

DARRANG COLLEGE



Tezpur, Sonitpur (Assam) 784001
www.darrangcollege.ac.in
e-mail: darrangcollege@gmail.com
principaldc@gmail.com



PROGRAMME OUTCOMES
PROGRAMME SPECIFIC OUTCOMES & COURSE OUTCOMES



**DARRANG COLLEGE, TEZPUR, (SONITPUR) ASSAM
PROGRAMME OUTCOMES, PROGRAMME SPECIFIC
OUTCOMES & COURSE OUTCOMES**

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Darrang College is affiliated to Gauhati University, Guwahati and follows the curricula prescribed by the University. The college has, hereby, stated in details the Programme Outcomes, Programme Specific Outcomes and Course Outcomes of all its programmes and courses.

I. PROGRAMME OUTCOME - BA

The completion of BA Programme will enable students to accomplish the following programme outcomes:

- Students will develop critical thinking and analyzing ability. With these tools of critical thinking and analyzing ability they would be involved with the action oriented issues for the good of the society and country.
- Students will be empowered to face the challenges both in personal and public life.
- Students will acquire the art of communication both in English and regional languages they will be equipped with the skills of listening, speaking, reading and writing. Accordingly they will connect themselves to the world through personal interaction, media and other means.
- Students will inculcate certain values to eliminate discrimination based on caste, class community and religion. They would learn how to agree to disagree in critical time.
- Students would learn how to be good law-abiding citizens by displaying concern for the disturbing social issues and trying to find empathetic solutions.
- Students will learn about ethics and ethical values. They will develop the ability to comprehend the different value systems while being insightful to their own.
- Students will gather knowledge about the vital issues relevant to environment and sustainability. Accordingly they will be aware of the different local as well as global policies to protect the environment and make the world a liveable one.
- Students will learn to make the education a life long process. They would imbibe the spirit of continuous learning getting inspired by the scientific and technological progress.
- Students are expected to understand the underlying basic ideas subject matter and relevant theories of their respective subjects so that they have specific subject oriented knowledge.
- Students will develop the ability to see how literature becomes an effective tool to bring forth the relevant social issues and eventually help in changing the mind-set of the people.
- Students of language Departments will learn their respective language and literature in a systematic way and could contribute to the growth of the concerned language and literature.

DEPARTMENT OF ASSAMESE
DARRANG COLLEGE, TEZPUR

1. B.A. ASSAMESE

Programme Specific Outcomes:

1. Understand the development of the Assamese language and its relations with other Indian languages.
2. Familiarize oneself with literary canons and critical methods.
3. Acquire Assamese language- its culture, growth, Development, History.
4. Introduce themselves to basic linguistics.
5. Assess Assamese literature from comparative and Pan- Indian perspectives.
6. Familiarise oneself with multi-lingual and multi-cultural realities of Assam through primary and secondary sources.
7. Develop critical thinking through interactive sessions.
8. Understand the fundamentals of Assamese language.
9. Learn and recognize different values.
10. Impact of western literature on Assamese language and literature.
11. Know about the works of prominent Assamese literary personalities.
12. Assess the changes of Assamese language through various stages of history.
13. Cultivate humanitarian values through Assamese literature.
14. Preserve Assamese culture.
15. Learn performing arts like theatre, film and dance
16. Acquire grammatical knowledge.
17. Application of competence in and systemic knowledge of linguistics in analyzing the Assamese Language and its dialectical variations.
18. Know the factors which have influenced Assamese literature throughout history.
19. Love tradition, culture and heritage.

Course Outcomes:

Sl. No.	Semester	Paper Code & title	Course Outcomes
BA (Honours) Assamese			
1	I	ASM-HC-1016 History of Assamese Literature from (Charyapada to Sankara Era)	<ul style="list-style-type: none"> • Conceptual ideas on the development period of Assamese literature. • Classification of Assamese literary history according to major writers of the concerned period.
2	I	ASM-HC-1026 History of Assamese literature from (Post –Sankari to Arunoday Era.	<ul style="list-style-type: none"> • Knowledge on the major writers of the concerned period. • Knowledge on the historical and literary background of the concerned period. • Knowledge on the literary divisions of the concerned period.
3	II	ASM-HC-2016 Introduction to linguistics	<ul style="list-style-type: none"> • Foundational knowledge on phonetics, Morphology and syntax. • Knowledge on linguistic, grammar and their various dimensions and trends.
4	II	ASM-HC-2026 Literary Criticism.	<ul style="list-style-type: none"> • Knowledge on various dimensions of poetry. • Knowledge on various dimensions of plays. • Knowledge on primary concepts of literary criticism.
5	III	ASM-HC-3016 Entrance course to Assamese Literature.	<ul style="list-style-type: none"> • Development of literary taste through a through, comprehensive study of selected short stories, articles, biopics etc.
6	III	ASM-HC-3026 Specimens of Assamese poetry.	<ul style="list-style-type: none"> • Introduction to history of Assamese poetry. • Evaluation of poetry through study of selected poems from pre-Sankara era to modern era.
7	III	ASM-HC-3036 Culture of Assam	<ul style="list-style-type: none"> • Understanding of the Assamese culture. • Knowledge on various facets of Assamese Art. • Knowledge on the ethnic composition of Assam.
8	IV	ASM-HC-4016 Comparative Indian Literature	<ul style="list-style-type: none"> • Introduction to comparative Indian literature. • A comprehensive study on selected multi-lingual Indian literary works.
9	IV	ASM-HC-4026 Assimilation in Assamese: Aryan and non-Aryan languages.	<ul style="list-style-type: none"> • Knowledge on various language families with special emphasis on Indo European, Sino-Tibetan and Austric. • Study of elements of non Aryan languages in Assamese. • Relation of Assamese and non Aryan languages.
10	IV	ASM-HC-4036 Assamese prose literature.	<ul style="list-style-type: none"> • A study on Assamese prose through selected literary works.

11	V	ASM-HC-5016 Assamese Drama and their production.	<ul style="list-style-type: none"> • A study on the history of Assamese drama. • A relative study on the pre and post independence Assamese stage and crafts. • A study on Ankiya, Historical, realistic and Absurd drama.
12	V	ASM-HC-5026 Assamese Grammar	<ul style="list-style-type: none"> • Knowledge on Assamese phonology, morphology and syntax. • Study on history of Assamese Grammar.
13	V	ASM-HC-5036 Assamese Romantic Poetry	<ul style="list-style-type: none"> • A study on Romanticism and its impact on Assamese poetry through selected romantic poems in Assamese.
14	V	ASM-HC-5036 Sankardeva	<ul style="list-style-type: none"> • Introduction to Sankardeva's literature. • Impact of Sankardeva on Assamese literature, his positives and shortcomings, his contributions.
15	VI	ASM-HC-6016 Assamese Short story and Novel.	<ul style="list-style-type: none"> • Introduction to the various facets on Assamese short story and novel through some selected literary texts.
16	VI	ASM-HC-6026 History of Assamese Script.	<ul style="list-style-type: none"> • Development of the Assamese Script through various phases in history in the Indian context. • Introduction to Assamese script with emphasis on specified samples.
17	VI	ASM-HC-6016 Lakshminath Bezbaruah.	<ul style="list-style-type: none"> • Introduction to Lakshminath Bezbaruah's literature. • Bezbaruah's impact on Assamese literature and his contributions. • Study of some of Bezbaruah's literary texts.
18	VI	ASM-HC-6046 Dialects of Assamese language.	<ul style="list-style-type: none"> • Introduction of Assamese dialect. • A study on the usage of Assamese dialect through recommended texts.

Sl No.	Semester	Paper Code & title	Course Outcomes
GENERIC AND SKILL COURSES			
1	I	ASM-HG-1016 History of Assamese Literature.	<ul style="list-style-type: none"> • Introduction to the emergence of Assamese literature with special reference to certain texts.
2	I	ASM-HE-1014 Communicative Assamese.	<ul style="list-style-type: none"> • Ability to write journal letters, quotation, social media posts in Assamese.
3	II	ASM-HG-2016 History of Assamese literature.	<ul style="list-style-type: none"> • Same as ASM-HG-1016.
4	III	ASM-HG-3016 Assamese plays and stage art.	<ul style="list-style-type: none"> • Same as ASM-HC-5016. • Assamese Drama and their production.
5	III	ASM-SE-3014 Functional Assamese.	<ul style="list-style-type: none"> • Skill in application of Assamese in practical and professional lives- use of Assamese in advertising. • Anchoring, public speech, debating, script writing etc.

6	III	ASM-CC-3016 Ancient Assamese literature	<ul style="list-style-type: none"> • Knowledge on prescribed Assamese texts in historical perspectives.
7	IV	ASM-SE-4014 Creative Literature	<ul style="list-style-type: none"> • Story and poetry writing practice.
8	IV	ASM-HG-4016 Modern Assamese lyrics.	<ul style="list-style-type: none"> • Acquaintance with Assamese music and its lyrical beauty.
9	IV	ASM-CC-4016 Modern Assamese literature.	<ul style="list-style-type: none"> • Conceptualization of modernity and knowledge on prescribed Assamese texts in historical perspectives.
FYUGP			
10	I	Course Level: 300-399 History of Assamese language and literature (Till 1826 C.E.)	<ul style="list-style-type: none"> • To study the development of Assamese language and literature from the beginning to 1826 C.E.
11	I	Course Level: 100-199 Communicative Assamese-1	<ul style="list-style-type: none"> • Have practical knowledge about Assamese language. • Ability to write applications, formal letters, advertisement, quotations in Assamese.
12	I	Course Level: 100-703 Composition of letters in Assamese (Asomiya Akhor Jotani)	<ul style="list-style-type: none"> • Knowledge of Assamese phonology, morphology. • Knowledge on linguistic, Grammar and their various divisions and trends.
13		Minor-I	<ul style="list-style-type: none"> • Same as Course level: 300-399
14		Minor-II	<ul style="list-style-type: none"> • Same as Course level: 300-399

DEPARTMENT OF BENGALI
DARRANG COLLEGE, TEZPUR

2. B.A. BENGALI

Programme Specific Outcomes:

After completing the B.A. (Bengali Major) programme, a student is expected to achieve the below mentioned programme outcomes :

1. Acquire the basic knowledge of Bengali literature & culture
2. Understanding the evolution and historical development of Bengali literature and culture.
3. Introduction of basic Bengali linguistics.
4. Introduce themselves to Folk song, Folklore, Traditional and mythical thoughts.
5. The students will be exposed to Indian and western literary criticism.
6. The students will also be familiar with the ways in which a literary text is influenced by historical and cultural contents.
7. Introduce them to Bengali literature of North East India.
8. Gain understanding about the writings of renowned Bengali writers.
9. Respect democratic and secular values.
10. Learn about various types of report preparation ,commercial advertisement and communication
11. Develop human values.
12. Acquire knowledge about child psychology and literature.
13. Learn and practice performing arts such as drama.
14. Skill development in word processing software and other computer application with focus on manuscript writing.
15. Methods of proof correction.
16. Develop knowledge about rhymes and rhetoric.

COURSE OUTCOMES :

Sl.No.	SEMESTER	PAPER CODE & TITLE	COURSE OUTCOMES	PSOs ADDRESSED	BLOOM'S TAXONOMI LEVEL
1	I	BEN- HC-1016 Classical Literature lesson -1	<ul style="list-style-type: none">• Conceptual ideas on the development of Bengali literature.• Knowledge on the major literary works on the concerned period.• Knowledge on the Vaisnab literature pre Chaitnya Era.	PSO1 and PSO 2	Knowledge, Understanding
2	I	BEN-HC-1026 Classical literature lesson-2	<ul style="list-style-type: none">• Knowledge on Vaisnab literature Chaitnya and Post-Chaitnya Era.• Knowledge on the major literary works of the Mangal Kavya.• Knowledge on the major literary works of the concerned period.	PSO 2	Knowledge, Understanding
3	II	BEN-HC-2016 Introduction to Linguistics	<ul style="list-style-type: none">• Conceptual ideas on the History of Bengali language.• Knowledge on linguistics, grammar and their various divisions and Trends.• Primary knowledge on phonetics.	PSO 3	Knowledge, Understanding
4	II	BEN- HC-2026 Social and cultural identity of Bengali community	<ul style="list-style-type: none">• Conceptual ideas on the History of Bengali community.• Knowledge on the development of social life.• Understanding on Bengali culture.	PSO 1 and PSO 2	Knowledge, Understanding
5	III	BEN-HC-3016 Folk culture and Folk literature	<ul style="list-style-type: none">• Concept of the folk literature and folk culture.• Knowledge of the various folksong and their characteristic.• Knowledge of the devotional believes in the society.	PSO 4	Knowledge, understanding
6	III	BEN-HC-3026 Rhyme and rhetorical theory Of poetry Indian poetics	<ul style="list-style-type: none">• Concept of the rhymes and characteristics of rhetorical theory.• Indian literary thoughts and criticism.• Ancient literary philosophy.	PSO 5 and 16	Knowledge , understanding, analyses

7	III	BEN-HC-3036 History of Bengali Literature (ancient and medieval period)	<ul style="list-style-type: none"> • Conceptual ideas on the development Bengali literature. • Knowledge on the major literary works of the concerned period. 	PSO 1 and 2	Knowledge, understanding
8	IV	BEN-HC-4016 History of Bengali Literature (Modern) period)	<ul style="list-style-type: none"> • Conceptual ideas on the development of Bengali Literature. • Knowledge on the major literary works of the concerned period. • Knowledge on the major writers of the concerned period. 	PSO 1 and 2	Knowledge, understanding
9	IV	BEN-HC-4026 Modern Bengali Literature Introduction period.	<ul style="list-style-type: none"> • Concept of literary epic • Effect of renaissance in 19th century Bengali literature. • Knowledge on the lyrical poetry. 	PSO 6	Knowledge, understanding
10	IV	BEN-HC-4036 Rabindra Literature	<ul style="list-style-type: none"> • Knowledge on Rabindra Nath Tagores contribution to Bengali Literature. • Study of prescribed Text. 	PSO 8	Knowledge' understanding
11	V	BEN-HC-5016 Modern Indian literature pre- independence period.	<ul style="list-style-type: none"> • Idea on the modern poetry and major poets of the concerned period. • Knowledge on the Bonkim Chandras noble (Rajani). • Knowledge on the various prose writers of the concerned period. 	PSO 6 and 8	Understanding
	V	BEN-HC-5026 Modern Indian literature post- independent period.	<ul style="list-style-type: none"> • Concept on the modern poetry. • Knowledge on the various story writers of concerned period . • Concept of Drama. 	PSO 9 and 13	Understanding
13	V	BEN-HE-5016 Childrens and juvenile Literature.	<ul style="list-style-type: none"> • Concept of fairy tales on Bengali literature. • Knowledge on the rhymes. • Concept on child psychology related to a noble (Padipishir barmi baksho). 	PSO 12	Knowledge, understanding

14	V	BEN-HE-5026 Biographical Literature	<ul style="list-style-type: none"> • Biography of swami Vivekananda . • Autobiography of Rabindra Nath Tagore. • Understanding the meaning of the memories reflecting in the life of a person. 	PSO 8,9 and 11	Understanding
15	VI	BEN-HC-6016 Definition and synonyms of Literature.	<ul style="list-style-type: none"> • Definition and comparison of the western & Indian Epic. • Idea on the division of the lyrical poetry and Ballads. • Concept of Bengali novel short stories and Drama. 	PSO 2 and 6	Understanding, Analyses
16	VI	BEN-HC-6026 western literature and criticism	<ul style="list-style-type: none"> • Concept of classicism, surrealism and romanticism with reference to the western literature. • Knowledge on critics and criticism method. 	PSO 5	Understanding,
17	VI	BEN-HE-6016 Bengali literature of Northeast India	<ul style="list-style-type: none"> • Concept of the Drama plot, character ,dialogue, dramatic conflict etc. • Short stories of northeast reflecting human values on present social condition. • Women in society related to the novel Biloris. 	PSO 7,11 and 13	Understanding, Analyses
18	I	BEN-AE-1014 Communicative Bengali	<ul style="list-style-type: none"> • Ability to write formal letters, advertise, social media post, commercial terminology in Bengali 	PSO 10	Knowledge, understanding
19	III	BEN-SE-3014 Manuscript and Proceeding MS word and pagemaker	<ul style="list-style-type: none"> • Skill in application of Bengali manuscript, method of footnote& bibliography. • Skill on MS word, page maker and Bengali typing. 	PSO 14	Knowledge, Apply
20	IV	BEN-SE-4014	<ul style="list-style-type: none"> • Method of proofreading. • Uses of various marks in proof correction. 	PSO 15	Knowledge, Apply

DEPARTMENT OF BODO
DARRANG COLLEGE, TEZPUR

3. B.A. Bodo

Course Outcome & Programme Outcome :

SL. NO.	SEMESTER	NATURE OF THE COURSE	COURSE NAME	COURSE OUTCOME	PROGRAMME OUTCOME
1	I	Minor	Growth and Development of Bodo Language	<p>The students are expected to:</p> <ol style="list-style-type: none"> 1. Learn the origin and development of the Bodo language. 2. Know about the migration and settlement of Bodo-speaking people. 3. Know about Sino-Tibetan language family, its different branches, as well as Bodo and its cognate languages. 4. Learn the common linguistic features of the Bodo and its cognate languages. 5. The present status, usage patterns, and role of the Bodo language in contemporary society and culture. 	<p>After successfully completing an undergraduate program with a minor in Bodo, a student is expected to achieve the following outcomes:</p> <ol style="list-style-type: none"> 1. Students will be able to explain the origin of the Bodo language, migration, and settlement of the Bodo speaking people. 2. Students will gain an understanding of the Sino-Tibetan language family and its relevance to the Bodo language. 3. Students will be able to identify and describe the basic features and characteristics of the Tibeto-Burman Language as it relates to the Bodo language. 4. Students will develop an awareness of the present status of the Bodo language, including its use, preservation efforts, and challenges it faces in contemporary society. 5. Students will recognize the significant contributions made by missionaries to the development of Bodo literature. 6. Students will gain knowledge about the contributions of Bodo writers during the Pre-Bihar age and Bihar age and understand their impact on Bodo literature.
2	II	Minor	Growth and Development of Bodo literature (Inception to 1952)	<p>The students are expected to:</p> <ol style="list-style-type: none"> 1. Learn the origin and development of Bodo written literature. 2. Know the contributions of Missionaries to Bodo literature. 3. The development of Bodo literature from Pre-Bihar Era to Bihar Era. 4. The history of scripts used in Bodo literature. 	<ol style="list-style-type: none"> 7. Students will understand the contributions of Bodo writers in the post-Bihar age and understand their contributions to the growth of Bodo literature. 8. Students will learn about the history of script in Bodo literature, including its development, evolution, and its influence on the Bodo literary tradition. 9. Students will have a clear understanding of the concept and definition of culture, as well as its characteristics. 10. Students will be able to identify the relationship between culture and society, culture and literature, and how they

3	III	Minor	Introduction to culture and Bodo culture	<p>The students are expected to:</p> <ol style="list-style-type: none"> 1. Learn the concept and definition of culture, the classification and characteristics of culture, and its relationship with society and literature. 2. Know about the basic ideas of culture and Bodo culture. 3. Know the major festivals, traditional folk dances and music of the Bodos 	<p>influence each other.</p> <ol style="list-style-type: none"> 11. Students will gain insight into Bodo culture, including its classification and characteristics. 12. Students will be familiar with Bodo festivals such as Bwisagu, Magw, Kherai, and Garja, and understand their cultural significance. 13. Students will recognize and appreciate the role of folk dance and music in Bodo culture, including the historical context and their significance as forms of artistic expression within the Bodo community.
4	I	AEC	Communicative Bodo	<ol style="list-style-type: none"> 1. The students will come to know about the spelling system used in writing Bodo language. 2. The students will know about the practical application of Bodo language in different perspectives. 3. The students will acquire knowledge about the essay writing. 	<p>After successfully completing an undergraduate program with the Ability Enhancement Course (AEC) in Bodo, a student is expected to achieve the following outcomes:</p> <ol style="list-style-type: none"> 1. Students will develop a high level of proficiency in the Bodo language, including the ability to read, write, speak, and understand Bodo effectively. 2. Demonstrate a solid understanding of the spelling system in Bodo and effectively apply it in written communication. 3. Students will apply advanced grammar skills, including the use of case and case endings, tone, tense and tense markers, as well as synonyms and antonyms, to enhance communication in Bodo. 4. Construct grammatically correct sentences in Bodo, demonstrating competence in grammar usage. 5. Utilize the Bodo language effectively in print and electronic media for commercial advertisement purposes. 6. Develop proficiency in administrative terminology in Bodo, enabling effective communication in commercial settings. 7. Demonstrate the ability to write coherent and well-structured essays on various topics in Bodo, including current issues, commercial pursuits, and literary pursuits. 8. Analyze and critically evaluate the language used in commercial advertisements and literary works in Bodo. 9. Develop effective self-study strategies to further enhance language proficiency in Bodo.

DEPARTMENT OF ECONOMICS
DARRANG COLLEGE, TEZPUR

4. BA/B.Sc Economics

Programme Specific Outcomes :

After the programme is completed, we want to instill in the students the capacity of

1. They have fully grasped the meaning and concepts of the specific theories and principles.
2. They are able to decipher the intricacies involved in analyzing the various economic problems, their origins and their implications.
3. They have been able to throw insights into the conceptual framework highlighting the working of the market and its different forms.
4. They have succeeded to keep themselves abreast to the various tools, models indices and other nuances. Which are widely employed in analyzing and explaining the various parameters and statistics in various branches of Economics.
5. To make the students ingrained in various branches of Economics and make them well equipped with the talent to distinguish between various branches of economic theories like Microeconomics, Macroeconomics, Public Finance etc.
6. To give the students a sound idea of National Income and the related issues. It was our honest endeavor to make the students imbibe the various intricacies and techniques of measuring the National Income and the mechanism of its generation.
7. To make sure that the students inculcate the various pros and cons of budget making and what are the principles that guide the objectives of revenue mobilization and its allocation on various heads.
8. To make the students aware of the big importance of the tax mechanism and the various ways in which the mechanism can be made more efficient in collection of maximum revenue with the least possible costs to the society.
9. To give the students the basic idea behind the income propagation progress in an economy. In this process they are being acquainted with the concept of “equilibrium and the role and significance of Govt. intervention”.
10. To make the students instilled with the basic prerequisites to assess the performance of the various govt. policies and schemes and further their success level.
11. We tried to take the students along the contours signaling the advanced issues in various “Macroeconomics” theories and their implications. They were tried to be ingrained in various complexities involve in making choice under uncertain, risks and asymmetric information.
12. The students ingrained in measuring and assessing the various market policies and perceptions.
13. Acquire in-depth knowledge of various cost benefit dimensions that enter the decision-making process involving the consumers and the producers and how in certain contexts their objectives are mutually exclusive to one another.
14. The students were supposed to have enlightened themselves concerning the perennial problems of inflation confronting almost all the countries of the world. They were also quite well equipped to peruse the entire issues connected to inflation such as Phillips curve, stagflation, cost of inflation, prevention of inflation etc.

COURSE OUTCOMES :

Sl. No.	Semester	Paper Code	Paper Name	Course Outcome
1.	1 st	ECO-101	Introductory Economics	This paper helps the students to be ingrained in various branches of Economics and makes them well-equipped with the talent to distinguish between various branches of economic theories like Microeconomics, Macroeconomics and Public Finance.
2.	2 nd	ECO-151	Basic Elements of Economics	Through his paper students can acquire about the idea of National Income and the related issues. It is our honest endeavour to make the students imbibe the various intricacies and techniques of measuring the National Income and the mechanism of its generation.
3.	3 rd	ECO-HC-3016	Intermediate Microeconomics -I	This paper helps the students to obtain sound training in microeconomic theory to formally analyze the behaviour of individual agents and students also come to know about the behaviour of the consumer, the producer and the behaviour of competitive firms.
4.	3 rd	ECO-HC-3026	Intermediate Macroeconomics-I	Through this paper, students are supposed to enlighten themselves concerning the perennial problem of inflation confronting almost all the countries of the world, aggregate demand and supply with various theoretical issues related to an open economy.
5.	3 rd	ECO-HC-3036	Statistical Methods For Economics	This paper helps the students to become familiar with some basic concepts and terminology that are fundamental to statistical analysis and inference that develops the notion of probability, followed by probability distributions of discrete and continuous random variables and joint distributions. This paper also introduces sampling techniques and the notion of sampling distributions that act as a bridge between probability theory and statistical inference.
6.	4 th	ECO-HC-4016	Intermediate Microeconomics-II	The students are being ingrained in the knowledge of general equilibrium and welfare, and imperfect markets coupled with the mathematical tools and reasoning through this paper.
7.	4 th	ECO-HC-4026	Intermediate Macroeconomics-II	This paper helps the students to understand the long-run dynamic issues like growth and technical progress with micro-foundations to the various aggregative concepts.
8.	4 th	ECO-HC-4036	Introductory Econometrics	This paper enriches with the students a comprehensive introduction to hypothesis testing, estimation and diagnostic testing of simple and multiple regression models with a deep statistical background.

9.	5 th	ECO-HC-5016	Indian Economy-I	This paper helps the students to review major trends in economic indicators and policy debates in India in the post-independence period, with particular emphasis on paradigm shifts and turning points, along with the international comparisons with China, Pakistan, Bangladesh, Sri Lanka, Nepal and Vietnam.
10.	5 th	Eco-HC-5026	Development Economics-I	Through this paper students inculcate knowledge about the conceptions of development and their justification, aggregate models of growth, cross-national comparisons of the growth experience and measurement of inequality etc.
11.	5 th	ECO-HE-5016	Economics of Health and Education	This paper helps the students understand the importance of health and education in human development with an overview of health and education in India.
12.	5 th	ECO-HE-5036	Public Finance	Through this paper, students acquire knowledge about the taxation of the centre, state and local governments, and the issues of fiscal federalism and decentralisation in India. This paper is also useful for students aiming towards careers in the government sector, policy analysis, business and journalism etc.
13.	6 th	ECO-HC-6016	Indian Economy-II	This paper helps the students to examine sector-specific policies and their impact in shaping trends in key economic indicators in India with evaluates the Indian empirical evidence.
14.	6 th	ECO-HC-6026	Development Economics -II	Through this paper, students acquire knowledge about the basic demographic concepts and their evaluation during the process of development and the role of globalization and increased international dependence on the process of development.
15.	6 th	ECO_HE-6016	Environmental Economics	This paper helps the students acquire knowledge about environmental problems, issues and the impact of different environmental policies etc.
16.	6 th	ECO-HE-6026	International Economics	Through this paper, students obtain knowledge about the composition, direction and consequences of international trade and the determinants and effects of trade policy with national policies as well as international monetary systems.

**DEPARTMENT OF EDUCATION
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5. BA Education

Programme Specific Outcomes :

The program outcome of a Bachelor of Arts (BA) in Education in Darrang College, under the Gauhati University encompasses a range of skills, knowledge, and competencies that prepare students for a career in the field of education. The outcomes of the program are designed to ensure that graduates are well-equipped to meet the diverse demands and challenges within the education sector. Here is a general overview of the outcomes of the Program:

1. **Foundational Knowledge:** Graduates should possess a solid understanding of educational theories, principles, and practices. They should be familiar with the historical and philosophical foundations of education in India and globally.
2. **Pedagogical Skills:** Develop effective teaching methodologies and strategies for different age groups and diverse learners. Demonstrate the ability to plan, implement, and assess lessons that cater to the varied needs of students.
3. **Subject Matter Expertise:** Acquire a deep understanding of the subjects they intend to teach, ensuring proficiency in the content area.
4. **Classroom Management:** Demonstrate skills in creating a positive and inclusive learning environment. Manage classroom dynamics effectively and employ appropriate disciplinary measures when necessary.
5. **Assessment and Evaluation:** Design and implement various assessment tools to evaluate student learning. Analyze assessment data to inform instructional decisions and improve teaching practices.
6. **Educational Technology Integration:** Integrate modern educational technologies into teaching practices for enhanced learning experiences. Demonstrate proficiency in using digital tools for instructional purposes.
7. **Communication and Interpersonal Skills:** Develop effective communication skills to interact with students, parents, and colleagues. Foster positive relationships within the school community.
8. **Cultural Sensitivity and Inclusivity:** Recognize and appreciate cultural diversity within the classroom. Implement inclusive teaching practices that cater to the needs of all students, including those with diverse abilities.
9. **Professional Ethics and Values:** Understand and adhere to ethical standards and values within the education profession. Demonstrate professionalism in all interactions and activities related to teaching.
10. **Continuous Professional Development:** Cultivate a commitment to lifelong learning and professional development. Stay updated on current educational trends, policies, and research.
11. **Community Engagement:** Engage with the local community and contribute to the broader societal development through educational initiatives.
12. **Research Skills:** Develop basic research skills to critically analyze educational issues and contribute to the improvement of teaching and learning.

By achieving these program outcomes, graduates of a BA in Education program in Darrang College are well-prepared to embark on a fulfilling career in education, whether as primary or secondary school teachers, educational administrators, curriculum developers, or education system consultants. The program aims to produce educators who can positively impact the lives of students and contribute to the overall improvement of the education system in India.

In addition to the overall program outcomes outlined above, the various Courses included in the B.A. program in Education under Gauhati University have the following intended outcomes.

Course Outcomes (Under Graduate CBCS Course)

Sl.No.	Semester	Paper code & Title	Unit/ chapter	Course outcomes
1.	I	EDU-HC-1016 PRINCIPLES OF EDUCATION	Unit 1- meaning and concept of education	<ul style="list-style-type: none"> • Enable the students about the principles of education • Provide knowledge to the students about the important concepts of Education, Curriculum, Democracy, Discipline and Freedom. • Develop knowledge about different Aims of Education, various types of Curriculum, Correlation of Studies and Forms of Discipline.
			Unit 2- Aims of education	
			Unit 3- Curriculum	
			Unit 4- discipline and freedom	
			Unit 5- Democracy and Education	
2.	I	EDU-HC-1026 PSYCHOLOGICAL FOUNDATIONS OF EDUCATION	Unit 1 Psychology and Education	<ul style="list-style-type: none"> • Clarify the need of educational psychology in teaching learning process. • Understand the nature and theories of learning and role of motivation in learning. • Clear up the concept of memory, forgetting, attention and interest, and understand the relationship between education and psychology. • Describe intelligence, its theories and measurement. • Provide practical knowledge about recall and recognition, trial and error learning and span of attention.
			Unit 2 Learning and Motivation	
			Unit 3 Memory, Attention, and Interest.	
			Unit 4- intelligence, creativity and personality	
			Unit 5- Laboratory Practical	
3.	II	EDU-HC-2016 PHILOSOPHICAL AND SOCIOLOGICAL FOUNDATION OF EDUCATION	Unit 1 Philosophy and Education	<ul style="list-style-type: none"> • Describe the concept of philosophy and its relationship with education. • Illustrate the educational implications of different Indian schools of philosophy. • Explain the educational implications of different Western schools of philosophy • Understand the concept of sociology and its relationship with education. • Develop understanding about the concept of educational sociology, social groups, and socialization.
			Unit 2 Various Indian Schools of Philosophy and Education	
			Unit 3 Various Western Schools of Philosophy and Education	
			Unit 4- Sociology and Education	
			Unit 5 -Socio-Cultural Context of Education.	

