POLBA MAHAVIDYALAYA

COURSE WISE & SUBJECT WISE OUTCOME

OF UG HONOURS COURSE (B.A.) IN BENGALI

UNDER NEP & CHOICE BASED CREDIT SYSTEM

DEPARTMENT OF BENGALI

2023-2024

PROGRAMME OUTCOMES

1. Students graduating through B.A. Hons CBCS Programme from this college are expected to develop an analytical skill which will enable them to solve the problem related issues that he faces in next level of studies.
2. Students, although at the initial stage after getting admission faces difficulty in their language skill, but when they pass the programme, they are expected to become pretty able to communicate their understanding in the subject.
3. Students of this programme will become capable to ask questions, critically appreciate a scholarly presentation of any form and debate upon the issues which invite cross discussions.
4. Students graduating from this college in this programme become able to relate the social and national issues to what they have learnt from their books and in the classroom situations.
5. Students completing the programme become confident in the sense that they feel they are employable.
6. This college trains the students to undertake primary level of research work and thus they become motivated for advanced researchwhen they go for higher studies.
7. The programme inspires the students the greater values of life to become worthy citizen of the country.
8. This program has the opportunity to increase their credit score.
9. They are staying ahead to the way of post-graduate.
10. Later in this course they will be able to suitable for different fields ofemployment.
11. As the syllabus covers the whole subject, their knowledge aboutthe subject matter is increasing.

PROGRAMME SPECIFIC OUTCOMES

- Students are expected to develop the language skill to communicate both in writing and verbally.
- It is expected that at the end of the programme students will get a fair knowledge of the development of Bengali literature vis-à-vis its culture – how it emerged, evolved and sustained despite several upheavals.
- After graduating they are expected to grow the sense of art and literature that will enable them to understand better the human social and cultural relationships.
- Students will also become able to undertake some hands-on experimentation with cultural growth and trends of their own locality.
- Students will also become able to appreciate the art and literature.
- Students are also expected to learn analytical skills while learning the appreciation ability.
- The syllabus focuses on the ancient, medieval and modern history of Bengaliliterature. So the students are getting to know about the heritage of Bengali literature and its culture.
- Their knowledge is increased to learn about Bengali language, linguistics andgrammar.

DEPARTMENT OF BENGALI

COURSE OUTCOME
CCFUP

Semester	I
Course-Code	**BENG1011, BENG1051, BENG1041**
Credit Value	20

Semester	Course	Course Title	Learning Outcome
I	**Major Course BENG1011**	Sahitya: Prathamik Dharana	This course provides a primary understanding of Bengali literature. Students are introduced to the various genres of literature and their structural elements. Subsequently, they engage in discussions highlighting the significance of these genres. The course covers an introduction to and foundational concepts of different forms of poetry and prose.
	SEC BENG1051	Byakaran o Banan Shikha	Students learn about the basic structure of Bengali Language. Students learn about different components of Bengali Grammar and improve their speaking and writing ability in Bengali.
	Minor	Other than Bengali	Course outcome with respective subject.
	Multidisciplinary	Other than Bengali	Course outcome with respective subject.
	VAC	Environmental Studies	This paper introduces the fundamental principles and concept of environmental science, ecology and related interdisciplinary subject such as policy, law, economics, pollution control, resources management etc.
	AEC BENG1041	Sahityer Bodh o Bichar	The objective of this course is to provide a basic understanding of language, literary forms, and literary characteristics. Through the study of selected literary works, students are expected to grasp the forms and distinctive features of literature. This foundational comprehension is the primary focus of this course.

Semester	II
Course-Code	**BENG2011, BENG2051**
Credit Value	20

Semester	Course	Course Title	Learning Outcome
II	**Major Course BENG2011**	Bangla Sahityer Itihas: Prachin o Madhyayug	The objective of this course is to introduce students with the historical progression of early and medieval Bengali language and literature. Through this course, students are expected to gain a comprehensive understanding of ancient and medieval Bengali literature. Additionally, they will become acquainted

			with the major literary trends, prominent works, and notable writers or literary figures of these periods.
	SEC BENG2051	Rachana Shaktir Naipunyo	The objective of this course is to enhance students' proficiency in writing skills. Topics such as letter writing, translation, and proofreading are emphasized to develop students' competence in effective writing practices.
	Minor	Other than Bengali	Course outcome with respective subject.
	Multidisciplinary	Other than Bengali	Course outcome with respective subject.
	AEC	English	Course outcome with respective subject.
	VAC	Understanding India	Course outcome with respective subject.

CBCS

Semester	III
Course-Code	**CC-5/CC-6/CC-7/GE-3/SEC-1**
Credit Value	26

Semester	**Course**	**Course Title**	**Learning Outcome**
III	**CC 5**	Bangla Sahityer Itihas (1801-1950)	They are taking lessons about history of Nineteenth and twentieth century's literature and society.
			Learning to understand about the development of Bengali literature.
	CC 6	Bhasatattwa	Basic knowledge about linguistics is being created.
			Learning about different aspects of modern linguistics.
	CC 7	Unish Shataker Kabya	They have taken a lesson about history of Bengali poetry in nineteenth century.
			They learned to read the history of Bengali poetry.
			They have learned to understand the nineteenth century renaissance by taking the initial lessons of 'Meghnadh Badh Kabya'.
	GE 3	Any discipline other than Bengali	Gradually, depth is being created about Bengali literature among students of other subjects.
	SEC 1	Bangla Byakaran	Reading different aspects of Bengali grammar has increased their idea about the structure of Bengali language.

Semester	IV
Course-Code	**CC-8/CC-9/CC-10/GE-4/SEC-2**
Credit Value	26

Semester	**Course**	**Course Title**	**Learning Outcome**
IV	**CC 8**	Kabita	Their ideas about Rabindranath's poetry are being formed.
			They have learned to analyze Modern poetry.
	CC 9	Upanyas	Learned to take lessons in Bengali novels.
			Students gained knowledge on critical

			analysis of novels.
	CC 10	Natak	Students have learned to discuss the structure of Bengali drama.
			They have learned to relate the society with the subject of drama.
	GE 4	Any discipline other than Bengali	Students of other subjects are getting to know about Bengali linguistics. They have learned the formation of Bengali language.
	SEC 2	Rachanashaktir Naipunya	Writing skills have increased. Learned how to write letters, reports and essays.

Semester	V
Course-Code	**CC-11/CC-12/DSE-1/DSE-2**
Credit Value	24

Semester	**Course**	**Course Title**	**Learning Outcome**
V	**CC 11**	Galpo	They have created an idea about short stories by reading Rabindranath's short story.
			They gained knowledge about Rabindranath's literature and philosophy.
			By reading modern short stories, students have learned to know the interrelationship of contemporary society and literature.
	CC 12	Prabandha O Prachya Kabyatattwa	They learned the various style and subject of Prabandha from various famous authors.
			They have learned the structure, origin and theories of Bengali kavya.
	DSE 1	Unish Sataker Bangla Kabya O Prabandha	Students have gained knowledge of the history of nineteenth-century poetry.
			They have come to know the dynamics of essays literature in Nineteenth-century.
	DSE 2	Unish Sataker Bangla Natak O Kathasahitya	They have known about the history of the origin and development of Bengali drama in nineteenth century.
			Students have gained knowledge of the development of novels and short stories in nineteenth century.

Semester	**VI**
Course-Code	**CC-13/CC-14/DES-3/DSE-4**
Credit Value	**24**

Semester	**Course**	**Course Title**	**Learning Outcome**
VI	**CC 13**	Sanskrita O Ingreji Sahityer Itihas	Students learn about the history of Sanskrit literature.
			They are able to realize the great tradition of Sanskrit literature.
			They knew about the history of English literature.
	CC 14	Sahityer Rup-Riti O Sangrup	Their knowledge has been created about various forms of modern literature.
			Early knowledge about modern literary theory has been created.

			Gained knowledge about the structure of different forms of literature.
	DSE 3	Bishsataker Swadhinata-Purbabarti Bangla Kathasahitya	They got a chance to know about the development of Bengali novels in twentieth century.
			Knowledge has been created about the history of short stories of this period.
	DSE 4	Sahitya Bisayak Prabandha O Lakasahitya	They have learned about Twentieth century essay literature.
			Preliminary ideas about folklore and folk culture have been formed.

COURSE WISE & SUBJECT WISE OUTCOME
OF UG GENERAL COURSE (B.A.) IN BENGALI
UNDER NEP & CHOICE BASED CREDIT SYSTEM
DEPARTMENT OF BENGALI
2023-2024

CCFUP

Semester	Course	Course Title	Learning Outcome
I	Minor Course BENG1021	Sahitya: Prathamik Dharana	This course provides a primary understanding of Bengali literature. Students are introduced to the various genres of literature and their structural elements. Subsequently, they engage in discussions highlighting the significance of these genres. The course covers an introduction to and foundational concepts of different forms of poetry and prose.
	Multi/ Interdisciplinary BENG1031	Kobita, Natok, Golpo, Prabandha	The objective of this course is to provide students with a foundational and insightful introduction to the distinctive forms of Bengali literature, including poetry, drama, short stories, and essays.
II	Minor Course BENG2021	Bangla Sahityer Itihas: Prachin o Madhyayug	The objective of this course is to introduce students with the historical progression of early and medieval Bengali language and literature. Through this course, students are expected to gain a comprehensive understanding of ancient and medieval Bengali literature. Additionally, they will become acquainted with the major literary trends, prominent works, and notable writers or literary figures of these periods.
	Multi/ Interdisciplinary BENG2031	Galpo o Upanyas	The objective of this course is to provide students from non-Bengali academic backgrounds with a basic understanding of

			Bengali short stories and novels. Additionally, the course introduces students to the styles of writing suitable for children and adults.
CBCS			
III	**CC 1C**	Bangla Sahityer Itihas	Special ideas are being made about the history of ancient, medieval and modern Bengali literature.
	SEC 1	Bangla Byakaran	They have learned the basics of Bengali Grammer.
IV	**CC 1D**	Bhasatattwa	Basic knowledge about linguistics is being created.
			Learning about different aspects of modern linguistics.
	CC (L2-2)	Bangla Kabita	They learned the poetries of Rabindranath and others.
			They have learned to analyze Modern poetry.
	SEC 2	Rachana Shaktir Naipunya	Writing skills have increased.
			Learned how to write letters, reports and essays.
V	**DSE 1A**	Unish Shataker Bangla Upanyas	Learned to take lessons in Bengali novels of 19^{th} Century.
			Students gained knowledge on critical analysis of novels.
	SEC 3	Prabandha O Pratibedan Rachana	Writing skills have increased. Learned how to write reports and essays.
VI	**DSE 1B**	Unish Shataker Bangla Natak	They have known about the history of the origin and development of Bengali drama in nineteenth century.
	SEC 4	Byabaharik Bangla Charcha O Anubad Charcha	Writing skills have increased. Learned how to write letters, reports, and paragraphs. Students learn techniques of translation from Bengali to English and vice versa.

POLBA MAHAVIDYALAYA

DEPARTMENT OF BOTANY

COURSE WISE & SUBJECT WISE OUTCOME

UNDER NEP & CHOICE BASED CREDIT SYSTEM

SUBJECT: BOTANY (GENERAL)

2023-2024

COURSE OUTCOME: The course outcomes of the different papers offered by University of Burdwan and followed by this college are as below. After completion of the course, students will be able to-

Semester	Course Code	Course title	Credit	
I	Major: BOTN1011	Major: Plant Diversity and Evolution	4	Identify Unders Learn t Study p Unders Explore Learn a Apprec Unders Study f
	Minor: BOTN1021	Minor: Plant Diversity and Evolution	4	Identify Unders Learn t Study p Unders Explore Learn a Apprec Unders Study fa
	Multi/Interdisciplinary: BOTN1031	Biodiversity and conservation	3	Compre Recogn Learn a Unders Explore Familia

				Learn t Apprec Unders
	Skill Enhancement Course (SEC): BOTN1051	SEC: Biofertilisers	3	Studen Studen
	Ability Enhancement Course (AEC)	AEC	2	. Course
	Value Added Course (VAC): CVA1061	Environmental Science	4	Course

II	Major: BOTN2011	Major: Biomolecules and Cell Biology	4	Compr Unders Learn t Grasp t Study r
	Minor: BOTN2021	Minor: Biomolecules and Cell Biology	4	Compr Unders Learn t Grasp t Study
	Multi/Interdisciplinary: BOTN2031	Medicinal Plants and Phytochemistry	3	Identif Learn Develo Study Unders Learn Explor Evalua Unders Integra
	Skill Enhancement Course (SEC): BOTN2051	SEC: Organic Cultivation and Protected Agriculture	3	Gain k Learn Unders Study Learn Unders Gain in Learn Unders Develo

	Ability Enhancement Course (AEC): ENGL2041	English	2	Course
	Value Added Course (VAC): CVA2061	Understanding India	4	Course
III	CC-1C	Plant Anatomy and Embryology	6	The co Studen
	SEC-1	Biofertilisers	2	Studen Studen

IV	CC-1D	Plant Physiology and Metabolism	6	To und Roles c Studen Entrapr within the Nitroge
	SEC-2	Medicinal Botany	2	Recogn Learn a Develo Unders Study t
V	DSE-1A (BOT)	Economic Botany and Biotechnolgy	6	Student and their cu Studen Introdu along with
	SEC-3	Nursery and Gardening	2	Unders Learn r Unders Develo Identify Unders Explore Learn a Unders

VI	DSE- 1B (BOT)	Cell and Molecular Biology	6	They wi Studen Format
	SEC-4	Mushroom Cultivation Technology	2	Students They wi

POLBA MAHAVIDYALAYA

DEPARTMENT OF BOTANY

PROGRAMME OUTCOME (PO)

Our College is affiliated to The University of Burdwan (BU) and hence follows the same Course Programme offered by BU from time to time. It, therefore, adheres and strives towards achieving the goal as enumerated by BU through its programme outcome. These are as follows—

PO-1: CRITICALTHINKING:Curricular management is strategically implemented to cultivate precise understanding of the thematic concepts enabling the students for cognitive attainment. The process of curricular management is monitored by formal assessment procedure. Thus, a consistent evaluation of critical thinking ability of the students is pursued.

PO-2: ENVIRONMENT AND SUSTAINABILITY: After the completion of graduate degree,students will be able to develop environment consciousness and strives for the development of the ecosystem and works towards attaining the goals of sustainable development.

PO-3: SELF DIRECTED AND LIFE-LONG LEARNING: The programme endeavours to develop skill for engagement in life-long learning in the broadest context of social changes.

PO-4: ETHICS: Recognize own value system and ability to deal along the path, accepting responsibility for his/her actions and rectify them as and when necessary.

PO-5: EFFECTIVE COMMUNICATION: Regular interface between teacher and students empowers the students to express their conceptual attainment through regular communication system both conventional and being IT enabled. Proficiency in communicating through English is being emphasized upon in order to imparting interactive capacity to professional domain.Attaining capacity in vernacular communication is also being emphasized to establish social accountability of students as a preparatory citizen.

PO-6: SOCIAL INTERACTION: Students will be able to develop social communication skill through interaction with different peer groups and mediated disagreement.

POLBA MAHAVIDYALAYA

DEPARTMENT OF BOTANY

SUBJECT: BOTANY (GENERAL)

PROGRAMME SPECIFIC OUTCOME (PSO)

➢ Systematic and fundamental understanding of Botany as a discipline

➢ Skill and related development for acquiring specialization in Botany

➢ Identifying Botany related problem, analyzing and application of data using appropriate methodologies

➢ Applying knowledge of Botany and skill to solve complex problems with defined solution

➢ Finding opportunity to apply Botany related skills for acquiring jobs and self-employment

➢ Understanding new frontiers of knowledge in Botany for professional development

➢ Applying subject knowledge for solving societal problems related to application of that subject in day today life

➢ Applying subject knowledge for sustainable environment friendly green initiatives

➢ Students in Botany will have an exposure in various skills enhancement in different fields'viz. Mushroom cultivation, herbal drugs and medicinal plant, conservation and ecosystem ,tissue culture. These will create new avenue ands and job opportunities for the students of Botany

Polba Mahavidyalaya

Affiliated to The University of Burdwan

COURSE AND PROGRAMME OUTCOMES

Of

{UG Programme in Education as per NEP-2020 (Honours with Research or Honours}

[Abbreviations Used: Core Course (CC); Skill Enhancement Course (SEC); Course Outcome (CO); Program Outcome (PO); Major/DS Course (Core); Minor course; Multidisciplinary course (MDS)]

(Session 2023-24)

SEMESTER- I

Major/DS Course (Core)

Educational Philosophy-I

Course Objectives:

1. To understand the meaning, nature, and scope of Education.

2. To explore the various functions and factors influencing Education.

3. To examine the aims of Education from both individualistic and socialistic perspectives.

4. To introduce the Philosophy of Education and to be acquainted with the relationship of Education and Philosophy.

5. To familiarize students with different schools of Indian Philosophy and their epistemological and ethical aspects.

6. To Analyze the educational implications of specific Indian philosophical schools such as Sankhya, Yoga, Nyaya, Charvak, Buddhist, and Jain.

7. To comprehend the concept of child-centric education and its meaning and characteristics.

8. To explore the aims of modern child-centric education.

9. To examine different approaches to child-centric education.

10. To understand the features and significance of life-centric education.

11. To understand the concept of freedom and discipline in the context of education.

12. To recognize the need for discipline and its application in educational institutions.

13. To understand the concept of free discipline and self-discipline

Course Outcomes:

1. Define Education and understand its various dimensions and purposes.

2. Develop an understanding of the factors that influence education and the role they play in shaping the educational process.

3. Compare and contrast individualistic and socialistic aims of education.

4. Gain insights into the relationship between Education and Philosophy and its implications for educational practices.

5. Comprehensive understanding of different schools of Indian philosophy and their relevance to education.

6. Analyze the educational implications of specific Indian philosophical schools.

7. Explain the concept of child-centric education and its significance in modern educational contexts.

8. Familiarize with different approaches to child-centric education and their respective strengths and weaknesses.

9. Recognize the features and significance of life-centric education and its impact on holistic development.

10. Understand the concepts of freedom and discipline in the educational setting.

11. Discuss the importance of discipline and its application in maintaining a conducive learning environment.

12. Understand the concept of free discipline and its role in fostering independent learning.

13. Develop an understanding of self-discipline and its significance in personal and academic growth.

SEMESTER- I

Skill Enhancement Course (SEC)-1

SEC-1: Computer Application in Education

Course Objectives:

1. To familiarize students with the essential components and functionalities of MS Office applications, including MS Word, MS PowerPoint, and MS Excel.

2. To provide an understanding of the concepts of information and communication technology (ICT) and its relevance in education.

3. To explore the issues and initiatives related to universal access and the digital divide in the context of ICT.

4. To examine the challenges involved in integrating ICT into the school system and understand the aims and objectives of the National Policy on ICT in School Education in India.

5. To introduce students to the components and objectives of the National Mission on Education through ICT (NMEICT) and various related platforms such as Spoken Tutorials, Gyan Darshan, Gyanvani, Sakshat Portal, e-GyanKosh, virtual laboratory, and haptic technology.

6. To enable students to effectively utilize internet resources for different disciplines, including natural sciences, social sciences, humanities, and mathematics.

7. To provide a general introduction to various forms of e-learning, such as mobile learning, distance learning, online learning, virtual universities, and Massive Open Online Courses (MOOCs).

8. To explore the potential of social networking platforms in education and their role in facilitating collaborative learning and knowledge sharing.

Course Outcomes:

1. Demonstrate proficiency in using MS Office applications, including MS Word, MS PowerPoint, and MS Excel, for creating documents, presentations, and spreadsheets.

2. Understand the importance of information and communication technology (ICT) in education and its impact on learning outcomes.

3. Analyze the issues and initiatives related to universal access and the digital divide, and propose strategies to bridge the gap.

4. Identify and address the challenges involved in integrating ICT into the school system, considering the objectives of the National Policy on ICT in School Education in India.

5. Utilize various components of the National Mission on Education through ICT (NMEICT), such as Spoken Tutorials, Gyan Darshan, Gyanvani, Sakshat Portal, eGyanKosh, virtual laboratory, and haptic technology, to enhance teaching and learning experiences.

6. Effectively utilize internet resources for different disciplines, including natural sciences, social sciences, humanities, and mathematics, to gather information and enhance subject knowledge.

7. Evaluate the advantages and limitations of different forms of e-learning, such as mobile learning, distance learning, online learning, virtual universities, and MOOCs, and select appropriate approaches for specific educational contexts.

8. Understand the role of social networking platforms in education and employ them for collaborative learning, knowledge sharing, and professional networking purposes

SEMESTER- II

Major/DS Course (Core)-2

Course - Educational Psychology-I

Course Objectives: -

1.Introduce students to the field of psychology and its relevance to education

2. Understand the nature and scope of educational psychology.

3. Explore the relationship between education and psychology.

4. Familiarize students with the methods used in educational psychology research.

5. Examine the concepts of growth and development and their significance in educational psychology.

6. Understand the determinants of development, including heredity and environment.

7. Identify the principles that underlie human development.

8. Study the stages of physical development and recognize the characteristics of each stage.

9. Explore the different areas of development, including emotional, intellectual, and social aspects.

10. Understand individual differences, including the concept, types, and their implications in an educational context.

11. Introduce the concept of learning and its importance in education.

12. Identify the factors associated with learning and their impact on educational outcomes.

13. Examine various theories of learning, including trial and error, classical conditioning, operant conditioning, insightful learning, and Gagne's theory of learning.

14. Understand the concept of transfer of learning and its relevance in educational settings.

15. Explore different theories and models related to transfer of learning.

16. Discuss the practical applications of transfer of learning in educational contexts.

Course outcomes: -

Upon completion of this course, students will be able to:

1. Define and explain the field of psychology and its connection to education.

2. Describe the nature and scope of educational psychology and its role in enhancing teaching and learning processes.

3. Analyze the relationship between education and psychology and recognize their mutual influences.

4. Apply appropriate research methods in conducting educational psychology studies.

5. Explain the concepts of growth and development and their significance in educational psychology.

6. Identify and compare the roles of heredity and environment in human development.

7. Apply the principles of development to understand the patterns and processes of growth.

8. Describe the stages of physical development and recognize the characteristics associated with each stage.

9. Analyze the emotional, intellectual, and social aspects of human development and their implications in education.

10. Recognize and accommodate individual differences in educational settings.

11. Define learning and its significance in educational contexts.

12. Identify and evaluate the factors that influence learning outcomes.

13. Compare and contrast different theories of learning, such as trial and error, classical conditioning, operant conditioning, insightful learning, and Gagne's theory of learning.

14. Apply the principles of Gagne's theory of learning in designing instructional strategies.

15. Explain the concept of transfer of learning and its relevance to educational practices.

16. Compare and contrast different theories and models related to transfer of learning.

17. Apply the principles of transfer of learning in designing effective instructional materials and strategi

SEMESTER- II

Skill Enhancement Course (SEC)-2

SEC-2: Education of Children with Special Needs

Course Objectives:

1. To provide an understanding of the education needs of children with visual impairments, including their identification, intervention, education, and prevention.

2. To develop knowledge and skills related to the education of children with hearing impairments, including their identification, intervention, education, and prevention.

3. To explore the challenges and strategies involved in educating children with speech and language disorders, including their identification, intervention, education, and prevention.

4. To understand the unique needs and educational approaches for children with physical disabilities, including their identification, intervention, education, and prevention.

5. To develop an understanding of learning disabilities in children, including their identification, intervention, education, and prevention.

Course Outcomes:

Upon completion of this course, students will be able to:

1. Identify the specific educational needs of children with visual impairments and implement appropriate intervention strategies to support their learning.

2. Recognize the challenges faced by children with hearing impairments and employ effective educational techniques to enhance their communication and learning skills.

3. Evaluate and apply appropriate intervention strategies for children with speech and language disorders to promote their communication and language development.

4. Design inclusive educational environments and accommodations to support the learning and participation of children with physical disabilities.

5. Identify the signs and symptoms of learning disabilities in children and develop individualized educational plans to address their specific needs.

6. Collaborate with parents, teachers, and other professionals to provide comprehensive support and resources for children with special educational needs.

7. Advocate for inclusive practices and policies in educational settings to ensure equal opportunities and access for children with diverse abilities.

8. Demonstrate sensitivity, empathy, and understanding towards children with special educational needs, fostering an inclusive and supportive learning environment.

9. Continuously engage in professional development and stay updated with the latest research and best practices in special education.

10. Reflect on personal attitudes and beliefs towards individuals with disabilities and develop a more inclusive and inclusive mindset.

SEMESTER- I

Minor course -1

Course: Principles of Education

Course Objectives:

1. Understand the meaning, nature, and scope of education.

2. Identify the functions and factors that influence the field of education.

3. Examine the aims of education from individualistic and socialistic perspectives.

4. Define the concept of curriculum and its significance in education.

5. Differentiate between different types of curriculum and their applications.

6. Understand the principles involved in curriculum construction.

7. Recognize the importance of co-curricular activities in enhancing overall education.

8. Explore child-centric education, its characteristics, and its aims in modern education.

9. Analyze the significance of play and play-way methods in education, including various approaches.

10. Understand the concepts of freedom and discipline and their application in educational institutions.

Course Outcome:

Upon completion of this course, students will be able to:

1. Demonstrate a clear understanding of the meaning, nature, and scope of education.

2. Evaluate the functions and factors that shape the field of education.

3. Critically analyze the aims of education from both individualistic and socialistic perspectives.

4. Apply the concept of curriculum to design effective educational programs.

5. Select and justify appropriate types of curriculum for specific educational contexts.

6. Develop curriculum construction skills based on established principles.

7. Recognize the value and integration of co-curricular activities in educational planning.

8. Implement child-centric education principles to promote holistic development.

9. Apply play and play-way methods in educational practices, drawing from different approaches.

10. Promote a balanced approach between freedom and discipline in educational institutions, fostering a conducive learning environment.

SEMESTER-II

Minor course -2

Course: Educational Psychology

Course Objectives:

1. Develop a comprehensive understanding of the field of educational psychology, including its meaning, nature, and scope.

2. Explore the relationship between education and psychology, and how psychological principles can inform educational practices.

3. Familiarize with the various research methods used in educational psychology and develop skills in conducting educational research.

4. Understand the concept of growth and development and its significance in the context of child development.

5. Identify and analyze the different stages of child development, including infancy, childhood, and adolescence.

6. Examine the various aspects of child development, including physical, intellectual, emotional, and social aspects.

7. Gain knowledge about personality development and understand the factors that influence its development.

8. Explore different approaches to understanding personality, such as types and traits.

9. Recognize and appreciate the individual differences among learners and understand their implications for education.

10. Gain insights into the concept of intelligence, including its definition, theories, and assessment methods.

Course Outcomes:

Upon completion of this course, students will be able to:

1. Demonstrate a clear understanding of the field of educational psychology, including its key concepts and theories.

2. Apply psychological principles and theories to educational contexts, enhancing instructional practices and student learning outcomes.

3. Utilize various research methods and techniques to investigate educational phenomena and contribute to the field of educational psychology.

4. Analyze and interpret the different stages of child development, recognizing the unique characteristics and needs of each stage.

5. Assess and support the various aspects of child development, promoting holistic growth in educational settings.

6. Understand the factors that contribute to personality development and apply this knowledge to support students' socio-emotional development.

7. Evaluate and utilize different approaches to understanding personality, considering their practical implications for educational settings.

8. Adapt instructional strategies to accommodate and address the diverse learning needs and individual differences among students.

9. Employ appropriate assessment methods to measure and assess students' cognitive abilities and intelligence.

10. Apply the principles and findings of educational psychology to design effective teaching strategies, create inclusive learning environments, and enhance student motivation and engagement.

11. Critically analyze and reflect on educational practices and policies through the lens of educational psychology, advocating for evidence-based approaches to education.

12. Demonstrate effective communication and collaboration skills with students, parents, and colleagues, promoting positive relationships and a supportive learning community.

SEMESTER-I

Multidisciplinary course (MDS-1)

Great Educators

Course Objectives:

1. Gain an in-depth understanding of the life and teachings of Swami Vivekananda.

2. Explore the contributions of Sri Aurobindo to philosophy and Education.

3. Examine the life and works of Rabindranath Tagore, including his philosophy of Education.

4. Analyze the educational philosophy and principles of Mahatma Gandhi.

5. Study the ideas and theories of Jean-Jacques Rousseau regarding Education.

6. Understand the educational approach and philosophy of Friedrich August Froebel.

7. Explore the educational theories and principles proposed by John Dewey.

8. Analyze the educational approach and methods developed by Maria Montessori.

9. Compare and contrast the philosophies and educational ideas of the mentioned educators.

10. Reflect on the relevance and applicability of the educational philosophies in contemporary educational contexts.

Course Outcomes:

Upon completion of this course, students will be able to:

1. Demonstrate a comprehensive understanding of the life, teachings, and contributions of Swami Vivekananda.

2. Evaluate the impact of Sri Aurobindo's philosophy on Education and personal development.

3. Critically analyze the educational philosophy and works of Rabindranath Tagore, and their implications for Education.

4. Assess the educational principles and practices advocated by Mahatma Gandhi, and their relevance in today's world.

5. Explain the key ideas and theories of Jean-Jacques Rousseau related to Education and child development.

6. Apply the principles and practices of Friedrich August Froebel's educational approach in instructional settings.

7. Evaluate the educational theories and ideas of John Dewey and their impact on progressive education.

8. Analyze the educational methods and principles developed by Maria Montessori and their application in early childhood education.

9. Compare and contrast the philosophies and approaches of the mentioned educators, identifying their similarities and differences.

10. Critically reflect on the educational philosophies studied and their implications for personal teaching practices and educational policy-making.

11. Develop a broader perspective on educational philosophies and their significance in shaping educational systems and practices.

12. Engage in critical discussions and debates on educational philosophies, fostering intellectual curiosity and a deeper understanding of diverse educational perspectives.

SEMESTER-II

Multidisciplinary course (MDS-2)

Value Education

Course Objectives:

1. Understand the meaning and concept of values in education.

2. Recognize the importance and significance of value education in the overall development of individuals.

3. Explore the concept of morality and its relationship with values in education.

4. Analyze the role of parents in facilitating children's moral development and fostering positive values.

5. Gain knowledge about social values and their impact on individuals and society.

6. Understand the role of values in the classroom environment and its influence on students' behavior and learning outcomes.

7. Explore strategies for inculcating values among students and promoting a values-based culture in educational settings.

8. Examine the meaning and aims of peace education and its role in fostering positive values.

9. Identify the values inherent in peace education and their significance in promoting harmony and conflict resolution.

10. Understand the connection between values and human rights education, and the role of values in upholding and promoting human rights.

Course Outcomes:

Upon completion of this course, students will be able to:

1. Demonstrate a comprehensive understanding of the concept of values in education and their importance in personal and societal development.

2. Evaluate the need for value education in educational settings and recognize its impact on individuals and communities.

3. Analyze the concept of morality and its relevance to values in education, and reflect on its implications for personal and professional conduct.

4. Recognize the role of parents in promoting children's moral development and understand strategies to facilitate the transmission of positive values.

5. Critically examine social values and their influence on individual behavior and societal norms.

6. Apply knowledge of values in creating a positive classroom environment and fostering ethical behavior among students.

7. Design and implement strategies for inculcating values among students, considering their developmental stage and individual needs.

8. Understand the meaning and objectives of peace education, and its role in promoting values such as empathy, tolerance, and cooperation.

9. Evaluate the impact of values in peace education on conflict resolution, social justice, and building a peaceful society.

10. Recognize the importance of values in human rights education, and its role in promoting equality, respect, and dignity for all individuals.

11. Reflect on personal values and develop a deeper understanding of their influence on teaching practices and interactions with students.

12. Engage in critical discussions on values in education, exploring different perspectives and their implications for educational policies and practices.

13. Demonstrate ethical behavior and integrity in personal and professional interactions, reflecting the values learned during the course.

14. Foster a sense of responsibility towards creating a positive and inclusive learning environment that promotes and upholds core values.

