; Defining the subject matter of Micro and Macro Sociology. 1.2 Describing basic concepts of Sociology like Social Institution; Social System; Association; Aggregates,

					<p>Categories; Groups and its Forms; Status and Role; Norms & Values; Social Structure; Social Processes.</p> <p>1.3</p> <p>Defining Culture and discussing its various aspects such as of Cultural Lag, Cultural Variability, Cultural Universality, Cultural Relativism and Ethnocentrism; Understanding concept Socialization and its meaning, types and agencies</p> <p>1.4</p> <p>Elucidating Social Change, its types and Agencies; Highlighting the role of Media in a global age; Elaborating on Social Mobility, its Types and Factors.</p> <p>1.5</p> <p>Understanding Social Stratification, its</p>
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					various forms and changing nature.
			Core Course 2 Title: Rise of Sociology as a Discipline	<p>This course is aimed at describing the social background and intellectual atmosphere in which Sociology was born highlighting contributions of its forerunners from both European and non-European sources.</p>	<p>2.1 Describing the era of Enlightenment in Europe and how it influenced scientific thinking.</p> <p>2.2 Discusses various theories, by Hobbes, Locke, Rousseau, Montesquieu, on Human Society and Foundations of Society.</p> <p>2.3 Elaborates on how rise of Sociology was shaped by French, American and Industrial Revolutions.</p> <p>2.4 Describes various contributions of Auguste Comte.</p> <p>2.5 Understands the idea of 'Society' in Non-European Society highlighting that of Ibn Khaldun.</p>

			Minor	This programme aims to introduce Sociology to the students by defining ideas and concepts as well as impart foundational ideas, events and stalwarts which are most common in any discourse related to the discipline.	SOCI1021: 1.Explaining basic foundational ideas, concepts, events that have played a pivotal role in the birth of the discipline of Sociology. 2.Discussions about theorists also play a crucial role in this section.
			Generic Elective 1 (For other disciplines)	This course intends to familiarize students doing hon. in other	1. Introducing Sociology as a Discipline, learning about Sociological

			<p>Title: Invitation to Sociology I</p>	<p>disciplines with the idea of Sociology distinct from other social sciences and enlightening them about the fundamental concepts of this discipline.</p>	<p>Imagination, Relation of Sociology with other Social Sciences and also its scientific nature.</p> <p>2. Learning about Some Basic sociological Concepts.</p> <p>3. Understanding Culture, Society and Socialization.</p> <p>4. Understanding Meaning, Types and Agencies of Social Change and Social Mobility</p> <p>5. Learning about concept, features and forms of Social Stratification.</p>
		MDC/ID C		<p>Students acquire knowledge about basic concepts, models and features of population which they can use for knowledge about general nature of population.</p>	<p>SOCI1051:</p> <p>1. Developing ideas about social demography.</p> <p>2. Learning about various theories of population.</p> <p>3. Learning about strategies that can help learn about research methodologies and registration systems.</p>

					4. Learning about various aspects of migration and fertility.
		<i>Semester 2</i>	<p>Core Course 3</p> <p>Title: Introductory Sociology II</p>	<p>This course is a description of important social institutions and related processes and their impacts.</p>	<p>3.1 Discussing various dimensions of Family, Marriage and Kinship.</p> <p>3.2 Elaborating different facets of Education and Economic life through theories on schooling, Social Inequality and Cultural Reproduction, and those of Taylorism and Fordism.</p> <p>3.3 Understanding Religion by knowing its definition, Origin, and Functions related concepts like Science and Magic; Secularization, Religious Fundamentalism and Ethnicity.</p> <p>3.4 Introducing concepts related to Social Control, Crime, and Deviance.</p> <p>3.5</p>

					Explaining the process of Urbanization and associated ideas and theories.
			Core Course 4 Title: Classical Sociological Thought I	This paper elaborately teaches about contributions of three great thinkers— Herbert Spencer, Karl Marx and Emile Durkheim.	4.1. Analysing the contributions of Herbert Spencer. 4.2 Elaborating concepts and ideas written by Karl Marx. 4.3 Understanding various theories of Émile Durkheim.
			Generic Elective 2 (For other disciplines) Title: Invitation to Sociology II	This programme aims at familiarizing students from other discipline with ideas of important social institutions.	(1) Understanding Nature, Types and Changes in Family, Marriage and Kinship. (2) Learning about Education and Social Inequality through Cultural Reproduction and understanding Taylorism and Fordism. (3) Understanding Religion as a sociological concept and notions related to it. (4) Learning about Social Control, its