4.	II	EDU-HC-2026: DEVELOPMENT OF EDUCATION IN INDIA-I	Unit 1 Education in Ancient and Medieval India	<ul style="list-style-type: none"> • Describe the education system in Ancient India, particularly Vedic Education. • Explain away the education system in Medieval India. • Understand the education system during the British Period.
			Unit 2 Education in British India: The Beginning	
			Unit 3 Education in British India: In 19th Century	
			Unit 4 Rise of Nationalism and its Impact on Education	
			Unit 5 Education in British India: A Period of Experiment	
5.	III	EDU-HC-3016: DEVELOPMENT OF EDUCATION IN INDIA-II	Unit 1 Development of Indian Education in the Post Independence Period	<ul style="list-style-type: none"> • Describe the educational situation during the time of Independence. • Understand the recommendations and educational importance of Education Commission and Committees in post Independent India. • Understand the National Policy on Education in different times. • Clear up with the recent Educational Development in India
			Unit 2 Development of Secondary Education in the Post Independent Period	
			Unit 3 Education Commission: 1964-66	
			Unit 4 National Policies on Education in Post Independent Period	
			Unit 5 Recent Developments and Programmes in Indian Education	
6.	III	EDU-HC-3026: EDUCATIONAL TECHNOLOGY AND TEACHING METHODS	Unit 1 Educational Technology	<ul style="list-style-type: none"> • Let know the objective of educational technology in teaching learning process. . • Familiarize with innovations in the field of education through technology. • Clear up about various methods and devices of teaching. • Make known with levels, effectiveness of teaching and classroom management. • Provide knowledge about the strategies of effective teaching as a profession.
			Unit 2 Information and Communication Technology in Teaching Learning	
			Unit 3 Models of Teaching	
			Unit 4 Methods and Techniques of Teaching	
			Unit 5 Lesson Planning and Micro Teaching	

7.	III	EDU-HC-3036: VALUE AND PEACE EDUCATION 1.	Unit 1 Value	<ul style="list-style-type: none"> Describe the concept and meaning of value. Accustom the role of educational institutions in building a value-based society. Unfold the meaning and concept of peace and its importance in human life, the importance of peace education and its relevance at national and international level. Understand the different issues/challenges in imparting peace education. Analyse the strategies and skills in promoting peace education at institutional
			Unit 2 Types of Values, their characteristics, functions and educational significance	
			Unit 3 Value Education	
			Unit 4 Peace Education	
			Unit 5 Challenges of Peace Education and Role of Different Organisations	
8.	IV	EDU-HC-4016: GREAT EDUCATIONAL THINKERS	Unit1 Educational thoughts of Srimanta Sankardeva	<ul style="list-style-type: none"> Provide knowledge about the views of thinkers in an educational context. 2. familiarize about the relevance of some of their thoughts in the present-day context. Understand the Philosophy of life of different Educational Thinkers and their works.
			Unit 2 Educational thoughts of Mahatma Gandhi and Rabindranath Tagore	
			Unit 3 Educational thoughts of A.P.J. Abdul Kalam.	
			Unit 4 Educational thoughts of Rousseau and Froebel	
			Unit 5 Educational thoughts of John Dewey and Madam Maria Montessori	
9.	IV	EDU-HC-4026: EDUCATIONAL STATISTICS AND PRACTICAL	Unit1 Basics of Educational Statistics	<ul style="list-style-type: none"> Clarify the basic concept of Statistics. Familiarize with different statistical procedures used in Education. Learn about the ability to represent educational data through graphs. understand the Normal Probability Curve and its applications in Education
			Unit 2 Graphical presentations of data	
			Unit 3 Co-efficient of correlation and percentiles	
			Unit 4 Normal Probability Curve and its applications	
			Unit 5 Statistical Practical	

10.	IV	EDU-HC-4036: EMERGING ISSUES IN EDUCATION	Unit 1 Social Inequality in Education and Constitutional Safeguards	<ul style="list-style-type: none"> • Understand the major emerging issues national, state, and local. • Accustom with the various issues in education that are emerging in the recent years in the higher education system. • Explain away the various problems and challenges of education in India at all levels.
			Unit 2 Liberalization, Privatization and Globalization of Education	
			Unit 3 Issues related to students	
			Unit 4 Environmental Education and Population education	
			Unit 5 Multi-cultural education and Alternative education	
11.	V	EDU-HC-5016: MEASUREMENT AND EVALUATION IN EDUCATION AND PRACTICAL	Unit 1 Measurement and Evaluation in Education.	<ul style="list-style-type: none"> • Clear up the concept of measurement and evaluation in education. • Acustom with the general procedure of test construction and characteristics of a good test. • Acquaint an understanding of different types of educational tests and their uses. • Describe about personality test, and aptitude tests.
			Unit 2 Test Construction	
			Unit 3 Educational Achievement Test	
			Unit 4. Personality Test Unit 5 Laboratory Practical	
12.	V	EDU-HC-5026: GUIDANCE AND COUNSELLING	Unit 1 Introduction to Guidance	<ul style="list-style-type: none"> • Unfold the concept, need and importance of Guidance and Counselling. • Familiarize the different types and approaches to Guidance and Counselling. • Clarify with the organization of guidance service and school guidance clinic. • Learn about the challenges faced by the teacher as guidance worker.
			Unit 2 Introduction to Counselling	
			Unit 3 Organisation of Guidance Service Unit 4 Guidance needs of Students	
			Unit 5 Guidance Programme	

13.	V	EDU-HE-5016: CONTINUING EDUCATION	Unit 1 Continuing Education.	<ul style="list-style-type: none"> Identify the concept, objectives, scope, and significance of continuing education in the context of present scenario. Explain away different aspects and agencies of continuing education. Unfold different methods and techniques as well as issues of continuing education. Familiarize the meaning of open education and realize the importance of open school and open universities in continuing education. Describe the development of adult education in India, kinds of adult education and different problems of adult education.
			Unit 2 Methodologies and Issues of Continuing Education	
			Unit 3 Open Education.	
			Unit 4 Adult Education	
			Unit 5 Recent Literacy Programmes in India	
14.	V	EDU-HE-5026: DEVELOPMENTAL PSYCHOLOGY	Unit 1 Introduction to Developmental Psychology	<ul style="list-style-type: none"> Acquaint the basic concepts relating to development. Clarify about heredity and environmental factors affecting pre-natal development. Identify the development aspects during infancy and childhood. Let know the development aspects of adolescence, importance of adolescence period and problems associated with this stage.
			Unit 2 Infancy	
			Unit 3 Childhood	
			Unit 4 Adolescence	
			Unit 5 Social, Emotional and Personality Development of Adolescence	
15.	V	EDU-HE-5036: HUMAN RIGHTS EDUCATION	Unit 1 Basic Concept of Human Rights	<ul style="list-style-type: none"> Unfold the basic concept, nature, and scope of human rights. Clarify the meaning, nature, principles, curriculum, and teaching methods of human rights education at different levels of Education. Understand the role of United Nations on human rights. Familiarize the enforcement mechanism in India and know the role of advocacy groups.
			Unit 2 United Nations and Human Rights	
			Unit 3 Human Rights Enforcement Mechanism in India	
			Unit 4 Role of Advocacy Groups for Promotion of Human Rights	
			Unit 5 Human Rights and Marginalised Sections	

16.	V	EDU-HE-5046: TEACHER EDUCATION IN INDIA	Unit 1 Conceptual Framework and Historical Perspectives of Teacher Education in India	<ul style="list-style-type: none"> Describe the concept, scope, aims and objectives and significance of teacher education. Accustom with the development of Teacher Education in India. Familiarize with the different organizing bodies of teacher education in India and their functions in preparation of teachers for different levels of education. Clear up the innovative trends and recent issues in teacher education, and be able to critically analyse the status of teacher education in India. Acquaint and conceive the qualities, responsibilities, and professional ethics of teachers
			Unit 2 Teacher Education for Different Levels of Education	
			Unit 3 Structure and Organisations of Teacher Education in India	
			Unit 4 Status of Teacher Education in India: Trends, Issues and Challenges	
			Unit 5 Quality, Responsibility and Professional Ethics of Teachers	
17.	VI	EDU-HC-6016: EDUCATION AND DEVELOPMENT	Unit 1 Basic Concepts of Education and Development	<ul style="list-style-type: none"> Let know the Relation between education and development. Describe Educational development in the post globalization era. Explain away Role of education in community development. Acquaint Education for human resource development. Clarify Economic and political awareness through education.
			Unit 2 Education and Community Development	
			Unit 3 Education and Human Resource Development	
			Unit 4 Education and Economic Development	
			Unit 5 Education and Developing Political Awareness	
18.	VI	EDU-HC-6026: PROJECT		<ul style="list-style-type: none"> Understand the process of conducting a Project. Prepare a project report.
19.	VI	EDU-HE-6016: MENTAL HEALTH AND HYGIENE	Unit 1 Fundamentals of Mental Health	<ul style="list-style-type: none"> Understand with the fundamentals and development of mental health and characteristics of a mentally healthy person. Explain away the concept and importance of mental hygiene and its relationship with mental health. Unfold knowledge about the principles, factors promoting mental health and the role of home, school, and society in maintaining proper mental health. Clarify the meaning and problem of adjustment and the different adjustment mechanisms. Describe with the concept and issues of positive psychology, mental health of women, role of WHO and stress management.
			Unit 2 Mental Hygiene-Meaning and Definitions	
			Unit 3 Education and Mental Health	
			Unit 4 Preservation of Mental Health and Hygiene	
			Unit 5 Mental Health and Yoga	

20.	VI	EDU-HE-6026: SPECIAL EDUCATION	Unit 1 Special Education	<ul style="list-style-type: none"> • Acquaint the meaning and importance of special education. • Clarify the different policies and legislations of special education. • Learn about the different types of special children with their characteristics. • Explain away different issues, educational provisions, and support services of special education.
			Unit 2 Physically Challenged Children	
			Unit 3 Children with Intellectual Disability (Mental Retardation) and gifted	
			Unit 4 Children with Learning Disability	
			Unit 5 Policies, Legislation and Services	
21.	VI	EDU-HE-6036: EDUCATIONAL MANAGEMENT	Unit 1 Introduction to Educational Management	<ul style="list-style-type: none"> • Explain away the basic concept of educational management. • Familiarize about the various resources in education. • Clarify the concept and importance of educational planning. • Make known about the financial resources and financial management in education.
			Unit 2 Resources in Education	
			Unit 3 Educational Planning	
			Unit 4 Institutional Planning	
			Unit 5 Financing of Education and Recent Trends in Management	
22.	VI	EDU-HE-6046: WOMEN AND SOCIETY	Unit 1 Status and Role of Women	<ul style="list-style-type: none"> • Understand the changing role of women in India. • Clarify gender discrimination in Indian society. • Let know the constitutional provisions for women and their rights. • Explain women empowerment. • Accustom an awareness and sensitivity towards women.
			Unit 2 Constitutional Provisions and Rights of Women	
			Unit 3 Gender Inequalities in School and Society	
			Unit 4 Women Empowerment	
			Unit 5 The New Roles of Men and Women and its Implications	

Course Outcomes (Under Four Years Under Graduate Programme), implemented by NEP 2020

Sl. No.	Semester	Course Name	Contents	Course outcomes
1.	I	PRINCIPLES OF EDUCATION	Unit 1- Concept of education	<ul style="list-style-type: none"> • Able to know the meaning, types and sound principles of education • Acquaint with the concepts like different aims of Education, Curriculum, Democracy, Discipline , Freedom etc • Provide knowledge about different Aims of Education and its application in educational setting. • Avail to understand the democratic ideals and set up of education.
			Unit 2- Aims of education	
			Unit 3- Curriculum	
			Unit 4- Discipline and freedom	
			Unit 5- Democracy and Education	
2.	II	EDUCATIONAL PSYCHOLOGY	Unit 1 Psychology and Education	<ul style="list-style-type: none"> • Understand the relationship between education and psychology • Explain the need of educational psychology in teaching learning process. • Describe the nature and theories of learning and role of motivation in learning. • Understand the concept of memory, forgetting, attention and interest. • Understand intelligence, its theories and measurement and acquaint themselves with different types of personality and adjustment mechanisms. • Understand the types of exceptional children and the significance of individual differences in a classroom.
			Unit 2 Learning and Motivation	
			Unit 3 Memory, Attention, and Interest.	
			Unit 4- Intelligence, creativity and personality	
			Unit 5- Exceptional children and individual differences	

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6. BA English

Programme Specific Outcomes :

After the completion of the programme, the students will be able to:

- Understand human life and society as literature is the reflection of the society particularly the nuances which is not represented in other subjects.
- Acquire knowledge about the origin of literatures of the western world and make a comparative analysis with Indian Classical literature.
- Get knowledge about various cultures and societies by studying European, African, American, Australian and other texts in the syllabus.
- Acquire moral and ethical values by decoding literary texts, characters, themes etc.
- Acquire comprehensive knowledge of the subject matter contained in the text that are based in different socio-cultural milieu, political events and movements.
- Studying literature makes sensitive to various issues such as environment, gender and structural hierarchies.
- Students develop confidence and life skills by studying about life itself via literature. It helps in grooming their personality. They also acquire competence in the English language.
- Studying literature has opened up diverse career avenues for students in mass communication, fashion, teaching, law, counselling, intelligent services and environment agencies.
- Literature transports the readers out of their immediate contexts into imaginary landscapes. It helps readers to interact with characters across time and space, thereby generating empathy and sympathetic insight.

Course Outcomes :

Sl. No.	SEMESTER	PAPER CODE & TITLE	COURSE OUTCOMES	UNIT/CHAPTER
1	I	ENG-HC-1016 Indian Classical Literature	The students studying English Literature are introduced to different genres like drama, poetry, the epic narrative, fables etc. of the Indian Classical Literature in English translation so that they can understand the diverse literatures as well as get acquainted to their own culture and society.	<ul style="list-style-type: none"> • Kalidasa: Abhijnana Shakuntalam • Vyasa: “The Dicing” “The Sequel to Dicing”, “The Book of the Assembly Hall”, “The Temptation of Karna”, “The Book of Effort” in The Mahabharata • Sudraka: Mrcchakatika • Ilango Adigal: “The Book of Banci” in Cilappatikaram
2	I	ENG-HC-1026 Western Classical Literature	This paper will familiarize the students with European Classical texts in the genres of poetry, theatre and general discourses, and help them to understand the beginnings of European /English literature.	<ul style="list-style-type: none"> • Homer: The Odyssey • Sophocles: Oedipus the King • Plautus: The Pot of Gold • Ovid: Selections from Metamorphoses; • Horace: Satires I:4 in Horace: Satires and Epistles and Persius: Satires
3	II	ENG-HC-2016 Indian Writing in English	This paper introduces the students to the historical development of the Indian Writing in English through a variety of Indian texts in different forms and genres. It will help the students to understand the individual and collective experience in Colonial and Post-colonial India.	<ul style="list-style-type: none"> • H.L.V. Derozio: “Freedom to the Slave”, “The Orphan Girl” • Kamala Das: “Introduction”, “My Grandmother’s House” • Nissim Ezekiel: “Enterprise”, “Night of the Scorpion”, “Very Indian Poem in English” • Robin S. Ngangom: “The Strange Affair of Robin S. Ngangom”; “A Poem for Mother” • Mulk Raj Anand: “The Two Lady Rams” • R.K. Narayan: <i>Swami and Friends</i>; • Salman Rushdie: “The Free Radio” • Anita Desai: <i>In Custody</i> • Shashi Deshpandee: • “The Intrusion” • Manjula Padmanabhan: <i>Lights Out</i> • Mahesh Dattani: <i>Tara</i>
4	II	ENG-HC-2026 British Poetry and Drama: 14 th to 17 th century	This paper acquaints the students to the social and political history of England from the 14 th to the 17 th century as one of the most fruitful periods of English literature and familiarize them with a selection of poetry and drama produced therein.	<ul style="list-style-type: none"> • Geoffrey Chaucer: <i>The Wife of Bath’s Prologue</i> • Edmund Spenser: Selections from <i>Amoretti</i> • John Donne: “The Sunne Rising”, “Batter My Heart”, “Valediction: Forbidding Mourning” • Christopher Marlowe: <i>Doctor Faustus</i> • William Shakespeare: <i>Macbeth</i> • William Shakespeare: <i>Twelfth Night</i>

5	III	ENG-HC-3016 History of English Literature and Forms	This paper introduces the students to the study of poetry, drama, fiction and non-fictional prose, and shows the development of each form through the various periods of English literature and its expansion into global English writing.	<ul style="list-style-type: none"> • Poetry from Chaucer to the Present • Drama from Everyman to the Present • Fiction • Non-Fictional Prose
6	III	ENG-HC-3026 American Literature	This paper gives the students the knowledge of evolution of American society through different stages as reflected in the literature written at different time lines.	<ul style="list-style-type: none"> • Tennessee Williams: <i>The Glass Menagerie</i> • Mark Twain: <i>The Adventures of Huckleberry Finn</i> • Edgar Allan Poe: “The Purloined Letter” • F. Scott Fitzgerald: “The Crack -up” • Anne Bradstreet: “The Prologue” • Emily Dickinson: “A Bird Came Down the Walk”, “Because I Could not Stop for Death” • Walt Whitman: Selections from <i>Leaves of Grass</i>: “O Captain, My Captain”, “Passage to India” (Lines: 1 -68) • Langston Hughes: “I too” • Robert Frost: “Mending Wall” Remember, • Sherman Alexie: “Crow Testament”, “Evolution”
7	III	ENG-HC-3036 British Poetry and Drama: 17 th and 18 th Centuries	After reading British Poetry and Drama of 17 th and 18 th century, the students will understand how the economic, political, social and the scientific revolution influenced the production of literature of the time, particularly the shift from Puritan Age to the Restoration and Neo-classical periods.	<ul style="list-style-type: none"> • John Milton: <i>Paradise Lost</i>: Book I • John Webster: <i>The Duchess of Malfi</i> • Aphra Behn: <i>The Rover</i> • John Dryden: “Mac Flecknoe” • Alexander Pope: “The Rape of the Lock”
8	IV	ENG-HC-4016 British Literature: The 18 th century	The students will learn about the Enlightenment and Neo-classicism which was dominated by reason and rationality. They will also learn about the development of journalistic writings and novels as new forms of literature in the 18 th century besides getting acquainted with the different satirical writings in prose and poetry.	<ul style="list-style-type: none"> • Jonathan Swift: <i>Gulliver’s Travels</i> (Books III and IV) • Samuel Johnson: “London” • Thomas Gray: “Elegy Written in a Country Churchyard” • Daniel Defoe: <i>Moll Flanders</i> • Joseph Addison: “Pleasures of the Imagination”, <i>The Spectator</i>, 411 • Oliver Goldsmith: <i>She Stoops to Conquer</i>
9	IV	ENG-HC-4026 British Romantic Literature	The students will learn about Romanticism and its characteristics such as freedom, individuality, Nature abreast of the intellectual inspirations that led to its development in English Literature. The texts highlight the relationship between human and Nature and the role of the poet.	<ul style="list-style-type: none"> • William Blake: “The Lamb”, “The Chimney Sweeper”, “The Tyger”, “Introduction to The Songs of Innocence” • Robert Burns: “A Bard’s Epitaph”, “Scots Wha Hae” • William Wordsworth: “Tintern Abbey”, “Upon Westminster Bridge” • Samuel Taylor Coleridge: “Kubla Khan”, “Dejection: An Ode” • Percy Bysshe Shelley: “Ode to the West Wind”, “Hymn to Intellectual Beauty”, <i>The Cenci</i>

				<ul style="list-style-type: none"> • John Keats: “Ode to a Nightingale”, “To Autumn”, “On First Looking into Chapman’s Homer” • Mary Shelley: <i>Frankenstein</i>
10	IV	ENG-HC-4036	By reading the novels of the 19 th century the students will learn about the complexity of human motive and conduct, in the realm of day-to-day life. They will also get acquainted with the poetic works of the Great Victorian poets.	<ul style="list-style-type: none"> • Jane Austen: <i>Pride and Prejudice</i> • Charlotte Bronte: <i>Jane Eyre</i> • Charles Dickens: <i>The Pickwick Papers</i> (Chapters: 1, 2, 23, 56, 57) • Thomas Hardy: “The Three Strangers” • Alfred Tennyson: “The Defence of Lucknow” • Robert Browning: “Love among the Ruins” • Christina Rossetti: “Goblin Market”
11	V	ENG-HC-5016 British Literature: The 20 th Century	Through this paper students will learn about the intellectual contexts of literature of the Modern Age. They will learn about the different tenets of modernism and trace it in modern poetry and modern novels. They will also get acquainted with Postmodernism through a reading of recent poetic works.	<ul style="list-style-type: none"> • Joseph Conrad: <i>Heart of Darkness</i> • Virginia Woolf: <i>Mrs Dalloway</i> • W.B. Yeats: “The Second Coming”, “Sailing to Byzantium” • T.S. Eliot: “The Love Song of J. Alfred Prufrock”; “Journey of the Magi” • W.H. Auden: “In Memory of W.B. Yeats” • Hanif Kureshi: <i>My Beautiful Launderette</i> • Phillip Larkin: “Church Going” • Ted Hughes: “Hawk Roosting” • Seamus Heaney: “Casualty” • Carol Ann Duffy: “Standing Female Nude”
12	V	ENG-HC-5026 Women’s Writing	The students will get acquainted to the distinct experiences of women articulated in different genres- poetry, novels, autobiography, during the 19 th and 20 th century. Mary Wollstonecraft’s text will familiarize them with the ideas in one of the earliest feminist treatises of the Western world.	<ul style="list-style-type: none"> • Mary Wollstonecraft: <i>A Vindication of the Rights of Woman</i> (Chapters 1 and 2) • Rassundari Debi: Excerpts from <i>Amar Jiban</i> • Katherine Mansfield: “Bliss” • Sylvia Plath: “Daddy”; “Lady Lazarus” • Alice Walker: <i>The Color Purple</i> • Mahashweta Devi: “Draupadi” • Nirupama Bargohain: “Celebration” • Adrienne Rich: “Orion” • Eunice De Souza: “Advice to Women”, “Bequest”
13	V	ENG-HE-5026	The Indian Literatures coming from different regions in English translation will help students to understand the diverse cultural and regional contexts which generated these texts. It will further enable the students to make a comparative study, given the	<ul style="list-style-type: none"> • Premchand: “The Shroud” Remember, • IsmatChughtai: “The Quilt” • BhabendranathSaikia: “Celebration” Remember, • Fakir Mohan Senapati: “Rebati” • Rabindra Nath Tagore: “Light, Oh Where is the Light?”, “When My Play was with thee”

			diversity of Indian literature written in regional languages.	<ul style="list-style-type: none"> • G.M. Muktibodh: “The Void”, “So Very Far” • Amrita Pritam: “I Say unto Waris Shah” • Thangjam Ibopishak Singh: “Dali, Hussain, or Odour of Dream, Colour of Wind”, “The Land of the HalfHumans” • Dharamveer Bharati: Andha Yug • Hiren Bhattacharyya: “What Is It That Burns in Me?”
14	V	ENG-HE-5056 Literary Criticism and Literary Theory	The students will learn about some important texts on literary criticism and theory which will inform them about the intellectual shifts in reading of culture, language, and literature in the 20 th century.	<ul style="list-style-type: none"> • William Wordsworth: Preface to the Lyrical Ballads • S.T. Coleridge: Biographia Literaria (Chapters: IV, XIII and XIV) • Virginia Woolf: “Modern Fiction” • T.S. Eliot: “Tradition and the Individual Talent” • I.A. Richards: Principles of Literary Criticism (Chapters: 1, 2 and 34) • Cleanth Brooks: “The Language of Paradox” • Terry Eagleton: “Introduction” to Marxism and Literary Criticism • Elaine Showalter: “Twenty Years on: A Literature of Their Own Revisited” • Toril Moi: “Introduction” to Sexual/Textual Politics • Jacques Derrida: “Structure, Sign and Play in the Discourse of the Human Science” • Michel Foucault: “Truth and Power” • Mahatma Gandhi: “Passive Resistance”, “Education” • Edward Said: “The Scope of Orientalism” • Frantz Fanon: Black Skin, White Masks (Chapter 4)
15	VI	ENG-HC-6016 Modern European Drama	The paper will introduce students to the Modern European drama and help them understand the emergence of Avant Garde movements and trends, and dramatic devices and techniques during the period of Modernism. It will acquaint them with the intellectual movements such as existentialism, absurdism, etc.	<ul style="list-style-type: none"> • Henrik Ibsen: <i>Ghosts</i> • Anton Chekhov: <i>The Cherry Orchard</i> • Bertolt Brecht: <i>The Caucasian Chalk Circle</i> • Samuel Beckett: <i>Waiting for Godot</i>
16	VI	Eng-HC-6026 Postcolonial Literatures	Students will read about the impact of colonialism across different cultures and society. They will get to know about issues of nation, identity, globalization in the context of the postcolonial condition.	<ul style="list-style-type: none"> • Chinua Achebe: <i>Things Fall Apart</i> • Gabriel Garcia Marquez: <i>Chronicle of a Death Foretold</i> • Bessie Head: “The Collector of Treasures”; Ama Ata Aidoo: “The Girl who Can” • Grace Ogot: “The Green Leaves” • Shyam Selvadurai: <i>Funny Boy</i>

				<ul style="list-style-type: none"> • Pablo Neruda: “Tonight I can Write”; “The Way Spain Was” • Derek Walcott: “A Far Cry from Africa”; “Names” • David Malouf: “Revolving Days”; “Wild Lemons” • EasterineKire: When the River Sleeps
17	VI	ENG-HE-6036 Partition Literature	It will acquaint the students with ideas of colonialism and nationalism and particularly help them understand the historical event of the Partition as a human calamity with its ensuing communalism, violence, homelessness and exile and how it affected women’s live in particular.	<ul style="list-style-type: none"> • Intizar Husain: • Amitav Ghosh: <i>The Shadow Lines</i> • DibyenduPalit: “Allam’s Own House” • Manik Bandhopadhyia: “The Final Solution” • Sa’adat Hasan Manto: “Toba Tek Singh” • LalithambikaAntharajanam: “A Leaf in the Storm” • Faiz Ahmad Faiz: “For Your Lanes, My Country” • Jibananda Das: “I Shall Return to This Bengal” • Gulzar: “Toba Tek Singh”
18	VI	Eng-HE-6026 World Literatures	This paper will provide the students an idea of world literature with issues of memory, displacement and diaspora. The students will learn about the different race and culture through different literary texts from across the world which are translated into English.	<ul style="list-style-type: none"> • V.S Naipaul<i>A Bend in the River</i> • Marie Clements: <i>The Unnatural and Accidental Women</i> • Antoine De saint Exupery: <i>The Little Prince</i> • Julio Cortazar: “Blow-Up” • Judith Wright: “Bora Ring” • Gabriel Okara: “The Mystic Drum” • Kishwar Naheed: “The Grass is Really Like Me” • Shu Ting: “Assembly Line” • Jean Arasanayagam “The Dead Soldiers”.
19	Sem I (NEP)	ENG010104 English Literary and social History Paper 1	Through this paper the students will learn the chronological English literary and cultural history. They will read and relate the circumstance that influenced, shaped, and contributed to the process of literary production from the medieval period to the present in England.	<ul style="list-style-type: none"> • Medieval to the Renaissance • The Enlightenment to the Nineteenth Century • Modern to the Present • Terms and Themes in Literature

DEPARTMENT OF GEOGRAPHY
DARRANG COLLEGE, TEZPUR

7. BA / B.Sc Geography

Programme Specific Outcomes :

B.A./B.Sc (Honours) Geography (CBCS) effective from the academic year 2019-2020

Four year Undergraduate Syllabus in Geography as per NEP 2020

B.A./B.Sc (Honours) Geography effective from the academic year 2023

After the completion of the programme, a student will be able to :

1. Understand the basic principles of physical geography, human geography, economic geography, population and settlement geography, environmental geography, geography of resources and development and geography of tourism.
2. Learn the basic principles of geomorphology, climatology, biogeography, environmental and disaster management, cartographic and quantitative methods, surveying techniques, remote sensing, GIS and GPS.
3. Practice the application of theoretical principles through laboratory experiments and field studies.
4. Acquire in-depth knowledge of the geography of India w.s.r. to North East India.
5. Gain theoretical and practical knowledge of regional development and planning as well as resource and development.
6. Develop the critical thinking ability in order to design, analyse, record and map the various results that acquired through laboratory experiments and field studies.
7. Acquire knowledge about the safe handling of surveying instruments, computers and GPS gadgets during laboratory experiments and field work.

Course Outcomes:

Sl. No.	Semester	Paper Code & Title	Course Outcomes	Unit/Chapter	Fink's Taxonomy Levels
BA/B.Sc (Honours) Geography					
1	I	GGY-HG-1016 Physical Geography	The students will learn that the earth is unstable and it is undergoing constant changes due to dynamic earth's processes. The students will come to know about the meaning and scope of geomorphology as a major branch of physical geography. After gaining knowledge based on the contents embodied in this paper, the students will be able to realize the importance of geomorphological knowledge as applied in various developmental activities executed on the land and over the earth's surface.	Physical Geography - Definition and Scope, Components of Earth System	Foundational knowledge, Understand, Remember
				Atmosphere – Composition and the vertical structure, Heat Balance	Understand, Remember
				Lithosphere – Internal Structure of the Earth based on Seismic Evidence	Understand, Remember
				Endogenetic and Exogenetic processes, Works of River, Fluvial Cycle of Erosion Davis	Understand, Remember
				Hydrosphere: Hydrological Cycle	Understand, Remember
				Relief representation from the topographical sheet	Application, Skills, critical thinking, creative thinking, practical thinking
		Profile Drawing Rainfall Temperature Graph, Climograph and Hythergraph			
2	II	GGY – HG – 2016 Human Geography	The paper will be useful for students in developing ideas on human environment issues that geographers usually address in the anthropocene. The paper will be useful for students preparing for UGC NET/SLET exams and other competitive exams including the civil services.	Field of human geography	Foundational knowledge, Understand, Remember
				Concepts of man – environment relationship	Understand, Remember
				Impact of environment on man	Understand, Remember
				Global patterns of racial, religious and linguistic composition of population	Understand, Remember
				Origin, growth and characteristics of rural and urban settlements	Understand, Remember
				Traditional house types of selected ethnic groups of North-East India, Trend of population growth in the world in relation to five most populous countries of the world using line graph, religious	Application, Skills, critical thinking, creative thinking, practical thinking
		Practical			

				composition of population in the world and three most populous countries of the world using pie-graph, spatial patterns of urban population in Assam and N.E.India at state level through choropleth map, drawing of major rural settlement types/patterns; morphological diagram of a village and a town.	
3	III	GGY-HG-3016 Economic Geography	The paper will be useful for students in developing ideas on how geographical aspects organize economic space and will offer perspectives to students if they wish to pursue a research programme. The paper will be useful for students to acquire knowledge about spatial patterns of various economic activities on the earth. The paper will be useful for students preparing for UGC NET/SLET exams and other competitive exams including the civil services.	Meaning and scope of Economic Geography	Foundational knowledge, Understand, Remember
				Economic activity	Understand, Remember
				Agriculture	Understand, Remember
				Manufacturing	Understand, Remember
				Transport system	Understand, Remember
				Trade	Understand, Remember
		Practical		Trade of rice, wheat and iron and steel production in the world/India since 1960 using moving average method, Trend of production of wheat, rice, maize and barley in the world/India since 1960 using Band-graph, Trend of balance of trade relations (export and import value) of India with Bangladesh, Nepal and Bhutan in respect of major commodities since 1990 using Bar-graph, Regional variation in fertilizer consumption and agricultural productivity in rice, wheat and barley in selected countries of the world using Bar-Graph, Inter-state and Inter-nation volume of movement of selected commodities through flow cartogram.	Application, Skills, critical thinking, creative thinking, practical thinking

4	III	GGY-HG-3026 Cartographic Methods	Understanding the importance of various cartographic techniques in geographical study General understanding of map type, map scale and map content. An acquaintance of different cartographic techniques for representation of various facets of physical and human geographic data of any area.	Meaning of cartography and its need in geography	Foundational knowledge, Understand, Remember
				Shape and size of the earth	Understand, Remember
				Map	Understand, Remember
				Map Projection	Understand, Remember
				Thematic map	Understand, Remember
		Practical		Construction of graphical scale, computation work for conversion of map scale, construction of graticule of map projection along with properties and uses: Zenithal polar gnomonic, simple conical with one standard parallel, simple cylindrical and Gall's stereographic cylindrical, representation of physical and human geographic data through choropleth and isopleth mapping and pie cartogram	Application, Skills, critical thinking, creative thinking, practical thinking
		5		IV	GGY-HG-4016 Geography of India w.r.to N.E. India
Physical setting	Understand, Remember				
Climate	Understand, Remember				
Population Growth and its distribution	Understand, Remember				
Agriculture	Understand, Remember				
Distribution and characteristics/potential of Natural Resources	Understand, Remember				
Factors influencing Industrial development in the country	Understand, Remember				
North-East India	Understand, Remember				
Practical	Trend of population growth and growth rates in India and N.E. India, spatial variation in decennial population growth rate in India, Spatial variation in the patterns of religious composition of population in India, Trend of food grains		Application, Skills, critical thinking, creative thinking, practical thinking		

				production in India since 1950-51 using band-graph, Map showing distribution of major tribal groups in North-East India	
6	IV	GGY-HG-4026 Population and Settlement Geography	The paper will be useful for students in developing ideas about spatio-temporal changes in the characteristics of population and settlement and the factors associated with them. The paper will be useful for students preparing for competitive exams including the civil services.	Defining the field of population geography	Foundational knowledge, Understand, Remember
				Sources, characteristics and problems of population data	Understand, Remember
				Distribution and density of population	Understand, Remember
				Population Growth	Understand, Remember
				Theories of population growth	Understand, Remember
				Population composition and associated characteristic patterns in global contexts	Understand, Remember
				Defining the field of settlement of geography	Understand, Remember
				Rural and urban settlements	Understand, Remember
		Practical		Population growth of Assam by line graph, Choropleth map to show spatial pattern of decadal variation in population growth, Choropleth map to showing spatial pattern of population density, pie graph, Choropleth map showing spatial pattern of level of urbanization in Assam, Flow cartogram showing direction and volume of migration into Assam, Map showing distribution of towns and their varied population size with spheres in Assam	Application, Skills, critical thinking, creative thinking, practical thinking

7	V	GGY-RE-5016 Environmental Geography and Disaster Management	This paper will be useful for the students in developing ideas on environmental issues including disasters that geographers usually address. Students will be able to analyse the cause and management issues related to disasters taking place in students own localities. The students will be able to differentiate the types of disasters, causes and their impact on environment and society along with various disaster management strategies and their applicability in different situations. The paper will be useful for students preparing for competitive exams including the civil services.	Environmental Geography	Foundational knowledge, Understand, Remember
				Human-Environment Relationships	Understand, Remember
				Major Global Environmental Problems	Understand, Remember
				Meaning of Hazard, Disaster, Risk and Vulnerability	Understand, Remember
				Disaster Management Cycle and Phases	Understand, Remember
				Major Hazards and Disasters and their Management	Understand, Remember
				National Environmental Policy and National Disaster Management Plan	Understand, Remember
				Exploring satellite imageries and toposheets to observe bank line change of Brahmaputra river, Mapping of major wetlands in a district and computation of shape and size, Preparation of a map of a nearby wetland and identify the changes in dimension, water level and encroachment it faced during the last one decade, Preparation of a long-term precipitation time series curve for any selected station of N.E. India using moving average method, Drawing of a diagram of disaster management cycle with reference to some disasters in North-East India, Drawing of a map of Assam showing the major fault lines thereon, Preparation of a disaster vulnerability map of Assam	Application, Skills, critical thinking, creative thinking, practical thinking
		Practical			

8	VI	Geography of Resources and Development	This paper will be useful to students in developing ideas on different aspects of resources, and the linkages with development issues that geographers usually address. This paper will also be useful for students preparing for different competitive examination including the civil services.	Geography of Resources and Development	Foundational knowledge, Understand, Remember
				Natural Resources for Development:	Understand, Remember
				Development and Environment	Understand, Remember
				Global issues of Natural Resources and Development	Understand, Remember
				Pattern of Economic Development and Resource use	Understand, Remember
		Practical		Determination of levels of development in India using simple composite index and ranking method, Mapping of physiological density of population in Assam, Mapping of spatial variation of category-wise forest cover, Identification of important natural resources/resource sites, Preparation of resource potential map of North-East India at state level showing spatial variation in production of selected commodities, Correlation and regression analysis of irrigation and intensity of cropping in Assam, Time series analysis of the trend of Coal/Crude oil/Natural gas production in India using moving average method and least squares method.	Application, Skills, critical thinking, creative thinking, practical thinking