15. Advocate for the integration of value education in educational policies and curriculum, recognizing its long-term impact on individuals and society.

COURSE AND PROGRAM OUTCOMES
OF
CBCS

[Abbreviations Used: Core Course (CC); Skill Enhancement Course (SEC); Discipline Specific Elective (DSE): Generic Elective (GE); Course Outcome (CO); Program Outcome (PO); Program Specific Outcome (PSO)]

Semester-3

CC-5 : Educational Sociology-I

After the completion of this course, students can:

CO1: acquire detail knowledge about Sociological Foundation of Education and relate the theories to real life.

CO2: also learn about social sub-system & its specific characteristic, The Components of Education and community, Relation between Education and Community, Education for Indian Society

CO3: develop knowledge about Social Change, Factors and problems of social change in India, Education with Special Reference to Social Change

CO4: also learn about Social Stratification, Education with reference to social stratification, Social equity and equality of educational opportunities

CC-6: Education in Ancient &Medieval India

After the completion of this course, students can:

CO1: develop detail knowledge about Education in Vedic period with special reference to curriculum, Method of teaching, role of teachers and salient features

CO2: learn about in Bramanic period Education, its Aims, Curriculum, Method of teaching and Role of Teachers.

CO3: learn about Education in Buddhistic Period, its Concept, Aims, Curriculum, Method of teaching, Role of Teachers and Comparison between Bramanic and Buddhistic education.

CO4: construct knowledge about Education in Medieval India: Under Sultanate and Mughal Rulers, with special reference to Objectives, Curriculum, Method of teaching, Role of Teachers and Salient features.

CC-7: Education in British India

After the completion of this course, students can:

CO1: develop detail knowledge about Indian Education during early British Period, Missionary educational activities in India during early 19th century, Serampore Mission, Fort William College, Bengal Renaissance-Educational contributions, Charter Act of 1813.

CO2: learn about Western Education, Oriental and Occidental Controversy, Macaulay's Minute, Adam's Report and its recommendations, Wood's Despatch-1854.

CO3: learn about Recommendations of Indian Education Commission (1882), Educational reforms of Lord Curzon, National Education Movement, Gokhale's compulsory primary education bill.

CO4: construct knowledge about Calcutta University Commission (1917-1919), Education under Diarchy, Hartog Committee Report (1929), Education under Provincial autonomy, Abbot Wood Report, Gandhiji's Basic Education, Sargeant Report (1944)

GE – 3 : Educational Sociology (For other Disciplines)

After the completion of this course, students can:

CO1: develop detailed knowledge about educational Sociology, relation between sociology and education, education-as a social sub-system.

CO2: learn about social change and social stratification in India.

CO3: construct knowledge about socialization, social Control and agencies of social control.

CO4: learn about social Agencies and their educative role: Family, School, State, Mass media.

SEC-1: Value Education

After the completion of this course, students can:

CO1: gain theoretical and practical knowledge about value education and its needs.

CO2: construct knowledge about values in a pluralist society, morality, morality & value, role of parents to facilitate children's moral development.

CO3: develop knowledge about values in the classroom, value from the pupil's perspective, Inculcation of Values among the students, role of the teachers to facilitate moral development among the pupils.

CO4: learn about Peace Education, Values in Peace Education, values and human rights education.

Semester-4

CC-8: Educational Sociology-II

After the completion of this course, students can:

CO1: develop detail knowledge about Socialization, Role of the Patents and the Teachers in the process of socialization, Social Control: Meaning and types of Social control, Agencies of Social Control

CO2: develop knowledge about Social Mobility: Meaning, Types, Causes and factors of Social Mobility, Mobility in Indian Society

CO3: develop their knowledge about Concept of Culture, Cultural Change & Cultural Lag, Education as Cultural Determinants, Education for Multicultural Society

CO4: develop their knowledge about Social Institution and Agencies of Education: Family, School, State, Mass media, Educative role of the above social agencies.

CC-9 : Development of Education in Post-Independence Period

After the completion of this course, students can:

CO1: develop detail knowledge about University Education Commission (1948-49): Aims, Curricula, Rural University and Other Recommendations, Mudaliar Commission (1952-53): Aims, Structure, Curricula and Other Recommendations,

CO2: learn about Kothari Commission (1964-66): Objectives, Structure, Curricula, Technical and Professional Education, Recommendations on different areas of education.

CO3: construct knowledge about Universal elementary education: Free, Compulsory & Universal Education in India, Present Position of Elementary Education, Language Policy in Education as recommend by different Commissions& Committees

CO4: learn about National Policy on Education (1986), Programme of Action (P.O.A.)-(1982), Constitutional Reforms Relating to Education.

Core Course (CC-10): Educational Management and Administration

After the completion of this course, students can:

CO1: internalize the concept of Educational Organization, Management and Planning. They also understand educational planning and the essential functions of educational management.

CO2: learn about Educational organization: Meaning and Principles, School Organization and its Principle, School plant, Buildings, Equipments, Playground, Workshop, Library, Computer room etc.

CO3: construct knowledge about Educational Supervision: meaning, need and functions, Factors influencing supervision, Difference between inspection and supervision, Styles of leadership

CO4: learn about Educational Planning: meaning, scope, and significance, Educational Planning: types & strategies, Manpower Planning: meaning, nature, and characteristics, Steps and Strategies in Manpower Planning.

GE - 4 : History of Education in India

After the completion of this course, students can:

CO1: internalize the concept of Missionary educational activities in India: Characteristics and significance, Serampore Mission: Contributions of the Trio to Education, Charter Act of 1813, Macaulay's Minute, Adam's Report and its recommendations, Woods Despatch (1854).

CO2: construct knowledge about Indian Education commission -1882, Indian University Commission (1902), National Education Movement.

CO3: learn about Sadler Commission -1917**,** Hartog Committee Report, Wardha Schame, The Sargent Plan (1944)

CO4: construct knowledge about Radhakrishnan Commission-1948, with special reference to rural university, Mudaliar Commission (1952-53): Reports and Recommendations, Kothari Commission (1964-66): Reports and Recommendations, National Education Policy1986 and Revised Educational Policy of 1992.

SEC-2: Educational Thoughts and Ideas of Great Indian Educators

After the completion of this course, students can:

CO1: develop knowledge about Raja Rammohan Roy (1772-1883): Philosophy of life, Activities, Ideas on Education and Women Education, Iswar Chandra Vidyasagar (1820-1891): Educational Philosophy, Aims of Education, Method of Instruction, Activities & Ideas on Women Education.

CO2: construct knowledge about Swami Vivekananda (1863-1902): Educational Philosophy, Aims of Education, Method of Instruction, Curriculum of Education, Women Education & Concept of Teacher Sri Aurobindo (1872-1950): Educational Philosophy, Aims of Education, Method of Instruction, Curriculum of Education, & Concept of Teacher

CO3: learn about Rabindranath Tagore (1861-1941): Educational Philosophy, Aims of Education, Method of Instruction, Curriculum of Education, & Santiniketan School, Mahatma Gandhi (1869-1948): Educational Philosophy, Aims of Education, Method of Instruction, Curriculum of Education, & Basic Education.

Semester-5

CC-11: Educational Guidance and Counselling

After the completion of this course, students can:

CO1: develop detail knowledge about Educational Guidance: Meaning, Definition Concept, Scope, Needs and Importance of Guidance, Essentials of good Guidance programme

CO2: construct knowledge about Different forms of Guidance: Educational, Vocational and Personal, Organization of Guidance service at different levels of education, Basic data necessary for guidance: data about pupils, courses, vocations, Tools and techniques of Guidance

CO3: learn about Counselling: Meaning, Nature, & Scope, Types of counselling, Tools and techniques of Counselling.

CO4: construct knowledge about Difference between Guidance and Counselling, Counselling process-relationships & its characteristics, Role of parent, teacher & counselor in guidance programme

CC-12: Educational Technology

After the completion of this course, students can:

CO1: develop detail knowledge about Educational Technology: concept and meaning, Educational Technology: nature, scope, needs and limitations, Components of Educational Technology-Hardware & Software.

CO2: construct knowledge about System approach: concept and characteristics, components of instructional system, uses and limitation of system approach, Programmed Learning: concept, nature and scope of programmed learning, Principles of programming.

CO3: learn about Communication: meaning, nature, types and process, Barriers of Communication, Significance of Communication, components of communication process, Communication in teaching-learning situation.

CO4: construct knowledge about Multimedia approach in educational technology, Visual, audio and audio-visual types and their uses in education, Computer and its role in education, Personalized Instructional Techniques, Mass Instructional Techniques

DSE-1: Current Issues in Indian Education

After the completion of this course, students can:

CO1: develop detail knowledge about Constitutional provision in education, Development of Education under Five Year Plans – Pre- Primary Education, Primary Education, Secondary Education, Higher Education, and Women Education - last two five years plans

CO2: acquire detail knowledge about Equal opportunity in Education: OBC, SC, ST, Women and Minorities, Education for all and Sarva Siksha Mission.

CO3: learn about Functions of following Educational Organizations: UGC, NAAC, NCERT, NUEPA, NCTE, DIET, SCERT.

CO4: learn about modern trends and Contemporary Issues in Education, Privatization in Education, Globalization and its impact on Education, Education as a Human Right, Adult and Non-formal Education.

DSE-2: Teacher Education

After the completion of this course, students can:

CO1: develop detail knowledge about meaning and scope of Teacher Education, Need for Education of the Teachers, Aims and
Objectives of Teacher Education: Elementary, Secondary and Higher Secondary levels

CO2: learn about development of Teacher Education in India before and after independence, Agencies of Teacher Education – NCTE, NCERT, SCERT, DIET

CO-3: construct knowledge about role of student teaching in Teacher Education programme, Organization of Student Teaching, Various Patterns: Internship, Teaching Practice, Supervision and Evaluation of Student Teaching

CO-4: learn about Teaching as a professional ethics of a teacher, Characteristics of a Good Teacher, Professional Organizations for various levels and their roles,

Semester-6

CC-13: Measurement and Evaluation in Education

After the completion of this course, students can:

CO-1: develop detail knowledge about **c**oncept of Measurement and Evaluation, Difference between Measurement and Evaluation, Types of Evaluation: Formative & Summative, Norm referenced & Criterion referenced

CO-2: construct knowledge about Different Tools and Techniques of Assessment: Tests, Observation, Assignment, and Project, General principles of test construction and standardization, Teacher Made test and Standardized test.

CO-3: learn about Characteristics of a good test, Reliability: Concept, and Methods of determination, Validity – concept and methods of determination

CO-4: construct knowledge about Types of Educational data; Collection and processing of data; Tabulation of data, Graphical representation of data; Frequency Polygon, Histogram, Bar Diagram, Pie chart, Ogive: Computation of diagrams and Uses

CO-5: learn, analyze and evaluate about Measures of Central tendency and its uses, Measures of Variability and its uses, Correlation, Computation of Correlation Co-efficient by Product moment and Rank difference Methods and interpretation of results

CC-14: Comparative Education

After the completion of this course, students can:

CO-I: develop detail knowledge about Comparative Education-Meaning and Concept, Scope and Objectives, Factors of Comparative Education -Geographical, Economic, Cultural, Philosophical, Sociological, Linguistic

CO2: learn about Study in Comparative Education - Descriptive, Historical, Sociological, Analytical and Synthetic

CO3: construct knowledge about basic structure of the Formal Education System of U.S.A, U.K and India

CO4: learn about Educational Objectives and curriculum of Primary & Secondary Education of U.S.A, UK and India

DSE-3: Distance Education

After the completion of this course, students can:

CO1: develop detail knowledge about Distance Education: Meaning, Characteristics and Significance, Present status of Distance Education, Growth of Distance Education

CO2: learn about Designing and preparing self-learning materials (SLM; Role of electronic media) in Distance Education, ICT and their applications in Distance Education

CO3: construct knowledge about Self – support service in Distance Education, Technical and Vocational Programmes through Distance Education, Distance Education in rural development

CO4: learn about Quality assurance of Distance Education, Mechanism for maintenance of standards in Distance Education, Role of Distance Education Council, & IGNOU

DSE-3: Educational Thoughts and Ideas of Great Western Educators

After the completion of this course, students can:

CO1: develop detail knowledge about Jean Jacques Rousseau (1712-1778): Educational Philosophy, Aims of Education, Curriculum of Education, Method of Instruction & Negative Education and Johann Heinrich Pestalotzzi (1748-1827): Educational Philosophy, Aims of Education, Curriculum of Education, Method of Instruction & Concept of Teacher

CO2: construct knowledge about F.W. August Froebel (1782-1852): Educational Philosophy, Aims of Education, Curriculum of Education, Method of Instruction & Kindergarten and Herbert Spencer (1820-1903): Educational Philosophy, Aims of Education, Curriculum of Education, Method of Instruction & Concept of Teacher

CO3: learn about John Dewey (1859-1952): Educational Philosophy, Aims of Education, Curriculum of Education, Method of Instruction, Concept of Teacher & Project Method and Madam Maria Montessori (1870-1952): Educational Philosophy, Aims of Education, Curriculum of Education, Method of Instruction, Concept of Teacher & Child Centric Education

DSE-3: Basics of Educational Research and Statistics

After the completion of this course, students can:

CO1: develop detail knowledge about Research in Education: Meaning, nature and scope of Educational Research, Types of Research: Fundamental, Applied and Action research, Qualitative and Quantitative Research, Research- Problems, Objectives and Hypotheses

CO2: construct knowledge about Major Approaches of Research: Historical; Descriptive; Experimental; Survey

CO3: construct knowledge, analyze and evaluate about Basic Statistics and their uses, Central tendency and Dispersion, Graphical representation of data, Correlation and its uses, Co-efficient of Correlation Computation by Product moment and Rank Difference

CO4: learn, analyze and evaluate about Inferential data Analysis, Normal probability curve, Standard Scores, CR-test (t-test)

Course: DSE-4: Special Education

After the completion of this course, students can:

CO1: develop detail knowledge about Education of Children with Visual Impairment and Hearing Impairment (with special reference to prevalence, etiology, identification, intervention, education and prevention of each category)

CO2: learn about Education of Children with Speech and Language Disorders and Learning Disabilities (with special reference to prevalence, etiology, identification, intervention, education and prevention of each category)

CO3: learn about Education of Children with Multiple Disabilities (with special reference to prevalence, etiology, identification, intervention, education and prevention of each category)

Program Outcomes (Education Honours)

PO1-Critical Evaluation:

Critically analyze the recommendations of various committees and commissions, national policies of education. Students are also encouraged to evaluate the contribution of western and Indian great educators and national leaders. They gain mastery over ICT. They also demonstrate their critical thinking through comparing features of the system of education in UK& USA with that of India, techniques of data collection, application of relevant statistical techniques to represent and analyse the data.

PO2-Discovery and Exploration:

Explore new ideas and thoughts through the application of theoretical knowledge of Education subject and statistical techniques and pedagogical analysis.

PO3-Effectual Communication:

Students demonstrate their communicational skills through paper presentations on subject as well as various interdisciplinary themes. Students engage in research projects to demonstrate effective communication skills.

PO4-Sense of time and space:

Relate their understanding of the theories of educational psychology, philosophical and sociological foundations, ICT, Guidance and counselling, Peace and Value education in various classroom situations and societal experiences.

PO5-Thinking Skills:

Demonstrate thinking skills by analyzing, synthesizing, evaluating factual and conceptual educational information from multiple sources and verifying the relevance of various topics by applying them.

PO6-Self-Sufficiency and Life-long Learning:

Developing self-sufficiency, sincerity, independent thinking as education is a lifelong process for empowering the students to face all challenges in their future endeavors.

PO7-Socio-Cultural-political Awareness:

The students became aware of socio-cultural-political diversity through analysis of diverse social groups, schools of philosophy, religion, class, caste, culture, role of family and other institutions and agencies.

PO-8-National Integration, International Understanding and Peace:

Develop concern for the society, nation, as well as promote the feelings of internationalism by comparing our education system with that of UK, USA, philosophy of various educators, social and educational reformers. Various educational policies for the eradication of illiteracy, equalization of educational opportunity, UEE, inclusion, National Disintegration, population explosion and so on are taught in order to sensitize the students. Core Philosophy of Indian Constitution is also developed among the students.

PO-9-Social Interaction:

Encouraging students from diverse backgrounds are provided equal opportunity for fulfilment of their needs and interests. Differently Able students are encouraged to interact with other students in an Inclusive environment. To understand the society the students interact with the members of the society.

PO-10-Solving current problems:

Acquainting students with the diverse current educational problems and other related issues like SSA, Inclusive education Unemployment, Poverty, National Disintegration and Population explosion.

PO-11-Inculcating Values and Ethics:

Applying the knowledge of education in order to inculcate awareness among students concerning racial and gender equity; human rights issues, social justice and other values as enshrined in the Preamble of the Constitution.

PO-12-Heritage Awareness, Environment Consciousness and Sustainability:

Encouraging students to understand various issues related to environment and sustainable development by acquainting them with the diverse causes that lead to social change and progress. Sensitizing the students with the cultural heritage of India in education is another key issue.

Program Specific Outcomes (Education Honours)

PSO1: (CC-1) Students develop a clear idea about the subject Education, like nature, scope and aim of Education, factors, different agencies of education and child centric Education, Indian philosophy of education.

PSO2: (CC-2) Students gather knowledge about Educational Psychology, theories of psychology and their role and importance & impact in the field of education and education system.

PSO3: (GE) Students develop a clear idea about the subject Education, like nature, scope and aim of Education, factors, different agencies of education and child centric Education, Indian philosophy of education.

PSO4: (CC-3) Students develop knowledge about basic of Indian as well as Western Philosophy. They also develop knowledge about the importance of different schools of philosophy in the field of Education.

PSO5: (CC-4) Students gather knowledge about Educational Psychology, Theory of Intelligence.

PSO6: (GE-2) Students gather knowledge about Educational Psychology, growth and development, personality etc.

PSO7: (CC-5) Students internalize the basic of Sociology, relation between Sociology and Education, theories of Educational Sociology and importance of Educational Sociology in the field of Education.

PSO8: (CC-6) Students develop knowledge about the details of ancient and medieval history of Indian Education system.

PSO9: (CC-7) Students develop knowledge about the details of Indian Education during early British Period.

PSO10: (GE-3) Students internalize the basic of Sociology, relation between Sociology and Education, theories of Educational Sociology and importance of Educational Sociology in the field of Education.

PSO11: (SEC-1) Students develop understanding of the concepts of value, morality and peace education.

PSO12: (CC-8) Students understand the meaning of Socialization, Role of the Patents and the Teachers in the process of socialization, Social Control: Meaning and types of Social control, Agencies of Social Control

PSO13: (CC-9) Students develop understanding of the concepts of Education in Post-Independence Period

PSO14: (CC-10) Students develop understanding of the concepts of Educational Management and Administration

PSO15: (GE-4) Students develop a concept of History of Education in India

PSO16: (SEC-2) Students develop understanding of the concepts of Educational Thoughts and Ideas of Great Indian Educators

PSO17: (CC-11) Students develop the concept of guidance and counselling, various types of Guidance and basic data necessary for Guidance.

PSO18: (CC-12) Students develop an understanding of educational technology, use of computer in education and communication, develop an understanding of ICT & e-learning and they also get acquainted with the instructional techniques and different models of teaching.

PSO19: (DSE-1) The learners develop knowledge about Current Issues in Indian Education
.

PSO20: (DSE-2) The learners develop knowledge about the concept of Teacher Education.

PSO20: (CC-13) Students develop understanding of the concepts of measurement and evaluation in education, process of Evaluation, types of measuring instruments and their uses, concepts of validity and reliability and their importance in educational measurement and principles of test construction. They also understand the criteria of constructing standardized tests and utility of statistics in the field of education.

PSO20: (CC-14) Students develop understanding of the concepts of Comparative Education of different countries.

PSO21: (DSE-3) Students develop understanding of the concepts of Distance Education and Open Education.

OR

PSO21: (DSE-3) Students develop understanding of the concepts of Educational Thoughts and Ideas of Great Western Educators.

OR

PSO22: (DSE-3) Learners develop the concept of statistics and to develop skill in analyzing descriptive measures, concept of Normal Probability Curve and its uses in education, measures of relationship and organize relevant educational data and to represent educational data through graphs and to develop skill in analyzing and displaying data.

PSO23: (DSE-4) Learners develop the concept of Special Education for special needs children. Education for visually, hearing and mentally challenged children and concept of inclusive education.

Semester-3rd
(General)

CC-1C: Educational Sociology Full Marks: 75

After end of the course –

CO1: learners will acquire detail knowledge about the Educational Sociology: Meaning, Nature and Scope, Relation between Sociology and Education, Education-as a social sub-system.

CO2: Students will understand about Social Change: Concept and nature, Factors and problems of social change in India, Social stratification: Meaning and Types.

CO3: Students will understand about Socialization: Meaning, process and factors of socialization, Social Control: Meaning and types of Social control, Agencies of Social Control.

CO4: Learners will acquire detail knowledge about Social Agencies of Education and their educative role: Family, School, State, Mass media.

SEC-1: Measurement and Evaluation in Education

After end of the course –

CO1: Learners will acquire detail knowledge about Concept of Measurement and Evaluation, Difference between Measurement and Evaluation, Needs of Evaluation in Education.

CO2: Students will understand about Different tools and techniques of Evaluation, Teacher Made test and Standardized test, achievement tests and psychological tests Cumulative Record Card.

CO3: Students will understand and analyze about Reliability: Meaning and Method of Determining Reliability by Tests- Retest Method, Validity: Meaning and Method of Determining Content Validity.

CO4: Learners will acquire detail knowledge about Tabulation of Educational Data, Measurement of Central Tendency: Mean, Median, Mode (Computation and their uses), Measures of Dispersion: Range; Quartile Deviation; Standard Deviation (Computation and their uses)

CO5: Students will understand about Concept of Correlation, Rank Difference method and Product moment method for Computation of correlation, Co-efficient, Interpretation of results.

Semester-4th
(General)

CC-1D : History of Education in India

After end of the course –

CO1: Learners will acquire detail knowledge about Missionary educational activities in India: Characteristics and significance, Serampore Mission: Contributions of the Trio to Education, Charter Act of 1813, Macaulay's Minute, Adam's Report and its recommendations, Woods Despatch (1854).

CO2: Students will develop their knowledge about Indian Education commission -1882, Indian University Commission (1902), National Education Movement.

CO3: Learners will acquire detail knowledge about Sadler Commission -1917**,** Hartog Committee Report, Wardha Schame, The Sargent Plan (1944).

CO4: Students will develop their knowledge about Radhakrishnan Commission-1948, with special reference to rural university, Mudaliar Commission (1952-53): Reports and Recommendations, Kothari Commission (1964-66): Reports and Recommendations, National Education Policy1986 and Revised Educational Policy of 1992.

SEC-2: Value Education

After end of the course –

CO1: Learners will acquire detail knowledge about Value in Education: Meaning and Concept, Needs of Value Education

CO2: Students will develop their knowledge about Morality: Meaning & Concept, Morality and Values in Education, Role of Parents to Facilitate Children's Moral Development

CO3: Learners will acquire detail knowledge about Social Values, Values in Classroom, Inculcation of Values among the students

CO4: Students will develop their knowledge about Peace Education: Meanings and Aims, Values in Peace Education, Values and Human Rights Education

Semester-5th
(General)

DSE-1A: Great Educators

After end of the course –

CO1: Learners will acquire detail knowledge about Swami Vivekananda (1863-1902), Sri Aurobindo (1872-1950).

CO2: Students will develop their knowledge about Rabindranath Tagore (1861-1941), Mahatma Gandhi (1869-1948).

CO3: Learners will acquire detail knowledge about Jean Jacques Rousseau (1712-1778), F.W. August Froebel (1782-1852).

CO4: Students will develop their knowledge about John Dewey (1859-1952), Madam Maria Montessori (1870-1952).

DSE-1A : Women Education

After end of the course –

CO1: Learners will acquire detail knowledge about Women Education: Meaning and Concept, Problems of Women Education.

CO2: Students will develop their knowledge about Literacy percentage of women, Existing prejudices against women education, Needs & Scope of Education for girls.

CO3: Learners will acquire detail knowledge about Role of Iswarchandra Vidyasagar, Mahatma Gandhi, and Rabindranath Tagore for
Women Education.

CO4: Students will develop their knowledge about Women Education as recommended by different commissions in Independent India, Measures taken by the Government for Women Education, Role of NGO's for Women Education.

GE-1: Current Issues in Indian Education

After end of the course –

COI: Learners will acquire detail knowledge about Development of Education since 1947, Primary Education, Secondary Education, Higher Education, Technical and Vocational Education.

CO2: They will also learn about Equalization of educational opportunity, Education for the Backward Classes, Development and Problems of Women Education.

CO3: Learners will acquire detail knowledge about Development of Non-formal Education in India, Adult and Continuing Education, Sarbo Siksha Abhijan / Mission.

CO4: They will also learn about Functions of following Educational Organizations, CABE, UGC, NCERT, SECRT, and DIET.

SEC-3 : Educational Guidance and Counselling

After end of the course –

CO1: Learners will acquire detail knowledge about Educational Guidance: Meaning, Definition, Scope, Needs and Importance of Guidance, Essentials of good Guidance programme.

CO2: They will also learn about Different forms of Guidance, Educational and Vocational Guidance, Organization of Guidance service at different levels of education, Tools and techniques of Guidance.

CO3: Learners will acquire detail knowledge about Counseling: meaning, nature, scope, Types of counseling, Tools and techniques of Counseling.

CO4: They will also learn about Difference between Guidance and Counselling, Counseling process-relationships & its characteristics, Role of parent, teacher & counselor in guidance programme.

Semester-6th
(General)

DSE-3: Educational Technology

After end of the course –

COI: After end of the course learners will acquire detail knowledge about Educational Technology: Concept and Meaning, Educational Technology: Nature, Scope, Needs and Limitations, Components of Educational Technology-Hardware & Software.

CO2: They will also learn about System approach: Concept and Characteristics, Uses and limitation of system approach.

CO3: Learners will acquire detail knowledge about Communication: Meaning, Nature, Types and Process, Barriers of Communication, Significance of Communication.

CO4: They will also learn about Multimedia approach in educational technology, Visual, audio and audio-visual types and their uses in education, Computer and its role in education.

GE-2 : Psychology of Mental Health and Hygiene (For other disciplines)

After end of the course –

CO1: Learners will acquire detail knowledge about Mental Hygiene: Meaning and Concept, Mental Health: Meaning and Concept, Characteristics of Mental Health, Education and Mental Health & Hygiene.

CO2: They will also learn about Adjustment: Concepts, Need, and Areas of Adjustment, Mechanism of Adjustment, Role of Family and School in effective Adjustment.

CO3: Learners will acquire detail knowledge about Maladjustment: Meaning and Definition, Causes of Maladjustment, Different forms of Maladjustment, Role of Family and School in remedial measures.

GE-2 : Education of Children with Special Needs

After end of the course –

CO1: Learners will acquire detail knowledge about Education of Children with Visual Impairment: identification, intervention, education and prevention, Hearing Impairment: identification, intervention, education and prevention.

CO2: They will also learn about Education of Children with Speech and Language Disorders: identification, intervention, education and prevention.

CO3: Learners will acquire detail knowledge about Education of Children with Physically Handicapped: identification, intervention, education and prevention.

CO4: They will also learn about Education of Children with Learning Disabilities: identification, intervention, education and prevention.

SEC-4 : Distance Education

After end of the course –

CO1: Learners will acquire detail knowledge about Distance Education; Significance, Meaning and Characteristics, Growth and Development of Distance Education.

CO2: They will also learn about Designing and preparing self-learning materials in Distance Education, ICT and their applications in Distance Education

CO3: Learners will acquire detail knowledge about Self – support service in Distance Education, Technical and vocational Programmes through Distance Education.

CO4: They will also learn about Quality assurance in Distance Education, Maintaining of standards in Distance Education, Role of Distance Education Council.

Program Outcomes (Education General)

PO1-Discovery and Exploration:

Explore new ideas and thoughts through the application of theoretical knowledge of Education subject and statistical techniques and pedagogical analysis.

PO2-Effectual Communication:

Students demonstrate their communicational skills through paper presentations on subject as well as various interdisciplinary themes. Students engage in research projects to demonstrate effective communication skills.

PO3-Sense of time and space:

Relate their understanding of the theories of educational psychology, philosophical and sociological foundations, Guidance and counseling.

PO4-Self-Sufficiency and Life-long Learning:

Developing self-sufficiency, sincerity, independent thinking as education is a lifelong process for empowering the students to face all challenges in their future endeavors.

PO5-Socio-Cultural-political Awareness:

The students became aware of socio-cultural-political diversity through analysis of diverse social groups, schools of philosophy, religion, class, caste, culture, role of family and other institutions and agencies.

PO-6-National Integration, International Understanding and Peace:

Develop concern for the society, nation, as well as promote the feelings of internationalism by comparing our education system with that of UK, USA, philosophy of various educators, social and educational reformers. Various educational policies for the eradication of illiteracy, equalization of educational opportunity, UEE, inclusion, National Disintegration, population explosion and so on are taught in order to sensitize the students. Core Philosophy of Indian Constitution is also developed among the students.

PO-7-Social Interaction:

Encouraging students from diverse backgrounds are provided equal opportunity for fulfillment of their needs and interests. Differently Able students are encouraged to interact with other students in an Inclusive environment. To understand the society the students interact with the members of the society.

PO-8-Inculcating Values and Ethics:

Applying the knowledge of education in order to inculcate awareness among students concerning racial and gender equity; human rights issues, social justice and other values as enshrined in the Preamble of the Constitution.

Program Specific Outcomes (Education General)

PSO1: (CC-1A) Students develop a clear idea about the subject Education, like nature, scope and aim of Education, factors, different agencies of education and child centric Education, Indian philosophy of education.

PSO2: (CC-1B) Students gather knowledge about Educational Psychology, theories of psychology and their role and importance & impact in the field of education and education system.

PSO3: (**CC-1C)** Students internalize the basic of Sociology, relation between Sociology and Education, theories of Educational Sociology and importance of Educational Sociology in the field of Education.

PSO4: (SEC-1) Students develop understanding of the concepts of measurement and evaluation in education, process of Evaluation, types of measuring instruments and their uses, concepts of validity and reliability and their importance in educational measurement and principles of test construction.

PSO5: (CC-1S) Students develop understanding of the concepts of educational history of pre-independence.

PSO6: (SEC-2) Students develop understanding of the concepts of value, morality and peace education.

PSO7: (DSE-1A) Students develop understanding of the concepts of Educational Thoughts and Ideas of Great Indian Educators

OR

PSO8: (DSE-1A) Learners will acquire detail knowledge about Women Education.

PSO9: (GE-1) Students develop understanding of the concepts of current issues in Indian education.

PSO10: (SEC-3) Students develop the concept of guidance and counselling, various types of Guidance and basic data necessary for Guidance.

PSO11: (DSE-3) Students develop an understanding of educational technology, use of computer in education and communication, develop an understanding of ICT & e-learning and they also get acquainted with the instructional techniques and different models of teaching.

PSO12: (GE-2) Students develop an understanding of Psychology of Mental Health and Hygiene

OR

PSO13: (GE-2) Learners develop the concept of Special Education for special needs children. Education for visually, hearing and mentally challenged children and concept of inclusive education.

PSO14: (SEC-4) Students develop understanding of the concepts of Distance Education and Open Education.