					<p>Meaning, Forms and Agencies.</p> <p>(5) Knowing about Urbanization as a Concept, process and related Problems.</p>
		<p><i>Semester</i> 3</p>	<p>Core Course 5: Title: Sociology in India</p>	<p>This course describes the journey through which Sociological discourse came into existence in India, highlighting the contributions by Benoy Kumar Sarkar and Radhakamal Mukherjee</p>	<p>5.1. Tracing the ways through which practice of Sociology and Social Anthropology grew in India.</p> <p>5.2 Elaborating on contributions of Benoy Kumar Sarkar.</p> <p>5.3 Discussing ideas and theories of Radhakamal Mukherjee.</p>
			<p>Core Course 6: Title: Classical Sociological Thought II</p>	<p>This Programme enlightens students more about the contributions of classical Sociological thinkers, namely George Simmel, Max Weber and Vilfredo Pareto.</p>	<p>6.1 Elaborating on contributions of Georg Simmel.</p> <p>6.2 Analysing various theories by Max Weber.</p> <p>6.3 Discussing notions propounded by Vilfredo Pareto.</p>

			<p>Core Course 7</p> <p>Title: Modern Sociological Theory I</p>	<p>This programme focuses on various contemporary theoretical perspectives namely functionalism, conflict theory and symbolic interactionism.</p>	<p>7.1. Elucidating meaning, nature and scope of sociological theory by giving reference to various Philosophical Orientations: such as Positivist, Hermeneutic and Critical.</p> <p>7.2 Discussing Functionalist Theory emphasising on the contributions of Malinowski, Radcliffe-Brown, Talcott Parsons and Robert Merton.</p> <p>7.3 Elaborating Conflict Theory of Ralf Dahrendorf and Lewis Coser; also discussing the main features of critical theory following Frankfurt School.</p> <p>7.4 Understanding Symbolic Interactionism through the works of Charles Horton Cooley, George Herbert Mead and Herbert Blumer.</p>
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			<p>Skill Enhancement Course 1</p> <p>Title: Framing Questionnaire and Conducting Interview</p>	<p>This course equips students with knowledge about instruments of data collection, their types, advantages, limitations and also training them about the way of recording, processing and interpreting data.</p>
				<p>1. Introducing Questionnaire and Interview Methods and learning about preparations before using them.</p> <p>2. Understanding various types of Questionnaire and guidelines of framing a questionnaire</p> <p>3. Developing an understanding about various types of Interviews and guidelines of preparing interview schedule</p> <p>4. Describing ways of recording Data, and how to process and interpret them.</p> <p>5. Discussing limitations of Questionnaire and Interview Methods.</p>

		<p><i>Semester</i> 4</p>	<p>Core Course 8 Title: Society in India I</p>	<p>This paper elucidates various important aspects of Indian society such as family, caste etc. with a special focus on rural society in pre-British and British era.</p>	<p>8.1. Analysing various features of Rural agricultural Society and Culture in India during Pre-British and British era.</p> <p>8.2. Understanding pluralistic nature of Indian Society.</p> <p>8.3. Discussing forms, features and changing nature of Family, Kinship and Marriage in India.</p> <p>8.4. Elaborating various dimensions of Caste system in India.</p>
			<p>Core Course 9 Title: Modern Sociological Theory II</p>	<p>This paper further enriches students with analysis of other contemporary theories namely Exchange, Ethnomethodology, Phenomenology, Feminism and Post-modernism.</p>	<p>9.1 Analysing Exchange Theory as discussed by George Homans and Peter Blau.</p> <p>9.2. Discussing Phenomenology and Ethnomethodology following</p>

					<p>Husserl, Schutz and Harold Garfinkel.</p> <p>9.3</p> <p>Elaborating on Liberal, Radical and Socialist ideas of Feminist Theory.</p> <p>9.4.</p> <p>Understanding Post-modernism emphasizing on ideas of Michel Foucault and Zygmunt Bauman.</p>
			<p>Core Course 10</p> <p>Title:</p> <p>Sociology in India II</p>	<p>This paper focuses on the works and contributions of D. P. Mukerji, G. S. Ghurye and M.N. Srinivas.</p>	<p>10.1.</p> <p>Elaborating on major contributions of D. P. Mukerji.</p> <p>10.2.</p> <p>Discussing works of G. S. Ghurye.</p> <p>10.3.</p> <p>Understanding contributions of M.N. Srinivas.</p>
			<p>Skill Enhancement Course 2</p> <p>Title:</p> <p>Project Report Writing</p>	<p>Writing report on the research conducted is an essential part of social research.</p> <p>This paper prepares students for this task elaborating every necessary steps involved in the process.</p>	<p>1. Discussing scope, reason and format of Report Writing.</p> <p>2. Elucidating various stages in Planning and Writing Report.</p> <p>3. Explaining structure and Components of Research.</p>