BA/B.Sc (Regular) Geography

9	I	GGY-HC-1016 Geomorphology	The students will learn that the earth is unstable and it is undergoing constant changes due to dynamic earth's processes. The students will come to know about the meaning and scope of geomorphology as a major branch of physical geography.	Physical Geography – Components of Earth System	Foundational knowledge, Understand, Remember
				Atmosphere	Understand, Remember
				Lithosphere	Understand, Remember
				Endogenetic and Exogenetic processes, Works of River	Understand, Remember
		Practical	After gaining knowledge based on the contents embodied in this paper, the students will be able to realize the importance of geomorphological knowledge as applied in various developmental activities executed in different areas.	Hydrosphere, hydrological cycle	Understand, Remember
				Study of Topographical Maps: Topographical map content and numbering system, profile drawing, preparation of slope map / relative relief map: Wentworth's method and Smith's method, delineation of drainage basin and drainage network, construction of cross and long profile, stream ordering by Horton and Strahler's method, interpretation of Geological map and construction of cross – section.	Application, Skills, critical thinking, creative thinking, practical thinking
10	I	GGY-HC-1026 Cartographic Techniques	Understanding the importance of various cartographic techniques in geographical study . General understanding of map type, map scale and map content. An acquaintance of different cartographic techniques for representation of various facets of physical and human geographic data of any area.	Cartography	Foundational knowledge, Understand, Remember
				Coordinate system	Understand, Remember
				Type of Maps	Understand, Remember
				Map Projection	Understand, Remember
		Practical		Thematic mapping	Understand, Remember
				Construction of graphical scale, conversion of map scale, Construction of graticules of Zenithal Polar Gnomonic and Stereographic, Simple Conical with one standard parallel, Bonne's conical, Gall's Stereographic Cylindrical along with their properties, uses and limitations, preparation of thematic maps	Application, Skills, critical thinking, creative thinking, practical thinking
11	II	GGY-HC-2016 Human Geography	The paper will be useful for students in developing ideas on human environment issues that geographers usually address in the anthropocene. The paper will be useful for students preparing for UGC NET/SLET exams and other competitive exams including the civil services.	Defining the field of human geography	Foundational knowledge, Understand, Remember
				Schools of human geography	Understand, Remember
				Paradigms of man-environment relationship study	Understand, Remember
				Man and environment relationship	Understand, Remember
				Man and culture	Understand, Remember
		Practical		Human Settlements	Understand, Remember
Traditional house types of selected ethnic groups of N.E. India and India, Trend of population growth in	Application, Skills, critical thinking, creative thinking,				

				the world in relation to five most populous countries of the world using line graph, Religious and Linguistic composition of population in the world and five most populous countries of the world using pie-graph, Spatial patterns of scheduled tribes population and urban population in India at state level through choropleth map, Drawing of major rural settlement types/patterns; Morphological diagram of a village and a town, Drawing of internal model structure of towns according to Burgess and Hoyt, Mapping of distribution of major racial and linguistic groups of population in the world.	practical thinking
12	II	GGY-HC-2026 Climatology and Biogeography	The paper will be useful for students in developing ideas on climate related aspects of geographical analysis. The paper will help provide theoretical insights and perspectives to students if they wish to pursue a research programme in future. Students will develop a basic understanding of the introductory concepts in biogeography. The paper be very useful for students preparing for UGC NET/SLET exams and other competitive exams including the civil services.	Meaning of climatology	Foundational knowledge, Understand, Remember
				Atmospheric Composition and Structure	Understand, Remember
				Insolation and Temperature	Understand, Remember
				Atmospheric Pressure and Wind system	Understand, Remember
				Atmospheric Moisture	Understand, Remember
				Climatic classification of Koppen and Trewartha	Understand, Remember
				Cyclones and anticyclones	Understand, Remember
				Meaning, Scope and Significance of biogeography	Understand, Remember
				Ecology and Ecosystem	Understand, Remember
				Global distribution of major plants and animals	Understand, Remember
				Biomes and Biodiversity hotspots of the world	Understand, Remember
				Soil as a component of environment	Understand, Remember
	Practical	Interpretation of Indian Weather map, Preparation of weather reports of Indian subcontinent, Preparation of rainfall-temperature graphs; hythergraph, climograph and ergograph taking data from India/N.E. India/Assam, Calculation of average annual rainfall and variability of annual rainfall	Application, Skills, critical thinking, creative thinking, practical thinking		
13	III	GGY-HC-3016 Economic Geography	The paper will be useful for students in developing ideas on how geographical aspects organize economic space and will offer perspectives to students if they wish to pursue a research programme. The paper will be useful for students preparing for UGC NET/SLET exams and other competitive exams including the civil services.	Meaning, scope and approaches of Economic Geography	Foundational knowledge, Understand, Remember
				Economic activity	Understand, Remember
				Agriculture	Understand, Remember
				Manufacturing	Understand, Remember
				Transport system	Understand, Remember
				Trade	Understand, Remember
				Practical	Trend of rice, wheat and iron & steel production in

				the world/USA/India since 1960 using moving average and least squares methods, Trend of production of wheat, rice, maize and barley in the world/USA since 1960 using Band-graph, Trend of balance of trade relations of India with USA, China and Japan in respect of major commodities since 1990 using Bar-graph, Regional variation in fertilizer consumption and agricultural productivity in rice, wheat and barley in selected countries of the world using Bar-graph, Inter-state/Inter-nation volume of movement of selected commodities and Inter-city movement of traffic/bus in N.E. India through flow cartogram	thinking, creative thinking, practical thinking
14	III	GGY-HC-3026 Geography of India with Special reference to N.E. India	The paper will be useful for students in developing understanding on Indian geography and its various dimensions. It will also be useful for students preparing for UGC NET/SLET exams and other competitive exams including the civil services.	India's location and its significance; administrative divisions	Foundational knowledge, Understand, Remember
				Physical setting of India	Understand, Remember
				Population of India	Understand, Remember
				Agriculture of India	Understand, Remember
				Industry of India	Understand, Remember
				North-East India	Understand, Remember
	Practical	Trend of population growth and growth rates in India and N.E. India since 1901 using Census data, Choropleth mapping to show spatial variation in decennial population growth rate in India, Spatial variation in the patterns of religious composition of population in India and Social composition of population, Trend of food grains production, Map showing distribution of major tribal groups in North-East India	Application, Skills, critical thinking, creative thinking, practical thinking		

15	III	GGY-HC-3036 Quantitative Methods in Geography	Thorough understanding of the statistical methods and techniques used in geographical studies, Understanding of tabulation, analysis and interpretation of geographical data.	Quantification and its significance in geographical study	Foundational knowledge, Understand, Remember			
				Geographical Data	Understand, Remember			
				Measures of central tendency	Understand, Remember			
				Sampling techniques	Understand, Remember			
				Time series analysis and its applications in geographical studies	Understand, Remember			
				Correlation and Regression Analysis	Understand, Remember			
		Practical		Tabulation/Grouping of geographical data for making frequency distribution table	Application, Skills, critical thinking, creative thinking, practical thinking			
				Computation of mean, median and mode for ungrouped and grouped geographical data				
				Determination of the location of spatial mean centre of settlements				
				Computation of the values of standard deviation and coefficient of variation of ungrouped and grouped data relating to some geographical phenomena				
				Analysis of time series data of some geographical phenomena using moving average and least squares methods				
				Computation of coefficient of correlation between two logically associated geographical phenomena using Spearman's rank correlation and Pearson's product-moment correlation formulae				
				GGY-SE-3014 River Basin Studies		At the end of the course, the students will be able to learn use of a few instruments like rotameter, planimeter, Dumpy Level, etc. To acquaint with the field methods of river studies in across-section. To learn the basics of morphometric analysis techniques.	Concept of river basin	Foundational knowledge, Understand, Remember
							Concept of fluvial system	Understand, Remember
River basin as a fundamental geomorphic unit	Understand, Remember							
Understanding the linear, areal and relief aspects of a river basin	Understand, Remember							
Concept of sediment production zone, sediment transfer zone and sediment deposition zone and associated processes	Understand, Remember							
Sources of water flow in a river basin	Understand, Remember							
Concept of basin runoff and channel discharge factors affecting basin runoff	Understand, Remember							
Practical	Delineation of a river basin along with drainage	Application, Skills, critical						

				network from topographical sheet and preparation of a basin physiography map, conduct of morphometric analysis, Computation of bifurcation ratio, length ratio and basin circulatory ratio, Relationship analysis using semi-log graph paper between stream order and stream number; stream order and average stream length; stream order and drainage area, Cross-sectional survey of a river and construction of profiles at least at three points, Preparation of stream frequency and drainage density maps of a river basin, Estimation of basin runoff for winter and summer months taking monthly water discharge data and preparation of a hydrograph	thinking, creative thinking, practical thinking
17	IV	GGY-HC-4016 Environmental Geography and Disaster Management	This paper will be useful for students in developing ideas on environmental issues including disasters that geographers usually address. This paper will be useful for students preparing for different competitive exams including civil services.	Environmental Geography	Foundational knowledge, Understand, Remember
				Human-Environment Relationships	Understand, Remember
				Major Global Environmental Problems	Understand, Remember
				Meaning of Hazard, Disaster, Risk and Vulnerability; Types of hazard/disaster	Understand, Remember
				Disaster Management Cycle and Phases	Understand, Remember
				Major Hazards and Disasters, and their Management	Understand, Remember
				National Environmental Policy and National Disaster Management Plan	Understand, Remember
		Practical		Exploring satellite imageries and toposheets to observe bank line change of Brahmaputra river from any selected stretch in three different time periods and preparation of map there from, Mapping of major wetlands in a district of Assam, Preparation of a map of a nearby wetland and identify the changes in dimension, water level and encroachment it faced during the last one decade, Presenting data in tabular form along with the map, precipitation time series curve, Drawing of disaster management cycle, fault line map of Assam, disaster vulnerability map	Application, Skills, critical thinking, creative thinking, practical thinking
18	IV	GGY-HC-4026 Population and Settlement Geography	The paper will be useful for students in developing ideas about spatio-temporal changes in the characteristics of population and settlement and the factors associated with them. The paper will be useful for students preparing for competitive exams including the	Defining the field of population geography	Foundational knowledge, Understand, Remember
				Sources, characteristics and problems of population data	Understand, Remember
				Distribution and density of population	Understand, Remember
				Population Growth	Understand, Remember

			civil services.	Theories of population growth	Understand, Remember
				Population composition and associated characteristic patterns in global contexts	Understand, Remember
				Defining the field of settlement of geography	Understand, Remember
				Rural and urban settlements	Understand, Remember
				Morphology of rural and urban settlements	Understand, Remember
				Concept of settlement hierarchy	Understand, Remember
				primate city and urban fringe; Christaller's Central Place Theory	Understand, Remember
		Practical		Trend of population growth in Assam/N.E. India/India through line graph, Calculation and graphical representation of trend of decadal and annual growth rates of population in Assam/N.E. India/India, decadal variation in population growth in Assam, population density in Assam, Nearest Neighbour Analysis, pie-graph, Map showing distribution of towns, Flow cartogram	Application, Skills, critical thinking, creative thinking, practical thinking
19	IV	GGY-HC-4036	The paper remains useful for students in developing skills in spatial data analysis if they wish to pursue a research programme. The paper will be useful for students preparing for different competitive exams including the civil services.	Remote Sensing: Definition and History of Development	Foundational knowledge, Understand, Remember
		Remote Sensing, GIS and GPS		Principles of Remote Sensing System	Understand, Remember
				Remote Sensing data products, sources and characteristics	Understand, Remember
				Application of Remote Sensing	Understand, Remember
				Geographical Information System	Understand, Remember
				GIS Data Types & Structures	Understand, Remember
				Data Layer Extraction and Spatial Analysis	Understand, Remember
				Application of GIS in geographical studies	Understand, Remember
				Global Positioning System	Understand, Remember
				GPS in surveying and mapping	Understand, Remember
		Practical		Visual Interpretation of Aerial photograph and Satellite Imagery, Analysis of aerial photographs and satellite image, Geo-referencing and Data layer creation, GPS data collection, plotting and mapping of various features within college campus.	Application, Skills, critical thinking, creative thinking, practical thinking

20	IV	GGY-SE-4014 Advanced Statistical Techniques for Spatial Analysis	It provides general understanding of geographical data and application of various statistical measures for their meaningful analysis. Acquiring basic knowledge about probability and normal distributions and their applications for sample data collection and analysis. Understanding the patterns and processes associated with various geographical phenomena through application of different statistical techniques	Statistics and Geography	Foundational knowledge, Understand, Remember
				Application of the measures of central tendency and dispersion	Understand, Remember
				Application of probability distributions	Understand, Remember
				Meaning and importance of sampling in geographical studies	Understand, Remember
				Correlation and regression analysis in geography:	Understand, Remember
		Introduction to the concept and application of Location quotient		Understand, Remember	
		Practical		Setting of hypothetical data of a geographical phenomenon for normal, positively skewed and negatively skewed distributions, calculation of mean, median, mode and coefficient of skewness, and representation of the positions of mean, median and mode in the respective frequency distribution curves, Graphical representation of median and mode for a given set of grouped data of a geographical attribute, Computation of correlation, Analysis of appropriate geographical data for computation/representation of LQ, gender disparity in literacy or work participation, and composite scores of socio-economic development	Application, Skills, critical thinking, creative thinking, practical thinking
21	IV	GGY-SE-4024 Surveying Techniques	Understanding the importance of various surveying techniques in geographical study . General understanding of preparation procedures of different types of plan and map, An acquaintance of different surveying techniques for representation of various spatial objects/ Phenomena.	Surveying	Foundational knowledge, Understand, Remember
				Principles of surveying	Understand, Remember
				Techniques of surveying by Plane Table, Prismatic Compass, Theodolite and Dumpy Level	Understand, Remember
				Methods of radiation, intersection, traversing, contouring and leveling in surveying	Understand, Remember
				GPS	Understand, Remember
		Practical		Preparation of a plan or a map of an area within the college campus or any suitable area using Plane Table, Open and Closed Traverse Surveying with Prismatic Compass, Closed Traverse Surveying with Theodolite, Profile leveling and contouring in a selected area by Dumpy Level , Preparing a map of a short trail along with prominent features by using hand-held GPS and associated software/freeware.	Application, Skills, critical thinking, creative thinking, practical thinking

22	V	GGY-HC-5016 Social and Political Geography	This course will help equip the students to comprehend various social and political aspects of phenomena and their interface within the realm of geography. The paper will be very useful for students preparing for various competitive examinations including civil services.	Social Geography	Foundational knowledge, Understand, Remember	
				Concept and types of social space and social groups	Understand, Remember	
				Social Well-being	Understand, Remember	
				Contribution of race, religion, language and ethnicity in promoting diversity in India	Understand, Remember	
				Social Geographies of inclusion and exclusion	Understand, Remember	
				Political Geography	Understand, Remember	
				Concept of state, nation, and nation-state	Understand, Remember	
				Concept of frontiers and boundaries	Understand, Remember	
				Concept of Geopolitics, Heartland and Rimland; Mackinder's Heartland Theory	Understand, Remember	
		Concept of colonialism, neo colonialism and lebensraum		Understand, Remember		
Practical		Mapping the spatial patterns of human development in India and Assam using HDI, Construction of Ternary Diagram, Level of Social well-being with the help of composite Z-score, Sex disparity in literacy in India/North-East India using Sopher's Disparity Index, Construction of a map of India, Reorganization of the states of North-East India	Application, Skills, critical thinking, creative thinking, practical thinking			
23	V	GGY-HC-5026 Field Techniques in Geography	This course will help students to proceed with a research problem and the steps she/he should adopt and the tools and craft to be employed for doing quality research. Students perceive fieldwork to be beneficial to their learning, because through it they experience 'geographical reality', and have deeper understanding of the subject. The students will have a chance to interact with respondents and collect data through questionnaire directly from the field. This course will develop understanding about designing and writing a field report	Geography and Field Studies	Foundational knowledge, Understand, Remember	
					Concept of Case Study and Its identification in the varying geographical contexts	Understand, Remember
					Tools and Techniques in Field Studies	Understand, Remember
					Surveying	Understand, Remember

				Preparation of Field Study Report and its broad design	Understand, Remember
		Practical		Field observations of a near-by area and preparation of a brief report (within 4-5 pages) about the prevailing physical and human landscape of the area along with its spot photograph, Longitudinal profile leveling and contouring in College campus and any nearby area with Dumpy Level, and plotting of collected data in the forms of longitudinal profile and contour map, Collection of point data from an area with handheld GPS and preparation of a GPS data table and distribution map with down-loaded data.	Application, Skills, critical thinking, creative thinking, practical thinking
24	V	GGY-HE-5046 Regional Development and Planning	The paper will be useful for students in developing ideas on disparities within and between countries and their fallout. The paper will help provide theoretical insights and perspectives to students, if they wish to pursue a higher studies or research in future. The paper will be very useful for students preparing for various competitive examinations including civil services.	Region	Foundational knowledge, Understand, Remember
				Regional planning	Understand, Remember
				Regional Planning in India	Understand, Remember
				Planning regions of India with special reference to North-East India	Understand, Remember
				Concept of Development	Understand, Remember
				Regional Development theories and models	Understand, Remember
				Human development	Understand, Remember
				Disparity of Regional Development in India : Development indicators	Understand, Remember
		Practical		Delineation of agricultural productivity regions in Assam, Delineation of influence zones of selected urban centers of Assam/ NE India by using Reilly's Breaking Point formula, Preparation of land use maps of any suitable area for two different points of time for identifying the changes in settlement, agriculture land, forest cover, water bodies, etc. during the period, Preparation of a choropleth map to show regional disparity in development in India and N. E. India based on selected indicators using	Application, Skills, critical thinking, creative thinking, practical thinking

				Ranking Method and Composite Z-Score method, Preparation of flow cartogram to show volume of inter-state movement of different commodities in India/NE India	
25	V	GGY-HE-5056 Urban Geography	It seeks to develop new insights among students on the relevance of an urban geography and associated problems in a rapidly urbanizing world. It will help build skills among students seeking advanced studies on urban development and planning. The paper will be very useful for students preparing for various competitive examinations including civil services.	Urban Geography	Foundational knowledge, Understand, Remember
				Origin and growth of towns in global and national contexts	Understand, Remember
				Patterns of Urbanisation in developed and developing countries	Understand, Remember
				Organization of urban space	Understand, Remember
				Concept of city-region, urban agglomeration, urban sprawl, umland and periphery, rural-urban dichotomy and continuum, urban fringe, satellite town, new town, smart city	Understand, Remember
				Urban Systems	Understand, Remember
				Urban issues and problems	Understand, Remember
				Urbanization and urban development planning in India	Understand, Remember
		Practical		Plotting of million cities of India by using proportionate sphere method, Determination of spatial mean centres of urban settlements using weighted centographic measure in Assam and NE India, Nearest Neighbour Analysis, Choropleth map showing spatial pattern of level of urbanization in Assam, Determination of rank-size relationship of urban centres in Assam, Urban population potential mapping based on selected urban centres of Assam, Delineation of urban influence zones of selected urban centres of Assam.	Application, Skills, critical thinking, creative thinking, practical thinking
26	VI	GGY-HC-6016 Geographical Thought		Early development of Geography	Foundational knowledge, Understand, Remember
				Foundation of modern geography	Understand, Remember
				Evolution of geographical thought	Understand, Remember
				Recent trends in geography	Understand, Remember
				Geographical debates	Understand, Remember
				Models in geography	Understand, Remember
		Practical		Mapping of routes of exploration and discoveries, Intensity of spatial interaction of Guwahati city with	Application, Skills, critical thinking, creative thinking,

				neighbouring urban centres, Mapping of population potential surfaces in Assam using the gravity model, Demarcation of urban influence zone by using Reily's breaking point formula, Trend of development of paradigms in geography, Preparation of a world map highlighting the major developments of geography, Greek and Arabian contributions to the development of Geography in different ages	practical thinking
27	VI	GGY-HC-6026 Research Methods in Geography and Project Work	This course will help the students to proceed with a research problem and the steps she/he should adopt and the tools and craft to be employed while doing quality research	Meaning and significance of research	Foundational knowledge, Understand, Remember
				Geographic Research	Understand, Remember
				Research Design	Understand, Remember
				Data Collection	Understand, Remember
				Statistical Analysis of Data	Understand, Remember
		Structure of a Research Report		Understand, Remember	
		Practical		Each student will have to prepare a Project Report on a suitable geographical problem under the guidance of respective teacher following appropriate methodology, data base and literature review	Application, Skills, critical thinking, creative thinking, practical thinking
28	VI	GGY-HE-6026 Hydrology	After completion of this course the students will be able to speak on the basic concepts of hydrology and its application in river basin studies. Students will also have a practical orientation of the concepts both in laboratory and in the field.	Meaning and Scope of hydrology	Foundational knowledge, Understand, Remember
				Hydrological cycle	Understand, Remember
				Runoff characteristics	Understand, Remember
				Ground water hydrology	Understand, Remember
				Basin or catchment hydrology	Understand, Remember
				River Hydrology	Understand, Remember
				Flood hydrology	Understand, Remember
				Anthropogenic activities and river basin hydrology	Understand, Remember
					Practical

29	VI	GGY-HE-6036 Geography of Tourism	The paper will be useful for students in developing ideas on how geographical factors tangent on tourism activities and how geographers seek to address issues of development and carrying capacities of varied environments. It will also build skills for students seeking to enroll in a research programme and/or provide openings for them to work with tourism/eco-tourism planning agencies.	Geography of Tourism	Foundational knowledge, Understand, Remember
				Factors and types of tourism	Understand, Remember
				Recent trends in tourism	Understand, Remember
				Impact of tourism on economy, environment and society	Understand, Remember
				Tourism development in India	Understand, Remember
		Practical		Trend of growth of tourist arrivals in the World/India/Assam since 1960 using Moving average method and least squares method, Trend of tourist arrivals in the north-eastern states of India and a few top-ranking tourist arriving states of India since 1980 using Band-graph, Line Graph showing pattern of tourist arrival in relation to rainfall and temperature in a year for selected tourist spots of North-East India, Spatial Patterns of Seasonal variation (Spring, Summer, Autumn and Winter) in tourist arrival in capital cities of North-East Indian states using Pie diagram and Bar Diagram, Preparation of a transport connectivity (road, railway and air) map of Assam, Preparation of a tourist map of North-East India, Preparation of a tourist guide map of North-East India, Mapping of trekking route in a hilly area suitable for adventure tourism using GPS	Application, Skills, critical thinking, creative thinking, practical thinking

**Four year Undergraduate Syllabus in Geography as per NEP 2020
B.A./B.Sc (Honours) Geography effective from the academic year 2023**

Course Name: Introduction to Physical Geography (Major / Minor Course)

30	I	Introduction to Physical Geography	To introduce students to the principles of physical geography and their application. To enable students to develop a deep understanding of the processes that drive physical geography. To enable students to apply the principles of physical geography to practical and real world situations. Students will be capable to explain the basic concepts and principles of physical geography, to Identify the major processes that shape the earth's physical environment, To analyse how physical geographic processes impact human activities and development. Students can apply critical thinking skills to analyse and solve problems related to physical geography.	Evolution and growth of Physical Geography	Foundational knowledge, Understand, Remember
				Geomorphology	Understand, Remember
				Climatology	Understand, Remember
				Oceanography	Understand, Remember
				Biogeography	Understand, Remember

DEPARTMENT OF HINDI
DARRANG COLLEGE, TEZPUR

8. BA Hindi

Programme Specific Outcome:

विशिष्ट पाठ्यक्रम परिणाम

गौहाटी विश्वविद्यालय द्वारा निर्धारित चयन आधारित क्रेडिट-व्यवस्था की पाठ्यचर्चा के अंतर्गत हिन्दी स्नातक (ऑनर्स) पाठ्यक्रम के विशेष परिणाम नीचे उद्धृत किया गया है :

1. विद्यार्थी संप्रेषण का अध्ययन करते हुए भाषा के आदान प्रदान की प्रक्रियाओं को समझ पायेंगे । जिसमें मौखिक तथा लिखित संप्रेषण की जानकारी भी भी प्राप्त होगी ।
2. विद्यार्थी हिन्दी साहित्य के विभिन्न कालखंडों विभिन्न कालखंड से परिचित होंगे , जैसे आदिकाल, भक्तिकाल, रीतिकाल और आधुनिककाल ।
3. सिद्ध व नाथ साहित्य से लेकर कबीर, सुरदस तुलसीदास, बिहारी, घनानंद, भूषण, मोतिरम, और अन्य आदिकालीन अथा रीतिकालीन कवियों का परिचय प्राप्त करने के पश्चात भारतेन्दु हरिश्चंदा, महावीर प्रसाद द्विवेदी, माखनलाल चतुर्वेदी, दिनकर, प्रेमचंद, जयशंकर प्रसाद, निराला, महादेवी वर्मा, अज्ञेय, सुमित्रानन्दन पंत, मन्नू भण्डारी, जैनेंद्र, आदि आधुनिक कवि तथा लेखकों के साहित्य कर्म और व्यक्तित्व का परिचय प्राप्त करेंगे ।
4. आदिकालीन और आधुनिक कवियों तथा लेखकों की रचनाओं जैसे-कहानी, उपन्यास, निबंध, नाटक और कविताएँ आदि केपी पढ़कर और उनके विश्लेषण के द्वारा शिक्षार्थी को जीवन की वास्तविकताओं को समझने की प्रेरणा मिलती है । कबीर की साखी पारिवारिक जीवन के दैनिक मामलों को समझने की सिख देती है तो तुलसी का वर्णन आध्यात्मिकता से जोड़ती है । प्रेमचंद की कहानियाँ जीवन संघर्ष करने की सिख देती है तो मन्नूभंडारी, जैनेंद्र का साहित्य आधुनिक मानवजीवन की चुनौतियों को उजागर करते हुये अच्छे-बड़े का फर्क सीखते हैं ।

5. पाठ्यक्रम में अंतर्निहित "भाषाविज्ञान" का अध्ययन करते हुये विद्यार्थी भाषा के उद्भव विकास से लेकर ध्वनि संदर्भ, रूप संदर्भ, अर्थ विस्तार, अर्थ संकोचन, भाषा विज्ञान और मानविकी का संबंध आदि का ज्ञान प्राप्त करेंगे ।
6. हिन्दी साहित्य अध्ययन को सुदृढ़ आधार प्रदान करने के लिए भारतीय और पाश्चात्य काव्यशास्त्र का श्यायन पाठ्यक्रम में शामिल किया गया है । इसके अंतर्गत अलंकार, रस, छंद तथा प्लेटों, अरस्तू, लॉगिनुस, वर्ड्सवर्थ आदि पाठ्यक्रम में शामिल किया गया है ।
7. प्रयोजनमूलक हिन्दी का अध्ययन करते हुए विद्यार्थियों को सरकारी कर्मचारी के रूप में कार्यालयों में कामकाज के लिए अवगत कराएंगे।
8. हिन्दी की साहित्यिक पत्रकारिता अपने आप में विशिष्ट है जहाँ पत्रकारिता के गुण-अवगुण की बात कहीं जाती है । सामाज में पत्रकारिता को समाज का चौथा स्तंभ कहते हैं । समाज निर्माण में पत्रकारिता की महत्वपूर्ण भूमिका रहती है ।
9. अनुवाद विज्ञान का अध्ययन से विद्यार्थियों को एक भाषा से दूसरी भाषा की अनुवाद करने की क्षमता प्राप्त होगी ।

Course Outcome:

प्रश्न-पत्र परिणाम :

क्रमिक संख्या	सेमेस्टर	प्रश्न-पत्र के कोड एवं प्रश्न-पत्रों के नाम	प्रश्न-पत्र का परिणाम	इकाई/पाठ	ब्लूम्स टैक्सोनोमिक लेवल लागू
1	BA I/Sem(H)	HIN-CORE-1 हिन्दी संप्रेषण	<p>1. इसके जरिए विद्यार्थियों को विविध प्रकार की ज्ञान प्राप्त होंगे जैसे बातचीत करने की प्रक्रिया, कार्यालय तथा अन्य संस्थाओं में वार्तालाप की प्रविधि ।</p> <p>2. सभी औपचारिक- अनौपचारिक संदर्भ में हिन्दी के जरिए भाव-विचारों का समुचित प्रेषण-संप्रेषण (मौखिक-लिखित) कर सकें ।</p> <p>3. इसके जरिए पठान-श्रवण की क्षमता भी वृद्धि होगी ।</p>	<p>इकाई 1 : संप्रेषण-प्रकार उपयोगिता, महत्व, भाषा एवं संप्रेषण, हिन्दी ध्वनियों की औच्चारणिक विशेषताएँ</p> <p>इकाई 2: मौखिक संप्रेषण : अभिवादन, अपना परिचय-प्रदान, दूसरों की परिचय प्राप्ति, आत्मीय-जनों एवं मित्रा-मण्डली के साथ वार्तालाप,अपरिचय जन के साथ वातचीत, सामग्रियों के क्रय-विक्रय, यातायत-परिवहन,</p> <p>इकाई 3 : लिखित संप्रेषण : अनौपचारिक/ पारिवारिक पत्र-लेखन, आवेदन-पत्र-लेखन, संपादक के नाम पर पत्र लेखन, निबंध-लेखन, अनुच्छेद लेखन, संवाद लेखन,</p> <p>इकाई 4 (क) पठन-श्रवण- मातृभूमि(मैथलीशरण गुप्त), पुष्प की अभिलाषा(माखनलाल चतुर्वेदी), झाँसी की रानी (सुभद्रा कुमारी चौहान), जनतंत्र का जन्म (रामधारी सिंह दिनकर) दो बैलों की कथा (कहानी) अशोक के फूल (निबंध)</p> <p>ख) मुहावरे, लोकोक्तियाँ, पल्लवन, संक्षेपण, अपठित गद्यांश और प्रश्नोत्तरी</p>	याद रखना समझना और विश्लेषण करना

2	BA I/Sem (Minor)	HIN-Minor- 1&2 हिन्दी संप्रेषण	<p>1. इसके जरिए विद्यार्थियों को विविध प्रकार की ज्ञान प्राप्त होंगे जैसे बातचीत करने की प्रक्रिया, कार्यालय तथा अन्य संस्थाओं में वार्तालाप की प्रविधि ।</p> <p>2. सभी औपचारिक-अनौपचारिक संदर्भ में हिन्दी के जरिए भाव-विचारों का समुचित प्रेषण-संप्रेषण (मौखिक-लिखित) कर सकें ।</p> <p>3. इसके जरिए पठन-श्रवण की क्षमता भी वृद्धि होगी ।</p>	<p>इकाई 1 : संप्रेषण-प्रकार उपयोगिता, महत्व, भाषा एवं संप्रेषण, हिन्दी ध्वनियों की औच्चारणिक विशेषताएँ</p> <p>इकाई 2 : मौखिक संप्रेषण : अभिवादन, अपना परिचय-प्रदान, दूसरों की परिचय प्राप्ति, आत्मीय-जनों एवं मित्र-मण्डली के साथ वार्तालाप,अपरिचय जन कके साथ वातचीत, सामग्रियों के क्रय-विक्रय, यातायत-परिवहन,</p> <p>इकाई 3 : लिखित संप्रेषण : अनौपचारिक/ पारिवारिक पत्र-लेखन, आवेदन-पत्र-लेखन, संपादक के नाम पर पत्र लेखन, निबंध-लेखन, अनुच्छेद लेखन, संवाद लेखन,</p> <p>इकाई 4 (क) पठन-श्रवण- मातृभूमि(मैथलीशरण गुप्त), पुष्प की अभिलाषा(माखनलाल चतुर्वेदी), झाँसी की रानी (सुभद्रा कुमारी चौहान), जनतंत्र का जन्म (रामधारी सिंह दिनकर) दो बैलों की कथा (कहानी) अशोक के फूल (निबंध)</p> <p>ख) मुहावरे, लोकोक्तियाँ, पल्लवन, संक्षेपण, अपठित गदयांश और प्रश्नोत्तरी</p>	याद रखना समझना और विश्लेषण करना
3	BA I/Sem	HIN-AEC-1 हिन्दी काव्य धारा	<p>1. इसके जरिए विद्यार्थियों को कविता शिक्षण का निहित रसानुभूति या सौन्दर्यानुभूति की जानकारी प्राप्त होगी । कविता हृदय की वस्तु तथा अनुभूति की अभिव्यक्ति है</p> <p>2. इसके जरिए विद्यार्थियों को कविता लिखने की रुचि पैदा करेंगे ।</p> <p>3. इस पत्र के जरिए विद्यार्थी</p>	<p>इकाई 1 क) आदिकालीन, भक्तिकालीन और रीतिकालीन हिन्दी काव्यधारा का सामान्य परिचय</p> <p>ख) पदावली-1,6 (विद्यापति), साखी 1-5 (कबीरदास), भ्रमरगीत (सूरदास), पद 1, 2, 3, (मीराबाई), केवट प्रसंग (तुलसीदास) दोहे 1-5 (बिहारीलाल), कवित्त-1,2,3 (घनानंद)</p> <p>इकाई 2: क) आधुनिक हिन्दी काव्यधारा का संक्षिप्त परिचय</p> <p>ख) निजभाषा उन्नति (भारतेंदु हरिश्चंद्र), चित्रकूट में सीता (मैथलीशरण गुप्त), पुष्प की अभिलाषा (माखनलाल</p>	याद रखना समझना और विश्लेषण करना

			हिन्दी साहित्य के आदिकाल, भक्तिकाल, रीतिकाल, और धुनिक काल की सम्यक जानकारी प्राप्त होंगे ।	चतुर्वेदी) अशोक की चिंता (जयशंकर प्रसाद) तोड़ती पत्थर (सूर्यकांत त्रिपाठी निररला), मेरे दीपक (महादेवी वर्मा) उधार (अज्ञेय), टूटा पहिया (धर्मवीर भारती), कुत्ता (धूमिल)	
4	BA II/Sem (H)	HIN-HC-2016 आदिकालीन एवं मध्यकालीन हिन्दी कविता	<ol style="list-style-type: none"> 1. विद्यार्थी आदिकालीन कविता तथा मध्यकालीन कविता के संदर्भ में जानकारी प्राप्त कर सकेंगे । 2. कबीरदास, तुलसीदास, जायसी, विद्यापति, बिहारी, घनानंद जैसे काव्य-रस प्राप्त कर सकेंगे । 3. इसके माध्यम से कृष्णभक्ति, रामभक्ति, रीतिमुक्त, रीतिबद्ध काव्यधाराओं से परिचित होंगे 	<p>इकाई-1: विद्यापति, कबीरदास, जैसी द्वारा रचित काव्य</p> <p>इकाई-2: सूरदास, तुलसीदास, द्वारा रचित काव्य</p> <p>इकाई-3: बिहारी घनानंद के काव्य ।</p>	याद रखना समझना और व्याख्या करना
5	BA II/Sem (H)	HIN-HC-2026 आधुनिक हिन्दी कविता	<ol style="list-style-type: none"> 1. इसके अध्ययन से आधुनिककाल के कवियों के जीवन परिचय प्राप्त कर सकेंगे । 2. इसके माध्यम से विद्यार्थी आधुनिक काव्यधाराओं की विशेषताएँ का ज्ञान परप्त करेंगे । 3. इस पत्र के माध्यम से राष्ट्रियों काव्य का परिचय प्राप्त करेंगे 	<p>इकाई-1: भारतेन्दु हरिश्चंद्र और मैथिलीशरण गुप्त की कविता ।</p> <p>इकाई-2: निराला और पंत की कविताएँ ।</p> <p>इकाई-3: महादेवी वर्मा और जयशंकर प्रसाद की कविता</p>	याद रखना समझना और व्याख्या करना

6	BA III/Sem (H)	HIN-HC-3016 छायावादोत्तर हिन्दी कविता	<p>1. इस विषय के माध्यम से विद्यार्थी आधुनिक कवियों से परिचय प्राप्त करेंगे ।</p> <p>2. इस पत्र के जरिए विद्यार्थी प्रगतिवादी, प्रयोगवादी तथा नयी कविताओं से परिचय प्राप्त करेंगे ।</p> <p>3. इसके जरिए विद्यार्थी मार्क्सवादी विचारधाराओं का भी ज्ञान प्राप्त करेंगे ।</p>	<p>इकाई-1: केदारनाथ अग्रवाल और नागार्जुन की कविताएँ</p> <p>इकाई-2: दिनकर, माखनलाल चतुर्वेदी, भवानीप्रसाद मिश्र और अज्ञेय की कविताएँ ।</p> <p>इकाई-3: रघुवीर सहाय, सर्वेश्वर दयाल सक्सेना, और गिरिजाकुमार माथुर की कविताएँ।</p>	याद रखना समझना और व्याख्या करना
7	BA III/Sem (H)	HIN-HC-3026 भारतीय काव्यशास्त्र	<p>1. विद्यार्थियों को कविता लिखने के नियमों की जानकारी प्राप्त होगी।</p> <p>2. विद्यार्थियों को भारतीय काव्यशास्त्र के विभिन्न संप्रदायों जैसे अलंकार, रस, रीति, ध्वनि वक्रोक्ति, औचित्य और रस की जानकारी मिलेगी ।</p> <p>3. इस पत्र के जरिये भारतीय काव्य परंपरा का परिचय प्राप्त करेंगे ।</p>	<p>इकाई-1: काव्यहेतु, काव्यालक्षण एवं काव्य प्रयोजन, रस सिद्धांत</p> <p>इकाई 2: ध्वनि सिद्धांत आऊर अलंकार सिद्धांत</p> <p>ईकाई-3: रीति सिद्धांत, वक्रोक्ति सिद्धांत और औचित्य सिद्धांत ।</p>	याद रखना समझना और विश्लेषण करना