DEPARTMENT OF HISTORY COURSE OUTCOME (CO) HISTORY HONOURS (B.A) UNDER CCFUP & CBCS

(2023-2024)

Semester	Course	Course outcome
Semester I	Major: HIST 1011 History Of India (From Earliest Times to 6th Century B.C.E)	1. This unit introduces the meaning of history and its significance in understanding the evolution of human civilization. It explores the origin of the name Bharat and delves into the concept of India or Bharat, highlighting its cultural and historical depth. The unit emphasizes the fundamental unity of India, transcending time and diversity. Additionally, it examines the Indian concepts of time, space, scope, and historical sources, providing a comprehensive foundation for the study of ancient Indian history. 2. In this unit, learners are introduced to a broad survey of Paleolithic, Mesolithic, and Neolithic cultures, focusing on their unique characteristics, tools, and ways of life. It provides insights into the gradual progression of early human societies, from hunting-gathering to settled agricultural lifestyles, laying the groundwork for later civilizations. 3. The Harappan Civilization is the focus of this unit, examining its origin, geographical extent, and key features like advanced urban planning, trade, and craftsmanship. It also highlights the religious practices of the Harappans and their interactions with other ancient civilizations. The unit concludes with an analysis of the theories surrounding the decline of the Harappan Civilization, encouraging critical thinking about historical interpretations. 4. This unit explores the Vedic and Later Vedic Age, including the arrival of the Aryans and the debates surrounding their migration. It discusses the economy, polity, society, and religion of the Vedic period and their influence on Indian culture. Learners will discover advancements in science, technology, environmental conservation, and health practices like yoga and naturopathy. The unit also examines the development of the Indian numerical system, mathematics, language, and economic thoughts, while addressing the significance of land, forests, agriculture, industry, and trade in the Vedic age. 5. This unit focuses on the religious protest movements of ancient India, particularly Jainism and Buddhism. It explores their emergence as reactions to the socio-religious practices of the time, their philosophical underpinnings, and their enduring impact on Indian and global thought. These movements contributed significantly to the spiritual and cultural diversity of India.
	SEC: HIST 1051 Understanding Indian Heritage	1. This unit provides an understanding of the concept of heritage, its significance, and its various dimensions—tangible, intangible, natural, and cultural. It explores how heritage shapes identity and preserves the values, traditions, and history of societies. The unit also emphasizes the need for awareness and conservation of heritage in a rapidly changing world. 2. This unit traces the constitution of heritage in colonial India, exploring how colonial policies influenced the perception and preservation of Indian heritage. It discusses the evolution of heritage legislation, highlighting key laws, acts, and institutional frameworks that were established during the colonial period and their impact on contemporary heritage conservation efforts. 3. Focusing on tourism as a tool for promoting Indian heritage, this unit examines how heritage contributes to the development of tourism and vice versa. It explores strategies for sustainable

		tourism that balance the promotion of cultural and natural heritage with its conservation, fostering global awareness and appreciation of India's rich heritage. 4. This unit highlights UNESCO World Heritage Sites in India through selected case studies. It explores the significance of these sites, the criteria for their inclusion, and the efforts made to conserve them. By examining case studies, learners gain insights into the challenges and opportunities associated with managing world heritage in India.
	Minor: HIST 1021 Ancient Indian History up to 550 CE [Students Who have Major Subject Other Than History]	1. This unit explores the sources and approaches used to study Ancient Indian History, including archaeological, literary, and epigraphic evidence, providing a foundation for understanding India's past. 2. The Harappan Civilization is analyzed in terms of its origin, extent, key features, and the theories surrounding its decline, highlighting its advanced urban planning and cultural achievements. 3. This unit examines the Vedic Civilization, focusing on its economy, polity, society, and religion, along with the rise of religious protest movements like Jainism and Buddhism, emphasizing their philosophies and societal impact. 4. The focus is on the rise of Magadha as a major power among the Sixteen Mahajanapadas and the emergence of the Mauryan Empire under leaders like Chandragupta and Ashoka, covering their administration, achievements, and the empire's eventual decline. 5. The post-Mauryan period is explored through the Satavahanas, Kushanas, and Indo-Roman trade, highlighting economic and cultural exchanges. The unit also covers the Gupta Age, focusing on its political expansion, contributions to art, literature, and administration, marking a classical period in Indian history.
	Multi/ Interdisciplinary Course: HIST 1031 History of India (1757 to 1857) [Students Who have Major Subject Other Than History]	1. This unit examines the rise of the English East India Company, focusing on the pivotal Battles of Plassey and Buxar, and the Grant of Dewani, which marked the beginning of British dominance in India. 2. The unit explores the interactions between the British and major regional states, covering Anglo-Maratha, Anglo-Mysore, and Anglo-Sikh relations, highlighting the conflicts and treaties that shaped British expansion in India. 3. This unit analyzes the economic policies of the British in India, including the Drain of Wealth, Deindustrialization, and the Permanent Settlement, emphasizing their profound impacts on India's economy and society. 4. The socio-religious reform movements led by figures like Rammohan Roy, Vidyasagar, and the Young Bengal movement are discussed, showcasing their efforts to modernize Indian society and challenge traditional practices. 5. This unit focuses on peasant and tribal revolts such as the Wahabi Movement and the Santal Movement, as well as the 1857 Revolt, analyzing its causes, consequences, and nature, marking it as a significant event in Indian resistance to British rule.
	VAC Environmental Studies	This paper introduces the fundamental principles and concept of environmental science, ecology and related interdisciplinary subject such as policy, law, economics, pollution control, resources management etc.
	AEC	Course outcome with respective subject.

Semester II	Major: HIST 2011 History Of Ancient World Civilization	1. This unit explores the Egyptian Civilization, one of the earliest and most remarkable in world history. It delves into its political developments, including the rise and fall of dynasties, and the civilization's contributions to art, architecture, and religion. Iconic structures like the pyramids and the Sphinx, alongside the belief systems surrounding the afterlife, highlight the grandeur and spiritual depth of ancient Egypt. 2. Focusing on the Mesopotamian Civilization, this unit examines the contributions of the Sumerians, Babylonians, and Assyrians. It covers their achievements in society, religion, architecture, administration, and education. The unit highlights innovations such as cuneiform writing and the Code of Hammurabi, showcasing Mesopotamia as the cradle of urban culture and organized governance. 3. This unit introduces the Chinese Civilization, emphasizing its advancements in polity, society, and science and technology. It explores China's ancient governance systems, social hierarchies, and technological innovations like paper and gunpowder. The enduring influence of Confucianism and Daoism is also discussed, showcasing the intellectual and cultural heritage of ancient China. 4. The Persian Civilization is the focus of this unit, with an examination of its political, social, and economic conditions. It highlights the administrative prowess of the Achaemenid Empire, its vast trade networks, and the cultural synthesis that emerged under Persian rule. Zoroastrianism and monumental architecture, such as Persepolis, illustrate the richness of Persian heritage. 5. This unit explores the rise of Classical Greece, beginning with the Age of Homer and the foundations of Athens and Sparta. It covers key historical events like the Persian Wars and the Peloponnesian War, as well as the transformative Periclean Age, marked by advancements in governance, art, and culture. The unit also examines Greece's contributions to literature, drama, sports, and philosophy, which laid the intellectual foundations for Western civilization.
	SEC: HIST 2051 Archives and Museums	1. This unit defines archives and related terms like manuscripts, records, and libraries, highlighting their importance in preserving history. It explores the physical forms of archival materials, from ancient clay tablets and inscriptions to modern films, tapes, and electronic records. 2. The unit covers types of archives and their evolution, with a focus on the history of archives in India. Key examples include the National Archives, New Delhi, and regional archives, showcasing their role in safeguarding cultural and administrative records. 3. This unit defines museums and outlines their aims, functions, and history, with emphasis on India's notable institutions like the Indian Museum in Calcutta and the National Museum, which preserve and exhibit cultural heritage. 4. The unit explores types of museums and the emergence of new institutions. It addresses the collection, conservation, and preservation of materials and examines the role of museums in society through exhibitions and public engagement.
	Minor: HIST 2021 HISTORY OF INDIA (From 550 C.E to 1206 C.E) [Students Who have Major	1. This unit explores the emergence of new powers during the Age of Decentralization, highlighting the fragmentation of authority and the rise of regional identities in early medieval India. 2. Focusing on decentralization, this unit examines the development and consolidation of regional powers, analyzing their political, social, and cultural significance in shaping local governance. 3. The emergence of regional powers in Central and Northern India is discussed, with attention to the role of kingdoms and clans in

	Subject Other Than History]	fostering regional political structures and cultural advancements. 4. This unit delves into the regional powers of the Deccan and South India, exploring the influence of prominent dynasties like the Cholas, Cheras, and Rashtrakutas in politics, trade, and culture. 5. The decline of the Rajputs and the political changes in North India until 1206 CE are examined, alongside a study of the rich cultural developments of pre-medieval India in areas like art, literature, and architecture.
	(Multi/ Interdisciplinary Course: HIST 2031 History of India (1858-1947) [Students Who have Major Subject Other Than History]	1. This unit examines the aftermath of the 1857 Revolt, focusing on the Indigo Rebellion and the Aligarh Movement, which marked early resistance to colonial policies and efforts toward socio-religious reform. 2. The early phase of the Indian National Movement is discussed, highlighting the formation of the Indian National Congress, its activities, and key events like the Swadeshi Movement and Morley-Minto Reforms, which laid the groundwork for organized political resistance. 3. This unit explores the Gandhi Era, emphasizing movements like the Khilafat and Non-Cooperation Movements, the Poona Pact, the Civil Disobedience Movement, and the Quit India Movement, which were pivotal in mobilizing mass support against British rule. 4. Focusing on the path to independence, this unit covers the 1935 Government of India Act, the influence of the leftist movement, Subhas Chandra Bose and the INA, and the critical milestones of the Cripps Mission and Cabinet Mission in shaping India's freedom struggle. 5. The rise of communal politics is analyzed through the birth of the Muslim League, the demand for Pakistan, and the rise of the Hindu Mahasabha, culminating in the Partition of India. The causes and effects of Partition are examined to understand its profound impact on the subcontinent.
	VAC: CVA206 Understanding India	1. This unit provides an introduction to India, highlighting its geographical, cultural, and historical significance, setting the stage for understanding its complex societal fabric. 2. The focus here is on the social history of India, examining the evolution of its social structures, traditions, and interactions across time, emphasizing key transformations. 3. This unit explores India as a plural society, showcasing its diversity in religion, language, culture, and traditions, and how these elements coexist to shape national identity. 4. A study of the major ideas of Swami Vivekananda, focusing on his vision of spiritual nationalism, social reform, and education as tools for building a progressive society. 5. This unit examines the major ideas of Mahatma Gandhi, including nonviolence, truth, self-reliance, and his strategies for achieving social and political liberation. 6. The focus is on Rabindranath Tagore’s ideas, exploring his views on education, humanism, internationalism, and the role of culture in fostering harmony. 7. This unit highlights B.R. Ambedkar’s contributions, including his advocacy for social justice, equality, and the rights of marginalized communities, alongside his role in framing the Indian Constitution. 8. The final unit examines India’s role in the world, focusing on its cultural, political, and economic interactions, and its contribution to global peace and development.

Semester III	Course :CC V Course Title : History of India (circa 1206 CE – 1526 CE)	CO-1: Students will gain knowledge about historical sources for interpreting the Delhi Sultanate. They will learn about history of Sultanate from its establishment and consolidation to its disintegration .Students will also gather ideas on different regional powers. CO-2: It will provide a clear idea to the students about the socio-economic and cultural aspects during the period of sultanate. CO-3: Students will also realize the religion, Sufism and
		Bhakti movement as developed during the Sultanate.
	Course :CC VI Course Title : Rise of the Modern West – 1 (15^{th}& 16^{th}	CO-1: It will provide a clear idea to the students about transition from feudalism to capitalism as well as early colonial expansion through sea. Voyages and exploration and discovery of America. CO-2: Students will also acquire knowledge about origins, spread and impact of Renaissance and Reformation in Europe. CO3: Students also learn about agricultural revolution, commercial revolution and price revolution as well as emergence of European state system.
	Course :CC VII Course Title : History of India (1526 – 1757 CE)	CO-1: Student will learn how to interpret historical sources for reconstruction of Mughal History. Students will acquire knowledge about establishment, consolidation and disintegration of Mughal Empire. CO-2: It will provide the basic conception to the students about the development of Mughal art, architecture and painting. CO-3: It will provide idea to the students on how regional powers emerge after the decline of the mughal empire and rise of the English East India company in Bengal.
	Course :SEC-I Course Title : Archives and Museum in India.	CO-1: This course will introduce students to archives and Museum in India and their history of development. CO-2: Students will learn about types of archives and museum and understand the traditions of presentation. CO-3: It will provide idea to students how to organise museum presentation and exhibition .Students also learn about relationship between museum, archives and society through communication outreach activities.

	Course : GENERIC ELECTIVE-IC Course Title : History of India (1206 CE- 1707 CE)	CO-1: It will give a clear idea to the students about the history of the Sultanate as well as the Mughal empire. upto 1707 AD . CO-2: Students will acquire knowledge about the sultanate from its establishment and consolidation to its downfall. CO-3 : Students will also get ideas on the emergence of different regional powers and the socio- economic and cultural aspects during the period of sultanate.(1206-1526 AD) CO-4: Students will learn about the history of the Mughal Empire from its foundation and consolidation to its disintegration. CO-5: Students will also understand Mughal Indian society, economy and culture including Akbar's Din -Iillahi.
SEM IV	COURSE : CC VIII Course title : Rise of the Modern West-II (17^{th}& 18^{th} centuries	CO -1: Students will be able to learn about 17^{th} century European crisis of economic, social and political dimension as well as the English Revolution and related major issues of political and intellectual currents. CO-2: Student will understand rise of Modern science in European society since Renaissance. CO-3: They will also learn Mercantilism and its impact on European economy. CO-4: Students will gather knowledge about European polities in 18^{th} century as well as the concept of parliamentary monarchy and absolutism in Europe. CO-5: Students also learn about the concept of Industrial Revolution in England and other European countries.
	COURSE : CC IX Course title :Course Title : History of India (1757- 1857)	CO-1: Students will learn how English East India company rule was established in Bengal as well as in India. CO-2: Student will also know about legitimization of company's rule in India through various acts passed in British parliament. CO-3: They will learn about British land revenue system and its impact on rural society. CO-4: Students will acquire knowledge about trade and industry including de-industrialization, drain of wealth and growth of modern industry. CO-5: They will get an idea about Bengal Renaissance and socio-religious reforms as well as role of Rammohan Roy, Vidyasagar etc. CO-6: Students will gain knowledge about popular resistance against the company's rule in form of various uprisings and nature of the revolt of 1857.

COURSE : CC-X Course Title : History of India (1858- 1964)	CO-1: Students will acquire knowledge about rebellions like Indigo rebellion, growth of new middle class, age of associations, the Aligarh movement etc. CO-2: Students will learn historiography of Indian nationalism, birth of Indian National congress, Swadeshi movement in Bengal in 1905, Muslim League, Lucknow Pact etc. CO-3: Students will learn how Gandhi rose to power in Indian politics and his activities towards freedom. CO-4: They will also learn about role of Subhas Bose and INA in Indian freedom struggle. CO-5: Student will understand how communal polities gained ground and finally led to the partition of India. CO-6: Students will get an idea of the Nehru era and its internal policy and foreign policy like Non- alignment between 1947 and 1964.

COURSE : SEC- II Course Title: Art Appreciation: An understanding to Indian Art.	CO-1: This course will introduce students to Indian art from ancient to contemporary times in order to understand its diversity and aesthetic richness. CO-2 : Students will understand pre- historic and proto historic art like Rock art as well as Harappan art. CO-3: Students will get idea on major developments in Indian art between 600 BCE TO 600 CE. in form of stupa, cave, temple ,sculpture etc. CO-4: Students will also know about temples, manuscripts, and mural paintings etc. in India in early medieval period. (600 - 1200 CE) CO-5: Students can get an idea about Indian art and architecture during the Sultanate and the Mughals (1200 CE - 1800 CE) CO-6: Students also can acquire knowledge on modern and contemporary Indian art and architecture as well as major artists and their artworks.

SEM V	Course : GENERIC ELECTIVE-ID Course Title : History of India (1707 - 1950)	CO-1: Students will learn how regional powers emerged after the downfall of Mughal empire and the Company's rise into power. CO-2: Students can get an idea on land settlements and tribal and peasant revolts against the company's economic exploitation. CO-3: Students can acquire knowledge about socioreligious reform movements in the 19th century and role of Rammohan Roy,Vidyasagar etc. CO-4: They will learn about nature of revolt of 1857 and age of associations and birth of Indian National Congress as well as partition and Swadeshi movement in Bengal. CO-5: Students will get an idea on the rise of Gandhi in Indian politics and his movements. They also learn about role of Subhas Bose and INA in Indian freedom struggle. CO-6: Students can also understand how India was partitioned owing to communal politics and how Indian Republic comes into being.
	COURSE : CC-XI Course Title : History of Modern Europe II (1789- 1870)	CO-1: The course will provide knowledge to students about the history of Modern Europe. Students will also learn about the background of the French Revolution an epoch - making event, its multi -faceted phases and its repercussions in Europe. CO-2: Students will acquire knowledge about the Napoleonic era and its impact on France and Europe, and Restoration and Revolutions of 1830 & 1848 and their impact. CO-3: It will give an idea to students about Industrialisation and socio - economic transformation in Europe, rise of socialism, rise of Nationalism in Germany and Italy, the second French empire etc.
	COURSE : CCXII Course Title: Studying history writing: Indian and western.	CO-1: It will introduce students to the historiography - Indian and western. Students will learn about time, space in history as well as types, classification and importance of sources of history. CO-2: Students will acquire knowledge about philosophy of history, hypothesis, historical narrative and generalization. CO-3: It will also introduce students to different schools of Indian and western historiography including precolonial forms of writing Indian history. CO-4: Students will be familiar with the relationship between history and other disciplines as well as the process of doing research of history.

COURSE : DSE- I Course Title: Life and Culture in preColonial Bengal. (Prehistoric times to mid-18th century.)	CO-1: Students will gain knowledge about the history of ancient and medieval Bengal. It will give a clear idea to the students about historical geography, people and society of ancient and medieval Bengal. Students can learn the political developments of Bengal from ancient times to the rule of the Nawabs. CO-2: Students will acquire knowledge about economic life in Bengal and rise of Calcutta and Murshidabad. CO-3: Students Can learn about religions, architecture, sculpture and other forms of art. CO-4: Students will gain knowledge about literature and traits of regional culture of ancient and medieval Bengal.
COURSE : DSE- II Course Title : Life and Culture in Colonial Bengal.(1757- 1947)	CO-1: Students will acquire knowledge about the history of colonial Bengal. They will learn how East India Company's rule was established in Bengal through the battle of Plassey. They also can know the change in the revenue system under the British and its impact on rural economy of Bengal. CO-2: Students will understand the changes in social and economic life in Bengal upto 19^{th} century such as de- urbanization and popular protests. CO-3: Students will learn about the impact of the Company's rule such as western education and Bengal Renaissance, role of Rammohan Roy, Vidyasagar etc. CO-4: Students will also acquire knowledge about on the cultural scenario in the 19^{th} century Bengal. Bengali literature, music, theatre, science, technology and medicine. CO-5: Students will gain the concept of Swadeshi movement, Muslim League, and Gandhian movements in Bengal. They will also understand influence of nationalism , literature, utsab & melas ,theatres , CO-6: Rabindranath, Nazrul and others in the 20^{th} centuries as well as impact of partition pf Bengal.

SEM VI	COURSE : CC- XIII Course Title : History of Modern Europe -II (1871- 1945)	CO-1: This course will help students to learn about major events in Modern Europe between 1871 & 1945. Students will know about German foreign policy of Bismarck and Kaiser William II, Eastern question and Balkan wars. CO-2: Students will understand causes of outbreak of First World War, the Russian Revolution and establishment of League of Nations. CO-3: Students will gather knowledge about consolidation of Soviet State as well as rise of fascism in Italy and Nazism in Germany, and crisis of new European order. CO-4: Students will learn how Hitler's aggressive foreign policy, Mussolini's foreign policy and Rome - Berlin Tokyo Axis led to the Second World War. CO-5: Students will also know about origin and functions of United Nations Organization.
	COURSE : CC- XIV Course Title : Making of the Contemporary world (1946- 2000)	CO-1: Students will learn about post- war changing social, political and economic scenarios of the world. They will also know about origin of cold war, military and defence alliances out of superpower rivalry as well as fall of Berlin Wall and German re-unification. CO-2: Students will be able to gather knowledge about decolonization and emergence of the Third World as well as Third world Organizations like OPEC, SAARC etc. CO-3: Students will learn how cold war was escalated due to Korean war, Cuban crisis, Vietnam war, Palestine problem, Gulf war etc. CO-4: Students will also understand Globalization and its impact, Liberalization and its impact as well as World Bank and IMF. CO-5: They will also know about emerging trends in culture, media as well as about Information Revolution. CO-6 : Students will be aware about changing world political scenarios such as collapse of Soviet Bloc and American Uni-polarism .They will learn about how current threats of ethnic clashes and cross- border terrorism confronting the world.
	COURSE : DSE- III Course Title : History of Modern East Asia I (1840 - 1919)	CO-1: Students will gain an idea on nature of society, administration, religion and economy in precolonial China. CO-2: Students will know about Anglo-Chinese relations till the Opium war and its result on Chinese life as a whole. CO-3: Students will acquire knowledge about Chinese Rebellions, Restoration and Nationalism. They will also know the Revolution of 1911 as well as the role of Dr. Sun - Yat - Sen. CO-4: Students will gain the concept of society, religion, economy and administration as well as crisis of the Shogunate in pre -Meiji Japan.

		CO-5: Students will learn about Meiji Restoration and how it signalled the process of Modernization and transformation of Japan. CO-6: Students will also learn about expansion of Japan up to the First World War.
	COURSE : DSE- IV Course Title : History of China and Japan (1919- 1949)	CO-1: This course will make the students aware of the major transformation of China and Japan between 19191949. They will learn about growth of Chinese Nationalism, Warlordism, and May 4th Movement.
		CO-2: Students will know about rise of Kuomintang Party and Chinese Communist Party (CCP), conflict between two parties and Ten Years of Nankin Government under Chiang -Kai – Shek. CO-3: Students will learn about the CCP under Mao- Tse - Tung, the Yenan experiment, the Chinese Revolution of 1949 and establishment of the People's Republic of China. CO-4: Students will know about the abolition of feudal society through the process of Modernization and Industrialization which led to the rise of Modern Japan. CO-5: Students will learn how imperial fascist Japan emerged due to failure of the democratic system and rise of militarism in the 1930s and 1940s. CO-6: Students will also acquire knowledge about Japan's bid for supremacy but her ultimate defeat in World War II and also position of Japan in post-war period.

PROGRAMME OUTCOME

FOR ACADEMIC YEAR: 2022 – 2023

Department of History

	PROGRAMME OUTCOME (PO)
PO-1	To provide students an in-depth knowledge of history.
PO-2	To provide students a basic method of studying and writing History.
PO-3	To provide a well - resourced learning environment for history.
PO-4	To provide students the scientific way of learning History
PO-5	To enhance the inquisitiveness of the students regarding Humanities, Literature and Current Affairs-- national and international.
PO-6	To provide students an orientation regarding the interdisciplinary fields in Arts and Humanities and other social sciences.
PO-7	To provide students of History an ability in critical thinking skills.
PO-8	To provide students with the opportunity to pursue courses that emphasizes quantitative and theoretical aspects of History.
PO-9	To help students fully understand the concept and application of research methodologies and field work.
PO-10	To provide students an idea of how and when Homo Sapience emerged as the specie and how they produced Human civilization.
PO-11	To make students aware that only through learning about past that we make sense of the present.
PO-12	To provide an opportunity for graduate students of History Honours to pursue post graduate courses at various universities and Ph.D courses thereafter.

PO-13	To instil in the minds of students an interest in taking up teaching of History as a profession in the academic institutions.
PO-14	To motivate the students to prepare for various types of competitive examinations.

B.A. Honours in History under CBCS curriculum
Programme Specific Outcomes (PSO) 2022-23

From the Academic Session 2017-18 CBCS was introduced by the BURDWAN University, which is our affiliating university at present. The first batch of students under the newly introduced semester system completed graduation in the academic year 2019-20. It thus appears difficult to measure programme specific outcomes on definite terms. Besides, the University itself is yet to provide concrete Programme Specific outcomes to its affiliated Colleges. However, our esteemed teachers of the Department of History pondered over the current syllabus and tried to chalk out some specific outcomes of B.A. three year, six semesters Honours Degree Programme of their own. Such expected Programme Specific Outcomes may be listed as follows:

1) **Sound Knowledge of different Historical Periods:** Under the CBCS papers in each semester are devoted to the study of particular Historical phase in the historical events along with the study of a few major works by some master Historians of that period. These not only help the students to understand a historical period better, but also reduce the load of study in the concerned area.

2) **Knowledge of the Development of Historical Perspective:** While pursuing Honours course of studies in History it is mandatory that a student develops proper knowledge of the historical events. In this sphere also the present syllabus appears to be illuminating, as it's provides the students with standard and up to date knowledge of historical events, impact, war and history, result.

The students may acquire knowledge of the historical events of the Ancient, Medieval, Modern Indian and European history in new aspects.

3) **Development of the New Historical Perspectives:** The current syllabus is well chosen to represent different events from different angles. They are not only meant to make the students familiar with the dominant events of different ages, but also to open out new perspectives, the student may acquire a knowledge of the changing nature of politics or kingdoms of the changing times.

Polba Mahavidyalaya, Polba, Hooghly
Session: 2023-2024

SEMESTER I and II COURSE WISE CREDIT DISTRIBUTION STRUCTURE UNDER CCFUP AS PER NEP, 2020

Semester	Course Type with Code	Level	Course Title	Credit	Lect.	Tuto.	Pract./ Viva-voce	Full Marks	Distribution of Marks		
									Theory	Pract./ Viva-voce	Internal Assessment
I	Major/DS Course (Core) Code: MATH1011	100-199	Calculus, Geometry & Vector Calculus	4	3	1	0	75	60	0	15
	Minor Course Code: MATH1021	100-199	Calculus, Geometry & Vector Calculus	4	3	1	0	75	60	0	15
	Multi/Inter disciplinary Code: MATH1031		Trigonometry and Coordinate Geometry	3	2	1	0	50	40	0	10
	Ability Enhancement Course (AEC) [L_1-1 MIL] Code: AEC1041		Arabic/ Bengali/ Hindi/ Sanskrit/ Santali/ Urdu or Equvlnt. Course from SWAYAM /Any other UGC recognized platform	2	2	0	0	50	40	0	10
	Skill Enhancement Course (SEC) Code: MATH1051		Graph Theory	3	2	1	0	50	40	0	10
	Common Value Added (CVA) Course Code: CVA1061		Environmental Science/ Education	4	3	0	1	100	60	20	20
	Total			**20**				**400**			

Semester	Course Type with Code	Level	Name of the Course	Credit	Lect.	Tuto.	Pract./Viva-voce	Full Marks	Distribution of Marks		
									Theory	Pract./Viva-voce	Internal Assessment
II	Major/DS Course (Core) Code: MATH2011	100-199	Introductory Algebra & Number Theory	4	3	1	0	75	60	0	15
	Minor Course Code: MATH2021	100-199	Introductory Algebra & Number Theory	4	3	1	0	75	60	0	15
	Multi/Interdisciplinary Code: MATH2031		Algebra	3	2	1	0	50	40	0	10
	Ability Enhancement Course (AEC)[L_2-1] Code: AEC2041		English or Equvlnt. Course from SWAYAM/ /Any other UGC-recognized platform	2	2	0	0	50	40	0	10
	Skill Enhancement Course (SEC) Code: MATH2051		Programming in C	3	2	1	0	50	40	0	10
	Common Value Added (CVA) Course Code: CVA2061		Understanding India/Digital & Technological Solutions/Health & Wellness, Yoga Education, Sports & Fitness	4	3/3	1/0	0/1	100	80/60	0/20	20
Skill based vocational course (addl. 4 Cr) during summer term for 8 weeks, who will exit the programme after securing 40 cr.											
For UG Certificate 40 cr + Additional 4 cr (work based vocational course) = 44 cr. Students are allowed to re-enter within 3 years and complete the program within the stipulated max. period of 7 years											
	Total			**20**				**400**			

DETAILED SYLLABUS

SEMESTER – I

MAJOR COURSES

Course Code: MATH1011
Course Name: Calculus, Geometry &Vector Calculus
(Credit: 4, Marks: 75)
Total Hours: Lecture -45, Tutorial – 15

Objectives

To study calculus, geometry and vector calculus

Learning outcomes

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

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

Skills: The students would be able to

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

General competence: The students would gain

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

Contents:

Hyperbolic functions, higher order derivatives, Leibnitz rule and its applications to problems of type $e^{ax+b} \sin x$, $e^{ax+b} \cos x$, $(ax+b)^n sinx, (ax+b)^n cosx$, indeterminate forms, L'Hospital's rule, concavity of curves, points of inflection, envelopes, asymptotes, curve tracing in Cartesian coordinates, tracing in polar coordinates of standard curves. **[L-12H & T-4H]**

Reduction formulae, derivations and illustrations of reduction formulae for the integration of $sinnx$, $\cos nx$, $tannx$, $secnx$, $(logx)^n$, $\sin^n x \sin^m x$, parametric equations, parametrizing a curve, arc length, arc length of parametric curves, area of surface of revolution. **[L-10H & T-3H]**

Reflection properties of conics, translation and rotation of axes, general equation of second-degree, classification of conics, polar equations of conics, spheres, cylindrical surfaces. central conicoid, paraboloids, plane sections of conicoid, generating lines, classification of quadrics. **[L-11H & T-4H]**

Triple product of vectors, introduction to vector functions, algebraic operations on vector-valued functions, limits and continuity of vector functions, differentiation and partial differentiation of vector functions, gradient of a scalar function, divergence and curl of vector functions. [L-**12H & T-4H]**

Reading References:

Text Books:

1. Calculus - G.B. Thomas and R.L. Finney, 9th Ed., (Pearson Education, Delhi, 2005).
2. Calculus - M.J. Strauss, G.L. Bradley and K. J. Smith, 3rd Ed., (Dorling Kindersley (India) P. Ltd. (Pearson Education), Delhi, 2007).
3. Integral Calculus - K.C. Maity and R. K. Ghosh., (New Central Book Agency (P) Limited, 1999).
4. An Elementary Treatise on Coordinate Geometry of three-Dimensions–R.J.T. Bell, (MacMillan & Co.).
5. The Elements of Coordinate Geometry-S.L. Loney, (MacMillan & Co.).
6. Vector Analysis- K.C. Maity and R. K. Ghosh, (New Central Book Agency (P) Ltd. Kolkata, 1999).

Reference Books:

1. Calculus- T. M. Apostol, (Volumes I and II. Vol-I, 1966, Vol-II, 1968).
2. Calculus- H. Anton, I. Bivens and S. Davis, 7th Ed., (John Wiley and Sons (Asia) P. Ltd., Singapore, 2002).
3. Introduction to Calculus and Analysis - R. Courant and F. John, (Volumes I & II), (Springer-Verlag, New York, Inc., 1989).
4. Analytical Geometry of two and three-dimensions- N. Dutta and R. N. Jana, (Shredhar Prakashani).
5. Calculus and Mathematical Analysis- S. Goldberg, 1989.
6. Vector Calculus- J. Marsden, and Tromba, (McGraw Hill, 1987).
7. Schaum's outline of Vector Analysis- M.R. Spiegel, (McGraw Hill, 1980).
8. Vector Analysis with Applications - A. A. Shaikh and S. K. Jana, (Alpha Science International Ltd., 2009).