					<p>4. Learning how to interpret Tables and Graphical Representation of Data as well as Use of Photographs and Case History.</p> <p>5. Developing insight on Ethical Issues related to social research and learning about ways of Referencing the Works of Others.</p>
			<p>Core Course 11</p> <p>Title: Society in India II</p>	<p>This programme aims at capturing changes occurring in every sector of Indian social life ranging from tribal life, rural sector to urban societies and then explaining multiple factors affecting social change in India.</p>	<p>11.1</p> <p>Explaining various features of Tribal societies in India, their problems and nature and factors of changes taking place in tribal life</p> <p>11.2</p> <p>Understanding Rural Society in India in post-independence era and discussing various changes in agrarian sector such as land-reform, green revolution etc. and their impact on rural class structure.</p> <p>11.3</p> <p>Developing an understanding</p>

		Semester 5			<p>about Urban Society in India from different perspectives, patterns of urbanization, Globalization and Indian Cities, relation with villages</p> <p>11.4 Explaining the process of Social Change in India in relation with Westernization, modernization and globalization, and role of factors such as economic development technology, education, media influencing social change.</p>
			Core Course 12	<p>Title: Research Methodology I</p> <p>This paper prepares students for doing social research by discussing its nature, significance and types, developing familiarity with Important Concepts, various types of research designs, and describing various steps of doing research.</p>	<p>12.1 Introducing the notion of Social Science Research, its Nature, Significance and Types</p> <p>12.2 Developing familiarity with Important Concepts of Social Science Research, e.g. data, hypothesis, Validity and Reliability,</p>

					<p>Deductive and Inductive Method, Qualitative and Quantitative Research etc.</p> <p>12.3 Discussing various types (Longitudinal, Cross sectional, Case Study, Experiment, Comparative) of Research Designs and Sampling and its types.</p> <p>12.4 Describing various steps involved in the process of Doing Research.</p>
			<p>Discipline Specific Elective 1 Title: Social Issues in India I</p>	<p>This course equips students with ideas about various social problems in India focusing on their causes and consequences. While discussing remedial measures taken by the government for eradicating such problems, this paper also evaluates those steps and reasons for their failure to bring about desired changes.</p>	<p>1. Learning about various facets of Communalism and Communal Riots with special reference to Religious Minority and Rise of Ethnic Identity .</p> <p>2. Discussing Concept, Types & Magnitude of Poverty & Unemployment, their Causes & Consequences and Strategies for</p>

				<p>Alleviating these problems.</p> <p>3. Analysing social problems experienced by Women and Children.</p> <p>4. Developing an understanding on Population Explosion & Migration.</p>
		<p>Discipline Specific Elective 2 Title: Sociology of Gender</p>	<p>Approaching gender from various perspectives is the goal of this paper focusing on basic concepts, gender based violence, relation of gender with work and political sector ending with a discourse on major feminist theoretical perspectives.</p>	<p>1. Learning about Basic Concepts related to Gender and discrimination based on it.</p> <p>2. Developing an insight on Causes, Magnitude and Remedial measures of violence against women.</p> <p>3. Understanding the relationship between Gender and Work.</p> <p>4. Discussing Role and status of women in Politics.</p> <p>5. Analyzing major theories on Feminism.</p>