8	BA III/Sem (H)	HIN-HC-3036 पाश्चात्य काव्यशास्त्र	<p>1. विद्यार्थियों को पाश्चात्य कवियों की जानकारी प्राप्त होगी ।</p> <p>2. इस पत्र के जरिए विद्यार्थियों को पश्चिमी काव्य की विचारधाराओं की जानकारी होगी ।</p> <p>3. विद्यार्थी स्वच्छंदतावादी तथा शैलीविज्ञान को सीखकर लाभान्वित होंगे ।</p>	<p>इकाई-1: प्लेटो, अरस्तू और लॉगिनुस के सिद्धांत</p> <p>इकाई-2: वर्ड्सवर्थ, कॉलरिज और क्रोचे के सिद्धांत ।</p> <p>इकाई-3: टी° एस° इलियट, आई° ए. रिचर्ड्स के सिद्धांत, स्वच्छंदतावाद, यथार्थवाद, शैलीविज्ञान</p>	याद रखना समझना और विश्लेषण करना
9	BA III/Sem (H)	HIN-SE-3014 कार्यालयीन अनुवाद	<p>1. इस पत्र के जरिए विद्यार्थी कार्यालय में प्रयोग की जाने वाली भाषा की जानकारी प्राप्त कर सकेंगे ।</p> <p>2. इसके जरिए विद्यार्थी भाषा के विविध रूपों से परिचित हो पायेंगे ।</p> <p>3. विद्यार्थियों को कार्यालयीन प्रयोजनों के लिए विभिन्न यांत्रिक उपकरण जैसे कंप्यूटर, टेलीप्रिंटर, वीडियो कोन्फ्रेंस आदि की जानकारी प्राप्त होगी</p>	<p>इकाई-1: हिन्दी भाषा के विविध रूप: राजभाषा, राष्ट्रभाषा, जनभाषा आदि</p> <p>इकाई-2: टिप्पण, प्रारूप-लेखन, पल्लवन, संक्षेपन, विविध प्रकार के पत्राचार आदि ।</p> <p>इकाई-3: पारिभाषिक शब्दावली, कार्यालयीन प्रयोजनों के लिए कंप्यूटर, टेलीप्रिंटर, टेलेक्स वीडियो कोन्फ्रेंस आदि</p>	याद रखना समझना और विश्लेषण करना

10	BA IV/Sem (H)	HIN-HC-4016 भाषा विज्ञान हिन्दी भाषा, एवं देवनागरी लिपि	<p>1. इसके जरिए विद्यार्थी उच्चारण की सारी प्रविधि को सीख पायेंगे।</p> <p>2. विद्यार्थी भाषा विज्ञान हिन्दी भाषा के उद्भव-विकास तथा देवनागरी लिपि के बारे में साम्यक जानकारी प्राप्त होंगे</p> <p>3. इसके जरिए भाषा विज्ञान के विविध रूप जैसे ध्वनि विज्ञान, रूप विज्ञान, वाक्यविज्ञान, अर्थ विज्ञान आदि की ज्ञात होगी।</p>	<p>इकाई-1: भाषा: परिभाषा, विशेषताएँ, भाषा परिवर्तन के कारण आदि।, भाषा विज्ञान: परिभाषा, अंग</p> <p>इकाई-2: ध्वनि विज्ञान: परिभाषा, स्वरों का वर्गीकरण आदि रूप विज्ञान: शब्द और रूप, पद, अक्षर आदि वाक्य विज्ञान : परिभाषा, तत्व, प्रकार आदि</p> <p>इकाई-3: अर्थ विज्ञान: शब्द और अर्थ का संबंध, अर्थ परिवर्तन के कारण और दिशाएँ, हिन्दी बशा का उद्भव और विकास ताहा देवनागरी लिपि।</p>	याद रखना समझना और विश्लेषण करना
11	BA IV/Sem (H)	HIN-HC-4026 हिन्दी कथा साहित्य	<p>1. इसके जरिए विद्यार्थी उपन्यास और कहानी के उद्भव और विकास की जानकारी प्राप्त कर पायेंगे।</p> <p>2. इसके जरिए विद्यार्थियों को उपन्यास और कहानी के मूल तत्वों की जानकारी भी प्राप्त करेंगे।</p> <p>3. इसके जरिए मनुभण्डारी, जैनेंद्र जैसे उपन्यासकार के उपन्यासों की जानकारी प्राप्त करेंगे तथा प्रेमचंद जैसे महान कहानी की जानकारी भी प्राप्त होगी।</p>	<p>इकाई-1: उपन्यास एवं कहानी: परिभाषा, प्रकार, तत्व, उद्भव और विकास</p> <p>इकाई-2: त्यागपत्र, आपका बंटी (उपन्यास)</p> <p>इकाई-3: उसने कहा था, पुस ककई रात, आकाशदीप, हार की जीत, पाजेब, मिस पाल, सिक्का बदल गया, एवं पिता (कहानी)</p>	याद रखना समझना और विश्लेषण करना

12	BA IV/Sem (H)	HIN-HC-4036 हिन्दी नाटक एवं एकांकी	<p>1. इससे जरिए विद्यार्थी नाटक एवं एकांकी के उद्भव और विकास की जानकारी प्राप्त करेंगे ।</p> <p>2. नाटक और एकांकी के जरिए आधुनिक जीवन का बोध कर पायेंगे।</p> <p>3. इसके जरिए विद्यार्थी अभिनय काला की जानकारी प्राप्त कर सकेंगे ।</p>	<p>इकाई-1: नाटक एवं एकांकी: परिभाषा, तत्व, प्रकार, उद्भव और विकास आदि।</p> <p>इकाई-2: अंधेर नगरी, आषाढ़ का एक दिन (नाटक)</p> <p>इकाई-3: विषकन्या, भोर का तारा, ये स्वतंत्रता का युग (एकांकी)</p>	याद रखना समझना और विश्लेषण करना
13	BA IV/Sem (SEC)	HIN-SE-4014 अनुवाद विज्ञान	<p>1. विद्यार्थियों को अनुवाद संबंधी सैद्धांतिक और व्यावहारिक ज्ञान प्राप्त होगी</p> <p>2. इसके जरिये विद्यार्थी राजभाषा तथा इसके प्रविधि संबंधी जानकारी प्राप्त होगी ।</p> <p>3. इसके जरिये तकनीकी और सरजनात्मक के विविध क्षेत्र में अनुवाद करने की प्रक्रिया की जानकारी प्राप्त होगी ।</p>	<p>इकाई-1: अनुवाद: अर्थ, परिभाषा, स्वरूप, आवश्यकता एवं महत्व ।</p> <p>इकाई-2: अनुवाद प्रक्रियाँ के तीन चरण : विश्लेषण, अंतरण और पुनर्गठन अनुवाद की भूमिका: पाठक की भूमिका, द्विभाषिक की भूमिका</p> <p>इकाई-3: कार्यालयीन अनुवाद: शासकीय पत्र, परिपत्र, ज्ञापन, विज्ञापन आदि। व्यवहारिक अनुवाद: हिन्दी से अंग्रेजी और अंग्रेजी से हिन्दी</p>	याद रखना समझना और विश्लेषण करना

14	BA V/Sem (H)	HIN-HC-5016 हिन्दी निबंध एवं अन्य विधाएँ	<p>1. इसके जरिए विद्यार्थी आधुनिक गद्य साहित्य जैसे निबंध, संस्मरण रेखाचित्र की जानकारी प्राप्त करेंगे।</p> <p>2. इसके जरिए विभिन्न साहित्यकार के विचारधाराओं से भी परिचित होंगे।</p> <p>3. इसके माध्यम से विद्यार्थी गद्य विधाओं की शिल्पगत विशेषताओं की जानकारी भी प्राप्त करेंगे।</p>	<p>इकाई-1: निबंध, संस्मरण, रेखाचित्र: परिभाषा, स्वरूप एवं तत्व आदि</p> <p>इकाई-2: मजदूरी और प्रेम, करुणा, देवदारु, मेरे राम का मुकुट भी रहा है और महाकवि जयशंकर प्रसाद।</p> <p>इकाई-3: तुम्हारी स्मृति, भक्तिन, सुभान खाँ और पीपल</p>	याद रखना समझना और विश्लेषण करना
15	BA V/Sem (H)	HIN-HC-5026 प्रयोजनमूलक हिन्दी	<p>1. इसके जरिये विद्यार्थी हिन्दी भाषा के विविध रूपों और हिन्दी संबंधी विविध संवैधानिक प्रावधानों की जानकारी प्राप्त होगी।</p> <p>2. इसके माध्यम से कार्यालयों में विविध कार्य के लिए प्रयोग की जाने वाली भाषा की जानकारी प्राप्त होगी।</p> <p>3. इसके माध्यम से विद्यार्थी सरकारी पत्राचार, टिप्पणी, तथा मसौदा आदि की नमूना प्रस्तुत करने में सहयोग होगी।</p>	<p>इकाई-1: राष्ट्रभाषा, संपर्क भाषा, राजभाषा, अंतराष्ट्रीय भाषा के रूप में हिन्दी, संविधान में हिन्दी,</p> <p>इकाई-2: प्रयोजनमूलक हिन्दी के प्रकार</p> <p>इकाई-3: भाषा व्यवहार : सरकारी पत्राचार, टिप्पणी मसौदा आदि, पारिभाषिक शब्दावली तथा अनुवाद।</p>	याद रखना समझना और विश्लेषण करना

16	BA V/Sem (H)	HIN-HE-5016 लोक-साहित्य- चिंतन	<p>1. इसके माध्यम से लोक-जीवन का सजीव चित्रण देखनों को मिलेगी ।</p> <p>2. इसके माध्यम से विद्यार्थी लोक-साहित्य के उद्भव और विकास की जानकारी प्राप्त करेंगे ।</p> <p>3. इसके माध्यम से विद्यार्थियों को भारतीय जन-जीवन तथा विभिन्न संस्कार, अनुष्ठान, उत्सव, पर्व, आदि की जानकारी भी प्राप्त होगी ।</p>	<p>इकाई-1: लोक और लोकवार्ता, लोकसंस्कृति की अवधारणा, लोक-वार्ता और लोक-संस्कृति, लोक-संस्कृति और साहित्य आदि</p> <p>इकाई-2: भारत में लोक साहित्य के अध्ययन, वर्गीकरण तथा अध्ययन की समस्या। लोकगीत: संस्कार-गीत, व्रत गीत, श्रमगीत, ऋतुगीत आदि ।</p> <p>इकाई-3: लोक-नाट्य: रामलीला, रासलीला, कीर्तनिया, यक्षगान, नौटंकी, लोक-कथा: व्रतकथा, परिकथा, नागकथा आदि</p>	याद रखना समझना और विश्लेषण करना
17	BA V/Sem (H)	HIN-HE-5026 हिन्दी की राष्ट्रीय सांस्कृतिक काव्याधरा	<p>1. इसके माध्यम से राष्ट्रीय कविता की जानकारी प्राप्त होगी ।</p> <p>2. इसके माध्यम से राष्ट्रीय सांस्कृतिक काव्यधरा का उद्भव और विकास की जानकारी प्राप्त होगी ।</p> <p>3. इसके माध्यम से विद्यार्थी राष्ट्रीयता की भावना एवं सांस्कृतिक चेतना की भावना का ज्ञात होते हैं ।</p>	<p>इकाई-1: क) हिन्दी की राष्ट्रीय –सांस्कृतिक काव्य धारा का उद्भव और विकास)</p> <p>इकाई-2: माखनलाल चतुर्वेदी : मनुष्यता, हमारी सभ्यता, भारत की श्रेष्ठता (कविता)</p> <p>इकाई-3 रामधारी सिंह दिनकर : जनतंत्र का जन्म, भारत का यह रेशमी नगर, रक्षा कारों देवता, अवकाशवाली सभ्यता</p> <p>इकाई-4: सुभद्रा कुमारी चौहान : झाँसी की रानी, व्यथित हृदय, स्वदेश के प्रति, वीरों का कैसा हो वसंत?</p>	याद रखना समझना और विश्लेषण करना

18	BA VI/Sem (H)	HIN-HC-6016 हिन्दी की साहित्यिक पत्रकारिता	<p>1. इसके माध्यम से विद्यार्थी पत्रकारिता के गुण-दोष, उद्देश्य, उपयोगिता आदि की जानकारी हासिल कर पायेंगे</p> <p>2. इसके माध्यम से विद्यार्थी समाज पर पढ़ रहे पत्रकारिता का प्रभाव से परिचित होंगे।</p> <p>3. इसके जरिए विद्यार्थी पत्रकारिता की सारी कौशल सीख पाएँगे तथा आलेख लिखने में सुविधा होंगे।</p>	<p>इकाई-1: साहित्यिक पत्रकारिता : अर्थ, अवधारणा और महत्व भारतेंदुयुगीन साहित्यिक पत्रकारिता : परिचय और प्रवृत्तियाँ</p> <p>इकाई-2: द्विवेदीयुगीन साहित्यिक पत्रकारिता : परिचय और प्रवृत्तियाँ प्रेमचंद और छायावाद युगीन साहित्यिक पत्रकारिता : परिचय और प्रवृत्तियाँ।</p> <p>इकाई-3: स्वतंत्रयोत्तर साहित्यिक पत्रकारिता : परिचय और प्रवृत्तियाँ समकालीन साहित्यिक पत्रकारिता : परिचय और प्रवृत्तियाँ महत्वपूर्ण पत्र-पत्रिकाएँ: सरस्वती, भारत-मित्र आदि</p>	याद रखना समझना और विश्लेषण करना
19	BA VI/Sem (H)	HIN-HC-6026 हिन्दी परियोजना कार्य	<p>1. इसके माध्यम से विद्यार्थी शोध-प्रविधि की जानकारी प्राप्त कर पाएँगे।</p> <p>2. इसके माध्यम से विद्यार्थियों को पुस्तक समीक्षा की जानकारी हासिल होगी।</p>	विद्यार्थी कबीरदास, सूरदास, तुलसीदास, जायसी, बिहारी, प्रसाद, वर्मा, पंत, निराला, अज्ञेय, नागार्जुन, धूमिल, आदि के रचनाओं पर परियोजना कार्य प्रस्तुत करेंगे।	लेखन कार्य सीखना

20	BA VI/Sem (H)	HIN-HE-6016 छायावादी काव्यधारा	<p>1. इसके जरिए विद्यार्थी छायावादी काव्यधाराओ से परिचित हो पायेंगे ।</p> <p>2. इसके माध्यम से विद्यार्थी छायावाद की विशेषताएँ के बारे में जानकारी प्राप्त होगी</p> <p>3. इसके माध्यम से छायावाद के प्रमुख कवि के जीवन परिचय का ज्ञात होंगे ।</p>	<p>इकाई-1: छायावादी काव्यधारा का उद्भव विकास, जयशंकर प्रसाद की कविता ।</p> <p>इकाई-2: निराला की कविताएँ</p> <p>इकाई-3: सुमित्रानंदन पंत की कविताएँ</p> <p>इकाई-4: महादेवी वर्मा की कविताएँ</p>	याद रखना समझना और विश्लेषण करना
21	BA VI/Sem (H)	HIN-HE-6026 प्रेमचंद का साहित्य	<p>1. इसके माध्यम से विद्यार्थियों को प्रेमचंद की साहित्यिक विचारधाराओं से परिचित होंगे ।</p> <p>2. इसके जरिए लेखन कला और विचारों तथा समाज पर पढ़नेवाले प्रभावों से अवगत होंगे ।</p> <p>3. इसके माध्यम से प्रेमचंद की लेखन शैली की जानकारी प्राप्त होगी ।</p>	<p>इकाई-1: प्रेमचंद के साहित्य का सामान्य परिचय, उपन्यास: सेवासदन</p> <p>इकाई-2: नाटक-कर्बला</p> <p>इकाई-3: निबंध-साहित्य का उद्देश्य</p> <p>इकाई-4: कहानियाँ : पुस की रात, शतरंज के खिलाड़ी आदि</p>	याद रखना समझना और विश्लेषण करना

DEPARTMENT OF HISTORY
DARRANG COLLEGE, TEZPUR

9. BA History

Programme Specific Outcomes:

After completion of the programme, a student will be able to:

- Critically approach the study of history as a discipline by acquiring the ability to distinguish between fact and fiction.
- Learn about the correlation of history with other disciplines which will enable them to adopt a multi-disciplinary approach in their work.
- Expand their knowledge base of the history of Assam, India, and the contemporary world.
- Develop perspectives on historical inquiry to understand different values systems like Buddhism, Jainism, Sufism, Islam, and Christianity that affected and shaped the lives of multiple cultures of the past.
- Recognize continuity and change and sequences of historical events across civilizations in relation to any given period, viz., the Harappan, Greek, Roman, Anatolia, and Minoan.
- Understand the concept of cause-and-effect relationship and to identify chains of events and developments, both short-term and long-term, which will enable them to identify, examine, and analyse reasons why events like important revolutions, world wars, and India's independence occurred and the resulting consequences.
- Understand and acquire a historical perspective on important national and regional concerns such as identity, economy, polity, and culture.
- Become sensitive to gender and social inequities.
- Develop a range of historical skills, essential for historical inquiry and research.
- Understand the origin, usefulness, and application of primary and secondary sources to prepare well-researched projects.

Course Outcomes

SL. NO.	SEMESTER	PAPER CODE & TITLE	COURSE OUTCOMES	UNIT/CHAPTER	BLOOM'S TAXONOMY LEVELS
1	I	HIS-HC-1016 History of India I	After the completion of this paper, the students will be able to explore and effectively use historical tools in reconstructing the remote past of ancient Indian pre and proto history. The course will also train the students to analyse the various stages of evolution of human cultures and the belief systems in the proto- history period.	Unit I. Reconstructing Ancient Indian History	Remember, understand, Analyze
				Unit II. Pre-historic hunter- gatherers	Remember, understand, Analyze
				Unit III. The advent of food production	Remember, understand, Analyze
				Unit IV. The Harappan civilization	Remember, understand, Analyze, Evaluate
				Unit V. Cultures in transition	Remember, understand, Analyze
2	I	HIS-HC-1026 Social Formations and Cultural Patterns of the Ancient World	After the completion of this paper, the students will be able to explain the processes and stages of the evolution of the variety of cultural pattern throughout antiquarian periods in History. They will be able to relate the connections between the various Bronze Age civilizations in the ancient world as well as development of slave and polis societies in ancient Greece.	Unit I. Evolution of Humankind:	Remember, understand, Analyze
				Unit II. Bronze Age Civilizations: economy, social stratification, state structure, Religion	Remember, understand, Analyze
				Unit III. Nomadic groups in Central and West Asia	Remember, understand, Analyze
				Unit IV. Slave society in Ancient Greece:	Remember, understand, Analyze, Evaluate
				Unit V. Polis in ancient Greece	Remember, understand, Analyze
3	II	HIS-HC-2016	On successful completion of this course the students will be able to	Unit I. Economy and Society	Remember, understand, Analyze

		History of India-II	explain the economic and socio-cultural connections, transitions and stratifications during the ruling houses, empires and the politico- administrative nuances of early Indian History from 300 BCE To 300 CE.	Unit II. Changing political Formations	Remember, understand, Analyze
				Unit III. Towards early medieval India	Remember, understand, Analyze
				Unit IV. Religion, philosophy and society	Remember, understand, Analyze, Evaluate
				Unit V. Cultural developments	Remember, understand, Analyze
4	II	HIS-HC-2026 Social Formations and Cultural Patterns of The Medieval World Paper	After the completion of this course, the students will be able to analyse and explain the historical socio-political, administrative and economic patterns of the medieval world. They will be able to describe the emergence, growth and decline of various politico-administrative and economic patterns and the resultant changes therein	Unit I. Roman Republic: I	Remember, understand, Analyze
				Unit II. Roman Republic: II	Remember, understand, Analyze
				Unit III. Economic developments in Europe from the 7th to the 14th centuries:	Remember, understand, Analyze
				Unit IV. Religion and culture in medieval Europe:	Remember, understand, Analyze, Evaluate
				Unit V. Societies in Central Islamic Lands:	Remember, understand, Analyze
5	III	HIS-HC-3016 History of India III (c. 750 -1206)	The completion of this paper will enable the students to relate and explain the developments in India in its political and economic fields and its relation to the social and cultural patterns therein in the historical time period between c.700 to 1206. They will also be able to analyse India's interaction with another wave of	Unit I. Studying Early Medieval India:	Remember, understand, Analyze
				Unit II. Political Structures:	Remember, understand, Analyze
				Unit III. Agrarian Structure and Social Change:	Remember, understand, Analyze
				Unit IV. Trade and Commerce	Remember, understand, Analyze, Evaluate

			foreign influence and the changes brought in its wake in the period.	Unit V. Religious and Cultural Developments:	Remember, understand, Analyze, Evaluate
6	III	HIS-HC-3026 Rise of the Modern West I	On completion of this course, the students will be able to explain the major trends and developments in the Western world between the 14 th to the 16 th century CE. They will be able to explore and analyse the significant historical shifts and events and the resultant effects on the civilizations of Europe in the period.	Unit I. Transition from feudalism (to capitalism):	Remember, understand, Analyze
				Unit II. Geographical explorations and early colonial expansion:	Remember, understand, Analyze
				Unit III. Renaissance:	Remember, understand, Analyze
				Unit IV. Reformation in the 16th century: Origin and impact	Remember, understand, Analyze, Evaluate
				Unit V. Economic developments of the sixteenth century:	Remember, understand, Analyze, Evaluate
7	III	HIS-HC-3036 History of India (c.1206-1550)	After completion of this course students will be able to explain the political and administrative history of medieval period of India from 1206 to 1550 AD. They will also be able to analyse the sources of history, regional variations, social, cultural and economic set up of the period.	Unit I. Sources	Remember, understand, Analyze
				Unit II. Polity:	Remember, understand, Analyze
				Unit III. Society and Economy:	Remember, understand, Analyze
				Unit IV. Regional Polities:	Remember, understand, Analyze Evaluate
				Unit V. Religion and Culture:	Remember, understand, Analyze
8	IV	HIS - HC- 4016 Rise of the Modern West II	After the completion of this course, the student will be able to explain the political and intellectual currents in Europe in the Modern Age. They will also be able to relate the circumstances and casual factors of the intellectual and	Unit I. Europe in the 17th Century.	Remember, understand, Analyze
				Unit II. The English Revolution:	Remember, understand, Analyze
				Unit III. European Economy	Remember, understand, Analyze

			revolutionary currents of both Europe and America at the beginning of the Modern Age.	Unit IV. Politics in the 18th century:	Remember, understand, Analyze Evaluate
				Unit V. Prelude to the Industrial Revolution	Remember, understand, Analyze
9	IV	HIS - HC- 4026 History of India V (c.1550-1605)	At the completion of this course, the students will be able to analyse the circumstances and historical shifts and foundations of a variety of administrative and political setup in India between c.1550-1605. They will also be able to describe the inter relationships between the economy, culture and religious practices of the period.	Unit I. Sources and Historiography	Unit I. Sources and Historiography
				Unit II. Establishment of Mughal rule	Unit II. Establishment of Mughal rule
				Unit III. Consolidation of Mughal rule under Akbar:	Unit III. Consolidation of Mughal rule under Akbar:
				Unit IV. Expansion and Integration:	Unit IV. Expansion and Integration:
				Unit V. Rural Society and Economy:	Unit V. Rural Society and Economy:
10	IV	HIS-HC-4036 History of India VI (c.1605-1750)	After the completion of this course, the students will be able to explain and reconstruct the linkages of the history of India under the Mughal Rule. As a whole, this course will enable them to relate to the socio-economic and religious orientation of the people of Medieval period in India.	Unit I. Political Culture under Jahangir and Shah Jahan:	Remember, understand, Analyze,
				Unit II. Mughal Empire under Aurangzeb:	Remember, understand, Analyze,
				Unit III. Patterns of Regional Politics:	Remember, understand, Analyze,
				Unit IV. Trade and Commerce:	Remember, understand, Analyze, Evaluate
				Unit V: 18th century India	Remember, understand, Analyze
11	V	HIS-HC-5016 History of Modern Europe- I (c. 1780- 1939)	After the completion of this course the students will be able to evaluate the historical evolution and political developments that	Unit I. The French Revolution and its European repercussions	Remember, understand, Analyze,
				Unit II. Restoration and Revolution: c. 1815 - 1848:	Remember, understand, Analyze, evaluate

			<p>occurred in Europe in the period between 1780 to 1939. They will also be also to critically analyse the evolution of social classes, nation states, evolution of capitalism and nationalist sentiment in Europe.</p> <p>They will also be able to relate to the variety of causes that dragged the world into devastating wars in the intervening period.</p>	<p>Unit III. Capitalist Industrialization</p>	Remember, understand, Analyze,
				<p>Unit IV. Social and Economic Transformation (Late 18th century to c. 1914)</p>	Remember, understand, Analyze, Evaluate
				<p>Unit V. Varieties of Nationalism and the Remaking of States in the 19th and 20th Centuries.</p>	Remember, understand, Analyze
12	V	HIS-HC-5026 History of India VII (c.1780 - 1857)	<p>After the completion of this course, the students will be able to relate the circumstances leading to the consolidation of colonial rule over India and their consequences. They will also be able to explain the orientation of the indigenous population and the masses towards resistance to the colonial exploitation. The course will also enable the students to analyse popular uprisings among the tribal, peasant and common people against the British policies.</p>	<p>Unit I. Expansion and Consolidation of colonial Power:</p>	Remember, understand, Analyze
				<p>Unit II. Colonial State and Ideology:</p>	Remember, understand, Analyze
				<p>Unit III. Rural Economy and Society:</p>	Remember, understand, Analyze
				<p>Unit IV. Trade and Industry</p>	Remember, understand, Analyze, Evaluate
				<p>Unit V. Popular Resistance:</p>	Remember, understand, Analyze
13	V	HIS-HE-5016 History of Assam Up to c. 1228	<p>This paper will give a general outline of the history of Assam from the earliest times to the advent of the Ahoms in the 13th century. Upon completion, students will be acquainted with major stages of developments in the political, social and cultural history of Assam during the early times.</p>	<p>Unit-I:</p> <p>a) A brief survey of the sources: Literary, Archaeological</p> <p>b) Land and people: Migration routes</p> <p>c) Cultural linkages with South East Asia : the Stone Jars of Dima Hasao</p>	Remember, understand, Analyze
				<p>Unit-II:</p> <p>a) Origin and antiquity of</p>	Remember, understand, Analyze

				<p>Pragjyotisha or Kamrupa Society</p> <p>b) Traditional rulers and early History</p> <p>c) Religion and belief systems</p>	
				<p>Unit-III:</p> <p>Political dynasties:</p> <p>a) Varmana</p> <p>b) Salastambha</p> <p>c) Pala</p>	Remember, understand, Analyze
				<p>Unit-IV:</p> <p>a) Political condition of Assam in the Post-Pala period.</p> <p>b) Turko-Afghan invasions</p> <p>c) Disintegration of the Kingdom of Kamarupa</p>	Remember, understand, Analyze, Evaluate
				<p>Unit-V:</p> <p>a) Central and Provincial administration</p> <p>b) Judicial administration</p> <p>c) Revenue administration</p> <p>d) Cultural Life : Literature, Art and architecture</p>	Remember, understand, Analyze
14	V	HIS-HE-5026 History of Assam (c.1228-1826)	On completion of this paper, students will be able to identify major stages of developments in the political, social and cultural history of Assam during the medieval times. This paper will	<p>Unit-1</p> <p>[a] Sources- archaeological, epigraphic, literary, numismatic and accounts of the foreign travelers; <i>Buranjis</i></p>	Remember, understand, Analyze.

			enable the student to explain the history of Assam from the 13 th century to the occupation of Assam by the English East India Company in the first quarter of the 19 th century	<p>[b] Political conditions of the Brahmaputra valley at the time of foundation of the Ahom kingdom.</p> <p>[c] Siu-ka-pha - An assessment</p> <p>[d] State information in the Brahmaputra valley-the Chutiya, Kachari and the Koch</p> <p>[e] State</p>	
				<p>Unit-II</p> <ul style="list-style-type: none"> • Expansion of the Ahom Kingdom in the 16th century: Suhungmung (Dihingiya Raja) • Political Developments in the 17th century: rule of Pratap Singha) <p>d) Ahom-Mughal wars- the treaty of 1639</p>	Remember, understand, Analyze.
				<p>Unit –III</p> <p>[a] Assam in the second half of the 17th Century- the Ahom- Mughal Wars – Mir Jumla’s Assam Invasion- causes and consequences,</p> <p>[b] Invasion of Ram Singha - the Battle of Saraighat (1671) and its results</p> <p>[c] Post-Saraighat Assam: Ascendancy of the Tungkhungia dynasty – the reign of Gadadhar Singha</p>	Remember, understand, Analyze.

				<p>Unit: IV</p> <p>[a] Ahom Rule at its zenith of RudraSingha (1696-1714) to Rajeswar Singha (1751-1769)</p> <p>[b] Decline and fall of the Ahom Kingdom the Moamariya Rebellion and the</p> <p>[c] Burmese Invasions- The English East India Company in Assam Politics</p> <p>[d] Treaty of Yandaboo and Assam</p>	Remember, understand, Analyze, Evaluate.
				<p>Unit :V</p> <p>[a] Ahom system of administration: the Paik system [b]Ahom Policy towards the neighbouring hill tribes</p> <p>[b] Religious life --Sankaradeva and the Neo Vaishnavite Movement- background and implications</p> <p>[c] Cultural developments : Art, Architecture and literature.</p>	Remember, understand, Analyze.
15	VI	HIS-HC-6016 History of India VIII (c.1857 - 1950)	At the completion of this course, the learners will be able to analyse the course of British colonial exploitation, the social	<p>Unit I. Cultural changes and Socio- Religious Reform Movements:</p> <p>Unit II. Nationalism: Trends up to 1919</p>	Remember, understand, Analyze Remember, understand, Analyze,

			<p>mobilizations during the period between c.1857 to 1950 and also the techniques of Indian resistance to British policies. It will also enable the students to explain the circumstances leading to de-colonization and also the initial period of nation building in India.</p>	<p>Unit III. Gandhian nationalism after 1919: Ideas and Movements:</p>	Remember, understand, Analyze,
				Unit IV. Nationalism and Social Groups	Remember, understand, Analyze, Evaluate
				Unit V. Communalism and Partition:	Remember, understand, Analyze
16	VI	HIS-HC-6026 History of Modern Europe II (c. 1780 -1939)	<p>After the completion of this course, the students will be able to analyse the historical developments in Europe between c.1780 to 1939. As the course structure of this paper focuses on the democratic and socialist foundations modern Europe, the students will be able to situate the historical development of Workingclass movements,</p>	<p>Unit I. Liberal Democracy, Working Class Movements and Socialism in the 19th and 20th Centurie</p>	Remember, understand, Analyze
				Unit II. The Crisis of Feudalism in Russia and Experiments in Socialism:	Remember, understand, Analyze
				Unit III. Imperialism, War, and Crisis: c. 1880 -1919	Remember, understand, Analyze
				Unit IV. The post 1919 World Order	Remember, understand, Analyze, Evaluate
				Unit V. Cultural and Intellectual Developmentssincecirca1850	Remember, understand, Analyze, Evaluate
17	VI	HIS-HE-5026 History of Assam (c.1228-1826)	<p>Upon completion of this course, students will be able to describe the period of British rule in Assam after its annexation by the imperialist forces. They will also be able to situate the development of nationalism in Assam and its role in India's freedom struggle. The course would enable the students to analyse the main currents of the political and socio- economic</p>	<p>Unit I: [a] Political condition in Assam on the eve of the British rule. [b] Establishment and Consolidation of the British rule: Reforms and Reorganizations- David Scott – Annexation of Lower Assam, Administrative [c] Reorganisation and Revenue Measures of Scott; Robertson – Administrative and Revenue Measures;</p>	Remember, understand, Analyze,

			developments in Assam during the colonial period.	Jenkin Administrative Measures	
				Unit II: <ul style="list-style-type: none"> • Ahom Monarchy in Upper Assam (1833-38) • Annexation of Cachar • Early phase of Revolts and Resistance to British rule- GomdharKonwar, Piyali Phukan, U.Tirut Singh, • The Khamti and the Singpho rebellion e) The 1857 Revolt in Assam and its aftermath	Remember, understand, Analyze
				Unit III: <p>[a] Establishment of Chief Commissionership in Assam.</p> <p>[b] Land Revenue Measures and Peasant Uprisings in 19th century Assam</p> <p>[c] Growth of national consciousness – Assam Association, SarbajanikSabhas, RaiyatSabhas.</p> <p>[d] Government of India Act, 1919– Dyarchy on Trial in Assam.</p>	Remember, understand, Analyze
				Unit IV : <p>[a] Non Co-operation Movement and SwarajistPolitics in Assam</p> <ul style="list-style-type: none"> • The Civil Disobedience Movement • Trade Union and Allied Movements 	Remember, understand, Analyze, Evaluate

				[d] Tribal League and Politics in Assam	
				Unit V: [a] Quit India Movement in Assam. [b] Cabinet Mission Plan and the Grouping Controversy [c] The Sylhet Referendum [d] Migration, Line System and its Impact on Politics in Assam	Remember, understand, Analyze
18	VI	HIS-HE-6026 Assam Since Independence	Students will be able to assess the aftermath of Partition and other socio- economic developments in post-independence Assam upon completion of this course. They will also be able to identify the main currents of political and socio-economic development in Assam after India's independence and the causes and impact of various struggles and movements in contemporary Assam.	Unit I- Political developments	Remember, understand, Analyze
				Unit II- Economic developments	Remember, understand, Analyze
				Unit III : Movements and Ethnic Ressorgence	Remember, understand, Analyze
				Unit IV: Environmental issues	Remember, understand, Analyze, Evaluate
				Unit V- Cultural development	Remember, understand, Analyze

DEPARTMENT OF NEPALI
DARRANG COLLEGE, TEZPUR

10. BA Nepali

First Semester

Nature of the Course: Ability Enhancement course

Course Name: Nepali Grammar and Poetry

Course Outcome:

- 1) Students are expected to learn the commonly used Nepali words in Nepali such as noun, pronoun, adjective, verb, etc.
- 2) Students will come to know different grammatical categories and linguistic aspects of the Nepali language.
- 3) Students will come to know about the renowned Nepali writer Laxmi Prasad Devkota and his long poem “Munamadan,” which is very popular in Nepali language and literature.

Programme Outcome:

After successfully completing the undergraduate programme with the Ability Enhancement Course (AEC) in Nepali, a student is expected to achieve the following outcomes:

- 1) Students will acquire a broad range of vocabulary related to names, pronouns, adjectives, verbs, nouns, and various grammatical categories. This knowledge will enable them to effectively communicate and comprehend spoken and written Nepali.
- 2) Students will develop a deep understanding of grammatical categories such as like gender, number, tense, voice, etc. They will learn to apply these categories accurately to construct grammatically correct sentences and convey meaning effectively.
- 3) Students will be able to engage with Nepali literary works and to improve their writing skills about the long poem and epic writing processes in near future.
- 4) Through the study of Laxmi Prasad Devkota’s poem "Munamadan," students will develop their ability to analyze and interpret Nepali poetry. They will gain insight into the themes, symbols, linguistic devices, and overall structure employed in the poem.
- 5) This course will improve students’ overall language skills, including reading, writing, speaking, and listening in Nepali. They will develop fluency and accuracy in their language usage, enabling them to express complex ideas and emotions with clarity and precision.