MINOR COURSES

Course Code: MATH1021
Course Name: Calculus, Geometry &Vector Calculus
(Credit: 4, Marks: 75)
Total Hours: Lecture -45, Tutorial – 15

Objectives

To study calculus, geometry and vector calculus

Learning outcomes

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

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

Skills: The students would be able to

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

General competence: The students would gain

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

Contents:

Hyperbolic functions, higher order derivatives, Leibnitz rule and its applications to problems of type $e^{ax+b} \sin x$, $e^{ax+b} \cos x$, $(ax+b)^n sinx, (ax+b)^n cosx$, indeterminate forms, L'Hospital's rule, concavity of curves, points of inflection, envelopes, asymptotes, curve tracing in Cartesian coordinates, tracing in polar coordinates of standard curves. **[L-12H & T-4H]**

Reduction formulae, derivations and illustrations of reduction formulae for the integration of $sinnx$, $\cos nx$, $tannx$, $secnx$, $(logx)^n$, $\sin^n x \sin^m x$, parametric equations, parametrizing a curve, arc length, arc length of parametriccurves, area of surface of revolution. **[L-10H & T-3H]**

Reflection properties of conics, translation and rotation of axes, general equation of second-degree, classification of conics, polar equations of conics, spheres, cylindrical surfaces. central conicoid, paraboloids, plane sections of conicoid, generating lines, classification of quadrics. **[L-11H & T-4H]**

Triple product of vectors, introduction to vector functions, algebraic operations on vector-valued functions, limits and continuity of vector functions, differentiation and partial differentiation of vector functions, gradient of a scalar function, divergence and curl of vector functions. [L-**12H & T-4H]**

Reading References:

Text Books:

1. Calculus - G.B. Thomas and R.L. Finney, 9th Ed., (Pearson Education, Delhi, 2005).
2. Calculus - M.J. Strauss, G.L. Bradley and K. J. Smith, 3rd Ed., (Dorling Kindersley (India) P. Ltd. (Pearson Education), Delhi, 2007).
3. Integral Calculus - K.C. Maity and R. K. Ghosh., (New Central Book Agency (P) Limited, 1999).
4. An Elementary Treatise on Coordinate Geometry of three-Dimensions–R.J.T. Bell, (MacMillan & Co.).
5. The Elements of Coordinate Geometry-S.L. Loney, (MacMillan & Co.).
6. Vector Analysis- K.C. Maity and R. K. Ghosh, (New Central Book Agency (P) Ltd. Kolkata, 1999).

Reference Books:

1. Calculus- T. M. Apostol, (Volumes I and II. Vol-I, 1966, Vol-II, 1968).
2. Calculus- H. Anton, I. Bivens and S. Davis, 7th Ed., (John Wiley and Sons (Asia) P. Ltd., Singapore, 2002).
3. Introduction to Calculus and Analysis - R. Courant and F. John, (Volumes I & II), (Springer-Verlag, New York, Inc., 1989).
4. Analytical Geometry of two and three-dimensions- N. Dutta and R. N. Jana, (Shredhar Prakashani).
5. Calculus and Mathematical Analysis- S. Goldberg, 1989.
6. Vector Calculus- J. Marsden, and Tromba, (McGraw Hill, 1987).
7. Schaum's outline of Vector Analysis- M.R. Spiegel, (McGraw Hill, 1980).
8. Vector Analysis with Applications - A. A. Shaikh and S. K. Jana, (Alpha Science International Ltd., 2009).

MULTIDISCIPLINARY COURSES

Course Code: MATH1031
Course Name: Trigonometric functions and coordinate geometry
(Credit: 3, Marks: 50)
Total Hours: Lecture - 30, Tutorial – 15

Objectives

To present the concepts of Trigonometric Functions, Straight Lines, Conic Sections and Introduction to Three - dimensional Geometry.

Learning outcomes

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

i. Trigonometric Functions.
ii. Straight Lines.
iii. Conic Sections.
iv. Introduction to Three - dimensional Geometry.

Skills: The students would be able to

i. solve the problem of Trigonometric Functions.
ii. solve the problem of Straight Lines.
iii. solve the problem of Conic Sections.
iv. solve the problem of Three - dimensional Geometry.

General competence: The students would gain

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

Contents:

Trigonometric Functions: Measurement of trigonometric angles, trigonometric functions and standard angles, trigonometric functions of associated angles, trigonometric functions of compound angles, transformations of sums and products of trigonometric functions, trigonometric functions of multiple angles, trigonometric functions of submultiple angles, general solution of the equations of trigonometric functions, properties of triangles. **[L-12H & T-6H]**

Two-dimensional geometry:

Straight line, circle, parabola, ellipse, hyperbola. **[L-12H & T-6H]**

Three - dimensional Geometry:

Coordinate axes and coordinate planes in three dimensions. Coordinates of a point. Distance between two points. **[L-6H & T-3H]**

Reading references:

Text Books:

1. Mathematics Part I - Textbook for Class XII, NCERT Publication
2. Mathematics Part II - Textbook for Class XII, NCERT Publication
3. Mathematics Exemplar Problem for Class XI, Published by NCERT
4. Elements of Mathematics - A. P. Baisnab and B. N. Ghatak, Oriental Book Company Pvt. Ltd.

Reference Books

1. Mathematics Exemplar Problem for Class XII, Published by NCERT
2. Mathematics for Class 12, R D Sharma, Dhanpat Rai Publications (P) LTD.
3. Mathematics for class 12, S.N.DE, Chhaya Prakashani Limited
4. Mathematics Class XII, Sandeep Garg, Dhanpat Rai Publications
5. Elements of Mathematics For Class XII (Vol-I and Vol-II), M.L. Bhargava, G.K Kharbanda, Anil Kathuria, Jeevan sons Publications

SKILL ENHANCEMENT COURSES

Course Code: MATH1051
Course Name: Graph Theory
(Credit: 3, Marks: 50)
Total Hours: Lecture -30, Tutorial – 15

Objectives

To study the basics of Graph theory and its applications.

Learning outcomes

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

i. undirected and directed graphs.
ii. ismorphism of graphs.
iii. Eulerian graphs, Hamiltonian graphs.
iv. various characterizations of trees with applications.
v. bipartite graph and its characterization.
vi. planar and non-planar graphs.
vii. colouring of a graph.
viii. matrix representation of graphs.

Skills: The students would be able to

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

General competence: The students would gain

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

Contents

Definition, examples and basic properties of graphs, complete graphs, Havel-Hakimi theorem (Statement and its application), bi-partite graphs, isomorphism of graphs. **[L-8H & T-3H]**

Königsberg bridge problem, Eulerian graph, Hamiltonian graph, Representation of a graph by a matrix, the adjacency matrix, incidence matrix, weighted graph. **[L-9H & T-3H]**

Travelling salesman's problem, shortest path, Tree and their properties, spanning tree, Dijkstra's algorithm, Warshall algorithm. **[L-9H & T-3H]**

Planar and non-planar graphs, Euler's formula, colouring of graphs, four colour problem, five colour theorem. **[L-4H & T-1H]**

Reading references:

Text Books:

1. Graph Theory-N. S. Deo, (Prentice-Hall, 1974).
2. Introduction to Graph Theory - D. S. Malik, M. K. Sen & S. Ghosh, (Cengage Learning Asia, 2014).

Reference Books

1. A First Look at Graph Theory - J. Clark & D. A. Holton, (Allied Publishers Ltd., 1995).
2. Introduction to Graph Theory- Douglas Brent West, (Prentice Hall, 2001).
3. Graph Theory- Frank Harary, (Addison-Wesley, 1971).
4. Graph Theory with Applications- J. A. Bondy & U.S.R. Murty, (Macmillan, 1976).

SEMESTER – II

MAJOR COURSES

Course Code: MATH2011
Course Name: Introductory Algebra and Number Theory (Credit: 4, Marks: 75)
Total Hours: Lecture -45, Tutorial – 15

Objectives

To present a systematic introduction to number theory and basic course on algebra.

Learning outcomes

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

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

Skills:

The students would be able to

i. access and also generate different tricky examples and counter examples involving integers during their advanced study of ring theory and field theory.
ii. simplify a mathematical problem in different field of science using complex number.
iii. 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

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

Contents:

Algebra

Complex Numbers: De Moivre's theorem for rational indices and its applications.

Theory of equations: Fundamental Theorem of Algebra (Statement), Relation between roots and coefficients, Transformation of equation, Descarte's rule of signs, Cubic and biquadratic equations, Reciprocal equation, separation of the roots of equations, Strum's theorem.
Inequality: The inequality involving AM≥GM≥HM, Cauchy-Schwartz inequality. [L-**10H & T-4H]**

Partial order, total order relations, partitions of a set and its connection with equivalence relation, greatest lower bound, least upper bound, maximal, minimal elements, lattice, bounded lattice, modular lattice, distributive lattice, complemented lattice, statement of Zorn's lemma.

[L-**5H & T-2H]**

Semigroups, Monoids, Groups – examples including permutation group, Matrix groups $(M_{n\times n}(\mathbb{R}), GL_n(\mathbb{R}), SL_n(\mathbb{R}))$, Z_n, elementary properties of groups, generators and relations, order of an element of a group, Subgroups and examples of subgroups, cosets, normal subgroup, center of a group, cyclic groups, Lagrange's theorem, Rings, subrings, Ideals (left, right and two sided), integral domain, field, subfield – examples and basic properties, characteristic of a ring and field.

[L-**10H & T-4H]**

Number Theory

Well ordering principle of set of natural numbers, pigeon-hole principle, division algorithm, greatest common divisor (gcd), Euclidean algorithm, least common multiple (lcm), Linear Diophantine equation, prime numbers, relatively prime numbers and related properties including Euclid's lemma, fundamental theorem of arithmetic and its applications, perfect square and square free integers, congruences, solution of congruences, Binary and decimal representation of integer, Chinese remainder theorem and its application. Fermat's little theorem, Wilson's theorem, sum of two squares, Arithmetic function-$\phi(n), d(n), \sigma(n)$. [L-**20H & T-5H]**

Reading References:

Text books:

1. Classical Algebra- S. K. Mapa,8th Edition, (Sarat Book House).
2. Topics in Abstract Algebra – M.K. Sen, S. Ghosh, P. Mukhopadhyay, S. K. Maity, 3rd Edition (University Press).
3. Higher Algebra- S. K. Mapa,8th Edition, (Sarat Book House).
4. An introduction to Theory of Numbers- Niven, Ivan,S. Zuckerman Herbert, L. Montogomery Hugh,5th Edition, (Willey).
5. Elementary Number Theory- D. M. Burton, (Mc Graw Hill Education).

Reference Books:

1. Topics in Algebra – I. N. Herstein,2nd Edition, (Wiley).
2. Contemporary Abstract Algebra - Gallian, A. Joseph, Standard Edition, (Cengage India Private Limited).
3. Higher Algebra - S. Barnards, J. M. Child, (Arihant).
4. Algebra - M. Artin, 2nd Edition, (Pearson Education, India).
5. A first course in Abstract Algebra - J. B. Fraleigh7th Edition, (Pearson Education, India).

MINOR COURSES

Course Code: MATH2021
Course Name: Introductory Algebra and Number Theory
(Credit: 4, Marks: 75)
Total Hours: Lecture -45, Tutorial – 15

Objectives

To present a systematic introduction to number theory and basic course on algebra.

Learning outcomes

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

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

Skills:

The students would be able to

i. access and also generate different tricky examples and counter examples involving integers during their advanced study of ring theory and field theory.
ii. simplify a mathematical problem in different field of science using complex number.
iii. 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

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

Contents:

Algebra

Complex Numbers: De Moivre's theorem for rational indices and its applications.

Theory of equations: Fundamental Theorem of Algebra (Statement), Relation between roots and coefficients, Transformation of equation, Descarte's rule of signs, Cubic and biquadratic equations, Reciprocal equation, separation of the roots of equations, Strum's theorem.

Inequality: The inequality involving AM≥GM≥HM, Cauchy-Schwartz inequality. [L-**10H & T-4H]**

Partial order, total order relations, partitions of a set and its connection with equivalence relation, greatest lower bound, least upper bound, maximal, minimal elements, lattice, bounded lattice, modular lattice, distributive lattice, complemented lattice, statement of Zorn's lemma.

[L-**5H & T-2H]**

Semigroups, Monoids, Groups – examples including permutation group, Matrix groups $(M_{n\times n}(\mathbb{R}), GL_n(\mathbb{R}), SL_n(\mathbb{R}))$, Z_n, elementary properties of groups, generators and relations, order of an element of a group, Subgroups and examples of subgroups, cosets, normal subgroup, center of a group, cyclic groups, Lagrange's theorem, Rings, subrings, Ideals (left, right and two sided), integral domain, field, subfield – examples and basic properties, characteristic of a ring and field.

[L-**10H & T-4H]**

Number Theory

Well ordering principle of set of natural numbers, pigeon-hole principle, division algorithm, greatest common divisor (gcd), Euclidean algorithm, least common multiple (lcm), Linear Diophantine equation, prime numbers, relatively prime numbers and related properties including Euclid's lemma, fundamental theorem of arithmetic and its applications, perfect square and square free integers, congruences, solution of congruences, Binary and decimal representation of integer, Chinese remainder theorem and its application. Fermat's little theorem, Wilson's theorem, sum of two squares, Arithmetic function-$\phi(n), d(n), \sigma(n)$. [L-**20H & T-5H]**

Reading References:

Text books:

1. Classical Algebra- S. K. Mapa,8th Edition, (Sarat Book House).
2. Topics in Abstract Algebra – M.K. Sen, S. Ghosh, P. Mukhopadhyay, S. K. Maity, 3rd Edition (University Press).
3. Higher Algebra- S. K. Mapa,8th Edition, (Sarat Book House).
4. An introduction to Theory of Numbers- Niven, Ivan, S. Zuckerman Herbert, L. Montogomery Hugh,5th Edition, (Willey).
5. Elementary Number Theory- D. M. Burton, (Mc Graw Hill Education).

Reference Books:

1. Topics in Algebra – I. N. Herstein,2nd Edition, (Wiley).
2. Contemporary Abstract Algebra - Gallian, A. Joseph, Standard Edition, (Cengage India Private Limited).
3. Higher Algebra - S. Barnards, J. M. Child, (Arihant).
4. Algebra - M. Artin, 2nd Edition, (Pearson Education, India).
5. A first course in Abstract Algebra - J. B. Fraleigh7th Edition, (Pearson Education, India).

MULTIDISCIPLINARY COURSES

Course Code: MATH2031
Course Name: Algebra (Credit: 3, Marks: 50)
Total Hours: Lecture - 30, Tutorial – 15

Objectives

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

Learning outcomes

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

i. Principle of Mathematical Induction.
ii. Complex Numbers and Quadratic Equations.
iii. Linear Inequality, Permutation and Combinations.
iv. Binomial Theorem.
v. Sequence and Series.
vi. Matrices and Determinants

Skills: The students would be able to

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

General competence: The students would gain

i. 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.
ii. analytical and reasoning skills, which improve their thinking power.

Contents:

Mathematical induction, laws of indices, logarithm, complex numbers, quadratic equations, linear inequations, permutation and combination, binomial theorem, sequence and series. [**L-20H & T-10H]**

Matrices:

Types of matrix, operations on matrices, determinant, adjoint and inverse of a matrix, solution of linear simultaneous equations by matrix method **[L-10H & T-5H]**

Reading references:

Text Books:

1. Mathematics Part I - Textbook for Class XII, NCERT Publication
2. Mathematics Part II - Textbook for Class XII, NCERT Publication
3. Mathematics Exemplar Problem for Class XI, Published by NCERT
4. Elements of Mathematics - A. P. Baisnab and B. N. Ghatak, Oriental Book Company Pvt. Ltd, 2022.

Reference Books

1. Mathematics Exemplar Problem for Class XII, Published by NCERT
2. Mathematics for Class 12, R D Sharma, Dhanpat Rai Publications (P) LTD.
3. Mathematics for class 12, S.N.DE, Chhaya Prakashani Limited
4. Mathematics Class XII, Sandeep Garg, Dhanpat Rai Publications
5. Elements of Mathematics For Class XII (Vol-I and Vol-II), M.L. Bhargava, G.K Kharbanda, Anil Kathuria, Jeevansons Publications

SKILL ENHANCEMENT COURSES

Course Code: MATH2051
Course Name: Programming in C
(Credit: 3, Marks: 50)
Total Hours: Lecture -30, Tutorial – 15

Objectives

To learn the basics of C programming and its different features viz. branching & looping, array, user defined functions, structures and pointers

Learning outcomes

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

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

Skills: The students would be able to

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

General Competence: The students would gain

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

Contents:

Introduction, basic structures, character set, keywords, identifiers, constants, variable-type declaration, operators: arithmetic, relational, logical, assignment, increment, decrement, conditional. [L- 3H & T- 1H]

Operator precedence and associativity, arithmetic expression, evaluation and type conversion, character reading and writing, formatted input and output statements. [L- 3H & T-1H]

Decision making (branching and looping): Simple and nested *if, if – else, switch, while, do-while, for* statements. [L- 5H & T-3H]

Concept of array variables, string handling with arrays – reading and writing, string handling functions. [L- 4H &T-2H]

User defined functions, call-by-value, call-by-reference functions and their uses, return values and their types, nesting of functions, recursion. [L- 5H & T-3H]

Structures: Declaration, initialization, nested structures, array of structures, array within structures. [L- 4H & T- 2H]

Pointers: Declaration, initialization, accessing variables through pointer, pointer arithmetic, pointers and arrays. [L- 6H & T-3H]

Reading references:

Text Books:

1. Programming in ANSI C-E. Balaguruswamy, (TMH, 2011).
2. Programming with C-B. S. Gottfried, (TMH, 2011).

Reference Books:

1. Programming with C-K. R. Venugopal and S. R. Prasad, (TMH, 1997).
2. The C Programming Language -Brian W. Kernighan and Dennis Ritchie, (Pearson Education India, 2015).
3. C Language and Numerical Methods-C. Xavier, (New Age International (P) Ltd. Pub, 2007).
4. The C Programming Language-Brian W. Kernighan / Dennis Ritchie, (Pearson Education India, 2015).

B.Sc. GENERAL (MATHEMATICS)

Course Structure: Semester III, IV, V and VI Courses (as per CBCS)

Program Outcome:
After completion of the B.Sc. General program (as per CBCS), the students will be able to

PO No.	Program Outcomes
PO 1	Develop numerical and analytical skills and critical thinking that enable them to solve day-to-day problems
PO 2	Develop scientific, communicative, and numerical skills and make rewarding careers in science and education by facing challenging competitive exams.
PO 3	Gain scientific knowledge and skills that enable them to undertake further studies in an inter-disciplinary branch of science
PO 4	Apply scientific knowledge of principles, concepts, and results to their day-to-day life
PO 5	Enhance problem-solving skills

Programme Specific outcome

After the successful completion of this course, the student will be able to:

PSO1	Recall basic facts of mathematics and display knowledge of conventions such as notations, and terminology.
PSO2	Equipped with mathematical skills and techniques which can be applied in both academic and non-academic areas of work.
PSO3	Construct mathematical modeling of many physical phenomena.
PSO4	Face competitive examinations confidently using the acquired numerical skills and knowledge.
PSO5	Develop interest and a positive attitude towards mathematics as an interesting and valuable subject of study.

Semester	Course Code	Title	Credits
III	BMG3CC1C	Real Analysis	6
IV	BMG4CC1D	Algebra	6
Discipline Specific Electives (DSE) **Choices for DSE1A (Choose any one)**			
V	BMG5DSE1A1	Matrices	6
	BMG5DSE1A2	Mechanics	6
	BMG5DSE1A3	Linear Algebra	6
Choices for DSE1B (Choose any one)			
VI	BMG6DSE1B1	Numerical Methods	6
	BMG6DSE1B2	Complex Analysis	6
	BMG6DSE1B3	Linear Programming	6
Skill Enhancement Courses (SEC) **Choices for SEC1 (Choose any one)**			

III	BMG3SEC11	Logic and Sets	2
	BMG3SEC12	Analytical Geometry	2
	BMG3SEC13	Integral Calculus	2
Choices for SEC2 (Choose any one)			
IV	BMG4SEC21	Vector Calculus	2
	BMG4SEC22	Theory of Equations	2
	BMG4SEC23	Number Theory	2
Choices for SEC3 (Choose any one)			
V	BMG5SEC31	Probability and Statistics	2
	BMG5SEC32	Mathematical Finance	2
	BMG5SEC33	Mathematical Modeling	2
Choices for SEC4 (Choose any one)			
VI	BMG6SEC41	Boolean Algebra	2
	BMG6SEC42	Transportaion and Game Theory	2
	BMG6SEC43	Graph Theory	2
	GRAND TOTAL		40

Semester-wise detailed syllabus

SEMESTER – III	
Name of the Course: **Real Analysis**	
Course Code: **BMG3CC1C**	
Full Marks: 75	Credit: 6
Number of classes required: 60	

Course Objectives (BMG3CC1C)

The prime objectives of the course are:

- Students will be able to describe the real line as a complete, ordered field.
- Learn to use the definitions of convergence as they apply to sequences, series, and functions.
- Students will be able to determine the continuity, differentiability, and integrability of functions defined on subsets of the real line.

Course Outcomes (BMG3CC1C)

After completing the course, students will be able to:

CO. No.	Course Outcome	PSOs Addressed
CO 1	CO1 Explain the primary concepts of sets, sequences, and series of real Numbers.	PSO2
CO 2	Understand the concepts of convergence of sequences and series	PSO1
CO 3	Understand the importance of convergence of sequence and series	PSO1
CO 4	Find the sum of infinite terms with different methods using the concepts of sequence and series.	PSO4

SEMESTER – IV	
Name of the Course: **Algebra**	
Course Code: **BMG4CC1D**	
Full Marks: 75	Credit: 6
Number of classes required: 60	

Course Objectives (BMG4CC1D)

The prime objectives of the course are:

- Students will recognize and use properties of real numbers.
- They will perform basic arithmetic operations on algebraic expressions and simplify algebraic expressions involving exponents and radicals.

Course Outcomes (BMG4CC1D)

After completing the course, students will be able to:

CO. No.	Course Outcome	PSOs Addressed
CO 1	Learn the basic concepts of countable sets, metric space, connectedness, and compactness of metric spaces, which are the backbone of real analysis.	PSO5
CO 2	Understand the techniques and examples in analysis, helps them to be well-prepared for courses like Topology, Measure theory and Functional analysis.	PSO3
CO 3	Using the concept of sequence and series find the sum of infinite terms with different methods.	PSO2
CO 4	Differentiate continuous functions and uniformly continuous functions.	PSO2
CO5	Understand iterative numerical methods to find the roots of an equation, which are based on the concept of sequence.	PSO4
CO6	Explain the applicability of mathematical models using the concepts of real analysis.	PSO1

Discipline Specific Electives (DSE)

Choices for DSE1A (Choose any one)

SEMESTER – V	
Name of the Course: **Matrices**	
Course Code: **BMG5DSE1A1**	
Full Marks: 75	Credit: 6
Number of classes required: 60	

Course Objectives (BMG5DSE1A1)

The prime objectives of the course are:

- Work with matrices and determine if a given square matrix is invertible.
- Learn to solve systems of linear equations and application problems requiring them.
- Learn to compute determinants and know their properties.
- Learn to find and use eigenvalues and eigenvectors of a matrix.
- Learn about and work with vector spaces and subspaces.

Course Outcomes (BMG5DSE1A1)

After completing the course, students will be able to:

CO. No.	Course Outcome	PSOs Addressed
CO 1	Find the inverse of a square matrix.	PSO3
CO 2	Solve the matrix equation Ax = b using row operations and matrix operations.	PSO2, PSO4
CO 3	Find the determinant of a product of square matrices, of the transpose of a square matrix, and of the inverse of an invertible matrix.	PSO3
CO 4	Find the characteristic equation, eigenvalues and corresponding eigenvectors of a given matrix.	PSO1, PSO5
CO 5	Determine if a given matrix is diagonalizable.	PSO3

SEMESTER – V	
Name of the Course: **Mechanics**	
Course Code: **BMG5DSE1A2**	
Full Marks: 75	Credit: 6
Number of classes required: 60	

Course Objectives (BMG5DSE1A2)

The prime objectives of the course are:

- Understand the various concepts of physical quantities and the related effects on different bodies using mathematical techniques.
- Emphasize knowledge building for applying mathematics in the physical world.
- To understand the concept of different forces and moments and their equilibrium concerning a coordinate system.
- To widen appreciation of the variety of phenomena covered by mechanics and the techniques available to handle them.

Course Outcomes (BMG5DSE1A2)

After completing the course, students will be able to:

CO. No.	Course Outcome	PSOs Addressed
CO 1	Understand the virtual work, stable and unstable equilibrium.	PSO5
CO 2	Solve the problems on the stability of near orbit, motion in a particle in 3D, and motion on a smooth sphere, cone, and any surface.	PSO2

CO 3	Understand the degree of freedom, D'Alembert's Principle, compound pendulum, and conservation of momentum and energy.	PSO1

SEMESTER – V	
Name of the Course: **Linear Algebra**	
Course Code: **BMG5DSE1A3**	
Full Marks: 75	Credit: 6
Number of classes required: 60	

Course Objectives (BMG5DSE1A3)

The prime objectives of the course are:

- To determine the eigen values and eigen vectors.
- To understand the concept of Algebra of linear transformations and matrices.
- Emphasize the application of techniques using the adjoint of linear operator and their properties to least squares approximation and minimal solutions to systems of linear equations.
- Understand the unique factorization domain and its applications, Cayley Hamilton theorem and its consequences, orthogonal projections and spectral theorem.

Course Outcomes (BMG5DSE1A3)

After completing the course, students will be able to:

CO. No.	Course Outcome	PSOs Addressed
CO 1	Use the definition and properties of linear transformations and matrices of linear transformations and change of basis, including kernel, range and isomorphism.	PSO3
CO 2	Demonstrate the ability to graphically or analytically analyze prime and maximal ideals, homomorphism and isomorphism theorem on rings and vector spaces.	PSO4, PSO5
CO 3	Demonstrate knowledge of inner product space, least squares approximation, normal and self-adjoint operator, spectral theorem.	PSO1, PSO2
CO 4	Demonstrate the ability of unique factorization domain and its applications, Cayley Hamilton theorem and its consequences, orthogonal projections and spectral theorem.	PSO5

Choices for DSE1B (Choose any one)

SEMESTER – VI	
Name of the Course: **Numerical Methods**	
Course Code: **BMG6DSE1B1**	
Full Marks: 75	Credit: 6
Number of classes required: 60	

Course Objectives (UMTMGE04)

The prime objectives of the course are:

- To comprehend various computational techniques to find approximate value for possible root(s) of non-algebraic equations, to find the approximate solutions of system of linear equations and ordinary differential equations.
- Emphasise the use of Computer Algebra System by which the numerical problems can be solved both numerically and analytically, and to enhance the problem-solving skills.

Course Outcomes (UMTMGE04)

After completing the course, students will be able to

CO. No.	Course Outcome	PSOs Addressed
CO 1	Derive numerical methods for various mathematical operations and tasks, such as interpolation, differentiation, integration, the solution of linear and nonlinear equations, and the solution of differential equations.	PSO1
CO 2	Analyse and evaluate the accuracy of common numerical methods.	PSO2

SEMESTER – VI	
Name of the Course: **Complex Analysis**	
Course Code: **BMG6DSE1B2**	
Full Marks: 75	Credit: 6
Number of classes required: 60	

Course Objectives (BMG6DSE1B2)

The prime objectives of the course are:

- To introduce the basic ideas of analysis for complex functions in complex variables with visualization through relevant practical.
- Understand Cauchy's theorems, series expansions, and calculation of residues.

Course Outcomes (BMG6DSE1B2)

After completing the course, students will be able to:

CO. No.	Course Outcome	PSOs Addressed
CO 1	Conceive the concepts of analytic functions and will be familiar with the elementary complex functions and their properties, and apply the concept and consequences of analyticity and the Cauchy Riemann equations and of results on harmonic and entire functions including the fundamental theorem of algebra.	PSO1, PSO3

CO 2	Applies the theory to the application of the power series expansion of analytic functions, and understand the basic methods of complex integration and its application in contour integration.	PSO2
CO 3	Represent functions such as Taylor, power, and Laurent series, classify singularities and poles, find residues, and evaluate complex integrals using the residue theorem.	PSO4, PSO5

SEMESTER – VI	
Name of the Course: **Linear Programming**	
Course Code: **BMG6DSE1B3**	
Full Marks: 75	Credit: 6
Number of classes required: 60	

Course Objectives (BMG6DSE1B3)

The prime objectives of the course are:

- To develop the ideas underlying the Simplex Method for Linear Programming Problem, as an important branch of Operations Research.
- Understand the Linear programming problems with applications to transportation, assignment and game problem.
- Understand the application of linear programming problems in manufacturing resource planning and financial sectors.

Course Outcomes (BMG6DSE1B3)

After completing the course, students will be able to:

CO. No.	Course Outcome	PSOs Addressed
CO 1	Formulate optimization problems and solve them using different methods.	PSO3
CO 2	Place a Primal linear programming problem into standard form and use the Simplex Method or Revised Simplex Method to solve it and find the dual, and identify and interpret the solution of the Dual Problem from the final tableau of the Primal problem.	PSO1, PSO2
CO 3	Explains the Transportation Problem and Assignment Problem, formulate them as an LPP and hence solve the problem.	PSO4
CO 4	To understand the theory of games for solving simple games.	PSO1, PSO2

Skill Enhancement Courses (SEC)

Choices for SEC 1 (Choose any one)

SEMESTER – III
Name of the Course: **Logic and Sets**

Course Code: **BMG3SEC11**	
Full Marks: 50	Credit: 2
Number of classes required: 40	

Course Objectives (BMG3SEC11)

The prime objectives of the course are:

- To properly use the vocabulary and symbolic notation of higher mathematics in definitions, theorems, and problems.
- To analyze the logical structure of statements symbolically, including the proper use of logical connectives, predicates, and quantifiers.
- Construct truth tables, prove or disprove a hypothesis, and evaluate the truth of a statement using the principles of logic.
- Solve problems and write proofs using the concepts of set theory, including the methods of Venn diagrams and truth tables.
- Solve problems and write proofs using the basic definitions and the fundamental properties of subsets and operations on the real numbers, integers, rational and irrational, even and odd, multiples or factors of whole numbers.

Course Outcomes (BMG3SEC11)

After completing the course, students will be able to:

CO. No.	Course Outcome	PSOs Addressed
CO 1	To discuss connectives and well-formed formulas	PSO1, PSO2
CO 2	Learn to evaluate normal forms and illustrate theory of inference for statement calculus	PSO3
CO 3	To define different types of sets and operations on sets	PSO1
CO 4	To explain representation of Venn diagrams	PSO1, PSO3
CO5	To describe Cartesian products of sets explain partial ordered relations and posets	PSO4
CO6	To explain representation and associated terminology of relations	PSO4, PSO5

SEMESTER – III	
Name of the Course: **Analytical Geometry**	
Course Code: **BMG3SEC12**	
Full Marks: 50	Credit: 2
Number of classes required: 40	

Course Objectives (BMG3SEC12)

The prime objectives of the course are:

- To get basic knowledge about Circle, Cone, Parabola, Hyperbola, Ellipse etc.
- To understand the concepts & advance topics related to two & three dimensional geometry.
- To study the applications of conics.
- To study the application of Sphere, cone and cylinder.
- To study how to trace the curve.

Course Outcomes (BMG3SEC12)

After completing the course, students will be able to:

CO. No.	Course Outcome	PSOs Addressed
CO 1	Understand geometrical terminology for angles, triangles, quadrilaterals and circles.	PSO1, PSO2
CO 2	Measure angles using a protractor.	PSO3
CO 3	Use geometrical results to determine unknown angles.	PSO4
CO 4	Recognise line and rotational symmetries.	PSO1, PSO5
CO 5	Find the areas of triangles, quadrilaterals and circles and shapes based on these.	PSO5

SEMESTER – III	
Name of the Course: **Integral Calculus**	
Course Code: **BMG3SEC13**	
Full Marks: 60	Credit: 2
Number of classes required: 40	

Course Objectives (BMG3SEC13)

The prime objectives of the course are:

- Compute limits, derivatives, and integrals.
- Analyze functions using limits, derivatives, and integrals.
- Recognize the appropriate tools of calculus to solve applied problems.