			<p>Or Discipline Specific Elective 2 Title: Field Survey (FS) & Extension Outreach (EO)</p>	<p>Bridging the gap between classroom and outside world is the main objective of this paper. Keeping this goal in mind students are instructed to conduct a field survey and an extension outreach activity.</p>	<p>Students collectively visit a village or a locality of a city/town and carry out field survey to find out major social issues in that area. Teachers may accompany them. Then in order to create awareness on they perform various extension outreach activities through poster, demonstration and talk.</p>
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		Semester 6	Core Course 13 Title: Research Methodology II	<p>This paper trains students about two different methods of data collection— quantitative and qualitative. It also prepares them to apply statistics in social science research.</p>	<p>13.1 Discussing various Quantitative Methods of data collection, their types, Application, Advantages and Limitations.</p> <p>13.2 Discussing various Qualitative Methods of data collection, their features and types.</p> <p>13.3 Understanding Statistics – types (Descriptive and Inferential, Parametric and Non-Parametric), Role of Statistics in Social Science research; Frequency distribution and Graphical representation of data; Percentage Calculation from Table and interpretation.</p> <p>13.4 Learning about various types of Central Tendency and Measures of Dispersion.</p>
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			<p>Core Course 14</p> <p>Title:</p> <p>Religion and Society</p>	<p>This paper helps developing an understanding on religion from various perspectives, especially by discussing major theories on religions. It also discusses the scenario in Indian society in relation to religion.</p>	<p>14.1 Understanding Religion and related concepts</p> <p>14.2 Presenting various explanations on Religion and major theories on religion by Marx, Durkheim and Weber.</p> <p>14.3 Discussing dominant Religions & their Impact on Indian society.</p> <p>14.4 Analysing Concept and Nature of Secularism & Communalism with a focus on Challenges to secularism in present era.</p>
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			<p>Discipline Specific Elective 3 Title: Social Movement in India</p>	<p>This course teaches about social movement with a special focus on India and how peasant's and workers' movements emerged here. It also discusses the relationship between women and environmental movements in India.</p>	<ol style="list-style-type: none"> 1. Developing familiarity with the concept, elements, types and perspectives of Social Movements. 2. Learning about the history, issues and present conditions of Peasant & Worker's Movements in India. 3. Understanding Dalit and Ethnic Movements in India. 4. Analysing the relationship of Women & Environmental Movements in India with reference to its history, issues and emerging challenges in present era.
			<p>Discipline Specific Elective 4 Title: Dissertation Paper</p>	<p>In this course Students do an independent research applying their sociological knowledge.</p>	<p>Students prepare a dissertation (4000-5000 words), which may be based on field data, containing Introduction, Review of Literature, Method of Study,</p>

					Major Findings, Conclusion and Recommendations , and References.
			Or Discipline Specific Elective 4 Title: Social Issues in India II	This paper equips students with knowledge on various social issues affecting lives of people of India. These problems range from various forms of environmental degradation to public health concerns, social disorganization to problem of social exclusion and inequality.	<ol style="list-style-type: none"> 1. Analysing the relationship between Sociology and Environment while focusing on various environmental issues. 2. Discussing major issues related to public health and illness. 3. Developing insight on Social Disorganization, its Meaning, Characteristics, Causes and types. 4. Elucidating concept, nature and types of Social Exclusion & Inequality.

PROGRAMME OUTCOME OVERVIEW (CBCS SYLLABUS)

OF

GOVERNMENT GENERAL DEGREE COLLEGE, SINGUR

Affiliated to THE UNIVERSITY OF BURDWAN

(With effect from 2017)

Department of Anthropology

Programme Outcome Nos	Programme Outcome
PO A	Generating sense of equality amongst the students in terms of ethnicity and gender, and fundamental human rights.
PO B	The programme helps in growing the sensitivity about tribal and minority issues, environmental, social and economic sustainability.
PO C	Knowledge of genetics helps in identification , understanding and stopping of disorder through counselling.
PO D	In depth observation regarding people, society and culture helps in providing valuable inputs while forming government policies in regard to issues like economy, tourism industry, sustainability and human resource development.
PO E	Application of genetic markers in forensic, helps in solving criminal cases, legal disputes succession, line of descent and paternity

Attainment of POs of B.Sc. Hons. in Anthropology

PO No.s	
PO A	✓
PO B	✓
PO C	✓
PO D	✓
PO E	✓

Department of Botany

Programme Outcome Nos	Programme Outcome Nos
PO A	Creating awareness about the living and non living world with special reference to plant sciences to the students
PO B	Enabling students to understand the interrelationships and interdependences between the animal and plant community including human in the Centre.
PO C	Upgrading attitude of students towards sustainable environment, Bio-diversity conservation and ecosystem restoration.
PO D	Making students competent in identifying different plant groups viz., algae, fungi, bryophytes, pteridophytes, gymnosperms and angiosperms and knowledge about their economic importance.
PO E	Students will understand the physiology of different biotic and abiotic stresses of plants, the basic attributes of Bioinformatics and Biostatistics.

Attainment of POs of B.Sc. Hons. in Botany

PO No.s	
PO A	✓
PO B	✓
PO C	✓
PO D	✓
PO E	✓

Department of Chemistry

Programme Outcome Nos	Programme Outcome Nos
PO A	Understand the concept of chemistry to interrelate and interact to other subjects like mathematics, physics, biological science etc.
PO B	Learn the laboratory skills and interpret the knowledge entirely in the working environment.
PO C	The course fulfils to produce competent chemists who can think and work independently in chemical laboratories or can fit themselves in chemical industries.
PO D	Select, design and apply appropriate experimental techniques along with IT tools to solve chemical problems.
PO E	Increasing the ability of critical thinking, development of scientific attitude, handling of different instruments, improve practical skills, enhance communication skill, social interaction, increase awareness in environment related issues and recognize the ethical value system.