**DEPARTMENT OF PHILOSOPHY
DARRANG COLLEGE, TEZPUR**

11. BA Philosophy

Programme Specific Outcome:

1. Preparation of course outcome and programme outcome:

After the completion of Under Graduate Programme in Philosophy, a student will be capable of:

- (1) Understanding the world from various perspectives.
- (2) Distinguishing between valid and invalid thinking.
- (3) Presenting the total picture of any complex problem of society through synthetic knowledge of philosophy.
- (4) Solving social issues through philosophical interpretation.
- (5) Acquiring knowledge of the earliest culture of India.
- (6) Developing a skill of critical enquiry.
- (7) Understanding that there is no superficial approach to the complex questions of life.
- (8) Developing a sense of value.
- (9) Understanding moral principles and applying those principles in day-to-day- life.
- (10) Developing a moral insight which is essential for leading a good life.
- (11) Thinking independently in a correct way.
- (12) Taking up research work in philosophy and issues related to philosophy.

Course Outcome:

Sl. No.	Semester	Paper Code	Paper Name	Course Outcome	PSOs Addressed
1.	I	CORE-1(NEP)	Ancient Indian Thought	Ancient Indian thought has been concerned with Vedas, Upanishads, Smriti, Puranas and the non-vedic schools of Indian Philosophy. This paper introduces to the students the thoughts which were available in ancient India.	PSO 1 and PSO 5
2.	II	PHI-HC-2016	Greek Philosophy	This paper helps students to know about the origin of Philosophy. Through this paper students are acquainted with the development of philosophy since the time of Thales.	PSO 1 and PSO 12
3.	II	PHI-HC-2026	Logic-II	Logic has been concerned with reasoning and argument. Traditional Logic deals with valid forms of thinking and Modern Logic deals with methods and techniques of distinguishing between valid and invalid arguments. Both traditional and modern logic enable students to reason correctly.	PSO 2 and PSO 11
4.	III	PHI-HC--3016	Western Philosophy (Descartes to Hegel)	Western Philosophy lays stress on individual's independent thinking. It has been critical about orthodox religion. Western Philosophy enables a student to understand modern trend of philosophy from Descartes to Hegel.	PSO 1 and PSO 7
5.	III	PHI-HC-3026	Indian Philosophy-II	Indian philosophy has been dealing with the human life, the world and reality. It evokes spiritualism through Upanisadic thought which brings peace and contentment in an individual's life. It enhances the knowledge of students from logical reasoning to ethical values of one's life, from suffering of human life to the attainment of perfection.	PSO 1 and PSO 12
6.	III	PHI-HC-3036	Ethics	Ethics demonstrates ethical awareness, the ability to do ethical reflection and the ability to apply ethical principles in decision making. This paper helps students to understand the meaning of value and the importance of value in our practical life.	PSO 8 and PSO 9

7.	IV	PHI-HC-4016	Contemporary Indian Philosophy	Contemporary Indian Philosophy has been dealing with the humanistic concept. It helps the students in creating the awareness of vedantic thought through different ethical qualities like non-violence, kindness etc.	PSO 1 and PSO 12
8.	IV	PHI-HC-4026	Philosophy of Religion	Philosophy of Religion is the philosophical study of religion which includes analysis of religious concepts, beliefs, arguments and practices of religious adherents. Philosophy of Religion develops an understanding of basic religious concepts and gives the students philosophical tools to evaluate them.	PSO 1 and PSO 10
9.	IV	PHI-HC-4036	Political and Social Philosophy	Social and Political philosophy has been concerned with many fundamental issues of individual and society and helps students understand the philosophy behind individual rights and liberty, justice etc. It also helps students to understand the philosophical aspects of modern political theories. The outcome of this paper is to create critical insight in socio-political ideas of governance and leadership.	PSO 3 and PSO 4
10.	IV	PHI-HC-5016	Analytic Philosophy	Analytic Philosophy is concerned with the study of language and the logical analysis of the concept of philosophy. It helps to get rid of the philosophical issues arising out of the misuse of ordinary language.	PSO 6 and PSO 11
11.	V	PHI-HC-5026	Phenomenology and Existentialism	Phenomenology has been concerned with direct investigation and description of phenomena as consciously experienced. Existentialism has laid stress on the life of the individual, his feelings, expectations, freedom and frustration in philosophical thinking. This paper acquaints the students with the twentieth century development of the Western Philosophy.	PSO 1 and PSO 12
12.	V	PHI-HE-5016	Philosophy of Upanishads	Philosophy of Upanishads deals with various topics like, self, consciousness, knowledge, ignorance and morality from the perspective of conversation, debates and stories. This paper creates awareness about the spiritual aspect of Indian tradition as separated from religious tradition.	PSO 5 and PSO 10

13.	V	PHI-HE-5026	Philosophy of Gita	The philosophy of Gita teaches the students to be dedicated as well as practical in performing their duties and responsibilities. It helps the students to mould themselves as spiritual Karmayogi through which they can guide themselves for a successful life.	PSO 5 and PSO 10
14.	VI	PHI-HC-6016	Philosophy of Mind	Philosophy of Mind takes a philosophical approach to mind, its relation to the body and how minds interact with material things. This paper helps students to analyse and critically evaluate theories, arguments and presuppositions of prominent philosophers in Philosophy of Mind.	PSO 1 and PSO 6
15.	VI	PHI-HC-6026	Meta Ethics	Meta ethics has been concerned with moral thought and moral language. It is an enquiry into the nature and meaning of ethical terms and moral foundation. It enables a student to grasp the basic conceptual framework of analytic philosophy which is necessary for moral inquires.	PSO 9 and PSO 12
16.	VI	PHI-HE-6026	Philosophy of Language	Philosophy of Language has been concerned with the philosophical investigation of the nature of language. This paper enables a student to understand the relation between language, language users and the world.	PSO 1 and PSO 6
17.	VI	PHI-HE-5036	Applied Ethics	Applied ethics has been dealing with the application of the ethical principles in practical life which in turn helps the students to increase their skills in examining the situations how these ethical principles work out in one's practical life.	PSO 9 and PSO 10

DEPARTMENT OF POLITICAL SCIENCE
DARRANG COLLEGE, TEZPUR

12. BA Political Science

Programme Specific Outcome:

After completion of the programme student will be able to –

1. Cultivate knowledge of theories, concepts, and research methods in humanities and social sciences.
2. Examines how global, national and regional developments affect society.
3. The Political Science degree furnishes the students with a unique multidisciplinary approach in social sciences and prepares them for further academic study and for careers in the public and the private sector.
4. Realise the world, country, society and have awareness of ethical problems, social rights, values and responsibility to the self and to others.
5. Understand and follow changes in patterns of political behaviour, ideas and structures. Develop the ability to make logical inferences about social and political issues on the basis of comparative and historical knowledge.
6. Take individual and team responsibility, function effectively and respectively as an individual and a member or a leader of a team; and have the skills to work effectively in multi-disciplinary teams.
7. Know how to access and evaluate data from various sources of information.

Course Outcomes :

SL. No.	Semester	Paper Code and Title	Course outcomes	Unit /Chapter	Bloom's Taxonomy Levels
1.	I	POL HC 1016: Understanding Political Theory	<ul style="list-style-type: none">• To introduce the idea of political theory and various approaches• To enable the students to assess the contemporary trends of political theory• To reconcile theory and practice in relation to democracy	I &II	Remember, understanding and apply
2	I	POL HC 1026 Constitutional Government and Democracy in India	<ul style="list-style-type: none">• To acquaint students with constitutional design of state structures and institutions• To understand the conflicts in constitutional provisions• To make them comprehend the state institutions in relation to extra constitutional environment.	I, II & III	Remember, understanding and Analyse and evaluate
3	II	POL HC 2016 Political Theory-Concepts and Debates	<ul style="list-style-type: none">• Understand the various concepts in political theory and appreciate how they can be helpful to analyse crucial political issues• Understand the significance of debates in political theory in exploring multiple perspectives to concepts, ideas and issues.• Appreciate how these concepts and debates enrich political life and issues surrounding it.	I, II, III & IV	Remember, understanding and Analyse and apply
4	II	POL HC 2026 Political Process in India	<ul style="list-style-type: none">• Understand the working of major political institutions in India• Understand the major debates in Indian politics along the axes of caste, gender, region and religion• Understand the changing nature of the Indian state and the contradictory dynamics of modern state power	I, II, III, IV, V, VI & VII	Remember, understanding and Analyse and evaluate

5	III	POL HC 3016 Introduction to Comparative Government and Politics	<ul style="list-style-type: none"> • To make students understand the basic concepts in comparative politics, • To make students classify the different political systems and historical context of modern governments, • To enable students to have a comparative analysis of countries related to their political institutions and behaviour. 	I, II and III	Remember, understanding and Analyse and apply
6	III	POL HC 3026 Perspectives on Public Administration	<ul style="list-style-type: none"> • To enable students to learn the basic concepts related to public administration and its importance, • To make students learn the major theories of public administration, • To enable students to have an understanding of public policy and its formulation, • To familiarize students with the major approaches and recent debates related to field of public administration. 	I, II, III & IV	Remember, understanding and Analyse
7	III	POL HC 3036 Perspectives on International Relations and World History	<ul style="list-style-type: none"> • To make students understand the key theoretical approaches in International relations, • To familiarize students with the evolution of International state systems and its importance. • To make students aware of the key theoretical debates in International relations • To enable students to have an overall understanding of International relations in relation to twentieth century IR history. 	I, II & III	Remember, understanding and Analyse

8	IV	POL HC 4016 Political Processes and Institutions in Comparative Perspective	<ul style="list-style-type: none"> • To understand, comprehend and analyse the complex nature and functioning of the political systems, political institutions and corresponding issues to these both in a country specific case of India and cross-country perspectives. • To demonstrate critical thinking about key issues of political system of different forms, political process and public policy. • To use the contents and sub-units of the course as yardsticks for comparing these political systems and processes. 	I, II, III, IV, V and VI	Remember, understanding and Apply and evaluate
9	IV	POL HC 4026 Public Policy and Administration in India	<ul style="list-style-type: none"> • Be familiarised with and gain knowledge about the processes of public policy making in India and their significance in administering the state. • Develop the ability to assess the functioning of the government and the administration in ensuring a citizen centric welfare administration in India. 	I, II, III, IV and V	Remember, understanding, Analyse, evaluate and apply
10	IV	POL HC 4036 Global Politics	<ul style="list-style-type: none"> • To enable students to understand how to approach a wide range of important global political and economic policy problems and participate in public policy debates on the crucial issues facing the world today. • To have knowledge of the essential theoretical assumptions underlying globalisation's conceptual frameworks and their relationships to policy interventions. • To demonstrate elementary knowledge of major issues and subject-matters surrounding globalisation that decides the international relations- political, economic and security relations- among the nations. 	I, II & III	Remember, understanding and Analyse and evaluate

11	V	POL HC 5016 Classical Political Philosophy	<ul style="list-style-type: none"> • To interpret ideas underlying traditions in classical political philosophy • To analyze the debates and arguments of leading political philosophers belonging to different traditions of the period • To appraise the relevance of classical political philosophy in understanding contemporary politics 	I, II, III & IV	Remember, understanding and Analyse and evaluate
12	V	POL HC 5026 Indian Political Thought-I	<ul style="list-style-type: none"> • To underline themes and issues in political traditions of pre-colonial India. • To compare and contrast positions of different political traditions those were present in pre-colonial India. • To evaluate the relevance of political thought of pre-colonial India for contemporary politics. 	I, II, III, IV, V, VI, VII & VIII	Remember, understanding and Analyse and evaluate
13	V	POL HE 5016 Human Rights	<ul style="list-style-type: none"> • To describe the basic concepts of human rights. • To comprehend different approaches regarding human rights • To familiarise the role of UNO in the growth and development of human rights. • To describe different measures taken for the protection of human rights. 	I, II, III & IV	Remember, understanding and Analyse and evaluate
14	V	POL HE 5036 Understanding Global Politics	<ul style="list-style-type: none"> • To describe the key concepts underlying the idea of world order and their historical evolution. • To comprehend diverse approaches to understand global political and economic problems. • To demonstrate relevance of international actors in understanding world politics. 	I, II & III	Remember, understanding and Analyse and evaluate

15	V	POL HE 5046 Select Constitutions - I	<ul style="list-style-type: none"> • Students will be able to understand the importance of constitutions • This paper is an integral part of public services examinations • Students will be introduced to the various types of constitutions and the forms of governments from different parts of the world. 	I, II, III & IV	Remember, understanding and Analyse and evaluate
16	VI	POL HC 6016 Modern Political Philosophy	<ul style="list-style-type: none"> • To interpret ideas underlying traditions in modern political philosophy • To analyse the debates and arguments of leading political philosophers of different philosophical traditions • To appraise the relevance of modern political philosophy in understanding contemporary politics 	I, II, III & IV	Remember, understanding and Analyse and evaluate
17	VI	POL HC 6026 Indian Political Thought-II	<ul style="list-style-type: none"> • To underline themes and issues in political thought of modern India. • To compare and contrast positions of leading political thinkers in India on issues those are constitutive of modern India. • To assess the relevance of political thought of modern India in understanding contemporary politics. 	I to XI	Remember, understanding and Analyse and evaluate
18	VI	POL HE 6016 Human Rights in India	<ul style="list-style-type: none"> • To describe origin and development of human rights in India • To comprehend different measures adopted by India for the protection and development of Human Rights • To familiarise the emerging issues related to human rights. 	I, II, III & IV	Remember, understanding, apply Analyse and evaluate

19	VI	POL HE 6036 Women, Power and Politics	<ul style="list-style-type: none"> • To explain key concepts that offers an understanding of gender inequality. • To appraise the historical evolution of the Women's movement in India and issues addressed by it. • To underline the contemporary issues that affect women's participation in politics 	I, II, III & IV	Remember, understanding and Analyse and evaluate
20	VI	POL HE 6046 Select Constitutions – II	<ul style="list-style-type: none"> • Students will be able to understand the importance of constitutions. • This paper is an integral part of public services examinations. • Students will be introduced to the various types of constitutions and the forms of governments from different parts of the world 	I, II, III & IV	Remember, understanding and Analyse

DEPARTMENT OF PSYCHOLOGY
DARRANG COLLEGE, TEZPUR

13. BA Psychology

Programme Specific Outcome:

The discipline of Psychology has emerged as a crucial social science. Its training can empower students to engage with social reality through a critical lens and thus contribute to the processes of socio-cultural transformation and justice, besides having relevant social values and skills. Psychology is both a human science and an art with a rich field of critical knowledge that endeavors to approximate the processes of lived life and social reality. B.A. degree in psychology aims at offering a general framework within which psychology teaching may be organized. It serves twin goals of responding to the needs of students to grow as competent, self-reflective learners with relevant academic and professional skills and to prepare them as contributors to the growing discipline of psychology.

The learning outcomes of a psychology degree can vary depending on the institution and the specific program. However, some common learning outcomes include:

- Imparting knowledge of basic psychological concepts and methods, and developing ability to appreciate the challenges in field settings.
- Help shaping cognitive, affective and behavioral abilities of students for building responsible psychology professionals and researchers.
- Developing an understanding of the ethical principles and standards that guide psychological research and practice.
- Promoting self-understanding, reflexivity and personal growth. Helping students understand the complexities of self and human relationships and how the two make each other up.
- Exposure to ways of thinking and relating with self and others through practical exercises which delve into autobiographical awareness and creating a story of their life.
- Learning planning and conducting small scale studies and analyzing data following scientifically.
- Mastery of communication and counseling skills.
- Practical training, internship and field placement.

Course Outcome:

Sl. No.	Semester	Paper code & Title	Course outcome	Unit/chapter
1	1	PSY-HC-1016 (Introduction To Psychology)	<ol style="list-style-type: none">1. Acqaint about the basic concepts of the field of psychology.2. The students gained the overall knowledge of methods of psychology3. The students gained the overall knowledge of subfields of psychology4. The students gained the overall knowledge of perception.5. 5. The students gained the overall knowledge of earning and motivation, conditioning, learning, memory	<ol style="list-style-type: none">1. Title- Introduction to Psychology2. Perception3. Learning and Motivation4. Memory
2	1	PSY-HC-1026 (Bio-Psychology)	<ol style="list-style-type: none">1. The students gained the overall knowledge of biopsychology2. The students gained the overall knowledge of brain and its structure3. The students gained the overall knowledge of neuron and its function1. 4. The students gained the overall knowledge of Endocrine system	<ol style="list-style-type: none">1. Introduction to Bio- Psychology2. The functioning Brain3. Organization of Nervous system4. Endocrine System
3	2	PSY-HC-2016 (Psychology of Individual Difference)	<ol style="list-style-type: none">1. The students gain the overall knowledge regarding definition and nature of personality, biological foundations, and perspectives of personality.5. 2 .The students gained the overall knowledge regarding the concept , cognitive approaches, theories of intelligence. Emotional intelligence6. The students gain the overall knowledge regarding Self And identity in Indian thought7. 4. The students gained the overall knowledge regarding Motivation, self determination theory and creativity.	<ol style="list-style-type: none">1. Personality2. Intelligence3. Indian Approach4. Enhancing Individual potential.
4	2	PSY-HC-2026 (Statistical methods for psychological research-1)	<ol style="list-style-type: none">1. The students gain the overall knowledge regarding psychological research and its types, percentile and quantitative data.2. The students gained the overall knowledge regarding Histogram, Frequency polygon and measures of central tendency.3. The students gain the overall knowledge regarding measures variability and standard Z-scores4. The students gained the overall knowledge regarding Normal distribution and its nature and properties.5. Random samplings and its characteristics and also its application.6. Meaning of correlation, Scatter plot of Bivariate distribution, Correlation Coefficient and Rank order correlation.	<ol style="list-style-type: none">1. Introduction2. Graphic representation of data3. Measure of variability and standard scores4. Normal distribution5. Random Sampling and Sampling distribution6. Correlation
5	3	PSY-HC-3016 (Psychological research)	<ol style="list-style-type: none">1. The students gain the overall knowledge regarding definition and nature, goals , ethics and principles of research and research traditions.2. 2 .The students gained the overall knowledge regarding the concept of samplings.	<ol style="list-style-type: none">1. Basics of research in psychology; research traditions.2. Sampling.3. Methods of Data collection.

			<ol style="list-style-type: none"> 3. The students gain the overall knowledge regarding the methods of data collection. 4. 4. The students gained the overall knowledge regarding norms, validity, reliability and application of psychological testing. 	<ol style="list-style-type: none"> 4. Psychological testing.
6	3	PSY-HC-3026 (Development of psychological thought)	<ol style="list-style-type: none"> 1. The students gain the overall knowledge regarding Indian and Western perspective of consciousness; classical schools and modern psychology. 2. 2 .The students gained the overall knowledge regarding the schools of psychology and Cognitive revolution. 3. The students gain the overall knowledge regarding psychoanalysis, ego psychology, cultural psychoanalysis. 4. 4. The students gained the overall knowledge regarding feminism and social constructionism. 	<ol style="list-style-type: none"> 1. Understanding Psyche: debates and issues. 2. Early Schools of psychology. 3. Psychoanalytic and Humanistic-existential Orientation. 4. Contemporary developments.
7	3	PSY-HC-3036 (social psychology)	<ol style="list-style-type: none"> 1. The students gain the overall knowledge regarding concept, nature and history of social psychology. 2. 2 .The students gained the overall knowledge regarding self and its processes. 3. The students gain the overall knowledge regarding inter-personal attraction, pro-social behavior, aggression. 4. 4. The students gained the overall knowledge regarding groups and its nature, its consequences, conflict and intervention techniques. 	<ol style="list-style-type: none"> 1. Nature and scope of social psychology. 2. Understanding and evaluating the social world. 3. Social interaction and influence. 4. Group Dynamics and inter-group relations.
8	4	PSY-HC-4016 (Statistical methods for psychological methods)	<ol style="list-style-type: none"> 1. Educate students with the techniques of inferential statistics and hypothesis testing, Z-test, T-test and the t distribution. 2. Students learn about the Null and Alternative hypothesis, hypothesis testing about the difference between two independent means and degrees of freedom 3. Students gain knowledge about ANOVA and Chi-Square test. 4. Students learn about the uses and applications of SPSS in statistics and Research. 	<ol style="list-style-type: none"> 1 Introduction to inferential statistics and hypothesis testing about single mean. 2 Hypothesis testing about the difference between two independent means. 3 Hypothesis testing for differences among three or more group: One-way Analysis of Variance(ANOVA) 4 Nonparametric Approaches to Data

9	4	PSY-HC-4026 (Developmental Psychology)	<ol style="list-style-type: none"> 1. Students learn about the concepts, theories and Research methods of human development. 2. Students gain knowledge about the stages of Life span Development. 3. Students learn about various Domains of Human development, perspectives of Piaget and Vygotsky on cognitive development. 4. Students learn how Family, peers, media & school influences human development. And also human development in Indian context. 	<ol style="list-style-type: none"> 1. Introduction 2. Periods of Life Span Development. 3. Domains of Human Development. 4. Socio-cultural contexts for Human development.
10	4	PSY-HC-4026 (Applied Social Psychology)	<ol style="list-style-type: none"> 1. Students learn about the nature of applied social psychology and its methodological approaches. 2. Students gain knowledge about the applications and role of social psychology in the environment and diversity. 3. Students gain knowledge about the applications and role of social psychology in work, health, legal system. 4. Students gain knowledge about the Intervention and evaluation for effective programme in applied social psychology. 	<ol style="list-style-type: none"> 1. Introduction. 2. Applying Social psychology-I 3. Applying social psychology-II 4. Intervention and Evaluation.
11	5	PSY-HC-5016 (Understanding psychological Disorder)	<ol style="list-style-type: none"> 1. Students learn about the definitions of abnormality, classifications, DSM,ICD, & Diathesis stress model. 2. Students learn about various types disorders such as, Anxiety disorder, Conversion disorder & Dissociative identity disorder and its clinical picture and dynamics. 3. Students gain knowledge about the Developmental disorders. The clinical picture and dynamics of Mental retardation, autism, ADHD & learning disabilities. 4. Students gain knowledge about Substance related disorder and eating disorder. They get awareness about alcohol abuse, drug abuse and also eating disorder such as anorexia and Bulimia nervosa 	<ol style="list-style-type: none"> 1. Understanding Abnormality 2. Clinical states 3. Developmental disorder(Clinical picture & dynamics) 4. Substance related disorder and eating disorder.
12	5	PSY-HC-5026 (Organizational behavior)	<ol style="list-style-type: none"> 1. Students learn about the Historical perspectives, challenges of Organization Behavior. 2. Students gain knowledge about the concept of Job satisfaction, Organizational citizenship Behavior and the theories related to Work motivation such as Maslow, two factor etc... 3. Students get to know about the power and politics and its influences in work setting and positive organizational Behavior. 4. Students learn the meaning, types, theories of leadership. 	<ol style="list-style-type: none"> 1. Introduction 2. Individual level process 3. Dynamics of Organizational Behavior 4. Leadership.

13	5	PSY-HE-5016 (Positive psychology)	<ol style="list-style-type: none"> 1. Introduce the basic concept of Positive psychology and its application. 2. Students learn about the positive emotions, emotional intelligence and its importance in daily life and also the core concept of Happiness. 3. Students gain knowledge about the self –efficacy, optimism, mindfulness etc.... 4. Introduces about the application of positive psychology in work setting, education, ageing and health. 	<ol style="list-style-type: none"> 1. Introduction 2. Positive emotional states and processes. 3. Positive cognitive states and processes. 4. Applications.
14	5	PSY-HE-5036 (Health psychology)	<ol style="list-style-type: none"> 1. Introduces the concept & meaning of Health psychology and related theories. 2. Students learn about health behavior and its theories. 3. Learn the meaning, sources and coping styles of stress. 4. Learn the importance of health enhancing behavior such as exercise, nutrition and also the health protective behaviors. 	<ol style="list-style-type: none"> 1. Introduction 2. Behavior and health 3. Stress 4. Health management.
15	6	PSY-HC-6016 (Understanding and Dealing with psychological Disorder)	<ol style="list-style-type: none"> 1. Students learn about the therapeutic intervention for various psychological disorder. 2. Students learn about Schizophrenia & mood disorder and its clinical picture and dynamics. 3. Students gain knowledge about various types of personality disorder and its clinical pictures. It introduces about various types of sexual disorder and its clinical picture. 4. Students gain knowledge about different types of treatment for disorders. Biological treatment and psychological treatment. 	<ol style="list-style-type: none"> 1. Schizophrenia 2. Mood disorder 3. Personality disorder and Sexual Disorder. 4. Treatment of Disorder.
16.	6	PSY-HC-6026 (Counselling Psychology)	<ol style="list-style-type: none"> 1. Develop an understanding of meaning, concept and goal of counseling and qualities of an effective counselor. 2. Introduces about various techniques of counseling and processes of counseling. 3. Students learn about the Applications of counseling to various areas such as child counseling, family counseling, career counseling etc. 	<ol style="list-style-type: none"> 1. Introduction 2. Counselling process and relationship 3. Techniques of counseling 4. Counselling Applications.

17.	6	PSY-HE-6016 (Community Psychology)	<ol style="list-style-type: none"> 1. Students gain an overall knowledge about community psychology, its models and types. 2. Introduces about the core values such as, sense of community, community strength, empowerment, respect for human diversity. 3. Students learn about the process of health promotion, its importance, community program for child and maternal health, physically challenged and old age. 4. Students gain knowledge about community development and empowerment, case studies. 	<ol style="list-style-type: none"> 1. Introduction 2. Core values. 3. Health promotion. 4. Interventions.
18.	6	PSY-HE-6036 (Project/Dissertation)	<ol style="list-style-type: none"> 1. Students gain overall knowledge about the designs and conduct of research. They gain knowledge about various designs and techniques of data collection, APA format, etc. 	

DEPARTMENT OF SANSKRIT
DARRANG COLLEGE, TEZPUR

14. BA Sanskrit

Programme Specific Outcome:

Introduction

As we know, the Programme Outcomes are statements about the knowledge, skills and attitudes or attributes the graduate of a formal program should have. The Programme Outcomes deal with the general aspect of graduation for a particular program, and the competencies and expertise a graduate will possess after completion of the program. These are broad and cover a wider area than of Course Outcomes. The Program Outcomes or Graduate Attributes are set for the sake of unity and quality assurance. The Program Outcomes set by the institution must reflect on these. The Programme Outcomes are attained through program specific Core Courses, which has their own previously set outcomes to attain.

Again, the course-specific outcomes are called Course Outcomes. Each course is designed to meet (about 5-6) Course Outcomes. The Course Outcomes are stated in such a way that they can be actually measured. The Course Outcomes are set by the institution, by consulting with the department heads, faculty, students and other stakeholders.

Bachelor of Arts (B.A.) in Sanskrit

Well completion of the under graduate/B.A. course with Honours/Major in Sanskrit under the parent University, a student will be able to prepare himself or herself for higher studies by acquiring the basic knowledge of the said subject as well.

This year Four Years Undergraduate Programme (FYUGP) has been started as per NEP 2020 wherein, Sanskrit Department offers both Major and Minor course. Moreover, there is Skill Enhancement Course (SEC) and Ability Enhancement Course (AEC), offered by our department.

Programme Outcomes

After the completion of the programme, a student will be able to:

1. Acquire a concrete perception of ancient Indian history, philosophy, and literature.
2. Enhance the communication skills of listening, speaking, reading, and writing.
3. Get in-depth knowledge of the core areas of the subject.
4. Achieve reasonable understanding of the multi-disciplinary relevance of Sanskrit literature such as *veda*, philosophy, grammar, *kavya*, *dharmasastras*, etc.
5. Compete in competitive exams like civil services and apply for jobs in different service sectors.

Course Outcomes

SL. NO.	SEMESTER	PAPER CODE & TITLE	COURSE OUTCOMES	UNIT/CHAPTER	BLOOM'S TAXONOMY LEVELS (U= Understand, R= Remember, An= Analysis, Ap= Apply)
1	Semester I	PAPER:SKT- HC-1016 CLASSICAL SANSKRIT LITERATURE (POETRY)	This course aims to get students acquainted with Classical Sanskrit Poetry. It intends to give an understanding of literature, through which students will be able to appreciate the development of Sanskrit Literature. The course also seeks to help students to negotiate texts independently.	UNIT :I --- RAGHUVAMSAM: CANTO I(Verses 1-25) Introduction (Author and Text), Appropriateness of title, Verses 1-10 = Grammatical Analysis , Meaning/Translation, Explanation, Content Analysis, Characteristics of Raghu clan. Verses 11-25: Grammatical analysis, Meaning/ Translation, Explanation, Role of Dilipa, Welfare of Subjects. UNIT :II --- KUMARASAMBHAVAM, CANTO- V (Verses; 1-30)	U, R and An.

				<p>Introduction (Author and Text), Appropriateness of title, Background of given contents.</p> <p>Text reading.</p> <p>Verses 1-15---Grammatical Analysis, Translation and Explanation, Poetic excellence and plot.</p> <p>Verses 16-30--- Grammatical Analysis, Translation and Explanation, Penance of Parvati, Poetic excellence and plot.</p> <p>UNIT –III--- KIRATARJUNIYAM, CANTO I (Verses 1-25)</p> <p>KIRATARJUNIYAM : Introduction(Author and Text,Appropriateness of title, Background of given contents.</p> <p>Verses 1-25...Grammatical Analysis, Translation and Explanation, Poetic excellence, Thematic analysis.</p> <p>UNIT – IV---NITISATAKAM(Verses 1- 20)</p> <p>Verses 1-10 Grammatical Analysis, Translation and Explanation,</p> <p>Verses 11-20---Grammatical Analysis, Translation and Explanation, Thematic analysis, Bhartihari’s comments on society.</p> <p>UNIT –V—ORIGIN AND DEVELOPMENT OF MAHAKAVYA AND GITIKAVYA</p> <p>Origin and development of different types of Mahakavya with special</p>	
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				reference to Asvaghosa, Kalidasa, Bharavi, Magha ,bhatti, Sriharsa.	
2	Semester I	PAPER: SKT-HC-1026 CRITICAL SURVEY OF SANSKRIT LITERATURE	This course aims to get students acquainted with the journey of Sanskrit Literature from Vedic literature to Purāṇa. It also intends to give an outline of different shastric traditions, through which students will be able to know the different genres of Sanskrit Literature and Śāstras.	<p>UNIT- I :VEDIC LITERATURE : <i>SAMHITA</i> (<i>Rik, Yajuh, Sama, Atharva</i>) : Time, Subject matter, religion & philosophy, social life. <i>Brahmana, Aranyaka, Upanisad, Vedanga</i> – Brief Introduction.</p> <p>UNIT- II:RAMAYANA: Subject-matter, Ramayana as an Adikavya, Ramayana as a source text and its cultural importance.</p> <p>UNIT- III :MAHABHARATA : Mahabharata and its time, Development, Encyclopedic nature, as a Source, Text, Cultural importance.</p> <p>UNIT-IV: PURANAS : Subject – matter, characteristics, Purana’s social, cultural and historical importance with special reference to the Kalikapurana.</p> <p>UNIT-V:GENERAL INTRODUCTION TO VYAKARANA, DARSANA AND SAHITYASASTRA General introduction to Vyakarana, Brief history of</p>	U , R & An.

				<p>Vyakaranasastra. General introduction to Darsana : Major schools of Indian Philosophy- Carvaka, Buddha, Jaina, Sankhya-yoga, Nyaya-vaishesika, Purvamimansa and Uttaramimansa.</p> <p>General introduction to Poetics : Six major schools of Indian Poetics – Rasa, Alamkara, Riti, Dhvani, Vakrokti and Aucitya.</p>	
3	Semester II	SKT-HC-2016 CLASSICAL SANSKRIT LITERATURE (PROSE)	<p>This course aims to acquaint students with Classical Sanskrit Prose literature. Origin and development of prose, important prose romances and fables Sanskrit are also included here for students to get acquainted with the beginnings of Sanskrit Prose literature. The course also seeks to help students negotiate texts independently.</p>	<p>Unit I Sukanasopadesa (Ed. Prahlad Kumar): Introduction – Author/Text, Text up to page 116 of Prahlad Kumar up to the end of the Text. Society, Ayurveda and Political thoughts depicted in Sukanasopadesa, logical meaning and application of sayings: Banocchistam, Pancananbanah</p> <p>Unit II Visrutacaritam Upto 15th Para: Para 1 to 10 - Introduction – Author/Text, Text reading (Grammar, Translation and Explanation), Poetic excellence, plot, Timing of Action, Society, language and style of Dandin.</p>	U , R & An.

				<p>Exposition of Sayings “Dandinahpadalalityam”, “KavirdandiKavirdandinaSamsayah”.</p> <p>Unit III</p> <p>Origin and Development of Prose, Important Prose Romances and Fables:</p> <p>Origin and development of prose, important prose romances and fables</p> <p>Subandhu, Dandin, Bana, AmbikadattaVyasa.</p> <p>Pancatantra, Hitopadesa, Vetalapancavimsatika, Simhasanadvatrimika, Purusapariksa, Sukasaptati.</p>	
4	Semester II	SKT-HC-2026 SELF MANAGEMENT IN THE GITA	The objective of this course is to study the philosophy of self-management in the Gītā. The course seeks to help students negotiate the text independently without referring to the traditional commentaries so as to enable them to experience the richness of the text.	<p>Unit I</p> <p>Gita: Cognitive and emotive apparatus:</p> <p>Hierarchy of <i>indriya</i>, <i>manas</i>, <i>buddhi</i>, and <i>atman</i> III.42; XV.7</p> <p>Role of atman – XV.7; XV.9</p> <p>Mind as a product of prakriti VII.4</p> <p>Properties of three gunas and their impact on the mind- XIII.5-6; XIV.5-8, 11-13; XIV.17</p> <p>Unit II</p> <p>Gita: Controlling the Mind: Confusion and Conflict</p> <p>Nature of conflict I.1; IV.16; I.45; II.6</p>	U, R, An. & Ap.