Course Outcomes (BMG3SEC13)

After completing the course, students will be able to:

CO. No.	Course Outcome	PSOs Addressed
CO 1	Use basic integration techniques to calculate area	PSO1
CO 2	Apply integrals to geometric application, physical application, and modeling problems	PSO2
CO 3	Perform additional integration calculations and approximations	PSO3
CO 4	Develop methods to solve differential equations	PSO3
CO 5	Understand infinite series and how to use them to evaluate functions	PSO4
CO 6	Represent functions using power series	PSO4

CO 7	Describing curves through parametric equations and polar coordinates	PSO5

Choices for SEC 2 (Choose any one)

SEMESTER – IV	
Name of the Course: **Vector Calculus**	
Course Code: **BMG4SEC21**	
Full Marks: 50	Credit: 2
Number of classes required: 40	

Course Objectives (BMG4SEC21)

The prime objectives of the course are:

- To gain skills in linear transformation.
- To develop the ability to compute eigenvalues and eigenvectors of linear transformations.
- To find inner product spaces and determine orthogonality.

Course Outcomes (BMG4SEC21)

After completing the course, students will be able to:

CO. No.	Course Outcome	PSOs Addressed
CO 1	Solve first order differential equations arising in various engineering fields.	PSO2, PSO3
CO 2	Solve linear differential equations of higher order and use the knowledge to study certain problems in engineering.	PSO4, PSO5

SEMESTER – IV	
Name of the Course: **Theory of Equations**	
Course Code: **BMG4SEC22**	
Full Marks: 50	Credit: 2
Number of classes required: 40	

Course Objectives (BMG4SEC22)

The prime objectives of the course are:

- To describe the graphical representation of a polynomial, maximum and minimum values of a polynomial,
- To acquire the concept of symmetric functions,
- To know the use of Newton's theorem to find the sums of power of roots, homogeneous products, limits of the roots of equation,

- Understand Sturm's theorem and its application.

Course Outcomes (BMG4SEC22)

After completing the course, students will be able to:

CO. No.	Course Outcome	PSOs Addressed
CO 1	Describe the relation between roots and coefficients	PSO1, PSO3
CO 2	Find the sum of the power of the roots of an equation using Newton's Method.	PSO3, PSO 5
CO 3	Transform the equation through roots multiplied by a given number, increase the roots, decrease the roots, removal of terms	PSO3, PSO4
CO 4	Solve the reciprocal equations and analyse the location and describe the nature of the roots of an equation.	PSO4, PSO5
CO 5	Obtain integral roots of an equation by using Newton's Method.	PSO 2
CO 6	Compute a real root of an equation by Horner's method.	PSO 3

SEMESTER – IV	
Name of the Course: **Number Theory**	
Course Code: **BMG4SEC23**	
Full Marks: 60	Credit: 2
Number of classes required: 40	

Course Objectives (BMG4SEC23)

The prime objectives of the course are:

- Learn to find quotients and remainders from integer division.
- Apply Euclid's algorithm and backwards substitution.
- Understand the definitions of congruences, residue classes and least residues.

Course Outcomes (BMG4SEC23)

After completing the course, students will be able to:

CO. No.	Course Outcome	PSOs Addressed
CO 1	Apply mathematical induction and other types of techniques to prove theorems or mathematical results.	PSO1
CO 2	Apply the concepts and results of divisibility of integers effectively.	PSO2
CO 3	Understand research problems related to number theory.	PSO4
CO 4	Learn various theorems on primes, congruence and residues which are used in cryptography.	PSO3
CO5	Solve problems related to Chinese remainder theorem, Fermat's Little theorem.	PSO2

Choices for SEC 3 (Choose any one)

SEMESTER – V	
Name of the Course: **Probability and Statistics**	
Course Code: **BMG5SEC31**	
Full Marks: 50	Credit: 2
Number of classes required: 40	

Course Objectives (BMG5SEC31)

The prime objectives of the course are:

- To make the students familiar with the basic statistical concepts and tools which are needed to study situations involving uncertainty or randomness.
- To render the students to several examples and exercises that blend their everyday experiences with their scientific interests.
- To extend and formalize knowledge of the theory of probability and use of Baye's theorem.
- To inculcate the concepts of random variables, mathematical expectation and correlation.
- Fostering the concept of discrete and continuous probability distributions.

Course Outcomes (BMG5SEC31)

After completing the course, students will be able to:

CO. No.	Course Outcome	PSOs Addressed
CO 1	Compute probabilities and conditional probabilities in appropriate ways.	PSO1, PSO3
CO 2	Solve word problems using combinatorial analysis.	PSO2
CO 3	Represent and statistically analyse data both graphically and numerically.	PSO4
CO 4	Demonstrate the ability of conditional probabilities statistically analyse data both graphically and numerically by presentation.	PSO5

SEMESTER – V	
Name of the Course: **Mathematical Finance**	
Course Code: **BMG5SEC32**	
Full Marks: 50	Credit: 2
Number of classes required: 40	

Course Objectives (BMG5SEC32)

The prime objectives of the course are:

- To provide an in-depth approach to credit risk modelling for the specific purpose of pricing fixed income securities and credit-risk derivatives.
- To explore the nature of factors underlying credit risk and develop models incorporating default risk.

Course Outcomes (BMG5SEC32)

After completing the course, students will be able to:

CO. No.	Course Outcome	PSOs Addressed
CO 1	Understand the mathematical foundations of quantitative finance	PSO1, PSO2
CO 2	Understand the standard and advanced quantitative methodologies and techniques of importance to a range of careers in investment banks and other financial institutions.	PSO2
CO 3	Create and evaluate potential models for the price of shares.	PSO3, PSO5
CO 4	Construct, evaluate and analyze models for investments and securities.	PSO3
CO 5	Apply scientific models and tools effectively.	PSO4

SEMESTER – V	
Name of the Course: **Mathematical Modeling**	
Course Code: **BMG5SEC33**	
Full Marks: 60	Credit: 2
Number of classes required: 40	

Course Objectives (BMG5SEC33)

The prime objectives of the course are:

- To introduce students to the elements of the mathematical modeling process;
- To present application-driven mathematics motivated by problems from within and outside mathematics;
- To exemplify the value of mathematics in problem solving; and
- To demonstrate connections among different mathematical topics.

Course Outcomes (BMG5SEC33)

After completing the course, students will be able to:

CO. No.	Course Outcome	PSOs Addressed
CO 1	Translate everyday situations into mathematical statements (models) which can be solved/analyzed, validated, and interpreted in context.	PSO1, PSO2
CO 2	Identify assumptions that are consistent with the context of the problem and which in turn shape and define the mathematical characterization of the problem.	PSO1

CO 3	Revise and improve mathematical models so that they will better correspond to empirical information and/or will support more realistic assumptions.	PSO2, PSO3
CO4	Assess the validity and accuracy of their approach relative to what the problem requires.	PSO4
CO5	Communicate mathematics in both oral and written form to a broad mathematical and lay audience, including the "end users" of a modeling problem, who may be utterly unfamiliar with the mathematics used.	PSO4, PSO5

Choices for SEC 4 (Choose any one)

SEMESTER – VI	
Name of the Course: **Boolean Algebra**	
Course Code: **BMG6SEC41**	
Full Marks: 50	Credit: 2
Number of classes required: 40	

Course Objectives (BMG6SEC41)

The prime objectives of the course are:

- To discuss connectives and well-formed formulas
- To explain Boolean functions and free Boolean algebras
- To explain representation and minimization of Boolean functions

Course Outcomes (BMG6SEC41)

After completing the course, students will be able to:

CO. No.	Course Outcome	PSOs Addressed
CO 1	Define Boolean algebra and sub-algebra	PSO1
CO 2	Explain Boolean functions and free Boolean algebras	PSO3
CO 3	Explain representation and minimization of Boolean functions	PSO4, PSO5

SEMESTER – VI	
Name of the Course: **Transportation and Game Theory**	
Course Code: **BMG6SEC42**	
Full Marks: 50	Credit: 2
Number of classes required: 40	

Course Objectives (BMG6SEC42)

The prime objectives of the course are:

- To understand the Linear programming problems with applications to transportation, assignment, and game problems.

- To understand the application of linear programming problems in manufacturing resource planning and financial sectors.
- To determine optimality conditions by using the Simplex method.
- To explain the traveling salesman problem and the game theory.
- To explain mixed strategies using linear programming techniques and algebraic methods.

Course Outcomes (BMG6SEC42)

After completing the course, students will be able to:

CO. No.	Course Outcome	PSOs Addressed
CO 1	Explain the Transportation Problem and Assignment Problem, formulate them as an LPP, and hence solve the problem.	PSO1, PSO2
CO 2	Understand the theory of games for solving simple games.	PSO2
CO 3	Determine optimality conditions by using the Simplex method. explain the traveling salesman problem	PSO3, PSO5
CO 4	Explain mixed strategies using linear programming techniques and algebraic methods	PSO4

SEMESTER – VI	
Name of the Course: **Graph Theory**	
Course Code: **BMG6SEC43**	
Full Marks: 60	Credit: 2
Number of classes required: 40	

Course Objectives (BMG6SEC43)

The prime objectives of the course are:

- Students will achieve command of the fundamental definitions and concepts of graph theory.
- Students will understand and apply the core theorems and algorithms, generating examples as needed, and asking the next natural question.
- Students will achieve proficiency in writing proofs, including those using basic graph theory proof techniques such as bijections, minimal counterexamples, and loaded induction.
- Students will work on clearly expressing mathematical arguments, in discussions and in their writing.
- Students will become familiar with the major viewpoints and goals of graph theory: classification, extremality, optimization and sharpness, algorithms, and duality.

Course Outcomes (BMG6SEC43)

After completing the course, students will be able to:

CO. No.	Course Outcome	PSOs Addressed
CO 1	Understand the concept of Graphs, which is an important tool for Mathematical Modelling	PSO1
CO 2	Understand different types of graphs and operations on graphs.	PSO2
CO 3	Relate real life problems or events with mathematical graphs.	PSO6
CO 4	Understand the concept of trees and algorithms to find special spanning trees.	PSO3
CO5	Understand directed graphs and its applications.	PSO2

DEPARTMENT OF ZOOLOGY

(SESSION: 2023-2024)

PROGRAMME OUTCOMES

After completing B.Sc. Zoology (general) Programme students will be able to:

PO1: Demonstrate and apply the fundamental knowledge of the basic principles of major fields of Zoology.

PO2: Apply knowledge to solve the issues related to animal sciences.

PO3: Take appropriate steps towards conservation of endemic and endangered animal species.

PO4: To foster curiosity in the students for Zoology.

PO5: To create awareness amongst students for the basic and applied areas of Zoology.

PO6: To orient students about the importance of abiotic and biotic factors of environment and their conservation.

PO7: To provide an insight to the aspects of animal diversity.

PO8: To inculcate good laboratory practices in students and to train them about Proper handling of lab instruments.

PO9: Demonstrate knowledge and understanding of Zoology and management

Principles and apply these to one's own work, as a member and leader in a team.

PO10: Recognize the need for, and have the preparation and ability to engage in

Independent and life-long learning in the broadest context of technological change

PO11: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PROGRAMME SPECIFIC OUTCOMES

The syllabus for Zoology (general) at undergraduate level using the Choice based credit system (CBCS) and National Education Policy (NEP) have been framed in compliance with model syllabus given by UGC. The main objective of framing this new syllabus is to give the students a holistic understanding of the subject giving substantial weightage to both the core contents and techniques used in Zoology. Keeping in mind and in tune with the changing nature of the subject, adequate emphasis has been given on new techniques and understanding of the subject.

COURSE OUTCOME

SEMESTER I(NEP)

❖ COURSE(DSC100) : NON- CHORDATES (Major and Minor) (credits-4)

After successfully completing this course, the students will be able to:

CO1- Understand and describe the features of Protista, Porifera, Radiata, Acoelomates and Pseudocoelomates.

CO2 - Understand and describe the features of Arthropoda, Mollusca and coelomate deuterostomes.

CO3- Understand and describe the features of Protochordates, Pisces and Amphibia.

CO4- Understand and describe the features of Reptiles, Aves and Mammalia

❖ SEC-1: APICULTURE (Credits-3)

CO1: The learner understands the basics about beekeeping tools, equipment, and managing beehives.

CO2: To understand the basic life cycle of the honeybees, beekeeping tools and equipment.

CO3: To learner for managing beehives for honey production and pollination.

CO4: The course is useful for providing self-employment to student.

CO5: The bee keeping is useful in pollination of the flora.

CO6: Learner will understand the marketing of various bee products.

SEMESTER II(NEP)

❖ COURSE(DSC102) *:* CHORDATES (Major and Minor) (Credits -4)

On completion of the courses student will be able to:

CO1- Understand the General Characteristics and Classification of Hemichordate, Urochordata and Cephalochordate, the Larval forms of Protochordata and Retrogressive Metamorphosis in Urochordata.

CO2- Acquire knowledge about the General Characters and Classification of Agnatha, Pisces and Amphibia.

CO3- Understand the General Characteristics and Classification of Reptilia, Aves and Mammals, Biting Mechanism in Snakes, Flight Adaptations in Birds and Migration in Birds.

CO4- Know about the Zoogeographical Realms and Characteristic Fauna.

❖ SEC-2: (SERICULTURE). (Credits -3)

CO1: Students will learn about the history and present status of mulberry and nonmulberry sericulture.

CO2: They will also be able learn about the life cycles, rearing, pest management entrepreneurship nonmulberry sericulture.

SEMESTER III(CBCS)

❖ COURSE (CCIII) : PHYSIOLOGY AND BIOCHEMISTRY (credits-6)

CO1:The students will be introduced to the terminologies and working mechanism relating to various organs systems in animal physiology- tissue, bone and cartilage, reproductive system, nervous system, muscular system, cardiovascular system and endocrine system .

CO2: The students will learn about the chemical foundation of biology pH. pK, acid and base, buffer and free energy.

CO3: Students will understand the basis and fundamental biochemistry of carbohydrate, lipids, protein and nucleic acids.

CO4: They will also be able to understand the nature and mechanism and kinetics of enzyme action.

❖ SEC-1: APICULTURE (Credits-2)

CO1: The learner understands the basics about beekeeping tools, equipment, and managing beehives.

CO2: To understand the basic life cycle of the honeybees, beekeeping tools and equipment.

CO3: To learner for managing beehives for honey production and pollination.

CO4: The course is useful for providing self-employment to student.

CO5: The bee keeping is useful in pollination of the flora.

CO6: Learner will understand the marketing of various bee products.

SEMESTER IV (CBCS)

❖ COURSE(CCIV)*:* GENETICS AND EVOLUTIONARY BIOLOGY (Credits-6)

CO1: This course describes different types of inheritance Such as incomplete dominance, co-dominance, Sex-linked, Sex-influenced etc., enabling students to critically analyses the mode of inheritance.

CO2: This course also inculcates knowledge among the students about the chromosomal mapping, Cause of mutation.

CO3: Students also learn how recombination and transfer of genetic Element took Place in bacteria.

CO4: Among the students this course inculcates the knowledge how Life is originated and progressed from simple molecules to unicellular and then to complex multicellular organisms.

CO5: Students also able to understand the various laws and principles of evolution.

❖ SEC-2: (MEDICAL DIAGNOSIS) (Credits -2)

CO1: The objective of this paper Is to give Students a Unique opportunity to learn how doctors and clinicians make decisions about disease prognosis, Prevention, diagnosis. Students will gain knowledge about various infectious, noninfectious and lifestyle diseases, tumors and their diagnosis.

CO2: After completing this Course, the students should be able to learn scientific approaches/techniques Used in the clinical laboratories to investigate various diseases.

CO3: This paper will also help to gain knowledge about common imaging technologies and their utility in the clinic diagnose a specific disease.

SEMESTER V(CBCS)

❖ COURSE(DSE-1): APPLIED ZOOLOGY (credits -6)

After successfully completing this course, students will be able to:

CO1-Understands processes of fisheries, sericulture, along with crop pest management techniques.

CO2-Students gain knowledge about various disease related vectors and their impact on human.

CO3- Understands concepts of Apiculture, Poultry and Dairy.

OR

❖ COURSE(DSE-1): AQUATIC BIOLOGY. (Credits -6)

CO1: Recognize scope and significance of aquatic Biology and introduce the limnology, Marine biology and oceanography.

CO2: Create awareness about the properties of freshwater and seawater, the elixir of life.

CO3: Understand and study different geomorphic formations of water bodies.

CO4: Give an insight to aquatic flora and fauna

CO5: Critically evaluate the pollution, its sources and eco-restoration of aquatic systems.

❖ SEC-3: (SERICULTURE) (Credits -2)

CO1: Students will learn about the history and present status of mulberry and nonmulberry sericulture.

CO2: They will also be able learn about the life cycles, rearing, pest management entrepreneurship nonmulberry sericulture.

SEMESTER VI(CBCS)

❖ COURSE(DSE-2): IMMUNOLOGY (Credits -4)

CO1: Students will learn an overall perspective of innate and adaptive immunity, antigenicity and immunogenicity, hybridoma technology, properties and functions of cytokines and complement system and vaccines.

CO2: To understand the evolution of immune mechanisms.

CO3: Students will also learn the different lymphoid organs, spleen, thymus, TC, DC of WBC, ELISA method.

CO4: To analyze and inculcate the fundamental knowledge on immune system and immunological responses to antigens.

CO5: Understand the immune mechanisms in disease control, vaccination, process of immune interactions.

OR

❖ COURSE(DSE-2): INSECTS, VECTORS AND DISEASES (Credits -4)

Knowledge gained

CO1: Development of knowledge about major insect pests of crops, forests, stored grains etc.

CO2: To develop concept about insect pest status, pest control methods.

CO3: Development of depth knowledge about insect vector biology, disease transmission, pathogenicity, endemicity of disease and about different control measures.

CO4: Identification of major insect pests and vectors responsible for disease transmission.

CO5: Knowing the physiology, life history in efficacious management of insect pests and vectors.

SEC-4:(COMMUNITY NUTRITION AND HEALTH STATISTICS)

(Credits -2)

At the end of this course the students will be able to-

CO1: Describe the public health aspects of malnutrition.

CO2: Identify the cause of malnutrition and its preventive measures.

CO3: Know the health care services by Government, health programs in India.

CO4: Understand the role of international and national organizations in public health various disease.

CO5: Apply the various statistical methods and interpretation of the results.

DEPARTMENT OF CHEMISTRY

POLBA MAHAVIDYALAYA

3-Year Degree/4-Year Honours in Chemistry (NEP 2020)

Session: 2023-24

Course Outcome: B.Sc. Chemistry Programme

Course Name	Course Outcome
CHEMISTRY MAJOR CHEM 101-1: Basic Chemistry-I	Several fundamental aspects of inorganic, organic and physical chemistry is discussed for the basic understanding of the students. The topics covered will help the students for studying higher in chemical sciences. Easy organic chemistry practical using several chemical and physical methods will enhance the basic knowledge of students' hands-on training. Students will be introduced with several basic aspects of theory and practical of chemical sciences. This will grow the foundation of the subject for studying various advanced topics in future semesters.
CHEMISTRY Minor CHEM 102-1: General Chemistry-I	Several fundamental aspects of the subject are discussed so that the principles can be useful for studying other branches of science (physical and/or biological sciences). Practical experiments are designed in such a way that the students of other disciplines can have an experience of hands-on training in chemistry at the primary level. On studying the course, the students will have an idea of chemical sciences, which may be applied for in-depth study of other science streams.
CHEMISTRY MAJOR CHEM 201-1: Basic Chemistry-II	Several basic topics from inorganic, organic and physical chemistry have been chosen for the development of the general chemistry knowledge of the students. This will help to grow the foundation for studying the several aspects of applied chemistry in future. The topics will grow the foundation of the students for the subject chemistry for learning any further advanced topics.
CHEMISTRY Minor CHEM 202-1: General Chemistry-I	Several basic aspects from inorganic, organic and physical chemistry have been discussed. The idea created from this course may help to understand students for further studying physical, biological and material sciences.

MULTIDISCIPLINARY COURSES	
CHEM103-1: Chemistry for Household Importance	This course includes only theory paper. After completion of this course, students would be able to explain the chemistry behind household things such as food additives, food color, antibiotics, vitamin, preservatives, soap, detergents and many more. After studying the topics these may help the students to get employment.
CHEM 203-1: Chemistry of Dyes, pigments, cosmetics and perfumes	Idea of every day products of chemical industries are discussed. Development of idea of several molecules and materials related to dye and cosmetics industry may help students to get employment.
SKILL ENHANCEMENT COURSES(SEC)	
CHEM105-1: Drugs and pharmaceuticals	This course includes a theory paper. Theory paper include drug discovery, design and development, synthesis of the representative drugs, analgesics agents, antipyretic agents, anti-inflammatory agents which will make them expertise in pharmaceutical field. It will help to build their job-oriented skill.
CHEM 205-1: Basic Analytical Chemistry	This course will develop the analysis as well as separation skills of the students which may help them to motivate for joining research and/or have employment.

Programme Outcome: B.Sc. Chemistry (General) NEP

- The B.Sc. Programme develops scientific spirit among the science graduates.
- This programme enhances observation, precision, analytical mind, logical thinking, clarity of thought and expression among the students.
- This programme teaches the students to formulate and solve problems in a logical manner.
- Students gain proficiency in laboratory techniques and the safe handling of chemicals and equipment. Students should be able to conduct experiments, interpret data, and present findings effectively.
- The field work and project work in this programme make the students compatible to the needs of modern industry and research field.
- The programme also enables the students to appear for various competitive examinations as well as start their own business.
- After completion of this programme, students can apply the principles of chemistry in other scientific disciplines such as biology, physics, materials science, and environmental science, facilitating an interdisciplinary approach to problem-solving.
- The programme is designed for holistic development of the students understand the ethical issues in scientific research and industry. Students should also be aware of the environmental impact of chemical processes and the importance of sustainability in chemical practices.

Programme Specific Outcome: B.Sc. Chemistry Programme (NEP)

After graduating with a degree in chemistry, the students have a wide scope in different fields. They can go for a master degree after successful completion of chemistry major programme. There is also a scope for going with research. Apart from opting for higher studies, the students can also build their carrier in a variety of related branches of science.

- Industrial field
- Laboratory technician
- Pathological expertise
- Medical representative and marketing field
- Health Science
- Home Science
- Nutrition expertise
- Analytical Field
- Instrument Operator
- Material Supplier

DEPARTMENT OF CHEMISTRY

POLBA MAHAVIDYALAYA

Course Outcome: B.Sc. Chemistry (General) Programme (CBCS)

Session: 2023-24

CORE COURSES (CC)	
Course Name	**Course Outcome**
CC1A: General Inorganic and Organic chemistry	This course includes a theory as well as a practical paper. Theory deals with the basic ideas of inorganic and organic chemistry. Origin and fundamental ideas about atomic structure will help to understand the electronic configuration of one and many electron atom.Chemical periodicity will help to understand general characteristics and different periodic properties of s, p, d and f block elements. Different Acids and Bases concepts will help the acidity or basicity nature of the elements. Redox reactions will help to do balance the different chemical reactions by oxidation no or ion-electron methods. Organic chemistry begins with the knowledge of resonance, hyperconjugation, electrophile, nucleophile, Stereochemistry of the compounds etc which will be helpful in understanding the reaction mechanism.
CC1B: Physical and Inorganic Chemistry	This course includes a theory as well as a practical paper. Physical parts include Vanderwaals equation and its application for explaining real gas behavior which is one of the most important topic of this part. Idea about critical state is needed for deriving the critical constants of real gases. Experimental determination of surface tension and viscosity by stalagmometer and viscometer will create more interest to the students about this course. Inorganic parts will provide comparative studies of different kinds of P-Block elements, bonding nature and Molecular Structure of different homonuclear and heteronuclear Molecules including VSEPR and LCAO approaches.
CC1C: Physical and Organic Chemistry	This course includes a theory as well as a practical paper. After completion of this course, students would be able to explain the concept of enthalpy, entropy, state functions, Carnot engine which will enrich students. They will learn how this parameters change with surrounding pressure, temperature and many more. Functional group app roach for Aromatic hydrocarbons, Organometallic compounds, Aryl halides, Alcohols; Phenols & ethers and Carbonyl compounds (preparations & reactions) to be studied in context to their structures.
CC1D: Physical and Analytical and Environmental Chemistry	This course includes a theory as well as a practical paper. Theory paper include phase diagram, conductance, electromotive forces and different properties of physical existence of an entity. Student will learn chemical analysis, chromatographic technique in analytical part as well as in practical portion.

DISCIPLINE SPECIFIC ELECTIVE COURSES (DSE)	
Course Name	**Course Outcome**
DSE 1A: Analytical and Industrial Chemistry	This course includes a theory as well as a practical paper. After successfully completing this course, students would gain knowledge about various industrial methods, error analysis, computer applications, Transition Metal including Lanthanoids and actinoids & Coordination Chemistry with Crystal field theory etc.
DSE 1B: Organic and Industrial Chemistry	This course includes a theory as well as a practical paper. After successfully completing this course, students would have a clear idea about large scale industrial preparation of organic compounds, Amino acids & Carbohydrates, polymers, manufacture of paints, dyes, drugs, pesticides, soaps & detergents, fats and other food additives etc.

SKILL ENHANCEMENT COURSES(SEC)	
SEC1: Analytical clinical biochemistry	This course includes a theory paper. After completion of the course students would be able to understand the chemistry behind carbohydrates, proteins, structure & biological actions of DNA and RNA, transcription, replication, translocation, nomenclature & classification of Enzymes, effect of pH and temperature, enzyme inhibition, biocatalysis etc. A keen interest on Gene therapy and Genetic coding grows a new desire among the students. The Students also learn a diagnostic approach using Blood & Urine sample to analyze the biochemistry of a disease.
SEC2: Pharmaceutical Chemistry	This course includes a theory paper. After completion of the course students would be able to understand the chemistry behind drugs and pharmaceuticals and their preparation, identification and applications etc.
SEC3: Computer application in Chemistry	This course includes a theory paper. After completion of the course students would be able to use computer for their study work. Writing chemical equations, drawing structures using various software will enrich their knowledge.
SEC4: Polymer Chemistry	This course includes a theory paper. After completion of the course students would gain knowledge about the various polymeric materials that we use in our daily life. Then synthesis of polymer, uses and applications part are also covered here which will be very interesting to the students.

Programme Outcome: B.Sc. Chemistry (General) CBCS

- The B.Sc. Programme develops scientific spirit among the science graduates.
- This programme enhances observation, precision, analytical mind, logical thinking, clarity of thought and expression among the students.
- This programme teaches the students to formulate and solve problems in a logical manner.
- The laboratory based practical work in this programme enable the students to have hand on experience on various equipment which will enhance their scientific knowledge and employability.
- The field work and project work in this programme make the students compatible to the needs of modern industry and research field.
- The programme also enables the students to appear for various competitive examinations as well as start their own business.
- After completion of this programme, students can engage themselves in diverse fields including medical, engineering, industries education, banking, business public service, self-business etc. proficiently.
- The programme is designed for holistic development of the students so that they become socially responsible, ethically correct and knowledgeable and contribute to the development and progression of the nation.

Programme Specific Outcome: B.Sc. Chemistry (General) Programme (CBCS)

After graduating with a degree in Chemistry, the students have a wide scope in different fields. Apart from opting for higher studies, the students can also build their carrier in a variety of related branches of science:

- Industrial Field
- Laboratory Technician
- Medical Representative and Marketing Field
- Health Science
- Analytical Field
- Instrument Operator
- Material Supplier

POLBA MAHAVIDYALAYA

COURSE WISE & SUBJECT WISE OUTCOME

OF UG HONOURS COURSE (B.A/B.Sc.) IN GEOGRAPHY

UNDER NEP & CHOICE BASED CREDIT SYSTEM

DEPARTMENT OF GEOGRAPHY

2023-2024

Course Outcome:

The course outcomes of the different papers offered by University of Burdwan and followed by this college are as below. After completion of the course, students will be able to:

Semester	Course code	Course Title	Credits	Course Outcomes
I	**Major:** **GEOG 1011**	**Geotectonics and Geomorphology (Theory)**	**4**	Explaining the basics of Geotectonics and Geomorphology.
				Understanding crustal movement and tectonics, with a focus on their involvement in the formationof landforms.
				Identifying the relationships between landforms, processes, and the underlying structure.
				Landform development models: an overview and critical assessment.
	SEC: **GEOG 1051**	**Computer Basics and Computer Applications**	**3**	Different statistical techniques like central tendencies and measures of dispersion, are taught to the students and the computer-based application of the same are taken care of in this unit.
	Minor	**Other than Geography**	**4**	Course outcome with respective subject.
	Multidisciplinary	**Other than Geography**	**3**	Course outcome with respective subject.

Semester	Course code	Course Title	Credits	Course Outcomes
I	**VAC**	**Environmental Studies**	**4**	This paper introduces the fundamental principles and concept of environmental science, ecology and related interdisciplinary subject such as policy, law, economics, pollution control, resources management etc.
	AEC	**AEC**	**2**	Course outcome with respective subject.
II	**Major: GEOG 2012**	**Population And Settlement Geography**	**4**	This unit includes description of the concepts of population composition and characteristics, measures of fertility and mortality.
				Discussion of migration Theories, Causes and Types.
				Concept of Malthus Marx Theory, Age Sex Structure, and policies of India & Sweden
				Learn about rural settlements, including their definition, nature, and characteristics.
				Examine the morphology of rural settlements.
				Learn the census definition and types of urban settlements.
				Understanding Burgess, Hoyt, Harris, and Ullman's urban morphology models.
				Learn Urban Hierarchy
	SEC: GEOG 2052	**Field Survey Techniques (Theory)**	**3**	Knowledge about fieldwork in Geographical studies, its significance,

				techniques and tools and collection of samples are been given to the students.
	Minor	**Other than Geography**	**4**	Course outcome with respective subject.
	Multidisciplinary	**Other than Geography**	**3**	Course outcome with respective subject.

Semester	**Course code**	**Course Title**	**Credits**	**Course Outcomes**
II	**AEC**	**English**	**2**	Course outcome with respective subject.
	VAC	**Understanding India**	**4**	Course outcome with respective subject.
CBCS				
III	**CC 5**	**Climatology**	**6**	Understanding the weather and climate elements, various atmospheric phenomena and climate change.
				Learn to associate the weather with other environmental and human problems.
				Approaches to climate classification are explained.
				Examining man's influence in global climate change.
	CC 6	**Statistical Methods in Geography (Th+P)**	**4+2=6**	Importance and application of Statistics in Geography.
				Various methods of statistical analysis are taught to help the students to get a better mathematical understanding of the subject.
				Gain a holistic picture of geographical phenomena, by interpreting statistical data.
	CC 7	**Geography Of India**	**6**	The students learn about India, the geology,

				physiography and cultural aspects.
				The students learn about West Bengal, the geology, physiography and cultural aspects.
				Developmental issues with Darjeeling Hills and Sundarban.

Semester	Course code	Course Title	Credits	Course Outcomes
III	**SEC 1**	**Computer Basics and Computer Applications (P)**	**2**	Different statistical techniques like central tendencies and measures of dispersion, are taught to the students and the computer-based application of the same are taken care of in this unit.
	GE 3	**Any Discipline Other Than Geography**	**6**	Students of subject other than Geography are studying Geography.
IV	**CC 8**	**Regional Planning and Development**	**6**	Understanding and identifying regions as an important component of geography.
				Recognize the various types and scales of regions.
				Recognize the various components of development and regional disparities in order to establish balanced development measures.

				Various regional development theories along with the practical planning applications are taught.

Semester	Course code	Course Title	Credits	Course Outcomes
IV	**CC 9**	**Economic Geography**	**6**	Understanding the importance of Economic Geography, the concept of the economic man, and economic theories.
				Evaluate the elements that influence the location of agricultural and industry.
				Recognize the evolution of various economic activity.
				Data on production, economic indices, the transportation network, and flows are to be mapped and interpreted.
	CC 10	**Environmental Geography (Th+P)**	**4+2= 6**	Comprehend the geographer's approach to environmental studies.
				Concept of ecosystem and its functions.
				Learn the fundamentals of wetland and waste management.
				Learn about the environmental policies.

				Identify the fundamentals of wasteland and forest management.
				Understand the bio diversity.