Attainment of POs of B.Sc. Hons. in Chemistry

PO No.s	
PO A	✓
PO B	✓
PO C	✓
PO D	✓
PO E	✓

Department of Computer Science

Programme Outcome Nos	Programme Outcome Nos
PO A	Develop theoretical foundations in computer science with the basics of computers and its different utilities.
PO B	To explore the widespread applications of computers throughout our society and beyond.
PO C	To explore the widespread applications of computers throughout our society and beyond.
PO D	To help students to build software/hardware tools
PO E	To create awareness about process and product standards.
PO F	To help students build-up a successful career in the domain of Computer Science.

Attainment of POs of B.Sc. Hons. in Computer Science

PO No.s	
PO A	✓
PO B	✓
PO C	✓
PO D	✓
PO E	✓

Department of Mathematics

Programme Outcome Nos	Programme Outcome Nos
PO A	Foundation in basic Mathematics namely Algebra, Geometry and Analysis and their applications in various fields of knowledge are the main focus of the programme
PO B	Instil analytical thinking.
PO C	Appreciation of interconnections among different branches of Mathematics
PO D	Strengthen theoretical understanding through problem solving
PO E	Acquire sufficient knowledge for pursuing higher studies in mathematics as well as other branches of science.

Attainment of POs of B.Sc. Hons. in *Mathematics*

PO No.s	
PO A	✓
PO B	✓
PO C	✓
PO D	✓
PO E	✓

Department of Physics

Programme Outcome Nos	Programme Outcome Nos
PO A	This course recapitulates few preliminary aspects of calculus such as differentiation, integration, differential equations, curve-plotting techniques along with their applications necessary for beginning of study of physics at the undergraduate-level.
PO B	The practical classes in this course helps the students to work with the electrical instruments and have better ideas about the troubleshoot in handling the electrical instruments.
PO C	In this course starts with teaching the fundamentals of waves, wave motion and their superposition. The students get to learn how to analyse the resultant motion of a particle when two or more waves are incident on it. The students also learn about the electromagnetic waves and their superposition. This is known as the wave optics.
PO D	This laboratory helps the students to learn how to handle the delicate optical instruments and work with them. This will help the students in better understanding of the theories they learn in the theory course.
PO E	This course introduces to the students a numerical computation software Scilab. The students learn the basics of working with Scilab software and they also solve different numerical problems with this Scilab software.

Attainment of POs of B.Sc. Hons. in Physics

PO No.s	
PO A	✓
PO B	✓
PO C	✓
PO D	✓
PO E	✓

Department of Psychology

Programme Outcome Nos	Programme Outcome Nos
PO A	It encourages students to develop a scientific bent of mind along with quantification of any observation in their experiences
PO B	The course contains basic neurobiology of cognition to applied fields of psychology. There is ample scope for the students to work in the emerging field of researches such as Neuro – physiology, cognitive science after qualifying COGJET in reputed educational or research institutions.
PO C	In this course, student learns about dealing with Psychopathology. Students can take up M.Phil after completion of masters if they want to become a Clinical Psychologist and want to practice as psychotherapist or Counsellor.
PO D	Industrial/ Organizational Psychology is a relevant field in recent times which encourages the students to pursue their careers in the corporate world/private organizations.
PO E	The course contains human resource management; an important field of recent times helps the students decide their career in HR related jobs
PO F	Applied Social psychology is about making the students identify, understand and change behaviours underlying social problems. Interventions and evaluations are also an integral part of the course curriculum that paves the way for the students to work as social workers in different organizations.
PO G	The programme is especially helpful for the students not only for academic purposes but it gives ample opportunity for the students who want to apply for different Govt. competitive examinations for administrative posts as well.
PO H	Students learn the basics of counselling, stress management, coping, and emotional management, will be ultimately beneficial for them in their personal and professional spheres of their lives.

Attainment of POs of B.Sc. Hons. in Psychology

PO No.s	
PO A	✓
PO B	✓
PO C	✓
PO D	✓
PO E	✓
PO F	✓
PO G	✓
PO H	✓

Department of Zoology

Programme Outcome Nos	Programme Outcome Nos
PO A	Students also learn to design solutions for complex problems and processes that meet specified needs with appropriate consideration for public health and safety, and environmental considerations
PO B	Apply ethical principles and commit to professional ethics and responsibilities and norms of subject practice such as animal biotechnology..
PO C	Individual and team work - Field trips and academic excursions while studying zoology honours helps the students to function effectively as an individual, and as a member or leader in diverse teams and in multi-disciplinary settings
PO D	The students will be acquiring basic experimental skills in various techniques in the fields of genetics, molecular biology, biotechnology, qualitative and quantitative microscopy, enzymology and analytical biochemistry.
PO E	The students will be acquiring basic experimental skills in various techniques in the fields of genetics, molecular biology, biotechnology, qualitative and quantitative microscopy, enzymology and analytical biochemistry.