				<p>Causal factors- Ignorance- II.41; <i>Indriya</i>-II.60, Mind- II.67; <i>Rajoguna</i> – III.36-39; XVI.21; Weakness of mind- II.3; IV.5 Means of controlling mind Meditation- difficulties-VI.34-35; procedure VI.11-14 Balanced life- III.8; VI.16-17 Diet control- XVII.8-10 Physical and mental discipline – XVII.14-19, VI.36. Means of conflict resolution Importance of knowledge – II.52; IV.38-39; IV.42 Clarity of <i>buddhi</i>- XVIII.30-32 Process of decision making – XVIII.63 Control over senses – II.59, 64 Surrender of <i>kartribhava</i> – XVIII. 13-16 Desirelessness– II.48; II.55 Unit III Gita: Self- management through devotion: Surrender of ego Abandoning frivolous debates Acquisition of moral qualities</p>	
5	Semester III	PAPER- SKT-HC-3016 CLASSICA SANSKRIT LITERATURE (DRAMA)	This course aims to acquaint students with three most famous dramas of Sanskrit literature	UNIT-I: SVAPNABASAVADATTAM of Bhasa, Act I & Act VI	U, R & An.

			which represent three stages in the growth of Sanskrit drama.	UNIT - II: ABHIJNANASAKUNTALAM of Kalidasa, Act I & Act IV. UNIT-III: MUDRARAKSASAM of Visakhadatta : Act I, II & III UNIT-IV : CRITICAL SURVEY OF SANSKRIT DRAMA Sanskrit Drama : Origin and Development, Nature of Nataka, Some important Dramatists and Dramas :- Bhasa, Kalidasa, Sudraka, Visakhadatta, Sriharsa, Bhavabhuti, Bhattanarayana and their works.	
6	Semester III	PAPER- SKT-HC-3026 POETICS AND LITERARY CRITICISM	The study of <i>Sāhityaśāstra</i> (Sanskrit Poetics) embraces all poetic arts and includes concepts like <i>alamkāra</i> , <i>rasa</i> , <i>rīti</i> , <i>vakrokti</i> , <i>dhvani</i> , <i>aucitya</i> etc. The entire domain of Sanskrit poetics has flourished with the topics such as definition of poetry and divisions, functions of word and meaning, theory of <i>rasa</i> and <i>alamkāra</i> (figures of speech) and <i>chandas</i> (metre), etc. This develops capacity for creative writing and literary appreciation.	UNIT- I: Introduction to Sanskrit Poetics, UNIT- II: Forms of Kavya Literature, UNIT- III: Sabda-Sakti and Rasa-sutra & Kavyadosa UNIT- IV : Figures of Speech and Metre	U, R & An.
7	Semester III	PAPER- SKT-HC-3036 INDIAN SOCIAL	Social institutions and Indian Polity have been highlighted in the	UNIT – I: Indian Social Institutions : Nature and	U, R & An.

		INSTITUTIONS AND POLITY	<p><i>Dharmaśāstra</i> literature. 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 texts such as <i>Saṁhitās</i>, <i>Mahābhārata</i>, <i>Purāṇa</i>, Kautilya's <i>Arthaśāstra</i> and other works known as <i>Nītiśāstra</i>.</p>	<p>Concepts, Indian Social Institutions : Definition and Scope: Sociological, definition of Social Institutions. Trends of Social Changes, Sources of Indian Social Institutions. Social Institutions and Dharmasastra Literature Dharmasastra as a special branch of studies of social institutions, sources of Dharma, Different kinds of Dharma in the sense of Social Ethics, Six kinds of Dharma in the sense of Duties. UNIT II : Structure of Society and Values of Life Varna system and Caste System, Origin of Caste-system from Inter Caste Marriages Position of Women in the Society. Social Values of Life. UNIT- III: INDIAN POLITY: ORIGIN AND DEVELOPMENT Initial stage of Indian Polity from Vedic period to Buddhist period. Relevance of Gandhian Thought in Modern period</p>	
				<p>with special reference to Satyagraha philosophy. UNIT-IV: CARDINAL THEORIES AND THINKERS OF INDIAN POLITY <i>Saptanga</i> Theory, <i>Mandala</i> Theory, <i>Saragunya</i> Policy of War and Peace, <i>Caturvidha Upaya</i> for balancing the power of State, Three types of State Power, Important Thinkers on Indian Polity.</p>	

8	Semester III	PAPER: SKT-SE-3014 ACTING AND SCRIPT WRITING SEC (SKILL ENHANCEMENT COURSE)	The acting is connected with the practical aspect of the play and depends on actor while script writing is closely related with society and this paper aims at the teaching the theoretical aspect of this art. The training of composition and presentation of drama can further enhance one's natural talent. This paper deals with the rules of presentation of play (acting) and dramatic composition (script writing) and aims at sharpening the dramatic talent of the students.	UNIT-I :Abhinaya (Acting)- Persons competent for presentation, Assignment of Role, Kinds of Roles. UNIT-II: Script Writing – Types of dramatic production, Dialogue Writing: Kinds of Dialogue.	U, R & Ap.
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9	Semester	SKT-HC-4016	This course aims to acquaint the	Unit I	U, R & An.
	IV	INDIAN EPIGRAPHY, PALEOGRAPHY AND CHRONOLOGY	students with the epigraphical journey in Sanskrit, the only source which directly reflects the society, politics, geography and economy of the time. The course also seeks to help students to know the different styles of Sanskrit writings.	<p>Epigraphy: Introduction to Epigraphy and Types of Inscriptions Importance of Indian Inscriptions in the reconstruction of Ancient History and Culture History of Epigraphical Studies in India History of Decipherment of Ancient Indian Scripts (Contribution of Scholars in the field of epigraphy) : Fleet, Cunningham, Prinsep, Bulher, Ojha, D. C. Sircar.</p> <p>Unit II Paleography: Antiquity of the Art of Writing Writing Materials, Inscribers and Library Introduction to Ancient Indian Scripts.</p> <p>Unit III Study of selected inscriptions: Asoka's Girnara Rock Edict- 1 Asoka's Sarnatha Pillar Edict Girnara Inscription of Rudradaman Dubi Copper Plates of Bhaskaravarman Parbatiya Copper Plates of Vanamalavarmadeva</p> <p>Unit IV Chronology:</p>	

				<p>General Introduction to Ancient Indian Chronology</p> <p>System of Dating the Inscriptions(Chronograms)</p> <p>Main Eras used in Inscriptions – Vikrama Era, Saka Era and Gupta Era</p>	
10	Semester IV	SKT-HC-4026 MODERN SANSKRIT LITERATURE	The purpose of this course is to expose students to the rich & profound tradition of modern creative writing in Sanskrit, enriched by new genres of writing.	<p>Unit I</p> <p>Mahakavya and Charitakavya: Svatantryasambhavam, Canto 2, verses 1-45</p> <p>Sankaradevacarita of (MaheswarHazarika) Chapter- 5, Manikancanamilanam</p> <p>Unit II</p> <p>Gadya and Rupaka: Sataparvika (AbhirajaRajendra Mishra) Sardulasakatam (Virendra Kumar Bhattacharya)</p> <p>Unit III</p> <p>Gitikavya and Other genres: Ketakikavya Taranga, I Srutipasastimanjari by MukundaMadhavaSarma: AnundoramBarooah, KrisnakantaHandique, Sankaradev Harshdev Madhava Haiku Unit IV</p> <p>General Survey:</p>	U, R & An.

				<p>PanditaKshamaRao, P.K. NarayanaPillai, S.B. Varnekar, ParmanandShastri, Reva Prasad Dwivedi Bhavadeva Bhagavati, MonoranjanShastri, BiswanarayanShastri, M. M. Sharma HaridasSiddhantavagish, Mula Shankar M. Yajnika, MahalingaShastri, LeelaRaoDayal, YatindraVimalChowdhury, Virendra Kumar Bhattacharya</p>	
11	Semester IV	SKT-HC-4036 SANSKRIT AND WORLD LITERATURE	This course is aimed to provide information to students about the spread & influence of Sanskrit literature and culture through the ages in various parts of the world in medieval & modern times.	<p>Unit I: Survey of Sanskrit Literature in the World Unit II : Upanisads and Gita in the World Literature Unit III: Sanskrit Fables in the World Literature Unit IV :Ramayana and Mahabharata in South East Asian Countries Unit V :Kalidasa's Literature in World Literature Unit VI :Sanskrit Studies across the World</p>	U, R & An.
12	Semester IV	SKT-SE-4014, SANSKRIT METRE AND MUSIC SEC (SKILL ENHANCEMENT Course)	The objective of this course to learn Sanskrit metre for analysis and lyrical techniques. Students will get the complete information regarding selected Vedic and Classical metres with lyrical techniques.	<p>Unit I :Brief Introduction to Chandasastra Unit II : Classification and Elements of Sanskrit Metre :Syllabic verse, Syllabo-quantitative verse, Quantitative verse,</p>	U, R & Ap.

				<p>Syllables (laghu, guru,), Guna, Feet</p> <p>Unit III : Analysis of Selected Vedic Metre as per Chandamanjari and their Lyrical Methods: Definition, Example, Analysis and Lyrical Methods of selected Metres</p> <p>Unit IV :Analysis of Selected Classical Metreas per Chandamanjari and their Lyrical Methods:Definition, Example, Analysis and Lyrical Methods of selected Metres</p>	
13	Semester V	SKT-HC-5016 VEDIC LITERATURE	This course on Vedic Literature aims to introduce various types of vedic texts . Students will also be able to read one <i>Upanisad</i> namely <i>Mundaka</i> where primary Vedanta-view is propounded.	<p>UNIT-I SAMHITA AND BRAHMANA : Rigveda, Yajurveda, Atharvaveda, Satapathabrahmana UNIT –II VEDIC GRAMMAR : Declensions, Subjunctive Mood, Gerunds, Vedic Accent and Padapatha UNIT-III MUNDAKOPANISAD : 1.1 -3.2</p>	U & R
14	Semester V	PAPER: SKT-HC-5026 SANSKRIT GRAMMAR	To acquaint the students with general Sanskrit Grammar.	<p>UNIT-I: General Introduction to Vyakarana, Sivasutra, Paribhasa, Sandhi UNIT –II: Natvavidhi & Satvavidhi UNIT-III : Declention , Conjugation and Roots UNIT- IV : Karaka Prakaranam, SamasaPrakaranam</p>	U, R & Ap.

15	Semester V	PAPER-SKT-HE-5016 ART OF BALANCED LIVING	This course aims to get the students with theories of art of living inherent in Sanskrit literature and apply them to live a better life. It also intends to make students work on human resource management for giving better results.	UNIT –I : Self Presentation , Method of Self Presentation- Hearing, Reflection and Meditation. (Brihadaranyakaopanisad with Sankarabhasya) UNIT- II : Concentration – concept of yoga, Restrictions of Fluctuations by practice, Eight aids to Yoga, Yoga and Action, Four distinct means of mental purity. UNIT-III : Refinement of Behaviour.	U, R & Ap.
16	Semester V	PAPER- SKT-HE-5026 THEATRE AND DRAMATURGY	Being audio-visual drama is considered to be the best amongst all forms of arts. The history of theatre in India is very old, the glimpses of which can be traced in the hymns of the Rigveda. The dramaturgy was later developed by the Bharatamuni. The objectives of this curriculum are to identify the beauty of drama and to introduce classical aspects of development of Indian theatre among the students.	UNIT –I : Theatre : Types and Construction. UNIT-II : Drama : Vastu, Neta and Rasa UNIT-III : Tradition and History of Indian Theatre .	U, R & Ap.

17	Semester V	PAPER- SKT-HE-5036	This course aims to get the students acquainted with comparative philology and its relation with Sanskrit language. It will also make the students acquire knowledge about the historical development of Sanskrit from Indo-European family of language.	UNIT-I :Bhasasastra – Its Nature, Importance, Origin and Development, Nature and Scope of Comparative Philology, Aim and Objective of Comparative Philology, Branches of Comparative Philology. UNIT- II: Indo- European Language Family, UNIT-III: History and Pre- history of Sanskrit UNIT-IV: Phonetic Changes.	U, R & An.
18	Semester V	PAPER- SKT-HE-5046 PROJECT / DISSERTATION	This course aims to understand the students acquainted with the Research Methodology.	WORD LIMIT: 8000 – 10000 WORDS LANGUAGE : SANSKRIT OR ENGLISH	Ap.
19	Semester VI	PAPER-SKT- HC-6016 INDIAN ONTOLOGY AND EPISTEMOLOGY	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 texts in Sanskrit. It also intends to give them an understanding of essential aspects of Indian Philosophy.	Unit- I: Essentials of Indian Philosophy, Unit- II: Ontology (Based on Tarkasaṃgraha), Unit- III: Epistemology (Based on Tarkasaṃgraha). Meaning and purpose of darśana, general classification of philosophical schools in classical Indian philosophy Realism (yathārthavāda or vastuvāda) and Idealism (pratyavāda), Monism (ekattvavāda), Dualism (dvaitavavāda) & Pluralism (bahuttvavāda) ; dharma (property)-dharmi (substratum) 37 Causation (kāryakāraṇavāda) : naturalism (svabhāvavāda), doctrine of pre-existence of effect (satkāryavāda), doctrine of real transformation (pariṇāmavāda), doctrine of illusory	U, R & An.

				transformation (vivartavāda), doctrine of nonpreexistence of effect in cause (asatkāryavāda and ārambhavāda).	
20	Semester VI	PAPER-SKT- HC-6026 SANSKRIT COMPOSITION AND COMMUNICATION	This course aims at teaching composition and other related information based on Laghusiddhāntakaumudi.	Unit- I: Samāsa, Voice and Kṛt. Unit- II: Translation and Communication. Unit- III: Essay. Vibhaktyartha Prakarana. Samasa, Voice & Kṛt (i). Samasa – Dvanda, Bahubrīhi and Karmadhāraya from Laghu Siddhanta Kaumudi (ii). Voice (kartr , karma and bha va) Selections from K t Prakara a- from Laghusiddhanta kaumudi Major Sūtras for theformation of kridanta words (tavyat, tavya, ani yar, yat, nyat, nvul, tric, a , kta, ktavatu, śatṛ, śānac, tumun, ktv -lyap, lyut ,ghan, ktin) Unit II Translation and Communication (i). Translation from English to Sanskrit on the basis of cases, Compounds and k rt suffixes. (ii). Translation from Sanskrit to English 40 Functional Sanskrit Comprehension, Story writing with outlines, Application/Letter writing Unit III Essay Essay (traditional subjects) e.g. veda, upniṣad, Sanskrit Language, Sanskriti, Rāmāyaṇa, Mahābhārata, purana, principal Sanskrit poets. Essay based on issues and topic related to modern subjects like entertainment, sports, national and international affairs and social problems.	U, R & Ap.

21	Semester VI	PAPER-SKT-HE-6016 FUNDAMENTALS OF AYURVEDA	<p>Ayurveda is a traditional Indian system of healthcare that has been traced back as early as 5,000 BCE. Through the classroom lectures and discussions, this course will introduce students to the theory of Ayurveda. The theory modules sessions that make up this course offer an introduction to Ayurveda that is well rounded, comprehensive and useful for students in their own day-to-day living. The major objective is to understand the basic principles and concepts of preventative medicine and health maintenance, diet and nutrition, usage of commonly used spices and herbs and outline of Ayurvedic therapeutic procedures in Ayurveda. Unit- I: Introduction of Āyurveda Introduction of Āyurveda, History of Indian Medicine in the pre-caraka period, The two schools of Āyurveda: Dhanvantari and Punarvasu. Main Ācāryas of Āyurveda – Caraka, Suśruta, V ḡbhā a, Mādhava, Sārṅgadhara and Bhāvamiśra. Unit- II: Carakamsa mhitā – (Sūtra-sthānam) Carakasa hitā – (Sūtra-sthānam): Division of Time and condition of nature and body in six seasons. Regimen of Fall Winter (Hemanta), Winter (Śisīra) 51 & Spring (Vasanta) seasons. Regimen of Summer (Grī ma), Rainy (Var ā) and Autumn (Śarada) seasons. Unit- III:</p>	<p>Unit- I: Introduction of Āyurveda. Unit –II: Carakasamhitā – (Sūtra-sthānam). Unit- III: Bhaisajyaratnavali.</p>	U, R & Ap.
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			Bhaisajyaratnāvali Bhaisajyaratnāvali (Avatāraprakaraṇa) (Ch. I) Bhaisajyaratnāvali (Mīśravargaparakaraṇa) (Ch. III).		
22	Semester VI	PAPER-SKT-HE-6036 KAMARUPA SCHOOL OF DHARMAŚASTRA	This course aims at giving learners knowledge about the meaning and scope of Dharma, about the Historical Perspective of the Dharmasāstras in Assam, different Schools of Dharmasāstra, Smṛiti writers of Kamarupa & their works, special features of Kamarupa School of Dharmasāstras, about Tirtha, Tirthasamanyaphalāni, Tirthavisesaphalāni etc.	Unit- I: Introduction to Dharmasāstras in Assam, Unit II: Kamarupa School of Dharmasāstra, Unit III: Tirthakaumudī of Pitambarasiddhantavagisha.	U, R & An.
23	Semester I Four Year Undergraduate Programme (FYUGP)	PAPER- I INTRODUCTION TO SANSKRIT Major & Minor	Through this course, students will acquire knowledge of Vedic and Classical Sanskrit Literature. Students will gain basic knowledge of Indian Scriptures that reflects the base of Indian society and culture. Students will study the history and background of Sanskrit language and Devnagari script. After going through this unit students will be able to appreciate the value of knowledge regarding ancient Indian literature. They will gain knowledge about various Indian scriptures which are the root of Indian Civilization. Students will be able to appreciate Indian Knowledge System that evolved in the initial stage of	Unit I: Introduction to Vedic Literature (Introduction to Saṁhitā, Brāhmaṇa, Āraṇyaka, Upaniṣad & Vedāṅgas) Unit II: II Introduction to Classical Sanskrit Literature (Epics, Purāṇa, Pañcamahākāvya, Nāṭaka) Unit III: Introduction to Śāstras (Vyākaraṇa, Darśana, Alāṅkāraśāstra) Unit IV: Origin and Development of Sanskrit Language and Devanāgarī Lipi	U, R, An. & Ap.

			human civilization. Also they will be able to grasp the linguistic significance of Sanskrit and its scripts.		
24	Semester I Four Year Undergraduate Programme (FYUGP)	PAPER –I FUNCTIONAL SANSKRIT SEC (SKILL ENHANCEMENT COURSE)	Through this course, students will acquire the Skill of correct Pronunciation of Sanskrit sounds. Students will gain knowledge about the Scientific Background of Sanskrit Alphabets Students will be Skilled in Sanskrit Communication in its Basic Level. Students will be Skilled in Writing various Types of Essays and Application including Project Proposal in Simple Sanskrit. After going through this unit students will be able to grasp the details of pronunciation techniques in connection with Sanskrit Sounds, understand the Science that remains behind the Sanskrit Alphabets, acquire the skill of Communication through Simple Sanskrit Language, attain the skill of Writing the contents of Various Types of Essays and Application in Simple Sanskrit, acquire the skill of Writing Project Proposal in Simple Sanskrit. They will acquire knowledge of the Technicalities behind the alphabets of Sanskrit, Skill for preliminary Communication in Sanskrit , Introductory knowledge of Creative writing in Sanskrit	Unit I : Specialities of Sanskrit Alphabets, Unit II – Preliminary Conversation in Sanskrit, Unit III : Writing of Sanskrit Essays and Application (Including Project Proposal), Unit I: Creative Writing in Sanskrit	U, R & Ap.

			Language, Skill for writing content of various types of applications in Sanskrit.		
25	Semester I Four Year Undergraduate Programme (FYUGP)	PAPER –I BASICS OF SANSKRIT COMMUNICATION AEC (ABILITY ENHANCEMENT COURSE)	Students will acquire the basic knowledge of the domain of Communicative Sanskrit. Students will gain knowledge about the Scientific Background of Sanskrit Alphabets and Vedic Svaras. They will get knowledge of Sanskrit sounds, Ideas and Technicalities required for Sanskrit Communication, Self Introduction in Sanskrit Language, Ability to project India and Assam in Sanskrit.	Unit I : Scientific Background of Sanskrit Alphabets and Vedic Svaras, Unit II : The Speech Apparatus and Pronunciation of Sanskrit Sounds, Unit III : Sanskrit Speaking Skill (Self Introduction through 10 Sentences, 10 Sentences on any Topic from the Surrounding, Ten Sentences each about India and Assam)	U, R & Ap.

DEPARTMENT OF SOCIOLOGY
DARRANG COLLEGE, TEZPUR

15. BA Sociology

Programme Specific Outcome:

- a) Acquire the basic knowledge about discipline of Sociology.
- b) Able to critically analyses the various societal phenomena by applying a theoretical perspective.
- c) Understand the culture, process of social change of different societies.
- d) Able to understand the social differences, inequality and also about differences in social behavior and human actions.
- e) It enhance the skill of critical thinking.

Course Outcome:

SL. NO.	SEMESTER	PAPER CODE/NAME	COURSE OUTCOME	UNIT
1.	I	Introduction to Sociology	<ul style="list-style-type: none"> a) Acquire knowledge about the field of sociology and its basic concepts. b) Understand the historical trajectory of the discipline of sociology c) The course will help the students to enhance their thinking in a sociological way. d) To provide a foundation for other more detailed and specialised course in sociology. 	Uni1- Sociology-Discipline and perspective Unit 2 – Basic concepts Unit3- Culture and society
2.	II	Introduction to sociology B/ SOC-HC-2016	<ul style="list-style-type: none"> a) This course will enable students to comprehend social reality through sociological perspectives. b) It will help students to understand the society from various sociological theoretical perspectives. 	Unit 1- On the plurality of sociological perspectives. Unit2- Functionalism Unit3- Interpretive sociology Unit4- Conflict perspective Unit5- Structuralism Unit6- Interactionism Unit7- Feminist perspective
3.	II	Sociology of India -B/SOC-HC-2026	<ul style="list-style-type: none"> a) The course aims to introduce the students with various societal phenomena of the Indian society. b) The course will also enable students to acquire a historical perspective and critically analyse about the contemporary Indian society. c) The course also aims to analyse the changing dynamics and the contemporary challenges of Indian society. 	Unit1- Ideas of India. Unit2- Resistance, mobilization change. Unit3- Challenges to civilization, state and society.
4.	III	Political Sociology/SOC-HC-3016	<ul style="list-style-type: none"> a) The course introduces the students to some major 	Unit1- Contextualising the study of politics

			<p>theoretical debates and concepts in political sociology while situating this within contemporary political issues.</p> <p>b) A key thrust of the paper is towards developing a comparative understanding of political relationships through themes such as power, governance state and societal relationship.</p>	<p>Unit2- Basic concepts Unit3- Political systems: segmentary, totalitarian and democratic Unit4- Everyday state and local structures of power</p>
5.	III	Economic Sociology/ SOC- HC-3026	<p>a) The course provides an understanding of the social and cultural bases of economic activity.</p> <p>b) It highlights the significance of sociological analysis for the study of economic processes in local and global context.</p>	<p>Unit1- Perspectives in economic sociology Unit2- Forms of exchange Unit3- Systems of production, circulation and consumption. Unit4- Some contemporary issues in economic sociology.</p>
6.	III	Sociology of Gender	<p>a) This course introduces gender as a critical sociological lens of enquiry in relation to various social fields.</p> <p>b) It also interrogates the categories of gender, sex and sexuality</p> <p>c) This course also make students aware about various gender inequalities and divisions based on caste, class, family and work.</p>	<p>Unit1- Gendering sociology Unit2- Gender as a social construct Unit3 Gender: differences and inequalities Unit4 Gender, power and resistance</p>

7.	III	Fundamentals of social statistics/SOC-SE-3014	<p>a) The course introduces the students to understand fundamentals of social statistics.</p> <p>b) The course encourage students to undertake data collection activities, sampling and data analysis.</p>	<p>Unit1- Introduction to social statics</p> <p>Unit2- Data collection</p> <p>Unit3- Representation of data</p> <p>Unit4- Data analysis</p> <ul style="list-style-type: none"> • Project work
8.	IV	Rural sociology in India/ SOC-HC-4016	<p>a) This course aims to introduce the students to various components of rural social structure, such as family, village, community, caste etc.</p> <p>b) It analyses the effect of religion, customs and traditions on rural social structures</p> <p>c) The course will enable students to make a scientific, systematic and comprehensive study of the rural social organisation of its structure, functions and objectives</p>	<p>Unit1- Introducing rural sociology</p> <p>Unit2- Rural agrarian social structure</p> <p>Unit3- Rural institutions</p> <p>Unit 4- Rural India in transition.</p>
9.	IV	Urban sociology in India/SOC-HC-4026	<p>a) The course provides an exposure to key theoretical perspectives for understanding urban life in historical and contemporary context.</p> <p>b) It also reflects on some concern of urban living while narrating the subjective experience of urban communities.</p>	<p>Unit1- Introducing urban sociology</p> <p>Unit2- Perspectives in urban sociology</p> <p>Unit3- Movements and settlements</p> <p>Unit4- Politics of urban space</p>
10	IV	Sociology of family, marriage and kinship/ SOC-HC-4036	<p>a) the course will enable students to conceptualise and theorise the social institution of family, marriage and kinship.</p> <p>b) The course will enable students to understand the changes in the institution of family, marriage and kinship in contemporary period.</p>	<p>Unit1- Nature and significance</p> <p>Unit2- Family and household</p> <p>Unit3- Conceptualising marriage</p> <p>Unit4- Kinship</p>
11	IV	Methods of sociological enquiry/ SOC-SE-4016	<p>a) The course will enable students about the process of research, formulating research design,</p>	<p>Unit1- Introduction to sociological research.</p> <p>Unnit2-</p>

			<p>quantitative and qualitative data.</p> <p>b) It also helps the students to know about research from a sociological point of view.</p>	<p>Fundamentals of social research</p> <p>Unit3- Statistical analysis</p> <p>Unit4- Research projects</p>
12	V	Sociological thinkers-1/ SOC-HC-5016	<p>a) The course introduces the students to the classics in the making of the disciplines of sociology.</p> <p>b) This paper also enable students to acquire a broad over view on various issues, concern since the time of inception as an academic discipline.</p>	<p>Unit1- Karl Marx</p> <p>Unit2- Max Weber</p> <p>Unit3- Emile Durkheim</p>
13	V	Sociological research methods-1/SOC-HC-5026	<p>a) This course aims to introduce students to sociological research methods and acquire some elementary knowledge of the complexities and philosophical understanding of research.</p> <p>b) The paper also introduce about how to conduct a research, about the concept of subjectivity, objectivity etc.</p>	<p>Unit1- The logic of social research</p> <p>Unit2- Methodological perspectives</p> <p>Unit3- Modes of enquiry</p>
14	V	Sociology of tribal societies in India/ SOC-HE-5016	<p>a) The course aims to provide students with a comprehensive profile and understanding of the tribal communities in India.</p> <p>b) The paper also helps to know about the geographical distribution of tribes, their cultural pattern.</p>	<p>Unit1- Introduction</p> <p>Unit2- Colonial/post-colonial policies and tribes.</p> <p>Unit3- Problems of tribal people</p> <p>Unit4- Issues of migration and autonomy</p>
15	V	Social stratification/SOC-HE-5036	<p>a) The course provide knowledge about principle theoretical perspectives on social enquiry.</p> <p>b) This paper provides knowledge on sociological study of social inequalities.</p>	<p>Unit1- Introducing stratification</p> <p>Unit2- Theories of stratification</p> <p>Unit3- Identities and inequalities</p> <p>Unit4- Mobility and reproduction</p>
16	VI	Sociological thinkers II/ SOC-HC-6016	<p>a) In this course the students were introduce about post-colonial sociological thinking.</p> <p>b) It will enhance the critical thinking about various social phenomena.</p>	<p>Unit1- Talcott Parson</p> <p>Unit2- Levis-Strauss</p> <p>Unit3-</p>

				G.H.Mead and Erving Goffman Unit4- Berger and Luckman Unit5- Max Horkheimer, Adorno and Herbert Marcuse Unit 6- Pierre Bourdieu.
17	VI	Sociological research methods/SOC-HC-6026	<ul style="list-style-type: none"> a) This course aims to introduce students to sociological research methods and acquire some elementary knowledge of the complexities and philosophical understanding of research. b) The paper also introduces about how to conduct research, about the concept of subjectivity, objectivity etc. 	Unit 1- Doing social research Unit2- Methods of data collection Unit 3- Statistical methods Unit 4- Research projects.
18	VI	Social Demography/SOC-HE-6016	<ul style="list-style-type: none"> a) The course provides a critical understanding of the interface between population and society. b) It analyses the role of fertility, mortality, migration on the composition, size and structure of population. c) It will also help the students to achieve border knowledge about population dynamics. 	Unit 1- Introducing population studies Unit2- Population, social structure and processes Unit3- Population, Gender and Migration Unit4- Population dynamics and development.
19	VI	Sociology of social movements/SOC-HE-6026	<ul style="list-style-type: none"> a) This course will enable the students to look at social movements from a sociological perspective. b) It introduces the contents and concepts of social movements and attempted to theoretically locate them through concrete case studies. 	Unit1- Contextualising social movements Unit2- Theories of social movements Unit3- Ideology, participation and mobilization: case studies. Unit4- Contemporary social movements.

DEPARTMENT OF TRAVEL AND TOURISM MANAGEMENT
DARRANG COLLEGE, TEZPUR

16. BA Travel and Tourism Management (TTM)

Programme Specific Outcome:

PO 1: Understand the theory and practice gap in the field of tourism management

PO 2: Students will develop professional skills that will prepare them to perform effectively as employee and also as an entrepreneur.

PO3: Students will understand ethical, legal, financial, marketing, human resources and social issues and responsibilities

PO4: Able to solve real problems through effective teamwork, communication and critical thinking

PO5: Able to adapt to the ever-changing environment and will be receptive to new skills and new competencies.

PO6: Students will be given assignments and seminars which will mould their leadership capabilities, professional ethics and subject insights.

PO 7: To orient and equip students with Travel Management skills of the age.

PO 8: Able to effectively communicate both in written and oral business communication.

PO 9:one will be familiar with basic definitions and with the travel and tourism cluster,

PO 10: To prepare students for managerial positions in Destination planning, Consultancies, Policymaking, Tour operations, Travel agencies, Small and Medium Enterprises (SME), Hospitality and Aviation.

PO 11: After completing the program, the students should be able to work in, travel and tourism related organizations, at various capacities in government levels, Event and Entertainment industry, Hotels, Food & Beverage services etc.

PO12: The programme also bestows entrepreneurial skills among the students to start new businesses in the above areas.

PO 13: To develop hospitality culture and behaviour and to enhance student competencies.

PO 14: To create an industry awareness.

Course Outcome:

SL NO.	SEMESTER	PAPER CODE & TITLE	COURSE COUTCOME	UNIT/CHAPTERS
BA TRAVEL AND TOURISM MANAGEMENT				
1	I	TTMMIN 1014 - Basics of Tourism	<p>This unit will help the students to get better understanding about the meaning of tourism, the nature and scope of tourism. It also explains about the meaning and differences of tourist, traveller, visitor and excursionist. This unit analyses about the forms of tourism and also the basic components. This unit helps to understand in what way the tourism had evolved over time from the ancient era to the modern-day tourism and how the motivation to travel works. It also helps to understand the factors affecting national and international tourism and how the push and pull factor influence tourist.</p> <p>To know about the different tourist resources and its nature and how it functions.</p> <p>This unit will help to understand about the significance of tourism industry in various sectors. It also explains about the inter connection of tourism as an industry and the latest trends which are follow in tourism industry, then the various impacts like economic, socio-cultural, ecological and environmental.</p>	<p>Conceptual Framework Tourism - Definition, Meaning, Nature, Scope and Types</p> <p>Historical Dimensions of Tourism -Travel and Tourism throughout the Ages</p> <p>Understanding Tourism Resources -Components of Tourist Resources</p> <p>Significance of Tourism Industry</p>
2	II	TTMMIN 2014 - Tourism Resource of Assam & North East India	<p>To understand the diversified tourist resources of Assam whether they are natural resources or historical tourism resources</p> <p>To know about the different criteria of religious and cultural tourism resources and their influence in the tourism market.</p> <p>It is to understand the potential of North East India from the perspective of adventure tourism and different tourist festival that is organised place in this region. It also explains the trends of tourism which helps in sales and promotion of this region.</p>	<p>Natural & Historical Tourism resources of Assam - Natural Tourism Resources, Historical Tourism Resources.</p> <p>Religious & Cultural Tourism Resources of Assam - Religious Tourism Resources, Cultural Tourism Resources</p> <p>Adventure sports and Tourist festivals of North East India</p>

3	III	TTMMIN 3014 Tourism Policy, Planning & Development	<p>It gives an idea about planning and how it influences the tourism sector and the steps used in tourism planning.</p> <p>This unit will help to understand about the National as well as state policy of tourism. Basically, the National Tourism Policy of 1982, 2002 and 2022 of India is highlighted in this unit apart from this the student will also learn about the National Action Plan of 1992 with its objectives and strategies.</p> <p>It also explains about the Tourism Policy of Assam both previous as well as the latest one</p> <p>This unit will help to understand how tourism planning is influencing a destination life and also the consequences of unplanned tourist destination</p>	Tourism Planning
				Approaches of Planning in Tourism
				Tourism Policy -Concept, Objectives and Significance of Tourism Policy
				Tourism Planning Development
4	IV	TTMMIN 4014 Tourism Organization, Travel Agency & Tour Operation Techniques	<p>The course aims to equip participants with essential skills for tourism organizations, travel agencies, and tour operators, covering aspects such as itinerary planning, customer service, marketing strategies, and industry regulations. Participants will gain practical knowledge to excel in the dynamic field of travel and tourism.</p>	Tourism Organizations - Need of Tourism Organizations
				Basics of Travel Agency - Genesis and Growth of Travel Agency business, Travel Documents/ Formalities
				Tour Operation
				Tour Guiding skills
5	V	TTMMIN 5014 Hospitality& Tourism Marketing	<p>A Hospitality and Tourism Marketing course typically aims to equip students with skills in strategic marketing, branding, and promotion specific to the hospitality and tourism industry. Students often learn to create effective marketing campaigns, understand consumer behaviour in the context of travel and hospitality, and develop strategies to enhance customer satisfaction and loyalty. The outcome is a well-rounded understanding of marketing principles applied to the unique challenges and opportunities within the hospitality and tourism sector.</p>	Introduction to Hospitality - Hospitality
				Departments, Functions & Grading of Hotels - Classification and Grading of Hotels, Organizational Structure of Hotel
				Tourism Marketing - Understanding of Marketing
				Digital marketing For Tourism
6	VI	TTMMIN 6014	Students will have to submit a report based on a field visit to a	Field Visit

		Field Visit and On Job Training (Practical)	Tourist destination Prepare a training report based on one week of job training. The students will also have to appear for Viva voce.	On the Job Training
7	VII	TTMMIN 7014 Tourism Entrepreneurship and Research Methodology	Tourism entrepreneurship helps student explores innovative ventures in the travel industry, while research methodology examines the methods used to study tourism trends. The colour of these outcomes depends on the strategies employed and the quality of research, influencing the success and sustainability of tourism initiatives.	
8	VIII	TTMMIN 8014 Dissertation	Each student will have to submit a Dissertation report based on a selected Tourist destination of local region. The students will have to appear before a board of examiners constituted for the purpose of conducting Viva voce.	