Semester	Course code	Course Title	Credits	Course Outcomes
IV	**CC 10**	**Environmental Geography (Th+P)**	**4+2= 6**	Acquire the ability to produce a questionnaire for perception survey on environmental problem.
				Using a soil kit, learn how to determine the organic matter and NPK of soil.
				Develop the skill to create an EIA checklist for an urban/industrialproject.
				Interpretation air quality.
	SEC 2	**Advanced Spatial Statistical Techniques**	**2**	Concept of settlement analysis, nature of statistical distribution, test of significance etc. are taught in the module.
				Some techniques are taught with the help of MS Excel.
	GE 4	**Any Discipline Other Than Geography**	**6**	Students of subject other than Geography are studying Geography.
V	**CC 11**	**Research Methodology and Field Work (Th+P)**	**4+2**	The students are initiated into the world of research through a theoretical

				knowledge of the meaning, types and significance of research.
				They acquire the knowledge of literature review in research, research problem, objectives and hypothesis building.
				Getting idea of research materials and methods and the techniques of writing scientific reports.
				Knowledge about fieldwork in Geographical studies, its significance, techniques and tools and collection of samples are been given to the students.
				The students during their field study tour would be trained to conduct a field survey and later on to prepare a field report based on their findings collected from field work.
V	**CC-12**	**Remote Sensing and Geographic Information System (Th+P)**	**4+2**	Understanding of remote sensing principles, sensor resolutions, and image referencing schemes is required.
				Understand how to interpret satellite imagery and create False Colour Composites from it.

				Knowledge about the definition and Components of Geographical Information System (GIS) and raster and vector data structures, principles of preparing attribute tables and overlay analysis, applications of Geographical Information System in flood management and urban sprawl are been imparted to the students.
				Apply Geographic Information System (GIS) for the creation thematic maps.
				Hands on training through a specified software are been provided for preparation of FCC, preparation of LULC Map by supervised image classification.
				Application of GNSS.
V	**DSE 1**	**Cultural and Settlement Geography (Theory)**	**6**	Description of the concept of cultural geography, its definition, scope, content and development.
				Concept of cultural hearth, realm; cultural landscape.
				Cultural innovation and diffusion, cultural

				segregation, cultural diversity, and acculturation.
				The world distribution and their corresponding characteristics of major races are been imparted to the students.
				Learn about rural settlements, including their definition, nature, and characteristics.
				Examine the morphology of rural settlements.
				Understanding the rural house types, census categories of rural settlements and idea of social segregation.
				Learn the census definition and types of urban settlements.
				Understanding Burgess, Hoyt, Harris, and Ullman's urban morphology models.
				Distinguish between city-region and conurbation.
				Examine how cities are classified in terms of their functions.
V	**DSE 2**	**Population Geography (Theory)**	**6**	The development of Population Geography, relation between Population Geography and Demography, determinants of population dynamics,

				some selected theories of population growth, distribution, density and growth of population in India since 1951 have been described in this unit.
				This unit includes description of the concepts of population composition and characteristics, measures of fertility and mortality.
				Population composition of India: rural and urban, occupational structure as per Census of India.
				Discussion of migration Theories, Causes and Types.
				Calculation of Human Development Index
				Population-resource regions,
				Population policies in some selected countries: Sweden and China
				Contemporary issues in Population have discussed
VI	**CC 13**	**Evolution of Geographical Thoughts (Theory)**	**6**	Definition, scope and content of Geography, development of Geography in ancient and medieval period, knowledge

				about Geography in the age of explorations, characteristics of Classical Geography and the concept of Quantitative Revolution have been elucidated in this unit.
				Various schools of thought like the German, the French and the American as also the Indian contribution to Geography
				The concepts of determinism, possibilism and neo-determinism.
VI	**CC-14**	**Disaster management (Th+P)**	**4+2**	Knowledge about hazards and disasters, approaches to hazard study, responses to hazards and mapping of hazards have been provide.
				Some specific disasters like earthquake, landslide, cyclone and fire have been elaborately discussed.
				The students are trained to prepare a project report based on specified disasters incorporating preparedness, mitigation and management.
VI	**DSE 3**	**Resource Geography (Theory)**	**6**	The concepts of resource, classification

				of resource, theory of resource and problem of resource depletion and conservation of resources, distribution of resources are taught.
				The distribution and utilisation of mineral, energy and power resources in India have been discussed.
				Issues of contemporary energy crisis and sustainable resource development discussed.
	DSE 4	**Soil and Bio-geography (Theory)**	**6**	The students are taught to understand the quality of soil, soil degradation, its specific problems, and understand its importance as a non-renewable resource.
				The concept of biosphere, ecology, ecosystem, environment, communities, habitats, niche have been taught.
				The concept of food chain and food web.
				Classification of Biomes, threat to bio diversity have been discussed.

COURSE WISE & SUBJECT WISE OUTCOME
OF UG GENERAL COURSE (B.A/B.Sc.) IN GEOGRAPHY
UNDER NEP & CHOICE BASED CREDIT SYSTEM
2023-2024

Semester	Course code	Course Title	Credits	Course Outcomes
I	**Minor: GEOG 1021**	**Geotectonics and Geomorphology (Theory)**	**4**	Explaining the interior of Earth, weathering process.
				Understanding crustal movement and tectonics, with a focus on their involvement in the formationof landforms.
				Identifying the relationships between landforms, processes, and the underlying structure.
				Landform development models: an overview and critical assessment.
	Multidisciplinary: GEOG 1031	**Physical Geography**	**3**	Students can acquire knowledge and develop an understanding of concepts, processes and methods of Physical Geography. Students may develop an interest in Geography through this course. Students can familiarize themselves with key concepts, terminology and core principles of Geography.
II	**Minor: GEOG 2022**	**Population And Settlement Geography**	**4**	This unit includes description of the concepts of population composition

				and characteristics, measures of fertility and mortality.
				Discussion of migration Theories, Causes and Types.
				Concept of Malthus Marx Theory, Age Sex Structure, and policies of India & Sweden
				Learn about rural settlements, including their definition, nature, and characteristics.
				Examine the morphology of rural settlements.
				Learn the census definition and types of urban settlements.
				Understanding Burgess, Hoyt, Harris, and Ullman's urban morphology models.
				Learn Urban Hierarchy
	Multidisciplinary: GEOG 2032	**Human Geography**	**3**	Students can acquire knowledge and develop an understanding of concepts, processes and methods of Human Geography. Students may develop an interest in Human Geography through this course. Students can familiarize themselves with key concepts, terminology and core principles of Human Geography.
				They can easily recognize and understand the processes and patterns of the spatial arrangement of the natural features as

				well as human aspects and phenomena on the earth's surface.
CBCS				
III	**CC 1C**	**Human Geography (Theory)**	**4**	Acquiring knowledge of approaches of Human Geography, different aspect of race, religion, language.
				Human adaptation to environment.
				This unit includes description of the concepts of population composition, population distribution.
				Discussion of migration theories, causes and types.
				Learn about rural settlements, including their definition, nature, and characteristics.
				Learn the census definition and types of urban settlements.
		Map Projection and Map Interpretation (Practical)	**2**	Understanding the concept of map projections.
				Understanding the basics of Topographical mapping, weather map.
	SEC 1	**Computer Basics and Computer Applications (Practical)**	**2**	Different statistical techniques like central tendencies and measures of dispersion, are taught to the students and the computer-based application of the same are taken care of in this unit.

IV	**CC 1D**	**Environmental Geography (Theory)**	**4**	Knowledge on approaches of Environmental Geography, concept and structure of ecosystem.
				Learning about human environment relationship.
				Issues related to environmental problems and policies.
				Forest and wetland conservation.
		Environmental Geography (Practical)	**2**	Acquire the ability to produce a questionnaire for perception survey onenvironmental problem.
				Using a soil kit, learn how to determine the organic matter andPH of soil.
	SEC 2	**Regional Planning and Development (Theory)**	**2**	Acquiring knowledge of Regional Planning and Development, Human development, and development of agriculture and industry of India, examining the purpose of planning region.
V	**DSE 1A**	**Geography of India (Theory)**	**4**	Detail understandings of Indian physical settings, population structure, resource distribution and industries.
				Discussion of problem regions.
		Field work (Practical)	**2**	The students during their field study tour would be trained to conduct a field survey and later on to prepare a field report based on their findings collected from field work.
	SEC 3	**Field Techniques**	**2**	Knowledge about fieldwork in

		and Survey Based Project Report (Practical)		Geographical studies, its significance, techniques and tools and collection of samples are been given to the students.
VI	**DSE 1B**	**Disaster Management (Theory)**	**4**	Knowledge about Hazards and Disasters, approaches to hazard study, responses to hazards and mapping of hazards have been provide.
				Some specific disasters like earthquake, landslide, cyclone have been elaborately discussed.
		Project Work (Practical)	**2**	The students are trained to prepare a project report based on specified disasters incorporating preparedness, mitigation and management.
	SEC 4	**Collection, Mapping and Interpretation of Pedological Data (Practical)**	**2**	Using a soil kit, learn how to determine the organic matter, Nitrogen and PH of soil.

POLBA MAHAVIDYALAYA

PROGRAMME OUTCOME

OF UG HONOURS/ GENERAL COURSE (B.A/B.Sc.) IN GEOGRAPHY

UNDER CHOICE BASED CREDIT SYSTEM

DEPARTMENT OF GEOGRAPHY

2023-2024

Programme Outcome:

The NEP 2020 introduced from 2023 and Choice Based Credit System (CBCS) in Geography was introduced from the academic session 2017-18. The envisioned Programme Outcome is enumerated below.

PO 1 – Role of Humans on our Planet – An understanding and acceptance of the factors that threaten the ecological system of the planet. This leads to a better understanding of the significance of anthropogenic causes for many of the disasters and risks posed to life on this planet. Enabling children to comprehend that man's ingenuity has resulted in resource creation and usage, which has resulted from man's desire for a better life and how this has also led to increasing vulnerability of the ecosystem in the 'Anthropocene'. That our planet is spaceship and balance must be brought about by restoration is the corethought. The students in this class would nurture conservationist attitude and would support the notion of sustainable development through reduce, reuse and recycling methods. The departmental seminars, field work, wall magazines continue to examine and analyze the human role and use of the planet.

PO 2 – Scientific and Critical Thinking – Students' knowledge, abilities, and overall understanding of the discipline are being developed. Students are encouraged to apply knowledge from class in real life problem analysis, think with scientific reasoning and to conduct research in a justifiable scientific manner.This purpose is accomplished through the Department's regular field trips to various locations of India, addressing environmental issues of the places and the subsequent preparation of a reports on the subject.

PO 3 – Environmental Hazard Response and Management – Students get the ability to respond toboth natural and man-made disasters, as well as managerial abilities. This is accomplished through the study and analysis of hazards, disasters, their impact, and management as part of the curriculum. Preparation of project reports emphasise in teaching students the aspect of analysing, preparedness and strategy formulation of disasters, assessing areal development issues and even social issues. Workshops, competitions, posters and presentations on environmental hazards attempt to instill skills beyond those required by the curriculum and for a better career and better life as an environmentallyeducated citizen.

PO 4 – Interdisciplinary Research Skills – Ability to pursue higher studies and grow with an exposure into applicability of Geography as a discipline in applied

interdisciplinary research, on problems or situations beyond the precise scope of Geography. The curriculum's diverse nature includes the study and analysis of concepts from sub-disciplines and related disciplines such as geology, seismology, pedology, hydrology, environmental studies, disaster management, resource management and conservation, regionalplanning and development studies, and so on.

PO 5 – A Human Resource Prepared for Diverse Professions-A comprehensive syllabus in Geography teaching with equal importance on theoretical and practical parts, on physical and socio- economic sub-branches, on traditional topics and recent developments prepare a student to face the world professional avenues and with diverse opportunities. The college regularly arranges discussions with students to inform young minds the job prospects related to learning the subject.

PROGRAMME SPECIFIC OUTCOME

PSO 1 - Analyzing landform development, crustal mobility and tectonics, climate change and dynamics, soil formation and classification, hydrological and oceanographic investigations, and other topics to gaina holistic understanding of the Earth, atmosphere, seas, and planet.

PSO 2 - Associating landforms with structure and process, developing man-environment interactions, andinvestigating Geography's location and role in relation to other social and earth sciences.

PSO 3 - Recognize the role and function of global economies, industrial locations, and resource usage andexploitation, as well as their consequences.

PSO 4- Developing a sensitive and long-term approach to the ecosystem and biosphere in order to preserve natural systems and ecological equilibrium.

PSO 5 - Fostering a tolerant mindset and attitude toward India's huge socio-cultural variety through the study and discussion of contemporary social and cultural geography principles.

PSO 6- Developing a grasp of geopolitics, global geostrategic perspectives, and the operation of political systems

PSO 7 - Investigating the differences in human habitation patterns around the globe through research of human settlements and population dynamics.

PSO 8- Understanding and accounting for regional differences, poverty, unemployment, and globalization's effects. Explaining and assessing India's regional variety through natural and planning regions interpretation.

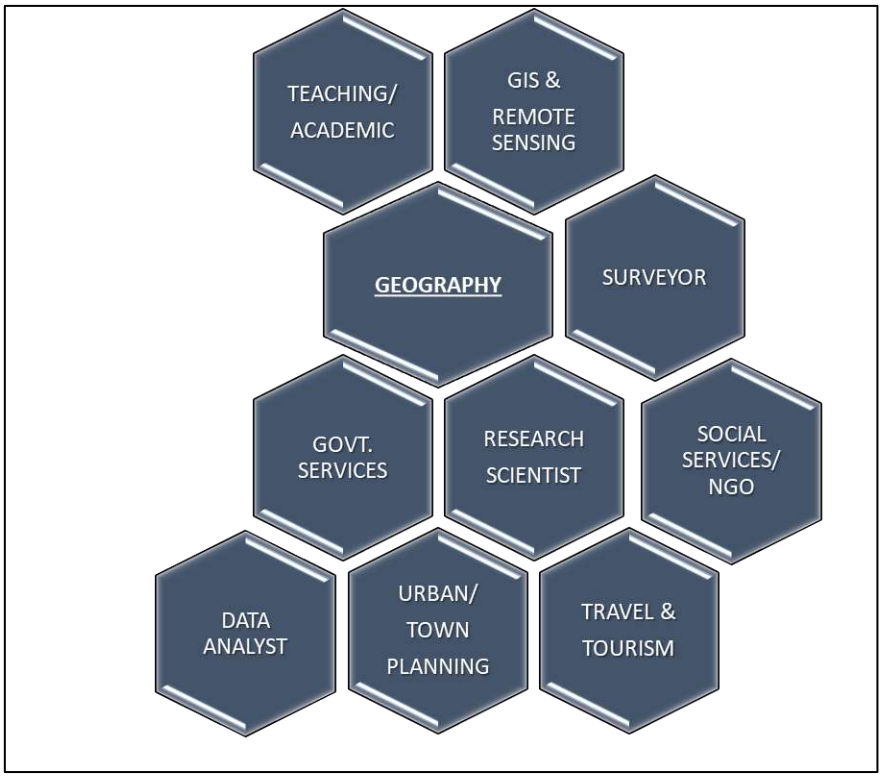
PSO 9 - Examining ancient and modern geographical ideas, as well as their connections

to modern concepts like as empiricism, positivism, radicalism, and behaviorism.

PSO 10 - Sensitization and knowledge of the subcontinent's vulnerability to hazards and calamities, as well as their management.

PSO 11 - Instruction in practical mapping, cartography, GIS software, image and map interpretation, photography, and image interpretation in order to comprehend the spatial variation of phenomena on the Earth's surface.

CAREER SCOPE WITH GEOGRAPHY



- Teaching, and govt. Jobs.
- Surveyor job with experience of field survey on educational excursion.
- NGO jobs with Skill Enhancement Course on social issues and survey.
- Planning & tourism job with specialization certificate.
- Data analyst job with skill enhancement course on computer application.

POLBA MAHAVIDYALAYA

DEPARTMENT OF ENGLISH

COURSE OUTCOME

ENGLISH

MAJOR COURSE SEM I

ENGL1011: Introduction to Poetry and Prose

1. Literary Forms

Outcome: Students will be able to identify and describe the characteristics and major elements of poetry, drama, and fiction. They will develop an understanding of different literary forms and their thematic and stylistic aspects, enhancing their analytical and comparative reading skills.

2. Poems

Sidney: Sonnet No. 1 (from Astrophel and Stella)

Outcome: Students will comprehend Sidney′ s exploration of unrequited love and poetic creativity, gaining insight into Elizabethan sonnet traditions and their thematic resonance.

Shakespeare: Sonnet No. 29

Outcome: Students will appreciate Shakespeare′ s thematic treatment of self-worth and solace in love, deepening their understanding of the emotional depth and stylistic nuances in Shakespearean sonnets.

John Donne: "Go and Catch a Falling Star"

Outcome: Students will analyze Donne′ s use of wit, metaphysical conceits, and skepticism about idealized love, fostering an appreciation for metaphysical poetry.

John Milton: "On His Blindness"

Outcome: Students will grasp Milton′ s reflections on personal loss and divine service, enabling them to connect themes of faith, patience, and resilience to broader literary and personal contexts.

William Wordsworth: "The Solitary Reaper"

Outcome: Students will explore Wordsworth′ s portrayal of nature and rural life, identifying Romantic elements such as emotion, imagination, and the sublime in his poetry.

John Keats: "Bright Star"

Outcome: Students will interpret Keats′ expression of eternal love and steadfastness, enhancing their understanding of Romantic ideals and poetic form.

Lord Byron: "She Walks in Beauty"

Outcome: Students will appreciate Byron′s lyrical depiction of beauty and virtue, understanding the relationship between aesthetic imagery and poetic tone.

Elizabeth Barrett Browning: "How Do I Love Thee"

Outcome: Students will evaluate Browning′s celebration of profound love, learning to analyze themes of devotion and the intimate voice in Victorian poetry.

W.B. Yeats: "The Wild Swans at Coole"

Outcome: Students will understand Yeats′s exploration of themes like time, change, and beauty, reflecting on the poetic symbolism and personal yearning evident in his work.

Wilfred Owen: "Anthem for Doomed Youth"

Outcome: Students will critically engage with Owen′s anti-war sentiment and use of vivid imagery and sound devices, understanding the impact of World War I on poetry.

3. Essays and Short Stories

Francis Bacon: "Of Studies"

Outcome: Students will grasp Bacon′s persuasive argument on the value of study, learning to identify key rhetorical techniques and their application in non-fiction.

Addison: "Mischiefs of Party Spirit"

Outcome: Students will explore Addison′s critique of political divisions and their effects on society, enhancing their ability to analyze satirical and didactic writing.

Charles Lamb: "Old China"

Outcome: Students will engage with Lamb′s nostalgic and reflective prose, understanding the role of personal voice and humor in essays.

Somerset Maugham: "The Lotus Eater"

Outcome: Students will interpret Maugham′s exploration of hedonism and existential choice, fostering skills in analyzing character and moral ambiguity.

Arthur Conan Doyle: "The Speckled Band"

Outcome: Students will develop an understanding of Doyle′ s narrative technique in detective fiction, focusing on plot development, suspense, and the role of deduction.

O. Henry: "The Last Leaf"

Outcome: Students will appreciate O. Henry′ s use of irony and emotional storytelling, learning to identify themes of hope, sacrifice, and friendship in short fiction.

4. Rhetoric and Prosody

Outcome: Students will gain knowledge of essential elements of style in English composition, particularly in poetry. They will learn to identify and apply rhetorical devices and analyze metrical patterns and prosodic features, enhancing their appreciation and critique of poetic structure and style.

Overall Course Outcome Students completing this course will acquire a foundational understanding of significant literary forms, enhance their analytical skills through exposure to classic texts, and develop an appreciation for the craft of writing in various genres and styles. They will be equipped to read critically, interpret literature thoughtfully, and engage with texts using informed perspectives.

POLBA MAHAVIDYALAYA

DEPARTMENT OF ENGLISH

COURSE OUTCOME

ENGLISH

MINOR COURSE ENGL1021: Poems, Essays and Short Stories, Rhetoric and Prosody

Poems (LH: 16)

1. **William Shakespeare: Sonnet 116**
    - Students will develop an understanding of Shakespearean sonnets, particularly the theme of unwavering love. They will learn to analyze poetic devices such as metaphor, personification, and the sonnet structure, enhancing their ability to appreciate classical poetry.
2. **William Wordsworth: "A Slumber did my Spirit Seal"**
    - Learners will explore Wordsworth's treatment of nature, mortality, and the transcendence of human experience. They will cultivate an ability to interpret Romantic poetry with an emphasis on emotional depth and the poet's philosophy of nature.
3. **P. B. Shelley: "One Word is Too Often Profaned"**
    - Students will examine Shelley's nuanced expression of love and its sacred nature. They will engage with the poet's language and symbolism, gaining insights into the themes of idealism and the Romantic movement's values.
4. **Rupert Brooke: "Soldier"**
    - Learners will analyze Brooke's patriotic sentiment and idealization of war. This will enable them to understand the early 20th-century context and the poetic portrayal of nationalism and sacrifice.

Essays and Short Stories (LH: 32)

1. **Charles Lamb: "Dream Children"**
    - Students will explore Lamb's reflective and autobiographical style, focusing on themes of nostalgia and loss. They will develop an appreciation for personal essays and the use of narrative voice and character sketches in prose.
2. **Bernard Shaw: "Spoken English and Broken English"**
    - Learners will gain insights into Shaw's perspective on language as a social tool, and the practicality of communication over rigid linguistic norms. They will learn to critique language use and the concept of standard versus vernacular English.
3. **Ruskin Bond: "The Night Train at Deoli"**
    - Students will appreciate Bond's storytelling technique and his focus on fleeting human connections and nostalgia. They will study themes of longing, memory, and the beauty of everyday life, enhancing their ability to interpret modern Indian literature.
4. **R. K. Narayan: "Out of Business"**
    - Learners will analyze Narayan's portrayal of human struggles, economic hardship, and resilience. This story will help students understand the socio-economic context of post-independence India and explore themes of hope and despair.

Rhetoric and Prosody (LH: 12)

- Students will learn essential concepts of rhetoric and prosody, developing the ability to identify and analyze various figures of speech, metrical patterns, and structural

elements of poetry. This will enable them to enhance their critical reading and appreciation of literary texts.

Overall Course Outcome

- By completing this Minor course, students will have developed the skills necessary for critical appreciation of English literary texts across genres. They will enhance their analytical abilities, understanding of thematic elements, and contextual awareness, which are integral for interpreting and enjoying literature.

POLBA MAHAVIDYALAYA
DEPARTMENT OF ENGLISH
COURSE OUTCOME
ENGLISH
SKILL ENHANCEMENT COURSE (SEC)
ENGL1051: English Grammar and Vocabulary

Introducing Grammar (Learning Hours: 15)

- What is grammar (the philosophy of grammar)?: Students will understand the foundational concepts and theoretical underpinnings of grammar, developing an appreciation for its philosophical aspects and how grammar influences language structure and thought.
- The importance of grammar: Learners will recognize the critical role grammar plays in effective communication, both written and spoken, enhancing their linguistic competence.
- Different approaches to grammar (traditional, communicative, transformational generative): Students will explore and differentiate between various grammatical frameworks, gaining insights into traditional prescriptive norms, practical communicative strategies, and the principles of transformational generative grammar.
- Grammar in speech and writing: Learners will apply their understanding of grammatical rules to improve clarity and precision in both oral and written forms of English, adapting usage to context.

Use and Application of Grammar (Learning Hours: 15)

- Use of correct prepositions: Students will accurately apply prepositions in sentences, avoiding common errors and ambiguities.
- Subject-verb agreement: Learners will master subject-verb concord, ensuring that their sentence structures are syntactically correct and contextually appropriate.
- Use of upper and lower case: Students will demonstrate proper capitalization in varied contexts, reinforcing attention to detail in written communication.
- Use of auxiliaries: Learners will proficiently incorporate auxiliary verbs to convey tense, aspect, modality, and voice, enhancing the depth of their language use.
- Question tags: Students will form and use question tags correctly, adding to their conversational fluency and engagement skills.
- Use of punctuation: Learners will utilize punctuation marks effectively to improve the readability and coherence of their written work.
- Use of countable and uncountable nouns: Students will correctly identify and use countable and uncountable nouns, improving grammatical accuracy in descriptions and general statements.

Sentences (Learning Hours: 5)

- Correction of errors: Learners will develop the ability to identify and correct grammatical errors in sentences, fostering self-editing skills.
- Rewriting of sentences: Students will practice paraphrasing and restructuring sentences to enhance meaning, variety, and fluidity in their writing.

Idioms and Vocabulary (Learning Hours: 10)

- Use of idioms: Learners will incorporate common English idioms into their language use, adding color and nuance to their speech and writing.
- Vocabulary (basic synonyms and antonyms): Students will expand their vocabulary by learning synonyms and antonyms, equipping them with tools to avoid repetition and refine their expression.

- Vocabulary for specific purposes (trades and professions): Learners will acquire specialized vocabulary pertinent to various trades and professions, enhancing their ability to understand and communicate within specific contexts.
-

Overall Course Outcome

By the end of this course, students will have developed a comprehensive understanding of grammar's significance and various theoretical approaches. They will exhibit improved accuracy and sophistication in their English language usage, including grammar, sentence construction, and vocabulary application. This enhanced skill set will empower them with greater confidence in both personal and professional communication.

POLBA MAHAVIDYALAYA
DEPARTMENT OF ENGLISH
COURSE OUTCOME
ENGLISH
MAJOR COURSE SEM II
ENGL2011: Plays, Novels, and Literary Terms

Plays (Learning Hours: 20)

- George Bernard Shaw: *Major Barbara*: Students will engage in a detailed analysis of the key themes, character development, and stylistic nuances within Shaw's *Major Barbara*. They will gain an understanding of how Shaw uses satire and social commentary to explore issues of morality, religion, and economic disparity.
- J. M. Synge: *Riders to the Sea*: Learners will critically evaluate Synge's use of tragedy and symbolism to portray the harsh realities of life on the Aran Islands. The study of this one-act play will enhance students' appreciation of the interplay between language, cultural identity, and the human condition.

Novels (Learning Hours: 30)

- R. K. Narayan: *The Guide*: Students will explore the narrative structure, themes of spiritual transformation, and character arcs in Narayan's *The Guide*. They will develop the ability to analyze the protagonist's journey and its symbolic implications, along with the cultural elements embedded in the text.
- Thomas Hardy: *The Mayor of Casterbridge*: Learners will delve into Hardy's exploration of fate, character flaws, and the social constraints of 19th-century England. This study will equip them with the skills to critically interpret Hardy's complex narrative style and his portrayal of tragic heroes.

Literary Terms (Learning Hours: 10)

- Literary terms related to poetry:
  - Heroic couplet, image, symbol, caesura, blank verse, carpe diem: Students will become familiar with these poetic terms and understand their usage in poetic analysis. This knowledge will enable them to identify and interpret these elements in various literary texts, enriching their comprehension of poetry.
- **Literary terms related to drama:**
  - Soliloquy and aside, hamartia and hubris, conflict, comic relief, protagonist and antagonist, Freytag's Pyramid: Learners will grasp these key dramatic terms, which will aid them in dissecting the structural and thematic intricacies of plays. This understanding will enhance their analytical skills for studying dramatic works.
- **Literary terms related to fiction:**
  - Story and plot, round character and flat character, point of view, stream-of-consciousness, foil, author and narrator: Students will develop a solid foundation in these fiction-related terms. This knowledge will help them to differentiate narrative techniques, character types, and the roles of narrators in storytelling, facilitating deeper literary analysis.

Overall Course Outcome

Upon completing this course, students will be equipped with the skills necessary for critical reading and interpretation of key literary texts. They will be able to identify and apply essential literary terms, enhancing their analytical capabilities and preparing them for more advanced literary studies in subsequent semesters.

POLBA MAHAVIDYALAYA
DEPARTMENT OF ENGLISH
COURSE OUTCOME
ENGLISH
MINOR COURSE SEM II
ENGL2021: Plays and Novels

1. George Bernard Shaw: *Arms and the Man* (LH: 16)
Course Outcome:
Students will analyze the key thematic elements of *Arms and the Man*, including the satirical examination of war, heroism, and the ideals of romanticism versus realism. They will explore Shaw's use of wit and humor in addressing social and political issues, developing an appreciation for his distinctive character-driven narrative style. The students will also be equipped to assess how Shaw critiques societal norms through the play's comedic and dramatic elements.

2. J. B. Priestley: *An Inspector Calls* (LH: 14)
Course Outcome:
Students will evaluate the themes of social responsibility, class inequality, and the interconnectedness of society in *An Inspector Calls*. They will understand how Priestley uses the structure of a detective play to reveal the flaws in the characters and the broader social critique. By the end of the unit, students will be able to assess Priestley's use of dramatic irony and suspense as a tool for engaging the audience in moral reflection on social justice.

3. Ernest Hemingway: *The Old Man and the Sea* (LH: 12)
Course Outcome:
The course will enable students to understand the thematic focus on struggle, perseverance, and the human condition in *The Old Man and the Sea*. They will critically examine Hemingway's minimalist narrative style and symbolism, particularly how the novel portrays the relationship between man and nature. By the end, students will be able to appreciate Hemingway's exploration of existential themes and the concept of dignity in the face of adversity.

4. R. K. Narayan: *Swami and Friends* (LH: 18)
Course Outcome:
Students will gain an understanding of the coming-of-age themes and the portrayal of childhood in *Swami and Friends*. They will examine Narayan's use of humor and simplicity to depict Indian social norms and relationships within a small-town setting. Students will also explore how Narayan's narrative style provides insights into the complexities of Indian society during the British colonial period, encouraging them to critically engage with character development and cultural themes.

Overall Course Outcome:
The course will foster students' ability to critically appreciate literary works across different genres (plays and novels). It will encourage the development of analytical skills to interpret thematic and stylistic elements, enabling students to understand how authors employ various narrative techniques to convey messages and explore human experiences. Additionally, the course will enhance students' abilities to discuss the moral, social, and psychological implications of the texts studied.

POLBA MAHAVIDYALAYA
DEPARTMENT OF ENGLISH
COURSE OUTCOME
ENGLISH
SKILL ENHANCEMENT COURSE (SEC)
ENGL2051: Creative Writing

1. Introducing Creative Writing (LH: 5)
Course Outcome:
Students will develop an understanding of what creative writing is, including its various forms and objectives. They will be able to distinguish creative writing from other forms of writing and will become familiar with its primary components. This foundational knowledge will prepare students to engage with creative writing more critically and creatively.

2. What is Creative Writing? (LH: 1)
Course Outcome:
Students will be able to define creative writing and recognize its significance as a form of artistic expression. They will understand its role in both personal and professional contexts and will explore how creativity can be channeled into different writing forms.

3. Types of Writing: Expository, Descriptive, Persuasive, Narrative (LH: 1)
Course Outcome:
Students will become familiar with the four main types of writing: expository, descriptive, persuasive, and narrative. They will learn how each type has its distinct purpose and style, and will be able to apply these forms in various writing contexts.

4. Writing as Craft (LH: 11)
Course Outcome:
This section will help students appreciate writing as a craft that requires skill, technique, and practice. Students will learn about the elements that contribute to good writing and develop an understanding of the importance of structure, clarity, and style in creative works. They will be encouraged to adopt a more disciplined approach to writing, focusing on revision and refinement of their drafts.

5. The Craft of Writing: Characteristics of Good Writing (LH: 5)
Course Outcome:
By the end of this unit, students will understand the key characteristics of good writing, including clarity, coherence, creativity, and originality. They will be able to analyze their own writing and the work of others to identify these qualities and improve their own writing through practice and feedback.

6. L. A. Hill: Principles of Good Writing (selections) (LH: 6)
Course Outcome:
Students will learn and critically engage with L. A. Hill's principles of good writing. They will examine how these principles can be applied to creative writing to enhance clarity, structure, and impact. This section will provide students with specific guidelines to incorporate into their own writing process.