Attainment of POs of B.Sc. Hons. in Zoology

PO No.s	
PO A	✓
PO B	✓
PO C	✓
PO D	✓
PO E	✓

Department of Bengali

Programme Outcome Nos	Programme Outcome
PO A	Disseminating knowledge of the evolution of literature and culture from ancient times to recent times to enlighten students about the relationship between time and literature.
PO B	Making students able to identify the patterns of linguistic changes and can detect the theoretical specialization of language in literary body.
PO C	Encouraging students to develop writing and communicative skills by enabling them to involve at a variety of literary works including research-oriented works.
PO D	Teaching students norms and ethics of publication and data collection.

Attainment of POs of B.A. Hons. in Bengali

PO No.s	
PO A	✓
PO B	✓
PO C	✓
PO D	✓

Department of English

Programme Outcome Nos	Programme Outcome
PO A	Developing abilities to 'close read' and analyze both high and popular literary texts apart from honing their basic communicative reading and writing skills.
PO B	Acquiring a thorough grounding in the various genres of literatures that also include important examples of literatures in translation.
PO C	Encouraging students to develop writing and communicative skills by enabling them to involve at a variety of literary works including research-oriented works.
PO D	Making students familiar with contemporary facets of English literary studies with a focus on critical theory that overlap with important areas of other branches of humanities.

Attainment of POs of B.A. Hons. in *English*

PO No.s	
PO A	✓
PO B	✓
PO C	✓
PO D	✓

Department of History

Programme Outcome Nos	Programme Outcome
PO A	Developing better understanding of historical aspects, environment, historiography, other social sciences and Gender related studies in Indian perspective and the World at large.
PO B	Understanding the importance of this subject in terms of anthropological, sociological , philosophical, political, and intellectual development of an individual and accordingly of the society.
PO C	Realizing history is a dynamic thought process which is based on the outcome of continuous research and excavations of archaeological sites as well as different historiographical interpretations on the progress and evolution of Mankind.
PO D	Inculcating social values amongst its students so that they become socially responsible citizens of the country and start the journey of life with confidence and dignity

Attainment of POs of B.A. Hons. in History

PO No.s	
PO A	✓
PO B	✓
PO C	✓
PO D	✓

Department of Philosophy

Programme Outcome Nos	Programme Outcome
PO A	This programme helps young minds to get initiated into the world of philosophical discourses by cultivating two questions, 'why' and 'how'.
PO B	The courses like Western philosophy and Logic help to sustain logical and critical ability among the students.
PO C	Political Thought (both Indian and Western) and the theories taught in the undergraduate level in Political Science aims at development of a rational common sense, critical thinking and logical analysis within the students, not only of human behavior but also of diplomatic moves of the states in the international arena..
PO D	Students studying this discipline learn to develop a tolerant attitude towards others view, help in mediating disagreements between fellow individuals and study the behavior patterns of various individuals they come across: in short, a comprehensive understanding of human nature.

Attainment of POs of B.A. Hons. in *Philosophy*

PO No.s	
PO A	✓
PO B	✓
PO C	✓
PO D	✓

Department of Political Science

Programme Outcome Nos	Programme Outcome
PO A	Developing a broader outlook towards various social and political issues at the local, regional, state, national and international level.
PO B	Developing a comprehensive view towards society, political economy, human rights, Gender issues, feminism, terrorism environmental politics and other such contemporary issues which are in the frontline nowadays.
PO C	Political Thought (both Indian and Western) and the theories taught in the undergraduate level in Political Science aims at development of a rational common sense, critical thinking and logical analysis within the students, not only of human behavior but also of diplomatic moves of the states in the international arena..
PO D	Students studying this discipline learn to develop a tolerant attitude towards others view, help in mediating disagreements between fellow individuals and study the behavior patterns of various individuals they come across: in short, a comprehensive understanding of human nature.

Attainment of POs of B.A. Hons. in Political Science

PO No.s	
PO A	✓
PO B	✓
PO C	✓
PO D	✓

Department of Sanskrit

Programme Outcome Nos	Programme Outcome
PO A	Developing a familiarity with Devnagari script.
PO B	Develop a strong concept of ancient Indian history, Philosophy and literature.
PO C	Reasonable understanding of multi-disciplinary relevance of literature of Sanskrit like Veda, Philosophy, Grammar, Kāvya, Smṛtiśāstra, Epigraphy etc.
PO D	Understanding and explaining the contemporary relevance and utility of the Indian knowledge systems.
PO E	Inculcating human values like truth, righteousness, honesty, sincerity and so on with which Sanskrit Literature is soaked.