II. PROGRAMME OUTCOME – BSC

The completion of B.Sc Program will enable students to accomplish the following programme outcomes:

- Students will be able to engage in insightful analysis, recognize underlying presumptions, validate their correctness, and evaluate their ideas and decisions from various viewpoints to make well-informed choices.
- Students are expected to develop proficiency in effective communication, acquiring skills such as active listening, eloquent speaking, adept reading, and precise writing. This competence should transcend traditional face-to-face interactions to encompass proficiency in electronic media.
- Students are bound to excel in interpersonal interaction, showcasing the ability to understand the viewpoints of others, facilitate conflict resolution, and actively participate in fostering consensus within collaborative settings.
- Students will develop a profound understanding of engaged civic participation. This encompasses displaying empathy for societal issues, gaining insights into fair national development, and participating actively in civic activities through volunteerism, while staying well-informed and aware of relevant concerns.
- Students will develop a foundation in ethics, encompassing the ability to discern diverse value systems, including their own. It is essential for them to comprehend the moral dimensions inherent in their decisions and willingly embrace responsibility for their choices.
- Students are expected to gain knowledge in the realm of environment and sustainability, involving a comprehensive understanding of the issues pertaining to environmentalism and sustainable development.
- Students will develop proficiency in self-directed and lifelong learning, equipping themselves with the capacity to autonomously pursue ongoing education within the diverse landscapes of socio-technological transformations.
- Students are expected to grasp the foundational concepts, essential principles, and overarching theories within the subjects they are taught.
- Students should acquire the necessary skills for proficiently operating scientific instruments and effectively plan and execute laboratory experiments.
- Students are encouraged to cultivate the ability to observe meticulously and derive sound, logical inferences from scientific experiments.
- Students should be adept at analytically and methodically evaluating scientific data, outlining objectives, and deriving well-founded conclusions.
- Students are expected to demonstrate creative thinking by generating unique and inventive ideas.
- Students should understand the benefits of a cross-disciplinary approach in generating enhanced solutions and fresh ideas for enduring progress.
- Students would nurture a rational perspective, applicable not just to science but extending to various aspects of life.
- Students will learn to embrace principles of integrity, virtuous conduct, and community responsibility.

DEPARTMENT OF BOTANY
DARRANG COLLEGE, TEZPUR

1. B.Sc. Botany

PROGRAM OUTCOMES :

Students taking admission to the program of B.Sc. are expected to get equipped with following PO1. Explaining the basic scientific principles and methods.

PO2. Inculcate scientific thinking and awareness among the student.

PO3. Ability to communicate with others in regional language and in English.

PO4. Ability to handle the unexpected situation by critically analyzing the problem.

PO5. Understanding the issues related to nature and environmental contexts and sustainable development.

PROGRAM SPECIFIC OUTCOME

PSO1. Understand the nature and basic concepts of cell biology, genetics, anatomy, morphology, biochemistry, physiology, taxonomy and ecology of plants.

PSO2. Students learn to carry out practical work, in the field and in the laboratory, gain skills and proficiency in Interpreting plant morphology and anatomy, Plant identification etc.

PSO3. Identify the taxonomic position of plants, formulate the research literature and analyze plants with substantiated conclusions using first principles and methods of nomenclature and classification in Botany.

PSO4. Identify problems and independently propose solutions using creative approaches, acquired through interdisciplinary experiences, and a depth and breadth of knowledge/expertise in the field of Plant Identification

PSO5. Demonstrate hands on skill in the experimental techniques and methods of analysis in various fields of Botany

Core papers course outcome :

SL NO	PAPER CODE & TITLE	COURSE OUTCOME
CO1	BOT-HC-1016 :Phycology and Microbiology	This paper is aimed at introducing the microbes to the learner which will help them to understand the subject. The popular career specialisations in Microbiology are Biomedical Scientists, Research Analyst, Virologist, Food Technologist
CO2	BOT-HC-1026 : Biomolecules and Cell Biology	Molecular biologists have an opportunity to get themselves a job at private industries, universities for research work or government agencies. Such biologists can also act as a consultant of specific scientific problems. There are a lot of research opportunities available in government agencies as well as universities.
CO3	BOT-HC-2016 : Mycology and Phytopathology	Mycology is a branch of biology that studies fungi, including their genetic and biochemical properties, their taxonomy and evolution, and their role as a beneficial microbe. Plant pathology or phytopathology studies plant diseases, their mechanisms, and disease control.
CO4	BOT-HC-2026 : Archegoniate	This part of Botany deals with the understanding development of Archegoniate towards understanding the adaptation of modern day plants. This will lead to establishment of technology innovation for adaptation of plants to the changing climate.
CO5	BOT-HC-3016 : Morphology and Anatomy of Angiosperm	For plants, plant morphology or phytomorphology is the study of the physical form and external structure of plants, whereas plant anatomy is the study of the internal plant structure, mostly at the cellular/microscopic level.
CO6	BOT-HC-3026 : Economic Botany	Economic botany intersects many fields including established disciplines such as agronomy, anthropology, archaeology, chemistry, economics, ethnobotany, ethnology, forestry, genetic resources, geography, geology, horticulture, medicine, microbiology, nutrition, pharmacognosy, and pharmacology.
CO7	BOT-HC-3036 : Genetics	The scope of genetics reaches of the problems of growth, form, and their origin of these varieties within the members of populations, and on the effects which these diverse genotypes have on the fitness of individuals and of populations as whole entities.
CO8	BOT-HC-4016 : Molecular Biology	Having a degree in molecular biology opens multiple career options, both in the industry (biologists, cellular biologists, teaching etc) and in the field of research (as a research specialist conducting experiments in clinical or non-clinical areas).

CO9	BOT-HC-4026 : Plant Ecology and Phytogeography	Phytogeography (from Greek-phytón = "plant" and , geographía = "geography" meaning also distribution) or botanical geography is the branch of biogeography that is concerned with the geographic distribution of plant species and their influence on the earth's surface.
CO10	BOT-HC-4036 : Plant Systematics	Plant systematic is a science that includes and encompasses traditional taxonomy; however, its primary goal is to reconstruct the evolutionary history of plant life. It divides plants into taxonomic groups using morphological, anatomical, embryological, chromosomal, molecular and chemical data.
CO11	BOT-HC-5016 : Reproductive Biology of Angiosperms	Flower structure and development. Development and structure of male and female gametophytes. Pollination biology, fertilization and self- incompatibility. Endosperm, embryo and polyembryony.
CO12	BOT-HC-5026 : Plant Physiology	Plant physiology is also an important topic related to fruits, vegetables and other edible parts of the plants. The production of food crops, including the harvest and post-harvest storage of plant products, also hinges on the plant physiology studies.
CO13	BOT-HC-6016: Plant Metabolism	Plant Metabolism and Chemodiversity focuses on understanding metabolism at the molecular level in organisms spanning the evolutionary lineage of terrestrial and aquatic plants, and reaching back to the basal members of this branch of life.
CO14	BOT-HC-6026 : Plant Biotechnology	Some possible career options for graduates with a PhD in botany or plant biotechnology include: Teaching and research positions at universities and colleges. Research positions at government agencies or non- profit organisations. Industry positions in agricultural or biotechnology companies.

Discipline Specific Elective (DSE) Papers

SL NO	PAPER CODE & TITLE	COURSE OUTCOME
DSE-CO1	BOT-HE-5016 : Natural Resource Management	Natural resource management deals with managing the way in which people and natural landscapes interact. It brings together natural heritage management, land use planning, water management, biodiversity conservation, and the future sustainability of industries like agriculture, mining, tourism, fisheries and forestry.
DSE-CO2	BOT-HE-5026: Horticultural Practices and Post-Harvest Technology	The postharvest handling systems for fresh produce begin with harvesting and involve preparation for fresh market or for processing (e.g. freezing, canning, drying), cooling, transportation, storage, and/or handling at destination (wholesale and retail marketing).
DSE-CO3	BOT-HE-6016 : Industrial and Environmental Microbiology	Industrial Microbiology is a branch of applied microbiology in which microorganisms are used for the production of important substances, such as antibiotics, food products, enzymes, amino acids, vaccines, and fine chemicals. Industrial microbiologists study and solve problems related to industrial production processes. They may examine microbial growth found in the pipes of a chemical factory, monitor the impact industrial waste has on the local ecosystem, or oversee the microbial activities used in cheese production to ensure quality.
DSE-CO4	BOT-HE-6026 : Analytical Techniques in Plant Sciences	Chemical analyses are an important tool in ensuring the quality, reliability and the best use of plant biomass. Analytical techniques can provide information about the chemical composition of biomass, characterize its properties and also determine the concentration of both organic and inorganic species in biomass.
CE-CO5	BOT-HE-6036 : Project work/Dissertation	Development of the following skills are given thrust: <ul style="list-style-type: none"> • Defining and outlining a research area with a clear question • Identifying the leading issues • Sourcing the relevant information • Assessing its reliability and legitimacy • Evaluating the evidence on all sides of a debate • Coming to a well-argued conclusion • Organizing and presenting the outcomes of your work critically, convincingly, and articulately, following all the guidelines on how to format your essay

		<p>Types of dissertation offered:</p> <p>Empirical dissertations are dissertations which involve collecting data, for example in a psychology degree. This may mean putting into practice professional and ethical guidelines when collecting data from members of the public. Empirical dissertations in natural and life science subjects may involve or be entirely centered on laboratory work.</p> <p>Non-empirical dissertations are based on existing data and arguments in the work of others. This is likely to mean spending a lot of time with your head in a book! In this type of dissertation, you need to make sure you don't just describe what others are saying, but critically analyze the work and explore its practical applications.</p>
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Skill Enhancement Paper

- 1 BOT-SE-3014 : Biofertilizers (SEC-I)
- 2 BOT-SE-3024 : Herbal Technology (SEC-I)
- 3 BOT-SE-4014 : Nursery and Gardening (SEC-II) 4 BOT-SE-4024 : Floriculture (SEC-II)
- 5 BOT-SE-4034 : Intellectual Property Rights (SEC-II)

DEPARTMENT OF CHEMISTRY
DARRANG COLLEGE, TEZPUR

2. B.Sc. Chemistry

Program Specific Outcomes and Course Outcomes:

Program Specific Outcomes

1. The program will create interest on Physical Chemistry, Inorganic Chemistry and Organic Chemistry.
2. These will enable the learners to acquire knowledge on concepts, techniques and facts.
3. The program will enhance practical skills as well as theoretical aspects of different chemical phenomenon.
4. The learner will be acquainted with instruments used in chemistry.
5. The course will also develop the knowledge on different theoretical tools used for the study of chemistry.
6. The learners will be able to achieve the critical thinking ability in order to design, carry out, record and question the results of chemical reactions performed in the laboratory.

Course Outcomes

BSc (HONOURS) Chemistry

SL. NO.	SEMESTER	PAPER CODE& TITLE	COURSE OUTCOMES	UNIT/CHAPTER	BLOOM'S TAXONOMY LEVELS
1	I	CHE-HC-1016- INORGANIC CHEMISTRY-I	Upon successful completion, students will have a clear Interpreting of concepts related to atomic and molecular structure, chemical bonding, periodic properties, and the redox behaviour of chemical species. Additionally, students will gain hands-on experience in preparing standard solutions with different concentration units and will learn volumetric estimations.	Atomic Structure	Interpret and Retrieve
		Periodicity of Elements		Interpret and Retrieve	
		Chemical Bonding		Interpret and Retrieve	
		Oxidation- Reduction		Interpret and Retrieve	
		LAB		Titrimetric analysis, Acid- Base Titration and Oxidation-Reduction Titrimetry	Execute, Question and Assess
2	I	CHE-HC-1026- PHYSICAL CHEMISTRY-I	The students will delve into the Kinetic Theory of Gases, exploring both ideal gases and real gases. Within the Liquid State unit, they are expected to grasp a qualitative Interpreting of liquid structure, along with key properties such as vapor pressure, surface tension, and viscosity. The Symmetry unit will introduce them to the elementary concepts of symmetry, laying the foundation for comprehension in solid-state chemistry and group theory. In the Solid State unit, students will learn to Execute X-ray crystallography for determining relatively simple crystal structures. Additionally, the course covers the topic of ionic equilibrium.	Gaseous State	Interpret and Retrieve
		Liquid State		Interpret and Retrieve	
		Molecular and Crystal Symmetry		Interpret and Retrieve	
		Solid State		Interpret and Retrieve	
		Ionic Equilibria		Interpret and Retrieve	
		Surface Tension measurement, Viscosity measurement and pH metry		Execute, Question and Assess	
		LAB			
		CHE-HC-2016- ORGANIC CHEMISTRY-I	Students will develop the ability to distinguish various types of organic compounds, articulate their reactivity, and analyze both their chemical and steric aspects.	Basics of Organic Chemistry	Interpret and Retrieve
		Stereo Chemistry		Interpret and Retrieve	
		Chemistry of Aliphatic Hydrocarbons- Carbon- Carbon		Interpret and Retrieve	

3	II	LAB		sigma bond, Carbon- Carbon pi bonds and Cycloalkanes and Conformational Analysis	
				Aromatic Hydrocarbons	Interpret and Retrieve
				Checking the calibration of the thermometer, Purification of Organic compounds by crystallization, Determination of Melting points and Chromatography	Execute, Question and Assess
4	II	CHE-HC-2026- PHYSICAL CHEMISTRY-II	Throughout this course, students will delve into the laws of thermodynamics, thermochemistry, thermodynamic functions, the relationship between thermodynamic properties, the Gibbs-Helmholtz equation, Maxwell's relations, and more. Additionally, the curriculum includes the study of partial molar quantities, chemical equilibrium, solutions, and colligative properties. Upon completing the course, students will possess	Chemical Thermodynamics	Interpret and Retrieve
				System of Variable Composition	Interpret and Retrieve
				Chemical Equilibrium	Interpret and Retrieve
				Solutions and Colligative Properties	Interpret and Retrieve

		LAB	the capability to analyze chemical systems from a thermodynamic perspective.	Determination of heat capacity of a calorimeter for different volumes using change of enthalpy data of a known system, Determination of heat capacity of a calorimeter and enthalpy of neutralization of HCl with NaCl, Calculation of the enthalpy of ionization of ethanoic acid, Determination of heat capacity of a calorimeter and integral enthalpy solution of salts, Determination of basicity of a polyprotic acid by the thermochemical method, Determination of enthalpy of hydration of copper sulphate and study of the solubility of Benzoic acid in water and determination of ΔH	Execute, Question and Assess
5	III	CHE-HC-3016- INORGANIC CHEMISTRY-II	Upon successfully completing this course, students will have the proficiency to Execute theoretical principles of redox reactions in comprehending metallurgical processes. They will adeptly identify a variety of s and p block compounds, Interpreting their preparation, structure, bonding, properties, and applications. The course's experiments are designed to enhance their quantitative estimation skills and introduce students to preparative methods in inorganic chemistry.	General properties of Metallurgy	Interpret and Retrieve
				Acids and Bases	Interpret and Retrieve
				Chemistry of s and p block elements	Interpret and Retrieve
				Noble gases	Interpret and Retrieve
		Inorganic Polymers		Interpret and Retrieve	
		Iodo/Iodimetric Titrations and Inorganic Preparation		Execute, Question and Assess	
CHE-HC-3026- ORGANIC CHEMISTRY-II			Chemistry of Halogenated Hydrocarbons	Interpret and Retrieve	
			Alcohols, Phenols, Ethers and Epoxides	Interpret and Retrieve	

6	III	LAB	Students will acquire the ability to categorize and characterize organic compounds based on their functional groups and reactivity.	Carbonyl Compounds	Interpret and Retrieve
				Carboxylic Acids and their Derivatives	Interpret and Retrieve
				Sulphur containing Compounds	Interpret and Retrieve
				Test for functional groups like alcohols, phenols, carbonyl carboxylic acids group and organic preparation.	Execute, Question and Assess
7	III	CHE-HC-3036- PHYSICAL CHEMISTRY-III	Throughout this course, students will delve into the phase rule and its application in specific systems. The Chemical Kinetics unit will cover rate laws for chemical transformations, experimental methods for determining rate laws, and the steady-state approximation. By the end of the course, students will have a comprehensive Interpreting of various surface adsorption processes, the fundamentals of catalysis—encompassing enzyme catalysis, acid-base catalysis, and the impact of particle size on catalysis.	Phase Equilibria	Interpret and Retrieve
		LAB		Chemical Kinetics	Interpret and Retrieve
				Catalysis	Interpret and Retrieve
				Surface Chemistry	Interpret and Retrieve
				Determination of critical solution temperature and composition of the phenol- water. System, construction of the phase diagram using cooling curves or ignition tube method, Distribution of acetic/ benzoic acid between water and cyclohexane, equilibrium and Kinetics study of different reactions	Execute, Question and Assess
				Introduction	Interpret and Retrieve
CHE-SE-3034- BASIC ANALYTICAL CHEMISTRY			Analysis of soil	Interpret and Retrieve	
			Analysis of Water	Interpret and Retrieve	
			Analysis of Food Products	Interpret and Retrieve	

8	III	LAB	After completing this course, students will be proficient in elucidating the fundamental principles of chemical analysis. They will possess the skills to design and implement microscale and semimicro experiments, systematically record data, and adeptly interpret and analyze results using scientific methodology.	Chromatography	Interpret and Retrieve
				Ion- exchange	Interpret and Retrieve
				Analysis of cosmetics	Interpret and Retrieve
				To study the use of phenolphthalein in trap cases, To Question arson accelerants, To carry out analysis of gasoline, Estimation of macro nutrients, Spectrophotometric determination of iron in Vitamin/Dietary tablets and Spectrophotometric Identification and Determination of Caffeine and Benzoic acid in Soft drink	Execute, Question and Assess
9	IV	CHE-HC-4016- INORGANIC CHEMISTRY	Upon successful completion of this course, students will demonstrate the ability to systematically name coordination compounds in accordance with IUPAC guidelines. They will possess a comprehensive Interpreting of bonding within this class of compounds, interpreting various properties with a focus on Crystal Field Stabilization Energy (CFSE) and predicting reactivity. Additionally, students will develop an appreciation for the general trends in the properties of transition elements across the periodic table, discerning differences among the rows. In the laboratory component of the course, students will not only gain practical skills in preparing, estimating, and separating metal complexes/compounds but will also cultivate the ability to independently design experiments. These skills will empower	Coordination Chemistry	Interpret and Retrieve
		LAB		Transition Elements	Interpret and Retrieve
				Lanthanoids and Actinoids	Interpret and Retrieve
				Bioinorganic Chemistry	Interpret and Retrieve
				Gravimetric Analysis, Inorganic Preparations and Chromatography of Metal ions	Execute, Question and Assess

			them to Execute their knowledge when required.		
10	IV	CHE-HC-4026- ORGANIC CHEMISTRY-III	Students are expected to showcase their proficiency in identifying and categorizing various N-based derivatives, alkaloids, and heterocyclic compounds. They should be able to articulate the structures of these compounds, elucidate their mechanisms and reactivity, and critically examine their synthesis and reaction mechanisms.	Nitrogen containing functional groups	Interpret and Retrieve
				Polynuclear Hydrocarbons	Interpret and Retrieve
				Heterocyclic Compounds	Interpret and Retrieve
				Alkaloids	Interpret and Retrieve
				Terpenes	Interpret and Retrieve
		LAB		Detection N, S, X in organic compounds, Functional group test for nitro, amine and amide. Qualitative analysis of unknown organic compounds containing simple functional groups	Execute, Question and Assess
11	IV	CHE-HC-4036- PHYSICAL CHEMISTRY-IV	Throughout this course, students will delve into theories of conductance and electrochemistry. They will gain insights into crucial topics such as solubility and solubility products, ionic products of water, and conductometric titrations. Additionally, students are expected to comprehend the different components of electrochemical	Conductance	Interpret and Retrieve
				Electrochemistry	Interpret and Retrieve
				Electrical and Magnetic properties of Atoms and Molecules	Interpret and Retrieve

		LAB	cells, including Faraday's Laws of electrolysis. The course will also provide students with a foundational theoretical Interpreting of the electrical and magnetic properties of atoms and molecules.	Determination of cell constant, equivalent conductance, degree of dissociation and dissociation constant of a weak acid and potentiometric titrations	Execute, Question and Assess
12	IV	CHE-SE-4034-PHARMACEUTICAL CHEMISTRY	Upon completion of this course, students will gain an appreciation for the drug development process. They will develop the ability to identify various small molecules used for treating different ailments and interpret their roles in various physiological processes.	Drugs and Pharmaceutical	Interpret and Retrieve
		LAB		Fermentation	Interpret and Retrieve
		LAB		Preparation of Aspirin and its analysis. Preparation of magnesium bisillicate	Execute, Question and Assess
13	V	CHE-HC-5016-ORGANIC CHEMISTRY-IV	Upon completing this course, students will be equipped to elucidate the crucial features of nucleic acids, amino acids, and enzymes. They will further develop the capacity to analyse the properties and applications of these biomolecules.	Nucleic Acids	Interpret and Retrieve
		LAB		Amino Acids and Proteins	Interpret and Retrieve
		LAB		Enzyme	Interpret and Retrieve
		LAB		Lipids	Interpret and Retrieve
		LAB		Concept of Energy in Biosystems	Interpret and Retrieve
		LAB		Pharmaceutical Compounds: Structure and Importance	Interpret and Retrieve
		LAB		Estimation of Glycine by Sorenson's method, Study of the titration curve of Glycine, Estimation of Proteins by Lowry's method, Study of the action of salivary amylase on Starch at optimum conditions, Effect of temperature on the action of Salivary amylase, Saponification value of an oil or fat, Determination of Iodine number of an oil or fat and Isolation and characterisation of DNA from onion/cauliflower/peas	Execute, Question and Assess

14	V	CHE-HC-5026- PHYSICAL CHEMISTRY-V	Upon concluding this course, students are anticipated to grasp the application of quantum mechanics in simple chemical systems, such as the hydrogen atom or hydrogen-like ions. Additionally, they will gain insights into chemical bonding in basic molecular systems and acquire a foundational Interpreting of various spectroscopic techniques and photochemistry basics.	Quantum Chemistry	Interpret and Retrieve
		LAB		Molecular Spectroscopy	Interpret and Retrieve
				Photochemistry	Interpret and Retrieve
				UV/Visible spectroscopy and Colourimetry	Execute, Question and Assess
15	V	CHE-HE-5026- ANALYTICAL METHODS IN CHEMISTRY	Upon successfully completing the course, students will possess a theoretical Interpreting of the selection of various analytical techniques employed for both qualitative and quantitative characterization of samples. Through practical experiments, students will gain hands-on experience with these techniques, empowering them to make informed decisions when analysing different samples.	Qualitative and Quantitative aspects of analysis	Interpret and Retrieve
		LAB		Optical methods of analysis	Interpret and Retrieve
				Thermal methods of analysis	Interpret and Retrieve
				Electroanalytical methods	Interpret and Retrieve
				Separation techniques	Interpret and Retrieve
				Chromatographic separation, Solvent extraction, Determination the pH of the given aerated drinks, fruit juices, shampoos, and soaps, Determination of Na, Ca, Li in cola drinks and fruit juices using flame photometric techniques, Analysis of soil, ion-exchange and Spectrophotometry experiments	Execute, Question and Assess
CHE-HE-5046- NOVEL INORGANIC SOLIDS		Upon completing this course, students will acquire knowledge of a diverse range of technologically important and emerging materials. Specifically, they will explore nanomaterials such as gold and silver	Synthesis and Modification of Inorganic Solids	Interpret and Retrieve	
		Inorganic Solids of Technical Importance	Interpret and Retrieve		

16	V	LAB	nanoparticles, carbon nanotubes, natural and artificial nanomaterials, and bionano composites. The curriculum also covers the mechanical and fabricating characteristics of engineering materials for construction, providing insight into ceramics and refractory materials. Engaging in experiments related to the synthesis of nanoparticles, oxides, hydrogels, and the determination of cation exchange capacity will enable students to appreciate the practical application of theoretical concepts.	Nanomaterials	Interpret and Retrieve
				Introduction to Engineering Materials for Mechanical Construction	Interpret and Retrieve
				Composite Materials	Interpret and Retrieve
				Speciality Polymers	Interpret and Retrieve
				Determination of cation exchange capacity, Synthesis of oxides by ceramic method, Synthesis of hydrogel by co-precipitation method and Synthesis of silver and gold nanoparticles	Execute, Question and Assess
17	VI	CHE-HC-6016- INORGANIC CHEMISTRY-VI	Throughout this course, students will delve into the intricate processes of ligand substitution and redox reactions within coordination complexes. The curriculum also encompasses the study of organometallic compounds, fostering an Interpreting of their bonding, stability, reactivity, and practical applications. Students will become acquainted with a diverse array of catalysts based on transition metals and their industrial applications. Upon successful completion, students will	Mechanism of redox reactions	Interpret and Retrieve
				Organometallic compounds	Interpret and Retrieve
				Transition metals and catalysis	Interpret and Retrieve
				Theoretical Principles in Qualitative Inorganic analysis (H ₂ S Scheme)	Interpret and Retrieve

		LAB	gain an appreciation for the utilization of concepts such as solubility product, common ion effect, pH, etc., in the analysis of ions and how skilfully designed reactions can identify components within a mixture. Engaging in experiments focused on coordination compound synthesis, calculation of 10^0 , and controlling factors will enable students to bridge the gap between theoretical concepts and practical application.	Qualitative semimicro analysis of mixtures containing 3 anions and 3 cations, Synthesis of ammine complexes of Ni(ii) and their ligand exchange reactions involving bidentate ligands like acetylacetonate, dimethylglyoxime, glycine, Preparation of acetylacetonate complexes of $\text{Cu}^{2+}/\text{Fe}^{2+}$, Controlled synthesis of two copper oxalate hydrate complexes, Determination of ϵ_{max} value from UV-Visible spectra of complexes and measurement of $10Dq$ by spectrophotometric method	Execute, Question and Assess
18	VI	CHE-HC-6026-ORGANIC CHEMISTRY-V	Upon completion of this course, students will have the capability to elucidate the fundamental principles of various spectroscopic techniques and interpret their significance in chemical and organic analysis. Moreover, students will demonstrate proficiency in classifying, identifying, and critically examining carbohydrates, polymers, and dye materials.	Spectroscopy	Interpret and Retrieve
				Carbohydrates	Interpret and Retrieve
				Polymers	Interpret and Retrieve
				Dyes	Interpret and Retrieve
		LAB		Extraction of caffeine from tea leaves, Preparation of sodium polyacrylate and urea formaldehyde, Analysis of carbohydrate, Qualitative analysis of unknown organic compounds containing monofunctional groups, Identification of simple organic compounds by IR spectroscopy and NMR spectroscopy and Preparation of methyl orange	Execute, Question and Assess

19	VI	CHE-HE-6016- GREEN CHEMISTRY	In addition to introducing learners to the principles of green chemistry, this course will familiarize them with the practical applications of green chemistry in organic synthesis. Students will be well-prepared for entry-level positions in the chemical industry. Furthermore, they will have the option to pursue further studies in this specialized area.	Introduction to Green chemistry	Interpret and Retrieve
				Principles of Green chemistry and designing a chemical synthesis	Interpret and Retrieve
				Examples of Green Synthesis/Reactions	Interpret and Retrieve
				Future Trends in Green chemistry	Interpret and Retrieve
				Safer starting materials, Preparation of biodiesel from vegetable oil, Principle of atom economy, Benzoin condensation using Thiamine Hydrochloride as a catalyst instead of cyanide, Reaction between furan and maleic acid in water and at room temperature rather than in benzene and reflux, Extraction of D-limonene from orange peel using liquid CO ₂ prepared from dry ice, Mechanochemical solvent free synthesis of azomethines, Co-crystal controlled solid state synthesis (C ₂ S ₂) of N- Organophthalimide using Phthalic anhydride and 3-aminobenzoic acid, Solvent free, microwave assisted one pot synthesis of phthalocyanine complex of copper(ii) and photoreduction of benzophenone to benzopinacol in the presence of sunlight	Execute, Question and Assess
20	VI	CHE-HE-6056- DISSERTATION	Students will undertake a project and subsequently compile a comprehensive report based on their findings and analysis.		Question, Assess and Create

BSc (REGULAR) Chemistry

SL. NO.	SEMESTER	PAPER CODE & TITLE	COURSE OUTCOMES	UNIT/CHAPTER	BLOOM'S TAXONOMY LEVELS
1	I	CHE-RC/HG-1016-CHEMISTRY-1	Upon completion of this course, students will acquire a deep Interpreting of atomic structure through the basic concepts of quantum mechanics. Additionally, they will grasp the intricacies of chemical bonding through both VB and MO approaches. In the organic part of the course, students are expected to gain proficiency in fundamental ideas used in organic chemistry, including stereochemistry, functional groups, alkanes, alkenes, alkynes, and more.	Atomic Structure	Interpret and Retrieve
		LAB		Chemical Bonding and Molecular Structure	Interpret and Retrieve
				Fundamentals of Organic Chemistry	Interpret and Retrieve
				Stereochemistry	Interpret and Retrieve
				Aliphatic Hydrocarbons Alkanes, Alkenes, Alkynes	Interpret and Retrieve
				Estimation of Na_2CO_3 , NaHCO_3 , Oxalic acid, water of crystallisation, Fe(II) and Cu(II) ions by volumetric analysis . Detection of extra elements in organic compounds and separation of mixture by chromatography	Execute, Question and Assess
2	II	CHE-RC/HG-2016-CHEMISTRY-2	Upon completing this course, students will acquire knowledge of periodic properties in main group elements and transition metals (3d series). The coordination chemistry unit will introduce them to crystal field theory. In the physical chemistry unit, students are expected to gain Interpreting in kinetic theory of gases, ideal gas and real gases, surface tension, viscosity, basic solid-state chemistry, and chemical kinetics.	s- and p- Block Elements	Interpret and Retrieve
		LAB		Transition Metal(3d series)	Interpret and Retrieve
				Coordination Chemistry	Interpret and Retrieve
				Kinetic Theory of Gases	Interpret and Retrieve
				Liquids	Interpret and Retrieve
				Solids	Interpret and Retrieve
				Chemical Kinetics	Interpret and Retrieve
				Semi- micro inorganic qualitative analysis, Estimation of Ni and Ag gravimetrically, Determination of composition of Fe^{3+} salicylic acid complex solution by Jab's method, Estimation of Mg^{2+} , Zn^{2+} and total hardness by complexometric titration,	Execute, Question and Assess

				Determination of Na ⁺ and K ⁺ using Flame photometry, Surface tension measurement, Viscosity measurement and chemical kinetics	
3	III	CHE-RC/HG-3016- CHEMISTRY-3	Upon completing this course, students will gain the ability to comprehend chemical systems from a thermodynamic perspective. They will delve into two crucial topics in chemistry, namely Chemical Equilibrium and Ionic Equilibrium. In the organic chemistry section, students are expected to familiarize themselves with various classes of organic molecules, including alkyl halides, aryl halides, alcohols, phenols, ethers, aldehydes, and ketones.	Chemical Energetics	Interpret and Retrieve
		LAB		Chemical Equilibrium	Interpret and Retrieve
		Ionic Equilibrium		Interpret and Retrieve	
		Aromatic Hydrocarbons		Interpret and Retrieve	
		Alkyl and Aryl Halides		Interpret and Retrieve	
		Alcohols, Phenols and Ethers		Interpret and Retrieve	
		Aldehydes and Ketones (Aliphatic and Aromatic)		Interpret and Retrieve	
		Determination of heat capacity of calorimeter for different volumes, enthalpy of neutralization of hydrochloric acid with sodium hydroxide, enthalpy of ionization of acetic acid, integral enthalpy of solution of salts and enthalpy of hydration of CuSO ₄ , study of the solubility of benzoic acid in water and determination of ΔH, Measurement of pH of different solutions and preparation of buffer solutions. Purification of organic compounds by crystallization, Determination of melting and boiling points and preparation of various organic compounds		Execute, Question and Assess	
4	III	CHE-SE-3034- BASIC ANALYTICAL CHEMISTRY	After successfully completing this course, students will have the ability to articulate the	Introduction	Interpret and Retrieve
				Analysis of Soil	Interpret and Retrieve
				Analysis of Water	Interpret and Retrieve
				Analysis of Food Products	Interpret and Retrieve

			fundamental principles of chemical analysis. They will be adept at designing and implementing microscale and semimicro experiments, systematically recording, interpreting, and analyzing data using scientific methodology.	Chromatography	Interpret and Retrieve		
				Ion Exchange	Interpret and Retrieve		
				Analysis of Cosmetics	Interpret and Retrieve		
		LAB		To study the use of phenolphthalein in trap cases, To Question arson accelerants, To carry out analysis of gasoline, Estimation of macro nutrients, Spectrophotometric determination of iron in vitamin/dietary tablets and Spectrophotometric identification and Determination of caffeine and benzoic acid in soft drink	Execute, Question and Assess		
5	IV	CHE-RC/HG-4016-CHEMISTRY-4	Upon completing this course, students will acquire knowledge in solutions, phase rule, and its applications in specific cases, as well as the fundamentals of conductance and electrochemistry. Additionally, they will delve into important topics in organic and biochemistry, including carboxylic acids, amines, amino acids, peptides, proteins, and carbohydrates.	Solutions	Interpret and Retrieve		
				Phase Equilibrium	Interpret and Retrieve		
				Conductance	Interpret and Retrieve		
				Electrochemistry	Interpret and Retrieve		
				Carboxylic acids and its Derivatives	Interpret and Retrieve		
				Amines and Diazonium Salts	Interpret and Retrieve		
				Amino acids, Peptides and Proteins	Interpret and Retrieve		
				Carbohydrates	Interpret and Retrieve		
				LAB		Study of equilibrium by distribution method. Construction of the diagram of a. Determination of the critical solution temperature. Composition of the phenol- water system. Study of the variation of mutual solubility temperature with concentration for the phenol- water system and determination of the critical solubility temperature, Determination of cell constant, equivalent conductance, degree of dissociation and dissociation constant of a weak acid	Execute, Question and Assess

				and conductometric and potentiometric titrations of weak acid vs strong base and strong acid vs strong base. Qualitative organic analysis of organic compounds, Separation of amino acids by paper chromatography, Determination of the concentration of glycine solution by formylation method, Titration curve of glycine, Estimation of Proteins by Lowry's method, Study of the action of salivary amylase on Starch at optimum conditions, Effect of temperature on the action of Salivary amylase, Saponification value of an oil or fat, Determination of Iodine number of an oil or fat and Isolation and characterisation of DNA from onion/cauliflower/peas	
6	IV	CHE-SE-4034-PHARMACEUTICAL CHEMISTRY	Students will be able to appreciate the drug development process, Identify various small molecules used for the treatments of different ailments and other physiological processes	Drugs and Pharmaceuticals	Interpret and Retrieve
				Fermentation	Interpret and Retrieve
				Preparation of aspirin and its analysis, Preparation of magnesium bisilicate	Execute, Question and Assess
7	V	CHE-RE-5026-ANALYTICAL METHODS IN CHEMISTRY	Upon successful completion, students will possess a theoretical Interpreting of the selection of various analytical techniques employed for qualitative and quantitative characterization of samples. Simultaneously,	Qualitative and Quantitative aspects of analysis	Interpret and Retrieve
				Optical methods of analysis	Interpret and Retrieve
				Thermal methods of analysis	Interpret and Retrieve
				Electroanalytical methods	Interpret and Retrieve
				Separation techniques	Interpret and Retrieve
Chromatographic separation, Solvent extraction, Determination the pH of the given aerated drinks, fruit juices,	Execute, Question and Assess				