7. Poems (LH: 12)
Course Outcome:
Students will explore the characteristics of poetry, including figurative language, imagery, sensory details, rhyme, and repetition. They will analyze how these elements work together to convey emotions, themes, and ideas. By studying William Wordsworth's "Daffodils," students will develop an understanding of how poets use language to evoke powerful images and feelings.

8. Poetry: Figurative Language, Imagery, Sensory Details, Rhyme, Repetition (LH: 12)
Course Outcome:
This section will deepen students' appreciation of poetry's unique language features. They will be able to identify and use figurative language, imagery, and sensory details in their own writing. Additionally, students will gain an understanding of how rhyme and repetition contribute to the musicality and emotional impact of a poem.

9. William Wordsworth: "Daffodils" (LH: 12)
Course Outcome:
By studying Wordsworth's "Daffodils," students will analyze the use of nature imagery, personification, and sensory language to convey themes of beauty, inspiration, and tranquility. This poem will serve as an example of how personal experience and natural surroundings can be transformed into universal poetic expression.

10. Short Stories (LH: 12)
Course Outcome:
Students will learn about the structure of short stories, including how theme, point of view, character, setting, and plot are used to create engaging narratives. They will analyze O. Henry's "The Gift of the Magi" to see how these elements come together to craft a compelling, emotional, and thought-provoking story.

11. Short Story: Theme, Point of View, Character, Setting, Plot (LH: 12)
Course Outcome:
Students will deepen their understanding of the key elements of short stories. They will be able to identify and analyze the theme, point of view, character development, setting, and plot in both classic and contemporary stories. This unit will prepare students to apply these elements when writing their own short stories.

12. O. Henry: "The Gift of the Magi" (LH: 12)
Course Outcome:
Through the analysis of O. Henry's "The Gift of the Magi," students will understand how a short story can convey complex themes like sacrifice, love, and irony. They will gain insight into O. Henry's use of surprise endings and his ability to convey emotional depth in a short narrative format.

13. Identification, with Reasons, of the Type and Stylistic Features of an Unseen Literary Passage (LH: 5)
Course Outcome:
By the end of this unit, students will develop the skills to analyze an unseen literary passage, identify its type (e.g., poetry, short story, or essay), and discuss the stylistic features it employs. This will help students improve their analytical and critical reading skills, making them more adept at understanding and appreciating various forms of creative writing.

Overall Course Outcome:
Upon completing the course, students will have a solid understanding of creative writing's various forms, including poetry and short stories. They will have developed their writing and analytical skills, allowing them to engage critically with creative texts and apply the principles of good writing to their own work. The course will encourage students to explore their creativity, refine their writing techniques, and begin to practice creative writing with greater confidence and skill.

DEPARTMENT OF PHYSICS

PROGRAMME SPECIFIC OUTCOME PROGRAMME OUTCOME AND COURSE OUTCOME(2023-2024)(CBCS)

The study of science has always been a demystifying experience. The ability to ask critical questions and follow them up with a systematic plan of inquiry seeking right answers advances scientific thoughts. Physics is a branch of science based on experimental observation. The acquaintance with physics helps to realize the working principles of many of our daily appliances. The beauty of physics lies in the simplicity of the fundamental physical theories.

Physics has a profound effect on all scientific developments. It is the present-day equivalent to "natural philosophy" from which most of our modern sciences arose. Being a description of nature, physics has been our best friend from the very day of human existence. The basic aim of Physics teaching is to let the students know and understand the principles and their applications inreal life.

PROGRAMME SPECIFIC OUTCOME

Undergraduate program in B.Sc. (General in Physics) is aimed to impart a complete knowledge in the basics of Physics and its application areas. After successful completion of the course, the employability of the students is increased and they become eligible to pursue higher education and research in Physics

PROGRAMME OUTCOMES

PO1:	Acquire sound knowledge about the fundamentals of various science subjects and become adopt in hands-on activities.
PO2:	Apply and demonstrate knowledge of concepts of physics, to analyze a variety of physical phenomena.
PO3:	Represent a commitment to the development of a scientific temper in the society by virtues of rational thinking and the scientific method. Perform effectively as an individual and as a member or leader in diverse team, in multidisciplinary setting.
PO4:	Demonstrate the learned laboratory skills, enabling them to take measurements in a physics laboratory and analyse the measurements to draw valid conclusions.
PO5:	Help in understanding the causes of environmental pollution and can open up new methods for pollution control i.e., demonstrating a commitment to coping with the urgent needs of humanity in the era of climate change. Apply and demonstrate the basic Physics in environmental context for sustainabledevelopment.
PO6:	Plan, execute and report the results of a complex extended experiment orinvestigation, using appropriate methods to analyze data and to evaluate the level of its uncertainty.
PO7:	Willingness to take up responsibility in study and work confidence in his/hercapabilities capacity to work effectively in a team motivation for learning and experimentation.
PO8:	Capable of oral and written scientific communication, and will prove that they can think critically and work independently.
PO9:	One most significant outcome of the programme is the inculcation of higher values of life among the learners that enble them to face any hazard of the future life.
PO10:	Respond effectively to unfamiliar problems in scientific contexts.

COURSE OUTCOMES

SEMESTER-III

🕮 COURSE: CC-1C: THERMAL PHYSICS AND STATISTICAL MECHANICS

(Credits: Theory - 04, Practical - 02) F.M. = 75 (Theory - 40, Practical – 20, Internal Assessment – 15) Internal Assessment [Class Attendance (Theory) – 05, Theory (Class Test/ Assignment/ Seminar) – 05, Practical (Sessional Viva-voce) - 05]

After successfully completing this course, the student will be able to:

CO1: Define laws of thermodynamics, entropy, thermodynamic processes etc.

CO2: Describe and derive expression of Heat engine & Carnot engine, entropy, latent heatequation and various thermodynamic potentials.

CO3: Explain the maxwell's distribution law of gas particles, concept of equipartition ofenergy and transport phenomena of gases.

CO4: Derive the Plank's law, Wine's distribution law, Rayleigh-Jeans Law, StefanBoltzmann Law and Wien's displacement law for Black body radiation.

CO5: Understand the concept of phase space, macro & micro state and also able to explain& compare all three type of statistics.

CO6: Understand rigorously all theory by all practical.

🕮COURSE: SEC-1: RENEWABLE ENERGY AND ENERGY HARVESTING

(Credits: 02) F.M. = 50 (Theory - 40, Internal Assessment – 10) Internal Assessment [Theory (Class Test/ Assignment/ Seminar)] – 10

After successfully completing this course, the student will be able to:

CO1: Understand the Fossil fuels and about the alternate sources of energy.

CO2: Explain solar energy, its uses and describe solar cell and photovoltaic cell.

CO3: Explain and application of various type renewable energy sources as wind energy, solar energy, ocean energy, geothermal energy and hydro energy.

CO4: Understand the piezoelectric and electromagnetic energy harvesting.

CO6: Understand rigorously all theory by all demonstration**.**

SEMESTER-IV

🕮 COURSE: CC- 1D: WAVES AND OPTICS

(Credits: Theory - 04, Practical - 02) F.M. = 75 (Theory - 40, Practical – 20, Internal Assessment – 15) Internal Assessment [Class Attendance (Theory) – 05, Theory (Class Test/ Assignment/ Seminar) – 05, Practical (Sessional Viva-voce) - 05]

After successfully completing this course, the student will be able to:

CO1: Define periodic and oscillatory motion, setup and solve differential equations of motion for simple harmonic, damped, and forced oscillators, set and solve differential equation for wave motion for longitudinal and transverse waves and also understanding the Sabine's formula of acoustics of buildings.

CO2: Describe the superposition of two collinear and perpendicular harmonic oscillator with graphical and analytical method and also understand the concept of Lissajous figure and its application.

CO3: Define the surface tension and its application to various type of liquid or air drops also about the Poiseuille's formula, define the coefficient of viscosity and types of pump system which creating low pressure and some type of gauge for measuring lowpressure.

CO4: Explain the wave front of light and its propagation, also can describe the interference of light by various measurements like Young's Double Slit experiment, Newton's Ring experiment, etc.

CO5: Determine the wavelength, refractive index, etc. by Michelson's Interferometer experiment.

CO6: Understand about the Fraunhofer and Fresnel diffraction of light with some experiment and also explain the plane, circular and elliptical polarization of light.

CO7: Understand rigorously all theory by all practical.

🕮 COURSE: SEC-2:WEATHER FORECASTING

(Credits: 02) F.M. = 50 (Theory - 40, Internal Assessment – 10) Internal Assessment [Theory (Class Test/ Assignment/ Seminar)] – 10

After successfully completing this course, the student will be able to:

CO1: Understand the basic idea about atmosphere and weather.

CO2: Determine how to produce wind also measuring its speed and direction and also understand about the humidity clouds and rainfall.
CO3: Describe the global wind system, thunderstorm and tropical cyclones also define theclimate, its change due to global warming and pollution.
CO4: Forecast of weather by various analysis.
CO5: Understand rigorously all theory by all demonstration.

SEMESTER-V

🕮 COURSE: DSE-1A:ELEMENTS OF MODERN PHYSICS

(Credits: Theory - 04, Practical - 02) F.M. = 75 (Theory - 40, Practical – 20, Internal Assessment – 15) Internal Assessment [Class Attendance (Theory) – 05, Theory (Class Test/ Assignment/ Seminar) – 05, Practical (Sessional Viva-voce) - 05]

After successfully completing this course, the student will be able to:

CO1: Explain the Plank's constant, photo electric effect and Compton scattering and also describe the wave particle duality by Davisson-Germer and double slit experiment.
CO2: Describe the Rutherford and Bohr's atomic model and from it define the energy spectra of hydrogen atom and also describe the uncertainty principle by thought experiment.
CO3: Define the Schrodinger wave equation for non-relativistic particles its application on one dimensional box and understand about the momentum operator, energy operator,eigen value, eigen function and also about the normalization of wavefunction.
CO4: Describe the quantum mechanical scattering and tunnelling across various potential barrier.
CO5: Understanding about the atomic nucleus its relation with atomic weight also describesthe nuclear forces and binding energy from semi-empirical mass formula.
CO6: Define the various type of radioactive decay, law of decay, fission and fusion, and about nuclear reactor.
CO7: Understand rigorously all theory by all practical.

🕮 COURSE: DSE-1A:NUCLEAR & PARTICLE PHYSICS

(Credits: Theory - 04, Practical - 02) F.M. = 75 (Theory - 40, Practical – 20, Internal Assessment – 15) Internal Assessment [Class Attendance (Theory) – 05, Theory (Class Test/ Assignment/ Seminar) – 05, Practical (Sessional Viva-voce) - 05]

After successfully completing this course, the student will be able to:

CO1: Describe the general properties of nuclei
CO2: Understanding about the various existing nuclear models like liquid drop model, Fermi gas model and shell model.
CO3: Define the three type of radioactive decay i.e., alpha, beta and gamma decay and also describe the nuclear reaction.
CO4: Explain the interaction of nuclear radiation with matter and also describe the various type of detector for nuclear radiation i.e., gas detectors, scintillation detectors and semiconductor detectors.
CO5: know the particle accelerator facility available in India and also describe the basic particle physics.

🕮 COURSE: SEC-3: COMPUTATIONAL PHYSICS

(Credits: 02) F.M. = 50 (Theory - 40, Internal Assessment – 10) Internal Assessment [Theory (Class Test/ Assignment/ Seminar)] – 10

After successfully completing this course, the student will be able to:

CO1: Use of computational methods to solve physical problems
CO2: Use of various computer languages like FORTAN, Linux.
CO3: Control of various statements and understand of introductory level of LaTeX and itsuses.
CO4: Understand rigorously all theory by all hands-on exercise.

SEMESTER-VI

🕮 COURSE: DSE-1A: QUANTUM MECHANICS

(Credits: Theory - 04, Practical - 02) F.M. = 75 (Theory - 40, Practical – 20, Internal Assessment – 15) Internal Assessment [Class Attendance (Theory) – 05, Theory (Class Test/ Assignment/ Seminar) – 05, Practical (Sessional Viva-voce) - 05]

After successfully completing this course, the student will be able to:

CO1: Describe time dependent and independent Schrodinger equation for non-relativistic particles and its application and also understand about the momentum operator,energy operator, eigen value, eigen function and also about the normalization of wavefunction.
CO2: Define the bound state in an arbitrary potential like square well potential and simple harmonic oscillator.

CO3: Apply quantum theory to hydrogen like atoms and using the Frobenius method and also understand about orbital angular momentum quantum numbers.
CO4: Understand about electron angular momentum, spin, spin angular momentum and spin magnetic moment and also understand about the Zeeman effect, Gyromagnetic ratio and Bohr Magneton.
CO5: Describe the Pauli's Exclusion principle, total angular momentum and vector modelof Spin orbit coupling.
CO6: Understand rigorously all theory by all practical.

🕮 COURSE: DSE-1A: DIGITAL AND ANALOG CIRCUITS AND INSTRUMENTATION

(Credits: Theory - 04, Practical - 02) F.M. = 75 (Theory - 40, Practical – 20, Internal Assessment – 15) Internal Assessment [Class Attendance (Theory) – 05, Theory (Class Test/ Assignment/ Seminar) – 05, Practical (Sessional Viva-voce) - 05]

After successfully completing this course, the student will be able to:

CO1: Using the logic circuit and Boolean algebra and also understand the Binary numbers.
CO2: Understanding the various type of semiconductor diodes and bipolar junctiontransistors.
CO3: Understanding about the Operational amplifiers and Sinusoidal oscillators.
CO4: Understand about various measuring instruments like CRO, Power Supply, Rectifiers,capacitor filter, Zener Diode and also about Timer IC.
CO5: Understand rigorously all theory by all practical.

🕮 COURSE: SEC- 4:ELECTRICAL CIRCUITS AND NETWORK SKILLS

(Credits: 02) F.M. = 50 (Theory - 40, Internal Assessment – 10) Internal Assessment [Theory (Class Test/ Assignment/ Seminar)] – 10

After successfully completing this course, the student will be able to:

CO1: Understand the basic principles of electricity and electrical circuits.
CO2: Define electrical drawing and symbols and also understanding about electric motors,generators and transformers.
CO3: Describe about various solid-state devices electrical protection and electrical wirings.

DEPARTMENT OF PHYSICS

PROGRAMME SPECIFIC OUTCOME
PROGRAMME OUTCOME AND COURSE OUTCOME(NEP)

Programme Outcomes

POs	Programme Outcomes
1.	To learn the basic philosophy of science.
2.	To understand basic concepts of science subjects like physics, chemistry, mathematics,botany and Zoology.
3.	To adopt different measurement techniques in science.
4.	To develop the ability of innovation in science.
5.	To make awareness about the environment and its sustainability among the students.
6.	Willingness to take up responsibility in study and work confidence in his/her capabilities capacity to work effectively in a team motivation for learning and experimentation.
7.	Use and apply professional software for scientific data analysis and presentation.
8.	Respond effectively to unfamiliar problems in scientific contexts.Capable of oral and written scientific communication, and will prove that they can think critically and work independently.
9.	To recognize the need and have the preparation and ability to engage in independent and life-long learning
10.	It helps to gain knowledge about research methodologies and skills of problemsolving protocols.

Programme Specific Outcomes

PSOs	Programme Specific Outcomes
1.	To learn and understand different theories in the physics.
2.	To strengthen the students with experimental techniques in physics.
3.	Use and apply professional software for scientific data analysis and presentation.
4.	Apply and demonstrate knowledge of concepts of physics, to analyze a variety of physical phenomena.
5.	Respond effectively to unfamiliar problems in scientific contexts. Capable of oral and written scientific communication, and will prove that they can think critically and work independently.
6.	To recognize the need and have the preparation and ability to engage in independent and life-long learning
7.	It helps to gain knowledge about research methodologies and skills of problemsolving protocols.
8.	To motivate the student for deep and micro study in the subject of physics.
9.	The study of kinetics of Chemical reactions.
10.	To make awareness about the environment and its sustainability among the students.

Course Outcome

Semester I

MAJOR-I: PHYS1011: MATHEMATICAL PHYSICS-I (Credits: Theory-03, Practical - 01) F.M. = 75 (Theory – 40, Practical – 20, Internal Assessment –15)
COURSE OUTCOME: On completion of this course, the student must be able to perform different mathematical operations like calculus and vector operations which are extremely essential to study theoretical and experimental physics.

MINOR-I: PHYS1021: MATHEMATICAL PHYSICS-I (Credits: Theory - 03, Practical - 01) F.M. = 75 (Theory - 40, Practical - 20, Internal Assessment - 15)
COURSE OUTCOME: On completion of this course, the student must be able to perform different mathematical operations like calculus and vector operations which are extremely essential to study theoretical and experimental physics.

MULTI-DISCIPLINARY-1: PHYS1031: CNCEPTS OF PHYSICS 1 (Credits: 03) F.M. = 50 (Theory- 40, Internal Assessment – 10)
COURSE OUTCOME: Students will develop the problem-solving capability and also learn the applications of Newtonian mechanics in daily life.

SEC-1:PHYS1051: RENEWABLE ENERGY AND ENERGY HARVESTING (Credits: 03) F.M. = 50 (Theory - 40, Internal Assessment - 10)
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.

Semester II

MAJOR II: PHYS2011: MECHANICS (Credits: Theory - 03, Practical - 01) **F.M. = 75 (Theory- 40, Practical – 20, Internal Assessment –15)**
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 (Credits: Theory - 03, Practical - 01) F.M. = 75 (Theory - 40, Practical – 20, Internal Assessment –15)
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.

MULTI-DISCIPLINARY-2: PHYS2031 CNCEPTS OF PHYSICS 2 (Credits: 03) F.M.= 50 (Theory-40, Internal Assessment–10)
COURSE OUTCOME: Students will develop the problem-solving capability and also learn the applications of Newtonian mechanics in daily life.

SEC-2: PHYS2051: ELECTRICAL CIRCUITS AND NETWORK SKILLS (Credits: 03)
F.M.= 50 (Theory - 40, Internal Assessment - 10) **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

POLBA MAHAVIDYALAYA
COURSE OUTCOME
PHILOSOPHY HONOURS (NEP)

Academic Session-2023-2024 (SEM-I & II)

Sl.	Name of the course	Semester	Course code	Credit	Marks in the course	Course outcome
1.	Outlines of Indian& Western Philosophy -1	I(Major)	PHIL 1011	4 per week	75	This course helps the students to have a close acquaintance with the major issues and important concepts of Indian Philosophy. Student can identify and distinguish between the main historical tradition in western philosophy from Pre- Socrates to the enlightenment
2.	SEC: -1 Philosophy of Human Rights		PHIL 1051	3per week	50	The outcome of this course is to understand the nature of human right, fundamental right and human right and duties etc.
3.	Philosophy :Indian and Western- I	I (Minor)	PHIL 1021	4 per week	**75**	Help for advanced learning of Indian Philosophy.
4.	Multidisciplinary Value Education in Indian		PHIL 1031	3 per week	**50**	Identify & explain key philosophical concepts as they arise in the different historical periods including knowledge, ,reality ,reason, substance,

	Tradition –I: Swami Vivekanand a and Sri Aurobindo					identity, mind/soul, causation, experience etc.
6.	Outlines of Philosophy : Indian and Western –II	II(Major)	PHIL 2011	4 per week	**75**	Students can assess arguments and philosophical perspectives using critical reasoning. They can write clear and concise explanations and arguments about basis ethical problems.
7.	Philosophy : Indian and Western-II	II(Minor)	PHIL 2021	4 per week	75	This course helps the students to have a close acquaintance with the major issues and important concepts of Indian Philosophy. Student can identify and distinguish between the main historical tradition in western philosophy from Pre- Socrates to the enlightenment
8.	Environment al Ethics	II (SEC)	PHIL 2051	3 per week	50	This course helps students to understand the distinct features of Indian Epistemology.
9.	Value Education in Indian Tradition(II) : Rabindranat h Tagore, S. Radhakrishn	II(Multidi sciplina)	PHIL 2031	3 per week	**50**	This course is emphasizing on the contemporary Indian philosophical concepts. The advantages of these course are that which provides the concept of God, Man, nature of

	an and Md. Iqbal					World Religion , Reality etc.
10.	Yoga Education	II(CVA/ VAC)	CVA 2061	4 per week	100	Yoga education can help students develop self-discipline and self-control. Yoga education can help people manage their thoughts and emotion, which can lead to a position mindset and mental clarity. Yoga techniques can help students improve their attention in studies. Yoga techniques can help students develop a blanced attitude for social activities.

POLBA MAHAVIDYALAYA
COURSE OUTCOME
PHILOSOPHY HONOURS(CBCS)
Academic Session-2023-2024 (SEM- III, IV, V&VI)

11.	Indian ETHICS	**III**	**CC-5**	**6 per week**	**75**	Students can assess arguments and philosophical perspectives using critical reasoning. They can write clear and concise explanations and arguments about basis ethical problems.
12.	WESTERN ethics		**cc-6**			To introduce the nature and scope of ethics as a discipline of Normative study.

						Students can distinguish between moral and non-moral action and determine the object of moral judgement,after resolving the quarrel between Motive and Intention-which one to be taken as its object.
13.	Indian LOGIC		**CC-7**			This course helps students to understand the distinct features of Indian Epistemology.
14.	Philosophy in Practice		**SEC-1**	**2 per week**	**50**	Students can Identify and distinguish between the philosophy and darsana .They can understand some model world-views of Indian as well Western philosophers.
15.	Western Logic-I	**IV**	**CC-8**	**6 per week**	**75**	Study of logic improves the analytical skills and knowledge of the formal techniques of evaluating arguments and deductive system. This course enhances the ability of critical thinking skills.
16.	Psychology		**CC-9**			The outcome of this course is to do analysis of language for critical thinking as all thinking is based on the logical presentation of language and psychology.
17.	Philosophy of Religion		**CC-10**			This course develops in students a sense of the values and a reflective attitude and sensitivity towards the sub-ethics and complexities of

						philosophical judgement and a life-long commitment to learning & enquiry.
18.	Philosophy of Human Rights		**SEC-2**	**2 per week**	**50**	The outcome of this course is to understand the nature of human right, fundamental right and human right and duties etc.
19.	Socio-Political Philosophy	**V**	**CC-11**	**6 per week**	**75**	This course educates the students about ways ti apply the ethical norms in the society and its effect on the society. It enhances the knowledge of socio-political movements, about the notion of freedom, duty & right etc.
20.	Western Logic-II		**CC-12**			The outcome of this course is to understand the valid argument form which includes propositional and predicate logic. This course also provides modern techniques which would help to proof arguments.
21.	Special Text: Kathopanisad		**DSE-1**			This course helps the students to have a close acquaintance with the major issues and important concepts of ancient Indian Philosophy. It enhances the knowledge about nature of self ,bondage and liberation etc.
22.	Special		**DSE-2**			This course develops in

	Text: B. Russell: the problems of philosophy					students a sense about Russell's philosophy, problems of western philosophy of twentieth century also.
23.	Philosophy in the Twentieth Century: Indian	**VI**	**CC-13**	**6per week**	**75**	This course is emphasizing on the contemporary Indian philosophical concepts. The advantages of these course are that which provides the concept of God, Man, nature of World Religion , Reality etc.
24.	Philosophy in the Twentieth Century: Western	**VI**	**CC-14**			This course introduces some basics concepts of contemporary western philosophy. This is emphasizing on the theory of substance, the source of knowledge, space and time and etc.
25.	Special Text: Rabindranath Tagore: Sadhana	**VI**	**DSE-3**			This course helps the students to have a close acquaintance with the major issues and important concepts of Tagore's Philosophy. This is emphasizing on Tagore's concept of the nature of man, God, problem of evil, surplus of man and so on.
26.	Special Text: Hume: An Enquiry Concerning Human Understanding		**DSE-4**			This course will enhance the knowledge of the students regarding the philosophical thoughts of D.Hume.

POLBA MAHAVIDYALAYA
DEPARTMENT OF PHILOSOPHY
2023-2024(CBCS)
GENERAL COURSE OUTCOME (SEM- III, IV, V &VI)

27.	Logic	3	GE-3/CC-1C	From the study of western logic the students become aware about the nature, classification and rules of inference as a result they learn to think logically which can help them to search the truth being free from all kinds of superstition.
28.	Philosophy in Practice	3	SEC-1	This syllabus would provide the opportunity not only to know attentive world views but also to develop a view of his or her own. Going through the Indian way of argumentation. Students would learn how to take part in a debate or in a gentleman's discussion
29.	Contemporary Indian Philosophy	4	GE-4/CC-1D	The role of a country man is to cope with the changing scientific, social and political scenario, but not at the cost of moral and religious tradition that he has inherited. Going through the writings of contemporary Indian philosophy students would be able to reconcile the golden ancient tradition of India with global changes taking place in every junctions of human civilization.

30.	Philosophy of Human Rights	4	SEC-2	From the study of the Philosophy of Human Rights the Students get a clear idea of human rights and such as right of food, right of cloth, right of education, right of work etc. As a result if the state or anyone violets their rights, they can appeal to be count of the protection of their rights.
31.	Philosophy of Religion	5	DSE-1A	From the study of the Philosophy of Religion the student become aware about the different theory regarding the origin of religion, the historical development of religion, general characteristic of religion and the different forms of religion. If can help them to be respectful to all the forms of religion which is too much necessary to maintain the communal harmony in the society.
32.	Indian Philosophy	5	GE-1	• Going through the different systems of Indian Philosophy the students will

				be benefited in various ways: • The Carvaka Philosophy teaches the students to be practical in their everyday life rejecting the Vedic concepts. • Going through the Jaina and Buddhist philosophy a student would learn the theory of ahimsa and that of Pancha Sila through which he or she would build up his or her character and to be a "Man" in the true sense of the term. • The Nyaya philosophy enables the students to infer properly and develops their thinking power. From the study of Vaisesika philosophy the students can acquire knowledge about the different types of categories and they can be aware of Vaisesika atomism. • The Samkhya philosophy teaches the students the theory of Causality and the theory of evolution of the world which can increase their insights. • From Yoga philosophy student can learn the eightfold Yoga through which he or she can keep himself or herself bodily and mentally fit which is necessary for maintaining his or her practical life. • The Mimansa and Vedanta philosophy help a student to develop a philosophical outlook towards the world which is necessary for maintaining good mental

				health.
33.	Philosophical Analysis	5	SEC-3	This will give Students the opportunity to have a taste of what Philosophical analysis is. By going through this Syllabus Students would be able to develop their reflective thinking. So that they can avoid the tendency of reacting irrationally in any situation.
34.	Tarkasamgraha (Saptapadartha)	6	DSE-1B	Going through the book Tarkasangraha the students are acquainted with the development of physical science in Ancient India. Besides this, the study of Tarkasangraga enables the students to develop their logical and analytical view point. Going through the book Tarkasangraha the student will be benefited for two reasons—(1) The students will be able to know about the development of modern science in Ancient India. (2) It will give the opportunity to the students two think—analytically and logically.
35.	Western Philosophy	6	GE_2	Going through the syllabus the students would be acquainted with the different theories regarding Epistemology and Metaphysics. As a result they would learn to think independently being free from all superstitions which would help them to become self-

				dependent in future life.
36.	Ethics in Practice	6	SEC-4	From the study of Indian Ethics the students will become aware about the concept of Purusartha, the Jaina concept of Panchasila and the Yoga concept of Astangik Marg. Going through the selected chapters of Sree Gita the students will be inspired to performed niskamkarma. All these will help them to build their moral characters and to be "Man" in the true sense of the term. As a result they will be able to devote themselves in the welfare of the society. From the study of Western Ethics the students come to know the real meaning of the different ethical terms such as "Good", "Bad", "Right", "Wrong" etc. They are also acquainted with the Nature, characteristic and the real object of Moral Judgment and the different theories of moral standard. As a result they can determine the moral value of a Voluntary action ultimately the study of Ethics, theoretical and Practical can help the students to develop and ethical sense in them and to build up their moral character.

GENERAL PROGRAM OUTCOMES FOR THE ENTIRE SYLLABUS: NEP-2020

1. Interdisciplinary Integration: Students will develop the ability to integrate knowledge across different philosophical traditions—Indian, Greek, and Western—and appreciate the cross-cultural exchange of ideas.

2. Analytical and Critical Thinking: Through comparative analysis of various philosophical systems, students will hone their ability to critically evaluate the assumptions, methods, and implications of different schools of thought.

3. Philosophical Writing and Argumentation: Develop strong skills in philosophical writing, reasoning, and argumentation, enabling students to articulate and defend complex ideas clearly and logically.

4. Cultural and Intellectual Awareness: Students will develop an appreciation for the historical and cultural contexts in which different philosophical traditions emerged, and how they address universal questions about human existence, knowledge, and the cosmos.

5. Application of Philosophical Concepts: Cultivate the ability to apply philosophical principles to contemporary issues in ethics, politics, metaphysics, and epistemology, using both Eastern and Western perspectives.

This structured approach will enable students to gain a holistic and comparative understanding of major philosophical traditions, fostering a deeper engagement with classical and contemporary philosophical problems.

PROGRAM OUTCOMES OF PHILOSOPHY (B.A.) UNDER CBCS

There will be six semesters in the Three-Year B.A.(Honours) programme. It consists of 14Core Courses, 2 Ability Enhancement Courses, 2 Skill Enhancement Courses, 4 Discipline Specific Elective Courses and 4 Interdisciplinary Generic Elective Courses.

PO- 1- The study of Philosophy helps the students to get acquainted with different schools of Indian philosophy like Cārvāka, Jainism and Budhhism as Nāstika schools on the other hand, Sāṁkhya, Yoga, Nyāya, Vaiśeṣika, Mimāṁsā and Vedānta as Āstika school, on the other hand.

PO-2- They learn both Psychology and Social and Political philosophy. In the part of Psychology students become aware of different theories like Interactionism, Philosophical behaviourism, Person theory along with different methods of Psychology, nature and relation of sensation and perception. They become acquainted with theories of learning, different levels of mind, Freuds theory of dream. They also learn different tests of Intelligence regarding I.Q. measurement.

PO-3- In the part of Social and Political philosophy students of philosophy learn about the nature of social and political philosophy and their relation. They also study the basic concepts of society, nature and role of family in society, different theories regarding the relation between individual and society. They also learn about secularism, nature and progress of Social changes, different theories of social changes, discussion about different political ideals.

PO-4- Students get acquainted with the epistemological and metaphysical theories of the western philosophers like Socrates, Plato, Descartes, Spinoza, Leibnitz , Locke, Berkeley Hume and Kant.

PO-5- By studying Logic, students get acquainted with the use of logical rules for identifying a valid argument. Along with these, they also learn existential import, symbolic interpretation, constructing formal proof of .validity, proving invalidity, Quantification theory. Study of this paper helps them to be aware of Mill's different experimental methods, Science and Hypothesis and also different theories of probability.

.

POLBA MAHAVIDYALAYA
Polba, Hooghly-712148
ENVSC Multidisciplinary
Session: 2023-2024

Program Outcome

- Develop foundational knowledge of environmental systems, focusing on resources, biodiversity, and sustainability.
- Cultivate analytical skills to address environmental challenges and propose solutions.
- Integrate interdisciplinary concepts to tackle complex environmental issues.
- Promote ethical practices and advocate for sustainable development goals (SDGs).
- Engage with communities to foster biodiversity conservation and responsible tourism.

Program Specific Outcome

- Understand and manage natural resources with a focus on Indian conservation strategies.
- Address sustainability challenges by implementing SDG-oriented strategies.
- Apply knowledge of biodiversity and conservation policies to mitigate environmental loss.
- Link conservation efforts with community livelihoods through ecotourism and home-stay tourism.
- Contribute to policy development using traditional knowledge and community-based approaches.