Attainment of POs of B.A. Hons. in Sanskrit

PO No.s	
PO A	✓
PO B	✓
PO C	✓
PO D	✓
PO E	✓

Department of Santali

Programme Outcome Nos	Programme Outcome
PO A	This Programme imports a profound understanding in Santali Language through the various stage of evolution and Transformation in different perspectives. Students are then able to identify the patterns of linguistics changes and can detect the theoretical specialization of language in literary body.
PO B	Students of Language are always inspired and encouraged to develop their writing and analytical and speaking skills .The Communicative skills enable them to involve at a variety of Literary works including research –oriented works
PO C	Students are learned the norms and ethics of publication and data collection.
PO D	Knowledge of the evolution of Literature and culture from ancient times to recent times helps students to understand the relationship between time and literature , as a result they have a deep understanding of Literary reading and Literary Criticism
PO E	It enables them to analyze and Interpret the Chemistry of Culture and Literature and Society In texts

Attainment of POs of B.A. Hons. in Santali

PO No.s	
PO A	✓
PO B	✓
PO C	✓
PO D	✓
PO E	✓

Department of Sociology

Programme Outcome Nos	Programme Outcome
PO A	Developing a deeper understanding of human social behaviour, social life, societal institutions, social interactions and social structures.
PO B	Understanding how inequalities are created, maintained and regenerated in the social system .
PO C	Developing a tolerant and biasfree outlook towards different groups and culture.
PO D	Spreading awareness about long history of social movements taken place in India.
PO E	An ethical and social responsibility is created by making students aware of folkways, mores, population studies and policies.
PO F	Equipping students with knowledge on various social issues (e.g. environmental degradation, public health concern) affecting lives of people of India.

Attainment of POs of B.A. Hons. in Sociology

PO No.s	
PO A	✓
PO B	✓
PO C	✓
PO D	✓
PO E	✓
PO F	✓

Links to Institutional Website

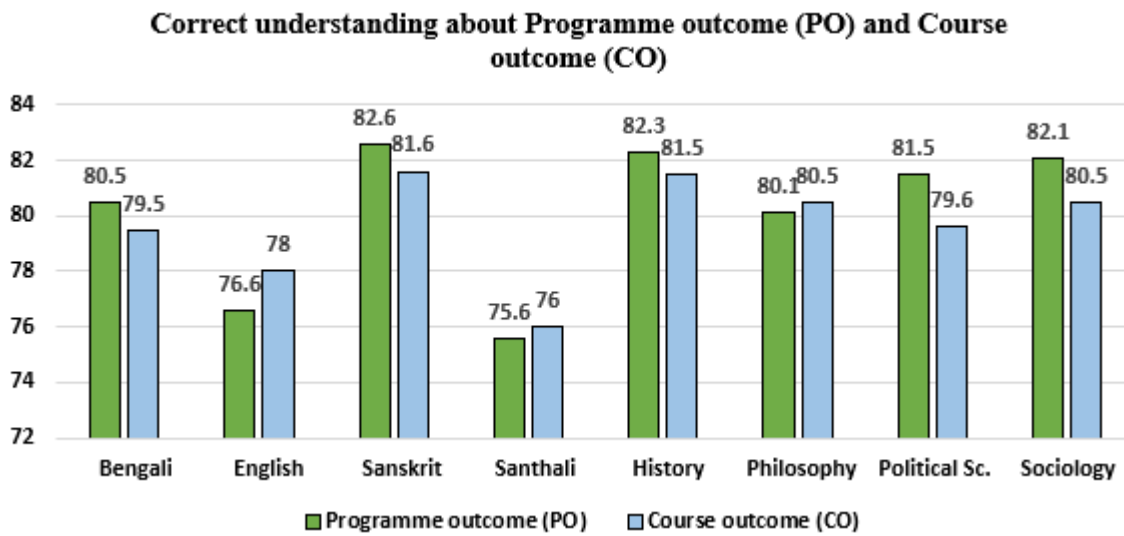
UG syllabus (CBCS)	PSO/CO Links to Institutional website
Anthropology	http://singurgovtcollege.org/userfiles/file/anthropology-po-pso-co.pdf
Botany	http://singurgovtcollege.org/userfiles/file/botany-po-pso-co-botany-final-pb-latest.pdf
Chemistry	http://singurgovtcollege.org/userfiles/file/chemistry-programme-outcome.pdf http://singurgovtcollege.org/userfiles/file/chemistry-course-outcome.pdf
Computer Science	http://singurgovtcollege.org/userfiles/file/computer-science_prog_course_outcome.pdf
Mathematics	http://singurgovtcollege.org/userfiles/file/Maths-PO-PSO-CO.pdf
Physics	http://singurgovtcollege.org/userfiles/file/physics-pso-co.pdf
Psychology	http://singurgovtcollege.org/userfiles/file/NAAC Psychology_PO.pdf
Zoology	http://singurgovtcollege.org/userfiles/file/zoology-po-pso-co-bg.pdf
Bengali	http://singurgovtcollege.org/userfiles/file/bengali-programme-specific-outcome-bengali-dept.pdf
English	http://singurgovtcollege.org/userfiles/file/english-course_outcomes_co_eng.pdf
History	http://singurgovtcollege.org/userfiles/file/history-po.pdf
Philosophy	http://singurgovtcollege.org/userfiles/file/philosophy-course-outcome.pdf
Political Science	http://singurgovtcollege.org/userfiles/file/santali-programme-specific-outcome.pdf
Sanskrit	http://singurgovtcollege.org/userfiles/file/PO-PSO-CO-Sanskrit-GGDC.pdf
Santali	http://singurgovtcollege.org/userfiles/file/santali-programme-specific-outcome.pdf
Sociology	http://singurgovtcollege.org/userfiles/file/sociology_po_pso_co.pdf

GOVERNMENT GENERAL DEGREE COLLEGE, SINGUR INTERNAL QUALITY ASSURANCE CELL (IQAC)


A Report on Student's Understanding about Programme outcome (PO) and Course outcome (CO) (2023-24)

A detailed survey was conducted among the students regarding their correct understanding about their Programme outcome (PO) and Course outcome (CO). The result of the survey was analysed using Statistical Package for Social Sciences software (SPSS, 16) and presented in the IQAC meeting department wise.

Student's correct understanding about their Programme outcome (PO) and Course outcome (CO) in the Arts departments-



Values presented in percentage

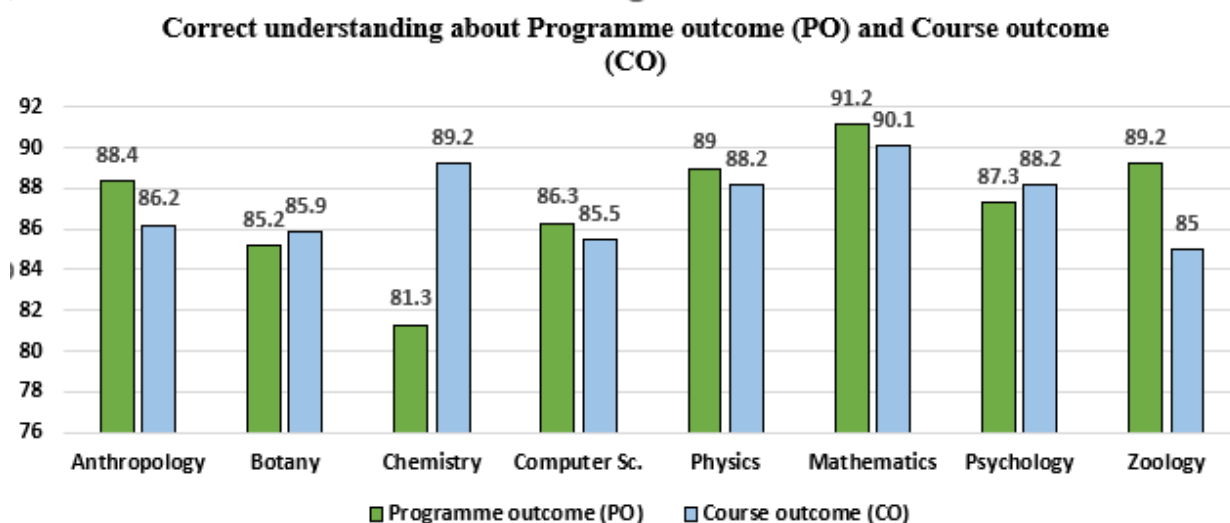

Principal
Govt. General Degree College, Singur

GOVERNMENT GENERAL DEGREE COLLEGE, SINGUR INTERNAL QUALITY ASSURANCE CELL (IQAC)


A Report on Student's Understanding about Programme outcome (PO) and Course outcome (CO) (2023-24)

A detailed survey was conducted among the students regarding their correct understanding about their Programme outcome (PO) and Course outcome (CO). The result of the survey was analysed using Statistical Package for Social Sciences software (SPSS, 16) and presented in the IQAC meeting department wise.

Student's correct understanding about their Programme outcome (PO) and Course outcome (CO) in the Science departments-



Values presented in percentage


Principal
Govt. General Degree College, Singur