Semester-wise detailed syllabus

SEMESTER – I	
Name of the Course: **Natural Resources & Sustainable Development**	
Course Code: **ENVSC1031**	
Full Marks: 40	Credit: 3
Number of classes required: 40	

Course Objectives

- Explain the fundamentals of natural resources and their distribution
- Present available natural resources.
- Describe the judicial uses of natural resources
- Outline & basic elements of sustainable development

Course Outcomes

- Understand the concept of natural resources; identify types of natural resources, their distribution and use with special reference to India

- Discuss the factors affecting the availability of natural resources, their conservation and management
- Explain sustainable development, its goal, targets, challenges and Indian strategies for SDGs

Syllabus

Unit 1: Natural resources ***(5)***

Overview of natural resources: Definition of resources; Classification of natural resources – biotic and abiotic, renewable and non-renewable

Unit 2: Biotic and water resources ***(10)***

Major types of biotic resources: Forests, Grasslands, Wildlife and Aquatic; Types of water resources: Freshwater and marine water resources; Availability and use of water resources; Conflicts over water resource – International and National perspectives

Unit 3: Soil and mineral resources ***(5)***

Soil types and distribution in India; Major degradation of soil; Major minerals in India; Over exploitation and environmental problems

Unit 4: Energy resources ***(10)***

Types of energy sources; Renewable resources (Solar, Hydro, Ocean and biomass); Non-renewable sources (Coal, Petroleum and Nuclear resources)

Unit 5: Sustainable Development ***(10)***

Concept, SDGs – Goals, Targets & Indicators; Challenges & strategies of SDGs in India

SEMESTER – II	
Name of the Course: **Biodiversity Conservation and Ecotourism**	
Course Code: **ENVSC 2031**	
Full Marks: 40	Credit: 3
Number of classes required: 50	

Course Objectives

- Concept of biodiversity
- Factors affecting biodiversity
- Understanding the major conservation policies
- Getting knowledge on ecotourism with home-stay tourism approach

Course Outcomes

- Understand the concepts of biodiversity and conservation
- Understand the factors impacting biodiversity loss in India and the World

- Major conservation strategies taken in India
- Ideas on ecotourism with special emphasis on home-stay tourism

Syllabus

Unit 1: Biodiversity & its distribution ***(15)***

Definition & Concept of biodiversity, levels and types of biodiversity; Biodiversity in India and the world; Biodiversity hotspots and Megadiversity countries

Unit 2: Threats to biodiversity ***(10)***

Types & causes of biodiversity loss - Land use and Land cover changes, commercial exploitation of species, invasive species, fire, disaster and climate change

Unit 3: Conservation policies ***(15)***

Importance & major policies – in situ and ex situ conservation; Major protected areas; National & International instruments for biodiversity conservation; Role of traditional knowledge for conservation; Community-based conservation, concept of Zoo management

Unit 4: Tourism & Leisure ***(10)***

Types of Tourism; Ecotourism – Concept, Growth and Developments; Impacts and management of ecotourism; Home stay tourism

POLBA MAHAVIDYALAYA
Polba, Hooghly-712148
Value Added Course
Under
Curriculum and Credit Framework for Undergraduate Program (CCFUP), as per N.E.P. 2020), [w.e.f. 2023 – '24]
Session: 2023-2024

Programme outcome

- Gain interdisciplinary knowledge to address environmental and educational challenges.
- Develop critical thinking and problem-solving skills for sustainable solutions.
- Acquire competence in advanced technologies and research methodologies.
- Foster ethical and value-based approaches to sustainability and inclusivity.
- Communicate effectively across diverse platforms and stakeholders.
- Address societal and global issues through sustainable development principles.
- Cultivate a habit of life-long learning and adaptability.

Programme Specific Outcome

- Analyze environmental systems and develop strategies for sustainable management.
- Implement educational frameworks that integrate environmental consciousness.
- Utilize tools and techniques to monitor and mitigate environmental impacts.
- Promote awareness of environmental and educational policies and practices.
- Design and lead projects focusing on sustainable development and value education.

Semester-wise detailed syllabus

SEMESTER – I	
Name of the Course: **Environmental Science/ Education**	
Course Code: **1061 [COURSE NO. 1]**	
Full Marks: 100 (Theory: 60, Project: 20, Internal Assessment: 20)	Credit: 4
Number of classes required: 60	

Course Objectives

- To create awareness and understanding of the environment and its different components
- To get knowledge on different current environmental problems and issues in national and international levels
- To impart knowledge about the management practices of different environmental problems
- To get real life experiences of different environmental resources, ecosystems and environmental degradation

Course Outcomes

- Understanding on environment and its importance
- Knowledge on different natural resources, causes of depletion and its sustainable uses
- Understanding the significance of biodiversity and its conservation
- Ideas on provisions of Indian Constitution for environmental protection
- Understanding the interrelationship among human population growth, environment and human health
- Knowledge of on-field experience on environmental issues through project work

Syllabus

Unit 1: Basics of Environmental Studies: (05)

Definition, Nature, Scope and Importance; Components of environment: Environmental education

Unit 2: Natural Resources: Renewable and Non-renewable Resources (10)

Nature and natural resources their conservation and associated problems:

- Forest resources: Uses, types and importance, Joint Forest Management & symbiotic relationship between tribal population and forests, Deforestation and its effects
- Water resources: Distribution of water on Earth; Use, over exploitation of surface and ground water; Dams: Benefits and problems; Flood and Drought
- Mineral resources: Mineral resources in India; Use and exploitation, Social impacts of mining
- Food resources: World food problems and food insecurities.
- Energy resources: Renewable and Non-renewable energy sources; Use of alternate energy sources - Case studies
- Land resources: Land as a resource; Land degradation, landslides, soil erosion, desertification
- Use of resources for sustainable development (Concepts & Goals)

Unit 3: Ecology and Ecosystems (08)

- Concept of ecology, Population ecology, Community ecology
- Concept of an ecosystem, different types of ecosystem
- Food chains, food webs and ecological succession
- Energy flow in the ecosystem and energy flow models

Unit 4: Biodiversity and its conservation (08)

- Biodiversity: Levels of biological diversity
- Values of biodiversity
- Hot-Spots of biodiversity, IUCN Red Data Book, Mega-biodiversity countries
- Threat to biodiversity
- Threatened and endemic species of India
- Conservation of biodiversity (*In- situ* and *Ex-situ)*

- Ecosystem services: Ecological, Economic, Social, Ethical, Aesthetical and Informational values

Unit 5: Environmental Pollution and Management (08)

- Nature, Causes, Effects and Control measures of – Air pollution, Water pollution, Soil pollution, Noise pollution
- Solid waste management: Causes, effects and disposal methods; Management of biomedical and municipal solid wastes
- Disaster management: Floods, Earthquake, Droughts, Cyclone and Landslides

Unit 6: Environmental Policies and Practices (10)

Constitutional Provisions for protecting environment- Article 48(A), 51A(g)

- Environmental Laws: The Environment (Protection) Act, 1986; The Air (Prevention and Control of Pollution) Act, 1981; The Water (Prevention and Control of Pollution) Act 1974; Forest (Conservation) Act, 1980
- The wildlife Protection Act, 1972
- Climate change, Global warming, ENSO, Acid rain, Ozone layer depletion; Montreal and Kyoto Protocols

Unit 7: Human Communities and Environment (06)

- Human population growth; Impacts on environment
- Environment and human health: Concept of health and disease; Common communicable and Non-communicable diseases; Health awareness programmes in India
- Environment movements in India: Chipko Movements, Silent Valley Movement, *Narmada Banchao Aandolan*

Unit 8: Field Work Report/Project Report/Term paper Marks: 20 (05)

[Based on any one of the following topics and to be evaluated by internal teachers only)

- Environmental assets - River/Forest/Grassland/Hill/Mountain *etc*.
- Environmental pollution - Urban/Rural/Industrial/Agricultural
- Study of common Plants/Insect /Birds/Wild life *etc*.
- Study of simple ecosystems: Pond/River/Hill slope *etc*.

SEMESTER – II	
Name of the Course: **Understanding India**	
Course Code: **CVA2061**	
Full Marks: 100 (Theory: 80, Internal Assessment: 20)	Credit: 4
Number of classes required: 60 (Theory: 45; Tutorial: 15)	

Course Objectives

- To create awareness and understanding about Indian society, its land, and people
- To make students aware about the major cultural traditions of Indian society
- To learn about the social history of India including its struggle for freedom
- To impart knowledge about the ideas and values propagated by four Indian thinkers

Course Outcomes

- Understand the Physical and Natural Environment of Indian Society
- Learn about the demography, culture, and languages of Indian populace
- Understand the significance of plural and tolerant culture of India
- Basic Ideas on social and political history of India through ages
- Understand the major ideas and values propagated by four Indian thinkers
- Application of the ideas and values propagated by Indian scholars to comprehend contemporary social reality.

Syllabus

Unit 1: Introducing India: (7 lectures)

- The Land of India: Geographical Setting; Physical and Natural Environment
- The People of India, Indian Constitution, Demography, Culture and Languages

Unit 2: Social History of India (8 lectures)

- Society and Culture in Pre-British India
- Brief History of India’s Freedom Struggle
- Society in Independent India: Federalism, Secularism, and Fundamental Rights

Unit 3: India as a Plural Society: (8 lectures)

- Religious, Linguistic and Cultural Diversity;
- Significance of Pluralism for Indian Culture:
- Unity in Diversity

Unit 4: Major Ideas of Swami Vivekananda (8 lectures)

- Synthetic Religion: Vedantic Approach
- National Regeneration and Patriotism
- Philosophy of Freedom and Acceptance

Unti 5: Major Ideas of Mahatma Gandhi (8 lectures)

- Non-Violence and Ethical Development
- Swaraj and Sarvodaya
- Critique of Modernity and Individualism

Unit 6: Major Ideas of Rabindra Nath Tagore (7 lectures)

- Cooperation, Social Service, and Ideals of Humanity
- Self-Strength, Self-Identity, and Creative Freedom
- Concept of Nation and Nationalism

Unit 7: Major Ideas of B. R. Ambedkar (7 lectures)

- Caste Oppression and Inequality
- Gender Inequality
- Prabuddha Bharat: Rights, Identity and Liberation

Unit 8: India & the World (7 lectures)

- India’s relations with Asian and Western Countries
- Globalization & India
- Technological and other achievements of India

POLBA MAHAVIDYALAYA

Department of Political Science
B.A. in Political Science (NEP 2020)
Session: 2023- 2024

PROGRAMME OUTCOMES

The B.A. 3-year degree/4-year Honours in Political Science under New Education Policy 2020 with effect from 2023-24 covers a comprehensive set of courses ranging from the study of Western Political Thought, Political Theory, Introducing Political Science, Human Rights Education, Indian Government & Politics, Introducing Indian Constitution, Legislative Support

The following points are the expected outcomes of the three/four-year BA program in Political Science.

- Through the study of important philosophical, theoretical and ideological foundations in the study of political science, students are expected to develop critical thinking arguments.
- The study of human rights will empower students to stand for the protection and promotion of basic human rights which contributes to national and international peace.
- Understanding Western Political Thought which lays the foundation of Political Science as a discipline, students are expected to develop a critical thinking on the subject.

PROGRAMME SPECIFIC OUTCOMES

- Familiarity with different approaches to the study of politics and an ability to apply these to contemporary collective and political behaviour.
- Ability to formulate and construct logical argument about political phenomenon and an ability to evaluate these through empirical and theoretical methods,
- Understand of how political institutions emerge, how they operate, how they interact with their external environment, and how they shape individual and collective behaviour.
- Knowledge of basic factual information about politics political behavior, comparative politics, international relations, or political theory and methodology.

COURSE OUTCOMES

The course outline of the discipline of Political Science are divergent and universally

humanistic in approach. After careful examination of the courses, the department of Political Science of Polba Mahavidyalaya has pointed out the following outcomes.

Semester	Course Code	Course Name	Course Outcome
SEM-I	Major/DS Core Course POLS 1011	WESTERN POLITICAL THOUGHT	1. The course provides an important philosophical and ideological foundation in the study of political science. 2. Students are expected to develop critical thinking and arguments from this course.
	MD/ID POLS 1031	INTRODUCING POLITICAL SCIENCE	1. To introduce the students to the discipline of Political Science and its basic concepts. 2. To identify various approaches to the study of Political theory. 3.To impart knowledge about various theories and concepts of Political Theory.
	SEC POLS 1051	HUMAN RIGHTS EDUCATION	1. Enabling students to understand history and purpose of Human Rights. 2. Identifying the major institutions through which Human Rights are established and enforced at the national and international level 3. The evolution of Human Rights movement in India.

POLBA MAHAVIDYALAYA

Department of Political Science
B.A. in Political Science (NEP 2020)
Session: 2023- 2024

PROGRAMME OUTCOMES

The B.A. 3-year degree/4-year Honours in Political Science under New Education Policy 2020 with effect from 2023-24 covers a comprehensive set of courses ranging from the study of political theories, Introducing Indian Constitution, Legislative Support.
The following points are the expected outcomes of the three-year BA program:

- Through the study of important philosophical, theoretical and ideological foundations in the study of political science, students are expected to develop critical thinking arguments.
- Learning the fundamentals of Indian government and politics is important for Indian students and has a job-prospect particularly in civil services and other competitive examinations.

PROGRAMME SPECIFIC OUTCOMES

- Familiarity with different approaches to the study of politics and an ability to apply these to contemporary collective and political behaviour.
- Understand of how political institutions emerge, how they operate, how they interact with their external environment, and how they shape individual and collective behaviour.
- Knowledge of basic factual information about politics political behavior, comparative politics, international relations, or political theory and methodology.

COURSE OUTCOMES

The course outline of the discipline of Political Science are divergent and universally humanistic in approach. After careful examination of the courses, the department of Political Science has pointed out the following outcomes.

SEM-II	Major/DS Core Course POLS 2011	POLITICAL THEORY	1. Indian Political Thought deals with the writings and thoughts articulated by Indian thinkers from the ancient till the modern period. 2. The course will also enable the student to understand the emergence and articulation of socio-political issues such as statecraft, nationalism, socialism, satyagraha, swadeshi etc. from an Indian perspective.
	MD/ID POLS 2031	INTRODUCING INDIAN CONSTITUTION	1. To create awareness about the political processes and the actual functioning of the political system. 2. To study in detail the political structure – both constitutional and administrative. 3. To study the rights and privileges granted by the constitution.
	SEC POLS 2051	LEGISLATIVE SUPPORT	1. Acquire knowledge about the law-making process in India 2. Develop knowledge about the powers and functions of the elected representatives at different tiers of governance. 3.Develop knowledge about the budget procedure.

POLBA MAHAVIDYALAYA

Department of Political Science

B.A. in Political Science (CBCS)

Session: 2023- 2024

Semester-3		
CC-1C	Indian Political Thought	**Knowledge Gained:** about the traditions of Indian thinkers from ancient period to contemporary time **Skill Gained:** enable the students to learn the challenges prevailed in the Indian society and howthe philosophy of thinkers of Indian tradition helped in shaping modern India. **Competency Gained:** able to appraise philosophical issues relevant to Indian society
SEC -1	Electoral Practices and Procedures	**Knowledge:** gained idea about the Electoral procedures. **Skill Gained:** to understand the techniques utilized in the Electoral procedures**.** **Competency Gained:** apply the knowledge if they choose administrative or policy making careers.
Semester- 4		

CC-1D	Indian Government and Politics	**Knowledge:** gained general understanding about the importance of the Constitution, about the functions of various governmental institutions of India, rights and duties of Indian citizens **Skill Gained:** able to understand the process through which Indian political system functions and the duties of the citizens required for safeguarding the Indian political system. **Competency Gained:** students will learn how the constitution can help in providing equal opportunities to the marginalized, downtrodden people, how constitution can help in social transformations in non-violent ways and how freedom, equality and justice can be achieved in the society.
SEC - 2	Public Opinion and Survey Research	**Knowledge:** knowledge on public opinion and basic tools and techniques of research. **Skill Gained:** will be able to apply various techniques in their field research and qualitative studies. **Competency Gained:** knowledge on writing research projects and research proposal.
Semester- 5		
DSE - 1A	Select Comparative Political Thought	**Knowledge:** about the tradition of western political thinkers and how their views and philosophies contributed in shaping the ideas on sovereignty, rights, law, authority, government, equality, class, state, society and power politics. Also gained knowledge about the traditions of Indian thinkers from ancient period to contemporary time. **Skill Gained:** able to understand the ideological foundation of the state-society interface. **Competency Gained:** enable thestudents to interpret the major developments in the state, society and politics and can contextualize new developments emerging in the specialized areas of Political Science.
SEC - 3	Democratic Awareness Through Legal Literacy	**Knowledge:** gained knowledge on the democratic values. **Skill Gained:** demonstrate knowledge through the legal literacy. **Competency Gained:** critically assess the democratic system in the present situation.
GE-1	Indian Political Thought	**Knowledge Gained:** about the traditions of Indian thinkers from ancient period to contemporary time **Skill Gained:** enable the students to learn the challenges prevailed in the Indian society and howthe philosophy of thinkers of Indian tradition helped in shaping modern India. **Competency Gained:** able to appraise philosophical issues relevant to Indian society
Semester- 6		

DSE - 1B	Understanding Globalisation	**Knowledge:** gained knowledge about different theories of Globalization and concepts, objectives and basic tenets of Globalization **Skill Gained:** understanding of global trend in the political and economic issues **Competency Gained:** Ability to demonstrate the evolving nature of contemporary politics and the dynamics embedded in the political institutions, processes and foreign policy making
SEC -4	Human Rights Education	**Knowledge:** knowledge on changing nature and dynamics of contemporary social issues of Human Rights **Skill Gained:** understand the dimensions of Human Rights **Competency Gained:** apply the knowledge in the understanding the Human Right Education.
GE-2	Indian Government and Politics	**Knowledge:** gained general understanding about the importance of the Constitution, about the functions of various governmental institutions of India, rights and duties of Indian citizens **Skill Gained:** able to understand the process through which Indian political system functions and the duties of the citizens required for safeguarding the Indian political system. **Competency Gained:** students will learn how the constitution can help in providing equal opportunities to the marginalized, downtrodden people, how constitution can help in social transformations in non-violent ways and how freedom, equality and justice can be achieved in the society.

POLBA MAHAVIDYALAYA

COURSE WISE & SUBJECT WISE OUTCOME

OF UG HONOURS COURSE (B.A.) IN SANSKRIT

UNDER NEP & CHOICE BASED CREDIT SYSTEM

DEPARTMENT OF SANSKRIT

2023-2024

Programme Outcome (PO):

Sanskrit is a very rich language of IE language group. It is a medium to know about ancient Indian soul. The history, culture, religion, social life, ethical values of our great country are reflected through its texts. The academic programme of both Honours and General degree courses are designed not only professional skill but also develop a deep understanding of rich heritage and dynamic prevalent scenario of India through various Sanskrit texts.

The overall objectives of Programme Outcome are:

PO1: Develop a strong concept of ancient Indian history, Philosophy and literature.

PO2: Enhance communication skills with LSRW (Listening, Speaking, Reading, Writing) capacities.

PO3: Students will familiar with Devnāgarī scripts. They will be able to write Devnāgarī scripts. By means of this knowledge students also know the script of modern languages like Hindi and Marathi.

PO4: Increase in depth knowledge of the Core Areas of the subject. Reasonable understanding
of multi-disciplinary relevance of literature of Sanskrit like Veda, Philosophy, Grammar, Kāvya, Smṛtiśāstra, Epigraphy etc.

PO5: Students will demonstrate the skill needed to participate in conversation that builds knowledge with collaboration.

PO6: Develop research aptitude and independent thinking.

PO7: Understand and explain the contemporary relevance and utility of the Indian knowledge systems.

PO8: Assist the learners in evolving strategies to address issues in traditional Indian educational paradigms.

PO9: Enhance the capacity to appreciate the need to have alternative perspectives in Sanskrit.

PO10: Possess the human values like truth, righteousness, honesty, sincerity and so on with

which Sanskrit Literature is steeped.

PO11: To make them eligible for higher education. After completion of the course students can apply various courses like M.A., B.Ed. After postgraduation and B.Ed., they can apply against teaching posts in schools, colleges, and other educational institutions. They may appear

at TET, CTET, NET and SET examinations. The CBCS syllabus was based on NET or SET syllabus.

PO12: They can appear many competitive examinations like UPSC, WBCS, PSC, Rail examinations etc.

Programme Specific Outcomes (PSOs) of B.A. Sanskrit Honours:

PSO 1: The students are expected to develop the Sanskrit Language skill to communicate both in writing and verbally.

PSO 2: It is expected that at the end of the programme students will get a fair knowledge of the development of Sankrit language and literature and its culture- how it emerged, evolved and sustained through the passage of more than thousand years.

PSO 3: Infusing the notion of Seva (service) in the students to be able to take part in social transformation. Imparting knowledge of basic living and concepts from ancient literature which is timeless and still applicable to the society.

PSO 4: Developing a strong sense of ethical and moral aptness in general and in the context of learning. Facilitating acquisition of basic skills in major areas of application e.g. leadership, communication, research aptitude, behavioral modification etc.

PSO 5: After graduating they expected to grow the sense of art and literature that will enable them to understand better the human social and cultural relationship, great Indian heritage value.

PSO 6: Students are expected to learn analytical skills while learning the appreciation ability.

PSO 7:Take part in the higher education and involve in teaching profession or undertake linguistic Research Oriented jobs.

Course Outcome (CO):

Semester	Core Course	Course Outcome
Semester I	**Major: SANS1011 Kāvya Literature**	Students will have the knowledge of Indian culture & society reflected in the Sanskrit Kāvyas of different great Sanskrit poets.
		They will have the knowledge of poetic excellence reflected in Sanskrit Literature.
	SEC: SANS1051 General Grammar	Described a general outline about the great tradition of Sanskrit Grammar.
		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.
		Develop an idea about basic idea of sandhi and pratyaya or suffix in Sanskrit grammar
	Minor (Other than Sanskrit)	Course outcome with respective subject.
	Multidisciplinary (Other Than Sanskrit)	Course outcome with respective subject.
	VAC Environmental Studies	This paper introduces the fundamental principles and concept of environmental science, ecology and related interdisciplinary subject such as policy, law, economics, pollution control, resources management etc.
	AEC: SANS1041 Language Skill	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 compositions in Sanskrit. Develop the power of speaking in Sanskrit.

Semester	Core Course	Course Outcome
Semester II	**Major: SANS2011 Sanskrit Drama**	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 Abhijñānaśakuntalam**.**
		They will acquire the basic knowledge of nātya-tattva. They will be able to gain different knowledge regarding the then society and culture. They have the knowledge of poetic excellence reflected in Sanskrit Literature.
	SEC: SANS2051 Critical Survey of Sanskrit Literature	Students will be able to understand the culture and society reflected in the Vedic literature and also in the Purānas.
		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.
	Minor Other than Sanskrit	Course outcome with respective subject.
	Multidisciplinary Other than Sanskrit	Course outcome with respective subject.
	AEC: English	Course outcome with respective subject.
	VAC: Understanding India	Course outcome with respective subject.

CBCS

Semester	**Core Course**	**Course Outcome**
Semester III	**CC5: Classical Sanskrit Literature (Drāmā)**	5.1 Students would be able to learn the inner structure of Sanskrit drama by themselves.
		5.2 Get knowledge of the ancient Indian Dramatic system.

		5.3 Idea about the Origin and development of Sanskrit Drama.
		5.4 This course aims to textual study of famous drama Kalidas's Abhijñānaśakuntala.
	CC6: Poetics and Literary Criticism	6.1 Students would know Sanskrit poetics according to *Kāvyālaṃkārasūtravṛtti* of Vāmana.
		6.2 Students would be able to know the definitions of meters according to *Chandomañjarī* of Gaṅgādāsa.
		6.3 Students will be familiar with the definition and explanation of Alaṃkāra, example of Alaṃkāra according to *Sāhityadārpaṇa* (chapter– 10) of Visvanātha Kavirāja.
	CC7: Indian Social Institution and Polity	7.1 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 *Manusaṃhitā* and *Kauṭilīya- arthaśāstra*.
		7.2 Students may compare the administrative policy of ancient time in India and current policies.
	SEC- 1: Basic Sanskrit	SEC 1.1 This is an elementary course in Sanskrit Language designed for students who wish to learn Sanskrit from the very beginning. 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.
		SEC 1.2 Students may read various inscriptions written in Brāhmi scripts.
Semester IV	**CC8: Indian Epigraphy and Chronology**	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.
		8.2 Students may learn the paleographic styles and languages of Inscriptions.
		8.3 General introduction of ancient Indian chronology.
		8.4 The course also seeks to help students to know the system of Dating the Inscriptions (Chronograms).
	CC9: Modern Sanskrit Literature	9.1 Students will expose to the rich and profound tradition of modern creative writing in Sanskrit.
		9.2 Get idea about modern Sanskrit writers and poets.
	CC10: Sanskrit and World Literature	10.1 Students may know Sanskrit studies across the world. They might know western scholars as well as eastern scholars.
	SEC-2: Political Thought in Sanskrit Literature	SEC-2.1 To help the students about the political thought in Sanskrit Literature through the *Arthasāsthra* (*Śāsanādhikāra*) and *Mudrārakṣasa*

		(Acts 1 & 2).
Semester V	**CC 11 Vedic Literature**	11.1 Students will familiar with oldest Indian literary heritage. They would know Vedic mantras, their application, Vedic grammar, socio-cultural life.
		11.2 Pronouncing of Saṃhitā- pāṭha and Pada-pāṭha of a mantra is to be taught here.
		11.3 The highest philosophy of life is described in Upaniṣad. Therefore, students may achieve this type of knowledge in this section.
	CC 12 Sanskrit Grammar	12.1 Students may gain knowledge about types and examples of *Samāsa*.
		12.2 Formation of words also is to be known.
		12.3 This course is aimed to provide information to students about the various Grammatical Concepts of the Sūtra, Vārtika, Bhāṣya, Karmapravacanīya, Nipāta, Gati, Upasarga, Guṇa, Vṛddhi, Ṭi, Ghi, Nadī, Ghu, Upadhā, Samprasāraṇa.
	DSE 1 Maxims in Sanskrit Language	DSE 1.1 to create a literary analysis of Hitopadesa that aids in moral education and instilling moral principles in students.
	DSE 2: Elements of Linguistics	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.
		DSE-2.2 They will able to know about some phonetic laws and tendencies.

Semester VI	**CC 13 Indian Ontology and Epistemology**	13.1 This course introduces students with essentials of Indian Philosophy.
		13.2 Students could relate the philosophical theory in their practical life.
		13.3 This course aims to get the students acquainted with the cardinal principles of the Nyāya- Vaiśeṣika philosophy through the *Tarkasaṃgraha* and to enable students to handle philosophical text in Sanskrit. To help the students know details idea about Vedānta Philosophy through the *Vedāntasāra*.
	CC14: Sanskrit Composition and Communication	14.1 Students can construct sentences properly.
		14.2 They can determine etymology of words.
		14.3 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 *Siddhāntakaumudī*). To help to the students learn about translation, comprehension and write reports.
	DSE 3: Fundamentals of Āyurveda	This course will enable the students to appreciate the principles of traditional Indian medicine system which has focused not only to physical health but a healthy life style including food habits, diets, preventive medicine, medicinal plants available in their surroundings. The course will make the learner able to know the history of Ayurveda through original sources of ancient medicine in Sanskrit text i.e. Charaksamhita, Sushruta- Samhita and Ashtanghridaya. They also get basic knowledge of physiology, health care, the way of diagionising the illness and preventive medicine.
	DSE 4: Art of Balanced Living	Theories of art of living inherent in Sanskrit literature and apply them to live a better life. Work on human resource management for giving

		better results, Method of self-presentation: Hearing (sravana). Reflection (manana) & meditation (nididhyasana) Concept of Yoga: Restriction of fluctuations by practice (abhyasa) and passionlessness as well as mmethods of Improving Behaviour: jnana-yoga, dhyana- yoga, karma- yoga and bhakti- yoga.

COURSE WISE & SUBJECT WISE OUTCOME
OF UG GENERAL COURSE (B.A.) IN SANSKRIT
UNDER NEP & CHOICE BASED CREDIT SYSTEM
DEPARTMENT OF SANSKRIT
2023-2024

Semester	Core Course	Course Outcome
Semester I	**Minor: SANS1021 Kāvya Literature**	Students will have the knowledge of Indian culture & society reflected in the Sanskrit Kāvyas of different great Sanskrit poets.
		They will have the knowledge of poetic excellence reflected in Sanskrit Literature.
	Multi/Interdisciplinary: SANS1031 Fundamentals of Grammar and its applications	Student will be able to read, write and understand the Sanskrit Language.
		Enrich knowledge of Sanskrit language.
Semester II	**Minor: SANS2021 Sanskrit Drama**	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 Abhijñānaśakuntalam**.**
		They will acquire the basic knowledge of nātya-tattva.

		They will be able to gain different knowledge regarding the then society and culture. They have the knowledge of poetic excellence reflected in Sanskrit Literature.
	Multi/Interdisciplinary: **SANS2031** **Self-Management in the Gitā**	Students will achieve the core message of the S′rīmadbhagavad gītā.
		They will understand the theory of applied Vedāntaas reflected in the S′rīmadbhagavadgītā.
CBCS		
Semester III	**CC3:** **Sanskrit Drama**	3.1 Students would be able to learn the inner structure of Sanskrit drama by themselves.
		3.2 Get knowledge of the ancient Indian Dramatic system.
		3.3 Idea about the Origin and development of Sanskrit Drama.
		3.4 This course aims to textual study of famous drama Kalidas's Abhijñānaśakuntala.
	SEC 1: **Yogasūtra of Patañjali**	Sec 1.1 Develop an idea about eight limbs of yoga - yama (abstinences), niyama (observances), asana (yoga postures), pranayama (breath control), pratyahara (withdrawal of the senses), dharana (concentration), dhyana (meditation) and samadhi (absorption).
Semester IV	**CC4:** **Sanskrit Grammar**	4.1 This course is aimed to provide information to students about the various Grammatical Concepts of the Sūtra, Vārtika, Bhāṣya, Karmapravacanīya, Nipāta, Gati, Upasarga, Guṇa, Vṛddhi, Ṭi, Ghi, Nadī, Ghu, Upadhā, Samprasāraṇa. Develop an idea about pratyaya or suffix in Sanskrit grammar

	SEC 2: **Basic Sanskrit – Part-I**	SEC 2.1 This is an elementary course in Sanskrit Language designed for students who wish to learn Sanskrit from the very beginning. 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.
		SEC 2.2 Students may read various inscriptions written in Brāhmi scripts.
Semester V	**DSE-1A:** **Philosophy, Religion and Culture in Sanskrit Tradition**	DSE 1.1 Demonstrate ideas about the divisions of Veda, the society of Ṛgvedic period, position of women in Vedic period.
		DSE 1.2 Generate broad knowledge about the characteristics, divisions and the social, economic, political and literary importance of *Purāṇa*.
	SEC 3: **Basic Sanskrit – Part-II**	SEC 3.1 Generate broad knowledge about the characteristics, divisions and the social, economic, political and literary importance of *Rāmāyaṇa*, *Mahābhārata, fables and Historical Kavyas*.
		SEC 3.2 Develop a textual study about Aparikshitkaraka from Pancatantra that aids in moral education and instilling moral principles in students.
	GE 1: **Indian Social Institution and Polity**	GE 1.1 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 *Manusaṃhitā* and *Kauṭilīya- arthaśāstra*.
		GE 1.2 Students may compare the administrative policy of ancient time in India and current

		policies.
Semester VI	**DSE-1B: Maxims In Sanskrit Language**	DSE 1.1 to create a literary analysis of Hitopadesa that aids in moral education and instilling moral principles in students.
	SEC-4: **Vedic Literature**	SEC 4.1 Students will familiar with oldest Indian literary heritage. They would know Vedic mantras, their application, socio-cultural life.
		SEC 4.2 Pronouncing of Saṃhitā- pāṭha and Pada-pāṭha of a mantra is to be taught here.
		SEC 4.3 The highest philosophy of life is described in Upaniṣad. Therefore, students may achieve this type of knowledge in this section.
	GE 2: Ethical Issues in Sanskrit Literature	To develop a textual study about Hitopadesa (Mitralabha) and Pancatantra (Mitrabheda Katha) that aids in moral education and instilling moral principles in students.