		LAB	hands-on experiments will provide students with practical experience in utilizing these techniques. This dual approach will empower students to make informed and judicious decisions while analyzing different samples.	shampoos, and soaps, Determination of Na, Ca, Li in cola drinks and fruit juices using flame photometric techniques, Analysis of soil, ion-exchange and Spectrophotometry experiments	
8	V	CHE-SE-5044- INTELLECTUAL PROPERTY RIGHTS	Upon completing this course, students will attain a deep Interpreting of the importance and various types of Intellectual Property Rights (IPR). The course will also offer clarity on the legal and economic aspects of the IP system.	Introduction to Intellectual Property	Interpret and Retrieve
				Copyrights	Interpret and Retrieve
				Trademarks	Interpret and Retrieve
				Patents	Interpret and Retrieve
				Geographical Indications	Interpret and Retrieve
				Industrial Designs	Interpret and Retrieve
				Layout Design of Integrated Circuits	Interpret and Retrieve
				Trade Secrets	Interpret and Retrieve
Different International Agreements a) World Trade Organisation b) Paris Convention	Interpret and Retrieve				
9	VI	CHE-RE-6016- GREEN CHEMISTRY	In addition to introducing learners to the principles of green chemistry, this course will familiarize them with the applications of green chemistry in organic synthesis. It will prepare students for entry-level positions in the chemical industry, and they will also have the option to pursue further studies in this area.	Introduction to Green chemistry	Interpret and Retrieve
				Principles of Green chemistry and Designing a chemical synthesis	Interpret and Retrieve
				Examples of Green Synthesis/Reactions	Interpret and Retrieve
				Future Trends in Green chemistry	Interpret and Retrieve
				Safer starting materials, Preparation of biodiesel from vegetable oil, Principle of atom economy, Benzoin condensation using Thiamine Hydrochloride as a catalyst instead of cyanide, Reaction between furan and maleic acid in water and at room temperature rather than in benzene and reflux, Extraction of D-limonene from orange peel using liquid CO ₂	Execute, Question and Assess

		LAB		prepared from dry ice, Mechanochemical solvent free synthesis of azomethines, Co-crystal controlled solid state synthesis (C ₂ S ₂) of N- Organophthalimide using Phthalic anhydride and 3-aminobenzoic acid, Solvent free, microwave assisted one pot synthesis of phthalocyanine complex of copper(ii) and photoreduction of benzophenone to benzopinacol in the presence of sunlight	
10	VI	CHE-SE-6024-PESTICIDE CHEMISTRY	Upon completion of this course, students will be proficient in explaining, describing, and critically examining different types of pesticides. They will gain insights into the activity, toxicity, and application of these pesticides, as well as the imperative need for exploring alternatives based on natural products.	Definition of pesticides, General introduction to pesticides, benefits and adverse effects of pesticides	Interpret and Retrieve
				Classification, Modes of action, Toxicity and Methods of pesticides residue analysis	Interpret and Retrieve
				Synthesis and technical manufacture and uses of representative pesticides	Interpret and Retrieve
				To calculate acidity/alkalinity in given sample of pesticides formulation as per BIS specifications	Execute, Question and Assess
		LAB		Preparation of simple organophosphates, phosphonates and thiophosphates	Execute, Question and Assess

FYUGP BSc (Major/Minor) Chemistry

SL. NO.	SEMESTER	PAPER CODE & TITLE	COURSE OUTCOMES	UNIT/CHAPTER	BLOOM'S TAXONOMY LEVELS
1	I	CHEMISTRY-I LAB	<p>After the completion of this course the students are expected to learn about atomic structure beginning from the historical development. They also will be able to Interpret the periodicity of the atoms, their chemical behaviour, chemical bonding both ionic and covalent in terms of VBT and MOT approach. In organic part the students will be expected to learn the stereochemistry of different organic molecules and their electronic effects. In physical chemistry part they will be able to learn gaseous state and liquid state.</p> <p>Through the experiments students will gain hands on experience of the theory in experiments</p>	Atomic Structure	Interpret and Retrieve
				Periodicity and Chemical Behaviour	Interpret and Retrieve
				Chemical Bonding I (Ionic Interaction)	Interpret and Retrieve
				Structure of Organic Molecules	Interpret and Retrieve
				Stereochemistry of Organic Molecules	Interpret and Retrieve
				Electronic Effects in Organic Molecules	Interpret and Retrieve
				Gaseous State	Interpret and Retrieve
				Liquid State	Interpret and Retrieve
				Preparation of normal and molar solution of KCl, Na ₂ CO ₃ , HCl, H ₂ SO ₄ etc, Determination of solubility of a given salt at different temperature and plot solubility curve, Determination of water of crystallization of hydrated salt by ignition and weighing, Determination of melting points of organic compounds, Effect of impurities on the melting point-mixed melting point of two unknown organic compounds, Purification of organic compounds by crystallization using water, alcohol and alcohol-water as solvent, Evaluating the compressibility factor using	

				Excel/Origin/Python/Fortran. Simulating an ideal gas using programming, Simulation of real gas using programming, Determine the partial molar volume of ethanol-water mixture, Determine the surface tension of a given liquid by using stalagmometer, Determine the composition of a given mixture by surface tension method, Study the variation of surface tension of detergent solutions with concentration.	
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**DEPARTMENT OF COMPUTER SCIENCE
DARRANG COLLEGE, TEZPUR**

3. B.Sc. Computer Science (General) Programme

Programme Specific Outcomes

The completion of the B.Sc. Computer Science (General) Programme shall enable a student to:

- i) To design, implement, and evaluate computer-based system, process, component, or program to meet desired needs by critical understanding, analysis, and synthesis
- ii) Identify applications of Computer Science in other fields in the real world to enhance the career prospects
- iii) Realize the requirement of lifelong learning through continued education and research.
- iv) Use the concepts of best practices and standards to develop user interactive and abstract application

Course Outcome :

Sl. No.	Semester	Course Code and Course Name	COURSE OUTCOMES
1	1 st	Computer Fundamentals and Programming	At the end of the course, the student will 1. Understand concepts of data representation, information processing and coding systems. 2. It will help understand algorithm and its uses. 3. understand a programming language syntax and its definition. 4. Be able to write simple programs in C language by using basic control structures (conditional statements, loops, switches, branching, etc.). 5. be able to create a programmable model for a problem given. 6. Understand a function concept and how to deal with function arguments and parameters. 7. Be able to Use Array and pointers.
2	2 nd	Computer Organization and Architecture	At the end of this course the students will be able to understand the basics of instructions sets and their impact on processor design and to demonstrate an understanding of the design of the functional units of adigital computer system. The learners will be able to evaluate cost performance and design trade-offs in designing andconstructing a computer processor including memory and to design a pipeline for consistent execution of instructions with minimumhazards. Will have ability to recognize and manipulate representations of numbers stored in digitalcomputers.
3	3 rd	Object Oriented Programming inC++	At the end of this course, the students will have knowledge and understandings of concept like <i>Object and Class</i> , Encapsulation, Constructor, Abstraction, Polymorphism, Inheritance. They will be able to apply the different types of polymorphism and inheritance and other concept of object-oriented programming in a solvable problem.

DEPARTMENT OF COMMUNITY SCIENCE
DARRANG COLLEGE, TEZPUR

4. B.A./B.Sc. COMMUNITY SCIENCE

Programme Specific Outcomes

Community Science has contributed a great deal towards national development by training students to take up leadership roles in extension and community outreach programs. The students are encouraged to develop a scientific temper. Familiarizing them with the use of newer technologies, methods in family and community linkages, and sustainable use of resources for human development are the hallmark of education in Community Science. As a discipline, Community Science integrates the ingredients of the sciences, social sciences and technology to facilitate the study of and enhance the quality of human life. Its approach is therefore inherently interdisciplinary. Traditionally, Home Science has adopted an ecological approach in its curriculum that engages the student through teaching, research and extension. The education process in Community Science underscores the importance of the individual's dynamic relationship with his/her family, community and society as a whole, as well as with the resources in the environment. Higher education learning in Community Science subjects provides students with the opportunity to sharpen their capacities with a sense of social responsibility. The goals and objectives of COMMUNITY SCIENCE.

- To understand and appreciate the role of interdisciplinary sciences in the development and well-being of individuals, families and communities.
- To learn about the sciences and technologies that enhance the quality of the life of people.
- To acquire professional and entrepreneurial skills for economic empowerment of the student in particular, and community in general.
- To develop professional skills in food, nutrition, textiles, housing, product making, communication technologies and human development.
- To take basics sciences from the laboratory to the people
- To develop self-employment and start-up.

PROGRAMME OUTCOME 1 :- Knowledge and Comprehension: Students will be able to demonstrate a thorough understanding of the programmes and concepts of Community Science, in all the five major areas for development.

PROGRAMME OUTCOME 2 :- Analytical and Problem-Solving Abilities: Students will have the ability to apply their knowledge of Community Science for better livelihood.

PROGRAMME OUTCOME 3 :- Research Skills: Students will possess the ability to participate in research activities, for all-round development of the community.

PROGRAMME OUTCOME 4 :- Communication and Presentation Skills: Students will be able to express their ideas effectively through both written and oral presentations, and also utilizing suitable tools.

PROGRAMME OUTCOME 5 :- Ethics and Values: Students will possess knowledge of the ethical and social implications of their work and demonstrate a dedication to the ethical and responsible conduct of research and practice.

PROGRAMME OUTCOME 6 :- Interdisciplinary and Multidisciplinary Learning: Students will be capable of combining their understanding and skills with other disciplines and participating in multidisciplinary research and innovation.

PROGRAMME OUTCOME 7 :- Disciplinary knowledge and skills: Community Science should possess a strong foundation as well as the ability to apply this knowledge for self-employment.

COURSE OUTCOME OF B.A. / B.Sc. COMMUNITY SCIENCE

Paper Name	Course Outcome	Unit	Bloom's Taxonomy
<p>Fundamental Of Nutrition and Human Development</p> <p>Paper Code-HOS010104</p> <p>Semester 1(NEP)</p> <p>HSC-HC-1016</p> <p>HSC-HC-1026</p> <p>Semester 1(CBCS)</p>	<p>1To obtain knowledge different food groups and their composition and nutrients present in food .</p> <p>2Understand the relationship between food , nutrition and health .</p> <p>3Analyzed different method of cooking.</p> <p>4To explain the domains of growth and development at different age levels. (From conception to childhood)</p> <p>5Identify the stages of human development and describe the milestone that indicate different stages</p>	<p>Unit 1: Concept in food and nutrition.</p> <p>Unit 2: Nutritional Status.</p> <p>Unit 3: Principles of cooking.</p> <p>Unit 4: Basics of human development.</p> <p>Unit 5: Growth and development and the different stages.</p>	<p>Understanding, analysing and remembering.</p> <p>Understanding, analysing and remembering.</p> <p>Understanding, analysing and remembering.</p> <p>Understanding, analysing and remembering.</p> <p>Understanding, analysing and remembering.</p>
<p>Bakery Science</p> <p>Paper Code- HSC-SE-1</p> <p>HSC-SE-4024</p> <p>Semester 1(NEP)</p> <p>Semester 4(CBCS)</p>	<p>1 To demonstrate different types of bakery items like cake , cookies , biscuits , icing pies and bread.</p> <p>2To know about common bakery faults and corrective measures .</p> <p>3. To know about different types of bakery equipment and tools.</p>	<p>Unit 1: Introduction to bakery science.</p> <p>Unit2: Bakery faults and remedies.</p> <p>Unit 3: Bakery Equipments.</p>	<p>Understanding, analysing and remembering.</p> <p>Understanding and remembering.</p> <p>Understanding, analysing and remembering.</p>
<p>Dynamics of Communication and Extension</p> <p>P.Code-HSC-HC-2016</p> <p>Semester- 2</p>	<p>1To know about communication concept and understanding communication .</p> <p>2How to communicate effectively.</p> <p>3To know about communication and extension methods</p>	<p>Unit 1: Concept of communication.</p> <p>Unit 2: Effective communication.</p> <p>Unit 3: Extension Methods.</p>	<p>Understanding, analysing and remembering.</p> <p>Learning and understanding.</p> <p>Understanding and remembering.</p>
<p>Resource Management</p> <p>P.Code-HSC-HC-2026</p> <p>Semester-2</p>	<p>1To know about different types of resources and their conservation.</p> <p>2Management of money , time , energy and space.</p> <p>3To know about decision making skills and event planning</p>	<p>Unit 1: Resources and its types.</p> <p>Unit 2: Management.</p> <p>Unit 3: Decision Making</p>	<p>Understanding, analysing and remembering.</p> <p>Understanding and remembering.</p> <p>Understanding, analysing and remembering.</p>

<p>Personal Finance and Consumer Studies</p> <p>P.Code-HSC-HC-3036</p> <p>Semester-3</p>	<p>1To know about income and expenditure .</p> <p>2To know about consumer problems , causes and solution .</p> <p>3To know about consumer education and different types of consumer protection act</p>	<p>Unit 1: Introduction</p> <p>Unit 2: Consumer problems.</p> <p>Unit 3: Consumer Education.</p>	<p>Understanding, analysing and remembering.</p> <p>Understanding and remembering.</p> <p>Understanding, analysing and remembering.</p>
<p>Introduction to Textile</p> <p>P.Code-HSC-HC-3016</p> <p>Semester-3</p>	<p>1.Developing and understanding of the basic concept , principles and properties related to textiles.</p> <p>2. Learning about the different types of fibres and fabric used in the textile industry</p> <p>3.Developing and understanding of the wet processing methods used in textiles</p>	<p>Unit 1: Concept of textile.</p> <p>Unit 2: Fabric and its types.</p> <p>Unit 3: Processing methods in textile.</p>	<p>Understanding, analysing and remembering.</p> <p>Understanding and remembering.</p> <p>Understanding, analysing and remembering.</p>
<p>Human Development : Adolescence and Adulthood</p> <p>P.Code-HSC-HC-4016</p> <p>Semester-4</p>	<p>1.To introduce the concept of puberty , adolescence and adulthood .</p> <p>2.Identify the physical changes , psychological and physiological changes and health issues</p>	<p>Unit 1: Concept of adolescence.</p> <p>Unit 2: Changes during adolescence and adulthood.</p>	<p>Learning and understanding.</p>
<p>Fashion Design Concept</p> <p>P.Code-HSC-HC-4036</p> <p>Semester-4</p>	<p>1.To know about using design and patterns on textiles .</p> <p>2.To know about different types stitches seams , finishing edges</p>	<p>Unit 1: Designs on textile.</p> <p>Unit 2: Types of stitches, seams etc.</p>	<p>Learning, understanding and remembering.</p> <p>Learning and remembering.</p>
<p>Life Science</p> <p>P.Code-HSC-HC-5016</p> <p>Semester- 5</p>	<p>1.Introduction to animal kingdom and plant kingdom .</p> <p>2.To know about types of garden and economic botany .</p>	<p>Unit 1: Plant and animal kingdoms.</p> <p>Unit 2: Economic botany.</p>	<p>Learning and understanding.</p> <p>Understanding and remembering.</p>
<p>Physical Science</p> <p>P.Code- HSC-HC-5026</p> <p>Semester-5</p>	<p>1.To make students familiar with households equipment and consumer awareness.</p> <p>2.Concept about modern physics and electronics</p>	<p>Unit 1: Household Equipments.</p> <p>Unit 2: Electronics.</p>	<p>Learning and understanding.</p> <p>Learning, analysing and understanding.</p>

<p>Interior Design and Decoration</p> <p>P.Code-HSC-HE-5046 Semester-5</p> <p>P.Code-HSC-HE-6046 Semester-6</p>	<p>1.To know about the space to optimize the zones with precise styles which correspond to the needs , the personality and specific taste of individual .</p> <p>2. To know about good taste and creativity to select the right combination of colors , materials , furnisher and decoration .</p>	<p>Unit 1: Space and Design.</p> <p>Unit 2: Colour and Decoration.</p>	<p>Learning and understanding.</p> <p>Learning, understanding and remembering.</p>
<p>Extension for Development</p> <p>P.Code-HSC-HE-5056 Semester-5</p>	<p>1.To know about different method used in extension education</p> <p>2. Extension work will enhance the qualities of different organization</p>	<p>Unit 1: Extension education</p> <p>Unit 2: Development in extension</p>	<p>Learning and understanding.</p> <p>Learning and remembering.</p>
<p>Child Rights and Gender Justice</p> <p>P.Code-HSC-HE-5036 Semester-3</p>	<p>1.To describe the basic concept of gender and relevance of gender justice.</p> <p>2. Analyse human rights in terms of gender equality</p> <p>3. To understand gender issues , laws, policies and programs</p>	<p>Unit 1: Concept of gender.</p> <p>Unit 2: Human rights.</p> <p>Unit 3: Laws and policies of gender.</p>	<p>Learning and understanding.</p> <p>Learning and understanding.</p> <p>Learning and remembering.</p>
<p>Research Methodology in Home Science</p> <p>P.Code-HSC-HC-6016 Semester-6</p>	<p>1.To know about different types of research , tools and techniques and research process .</p> <p>2. To give students a brief knowledge about data collection process</p>	<p>Unit 1: Introduction to research.</p> <p>Unit 2: Data collection</p>	<p>Learning and understanding.</p> <p>Learning and understanding.</p>
<p>Socio – Economic Environment</p> <p>P.Code-HSC-HC-6026 Semester-6</p>	<p>1.To make students familiar with the concepts of sociological orientation</p> <p>2.To give students knowledge about economic system, consumption, production and distribution</p>	<p>Unit 1: Introduction</p> <p>Unit 2: Economic system and its impact.</p>	<p>Learning and understanding.</p> <p>Learning and understanding.</p>
<p>Therapeutic Nutrition</p> <p>P.Code-HSC-HE-6016 Semester-6</p>	<p>To make students aware about therapeutic diet.</p> <p>2. To know about various diseases and the role of diet and nutrition in its prevention.</p>	<p>Unit 1: Introduction</p> <p>Unit 2: Diseases: etiology, causes, symptoms, prevention.</p>	<p>Learning and understanding.</p> <p>Learning and understanding.</p>

Childhood Disability and Social Action P.Code-HSC-HE-6036 Semester-6	1.To impart knowledge about basic concepts of disability. 2.To create an environment that enables disabled persons	Unit 1: Disability Unit 2: Societal perception towards disability.	Learning, understanding and remembering. Learning and understanding.
Entrepreneurship Development and Enterprise Management P.Code-HSC-HE-6056 Semester-6	1.To understand the process and procedures involved in setting up a business. 2. To explain about unemployment and entrepreneurship as a self employment. 3. Identify successful entrepreneur and their achievement	Unit 1: Introduction. Unit 2: Entrepreneurship Unit 3: Success in business.	Learning and understanding. Learning, analysing and understanding. Learning, understanding and remembering.
Early Childhood Care and Development P.Code-HSC-SE-3014 Semester-3	1.Understand the nature, aims and objectives of early childhood care and education . 2. To make students aware of early childhood years and significance of intervention programmes for early childhood care and development. 3. Create developmentally appropriate programs for young children .	Unit 1: Early childhood education. Unit 2: Intervention programs of ECCE and its significance. Unit 3: Policies and programs of ECCE.	Learning and remembering. Learning and understanding. Learning, understanding and remembering.
Maternal and Child Nutrition P.Code-HSC-SE-3034 Semester-3	1.To understand about maternal care and nutrition. 2.To know about breastfeeding, lactating mothers and children. 3. To know about the relationship between mothers and new born babies .	Unit 1: Maternal care Unit 2: Breastfeeding and lactation. Unit 3: Mothers and infants.	Learning and remembering. Learning and understanding. Learning, understanding and remembering.
Communication system and Mass media P.Code-HSC-HC-3026 Semester-3	1.To understand intra -personal , inter – personal organization public and mass communication . 2. To know about different types of mass media .	Unit 1: Communication. Unit 2: Types of mass media.	Learning and remembering. Learning, understanding and remembering.
Nutrition: A Life Cycle Approach P.Code-HSC-HC-4026 Semester-4	1.To know about food groups, dietary guidelines and meal planning. 2.To know about physiological changes, nutritional concerns of adults, pregnant and lactating women. 3.To know about growth and development(ICMR), RDA, healthy food choices of infants, pre school, school children and adolescents.	Unit 1: Principles of meal planning. Unit 2: Nutrition during adulthood. Unit 3: Nutrition during childhood.	Learning and understanding. Learning and understanding. Learning and understanding.

DEPARTMENT OF MATHEMATICS
DARRANG COLLEGE, TEZPUR

5. B.A. / B.Sc Mathematics

Programme Specific Outcomes

- The Bachelor Degree course in Mathematics(Honors/Major and Generic/Minor) aims at developing critical, logical and analytical thinking of the students and use mathematical reasoning in everyday life.
- Pursuing a degree course in mathematics will enable the students to identify applications of mathematics in other disciplines and in the real-world problems, leading to the enhancement of career prospects in a wide range of fields as education, research, government sector, business sector and industry etc.
- As the program covers the full range of mathematics, beginning from the structured foundation of Calculus, Real and Complex analysis, Algebra, Differential equations, Mathematical modelling, Number theory, Graph theory, Mechanics and C-programming to the exceptionally broad range of topics covering Pure and Applied Mathematics which include Linear Algebra, Metric Spaces, Statistics, Linear Programming and Applications, Mathematical Finance, and Bio-Mathematics; it will make the students understand higher mathematics from a different perspective.
- The program aims at developing a different and better perspective for mathematics than the mathematics they studied earlier at the school level.
- The program will enable the students to learn how to communicate mathematics effectively by oral, computational, practical or graphical means.
- The program aims to carry out the hand on sessions in Computer lab using various CAS software to have a conceptual understanding of the computing tools and widen the horizon of students' self-experience.
- The program aims at utilizing mathematics to solve theoretical and applied problems by critical understanding and analysis.
- The program will enable students to appreciate the requirement of lifelong learning through continued education and research.

From the Year 2023, Gauhati University has introduced Four Years Under Graduate Program (FYUGP). The FYUGP aims to introduce the students in research field from the degree level along with all the above program outcomes.

Course Outcomes :

Sl. No.	SEMESTER	PAPER CODE & TITLE	COURSE OUTCOMES	UNIT/CHAPTER	BLOOM'S TAXONOMY LEVELS
1.	I	MAT-010104: Algebra(UG CBCS)	<p>This course will enable the students to:</p> <p>(i) Employ De Moivre's theorem in a number of applications to solve numerical problems.</p> <p>(ii) Learn the basic concepts of exponential, logarithmic and hyperbolic functions of complex numbers.</p> <p>(iii) Learn how to find the nature of the roots of a given polynomial equation by Descartes' rule, also learn about symmetric functions of the roots for cubic and biquadratic equations.</p> <p>(iv) Learn how to solve cubic and biquadratic equations.</p> <p>(v) Recognize consistent and inconsistent systems of linear equations by the Row Echelon form of the augmented matrix. Finding inverse and rank of a matrix.</p>	<p>Unit 1: Polar representation of complex number, De Moivre's theorem (both integral and rational index), Roots of complex numbers, n^{th} roots of unity, Application of De Moivre's Theorem, Exponential and logarithmic functions of complex numbers, Hyperbolic functions.</p> <p>Unit 2: Algebraic equations: Deduction from Fundamental Theorem of Classical Algebra, Descartes' rule of signs, relation between roots and coefficients of a polynomial equation of degree n, symmetric functions of roots, Transformation of equations, Cardon's method of solution of a cubic equation, Euler's method of solution of a biquadratic equation.</p> <p>Unit 3: Matrix Algebra, Addition, Transposition, Symmetry, Multiplication of matrices and their properties, Matrix inversion and properties, Row Echelon form and Rank of a matrix, Reduced row Echelon form, Consistency of linear systems, Solutions of system of homogeneous linear equations with number of equations and unknowns up to four.</p>	<p>Remember, Understand, Apply, Evaluate.</p> <p>Remember, Understand, Apply, Evaluate.</p> <p>Understand, Apply, Evaluate, Create.</p>

2.	I	0108203 (Programming in C)	<p>After completion of this paper, student will be able to:</p> <p>(i) Understand and apply the programming concepts of C which is important to mathematical investigation and problem solving.</p> <p>(ii) Learn about structured data-types in C and learn about applications in factorization of an integer and understanding Cartesian geometry and Pythagorean triples.</p> <p>(iii) Use of containers and templates in various applications in algebra.</p> <p>(iv) Use mathematical libraries for computational objectives.</p> <p>(v) Represent the outputs of programs visually in terms of well formatted text and plots.</p> <p>(vi) In practical students learn about the roots of a quadratic equation, solution of an equation using N-R algorithm, sin(x), cos(x) with the help of functions.</p>	<p>Unit 1: Variables, constants, reserved words, variable declaration, initialization, basic data types, operators and expression (arithmetic, relational, logical, assignment, conditional, increment and decrement), hierarchy of operations for arithmetic operators, size of and comma operator, mixed mode operation and automatic (implicit) conversion, cast (explicit) conversion, library functions, structure of a C program, input/output functions and statements. Control Statements: if-else statement (including nested if-else statement), switch statement. Loop control Structures (for and nested for, while and do-while). Break, continue, go to statements, exit function.</p> <p>Unit 2: Arrays and subscripted variables: One and Two-dimensional array declaration, accessing values in an array, initializing values in an array, sorting of numbers in an array, addition and multiplication of matrices with the help of array. Functions: function declaration, actual and formal arguments, function prototype, calling a function by value, recursive function.</p>	<p>Remember, Understand, Apply, Evaluate.</p> <p>Remember, Understand, Apply, Evaluate.</p>
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3.	II	MAT-HG-1016/ MAT-RC-1016: Calculus (UG CBCS)	<p>The students who take this course will be able to:</p> <p>(i) Understand continuity and differentiability in terms of limits.</p> <p>(ii) Describe asymptotic behaviour in terms of limits involving infinity.</p> <p>(iii) Understand the importance of mean value theorems.</p>	<p>Unit 1:Limits and continuity of a function including different approaches, Properties of continuous functions including Intermediate value theorem.</p> <p>Unit 2: (a) Differentiability, Successive differentiation, Leibnitz theorem, Recursion formulae for higher derivatives. (b) Reduction formulae, derivations and illustrations of reduction formulae of the type $\int \sin^n x \, dx,$ $\int \cos^n x \, dx,$ $\int \tan^n x \, dx,$ $\int \sec^n x \, dx, \int (\log x)^n \, dx,$ $\int \sin^n x \cos^m x \, dx.$</p> <p>Unit 3: Rolle's theorem, Lagrange's mean value theorem with geometrical interpretations and simple applications, Maclaurin and Taylor polynomials and their sigma notations. Taylor's formula with remainder, Introduction to Maclaurin and Taylor series.</p> <p>Unit 4:Functions of two or more variables, Partial differentiation up to second order, Euler's theorem on homogeneous functions.</p>	<p>Remember, Understand, Apply.</p> <p>Remember, Understand, Apply.</p> <p>Understand, Remember, Apply.</p> <p>Understand, Apply, Evaluate.</p>
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4.	III	MAT-HC-3016: Theory of Real Functions	<p>This course will enable the students to:</p> <p>(i) Have a rigorous understanding of the concept of limit of a function.</p> <p>(ii) Learn about continuity and uniform continuity of functions defined on intervals.</p> <p>(iii) Understand geometrical properties of continuous functions on closed and bounded intervals.</p> <p>(iv) Learn extensively about the concept of differentiability using limits, leading to a better understanding for applications.</p> <p>(v) Know about applications of mean value theorems and Taylor's theorem</p>	<p>Unit 1: Cluster point or limit point of a set, limits of a function ($\varepsilon - \delta$ approach), sequential criterion for limits, divergence criteria, limit theorems, one sided limits, infinite limits and limits at infinity.</p> <p>Unit 2: Continuous functions, sequential criterion for continuity and discontinuity, algebra of continuous functions, continuous functions on intervals, maximum-minimum theorem, intermediate value theorem, location of roots theorem, preservation of intervals theorem, uniform continuity, uniform continuity theorem.</p> <p>Unit 3: Differentiability of a function at a point and in an interval, Caratheodory's theorem, chain rule, derivative of inverse function, Rolle's theorem, mean value theorem, Darboux's theorem, Cauchy mean value theorem, Taylor's theorem and applications to inequalities, Taylor's series expansions of exponential and trigonometric functions, $\ln(1+x)$, $1/(ax+b)$ and $(1+x)^n$.</p>	<p>Understand, Remember, Apply.</p> <p>Understand, Remember, Apply.</p> <p>Remember, Understand, Analyse.</p>
5.	III	MAT-HC-3026: Group Theory-I	<p>The course will enable the students to:</p> <p>(i) Recognize the mathematical objects that are groups, and classify them as abelian, cyclic and permutation groups, etc.</p> <p>(ii) Link the fundamental concepts of groups and symmetrical figures.</p>	<p>Unit 1: Symmetries of a square, Dihedral groups, definition and examples of groups including permutation groups and quaternion groups (illustration through matrices), elementary properties of groups. Subgroups and examples of subgroups, centralizer, normalizer, center of a group, product of two subgroups. Properties of cyclic groups, classification of subgroups of cyclic groups.</p> <p>Unit 2: Cycle notation for permutations, properties of permutations, even and odd permutations, alternating group, properties of cosets, Lagrange's theorem and</p>	<p>Remember, Understand, Analyse.</p>

			<p>(iii) Analyze the subgroups of cyclic groups and classify subgroups of cyclic groups.</p> <p>(iv) Explain the significance of the notion of cosets, normal subgroups and factor groups.</p> <p>(v) Learn about Lagrange's theorem and Fermat's Little theorem.</p> <p>(vi) Know about group homomorphisms and group isomorphisms.</p>	<p>consequences including Fermat's Little theorem. External direct product of a finite number of groups, normal subgroups, factor groups, Cauchy's theorem for finite abelian groups.</p> <p>Unit 3: Group homomorphisms, properties of homomorphisms, Cayley's theorem, properties of isomorphisms, First, Second and Third isomorphism theorems.</p>	<p>Remember, Understand, Analyse, Apply.</p> <p>Remember, Understand, Analyse, Apply.</p>
6.	III	MAT-HC-3036: Analytical Geometry	<p>This course will enable the students to:</p> <p>(i) Learn conic sections and transform co-ordinate systems</p> <p>(ii) Learn polar equation of a conic, tangent, normal and properties</p> <p>(iii) Have a rigorous understanding of the concept of three-dimensional coordinates systems</p>	<p>Unit 1: Transformation of coordinates, pair of straight lines. Parabola, parametric coordinates, tangent and normal, ellipse and its conjugate diameters with properties, hyperbola and its asymptotes, general conics: tangent, condition of tangency, pole and polar, center of a conic, equation of pair of tangents, reduction to standard forms, central conics, equation of the axes, and length of the axes, polar equation of a conic, tangent and normal and properties.</p> <p>Unit 2: Plane, straight lines and shortest distance. Sphere, cone and cylinder, central conicoid, ellipsoid, hyperboloid of one and two sheets, diametral planes, tangent lines, director sphere, polar plane, section with a given center.</p>	<p>Understand, Analyse, Apply, Evaluate.</p> <p>Understand, Analyse, Apply, Evaluate.</p>

7.	IV	MAT-HC-4016: Multivariate Calculus	<p>This course will enable the students to:</p> <p>(i) Learn the conceptual variations when advancing in calculus from one variable to multivariable discussion.</p> <p>(ii) Understand the maximization and minimization of multivariable functions subject to the given constraints on variables.</p> <p>(iii) Learn about inter-relationship amongst the line integral, double and triple integral formulations.</p> <p>(iv) Familiarize with Green's, Stokes' and Gauss divergence theorems.</p>	<p>Unit 1: Functions of several variables, Level curves and surfaces, Limits and continuity, Partial differentiation, Higher order partial derivative, Tangent planes, Total differential and differentiability, Chain rule, Directional derivatives, The gradient, Maximal and normal property of the gradient, Tangent planes and normal lines.</p> <p>Unit 2: Extrema of functions of two variables, Method of Lagrange multipliers, Constrained optimization problems; Definition of vector field, Divergence and curl.</p> <p>Unit 3: Double integration over rectangular and nonrectangular regions, Double integrals in polar coordinates, Triple integral over a parallelepiped and solid regions, Volume by triple integrals, triple integration in cylindrical and spherical coordinates, Change of variables in double and triple integrals.</p> <p>Unit 4: Line integrals, Applications of line integrals: Mass and Work, Fundamental theorem for line integrals, Conservative vector fields, Green's theorem, Area as a line integral; Surface integrals, Stokes' theorem, The Gauss divergence theorem.</p>	<p>Understand, Analyse, Apply, Create, Evaluate.</p> <p>Remember, Understand, Apply, Evaluate.</p> <p>Understand, Analyse, Apply, Evaluate.</p> <p>Remember, Understand, Apply, Evaluate.</p>
8.	IV	MAT-HC-4026: Numerical Methods (Including Practical)	<p>The course will enable the students to:</p> <p>(i) Learn some numerical methods to find the zeroes of nonlinear functions of a single variable and solution of a system of linear equations, up to a certain given level of precision.</p> <p>(ii) Know about methods to</p>	<p>Unit 1: Algorithms, Convergence, Bisection method, False position method, Fixed point iteration method, Newton's method, Secant method, LU decomposition.</p> <p>Unit 2: Lagrange and Newton interpolation: linear and higher order, finite difference operators.</p> <p>Unit 3: Numerical differentiation: forward difference, backward difference and central difference. Integration: trapezoidal rule, Simpson's rule, Euler's method.</p>	<p>Remember, Understand, Apply, Evaluate.</p> <p>Remember, Understand, Apply, Evaluate.</p>

			<p>solve system of linear equations, such as False position method, Fixed point iteration method, Newton's method, Secant method, LU decomposition.</p> <p>(iii) Interpolation techniques to compute the values for a tabulated function at points not in the table.</p> <p>(iv) Applications of numerical differentiation and integration to convert differential equations into difference equations for numerical solutions.</p>	<p>Practical / Lab work to be performed on a computer: Use of computer aided software (CAS), for example Matlab/ Mathematica/ Maple/Maxima etc., for developing the following Numerical programs:</p> <p>(i) Calculate the sum $1/1 + 1/2 + 1/3 + 1/4 + \dots + 1/N$.</p> <p>(ii) To find the absolute value of an integer.</p> <p>(iii) Enter 100 integers into an array and sort them in an ascending order.</p> <p>(iv) Any two of the following (a) Bisection Method (b) Newton Raphson Method (c) Secant Method (d) Regula Falsi Method</p> <p>(v) LU decomposition Method</p> <p>(vi) Gauss-Jacobi Method</p> <p>(vii) SOR Method or Gauss-Seidel Method</p> <p>(viii) Lagrange Interpolation or Newton Interpolation</p> <p>(ix) Simpson's rule.</p>	<p>Understand, Apply, Analyse, Evaluate.</p>
9.	IV	MAT-HC-4036: Ring Theory	<p>On completion of this course, the student will be able to:</p> <p>(i) Appreciate the significance of unique factorization in rings and integral domains.</p> <p>(ii) Learn about the fundamental</p>	<p>Unit 1: Definition and examples of rings, properties of rings, subrings, integral domains and fields, characteristic of a ring. Ideals, ideal generated by a subset of a ring, factor rings, operations on ideals, prime and maximal ideals. Ring homomorphisms, properties of ring homomorphisms, Isomorphism theorems I, II and III, field of quotients.</p>	<p>Remember, Analyse, Apply.</p>

			<p>concept of rings, integral domains and fields.</p> <p>(iii) Know about ring homomorphisms and isomorphisms theorems of rings.</p> <p>(iv) Learn about the polynomial rings over commutative rings, integral domains, Euclidean domains, and UFD</p>	<p>Unit 2: Polynomial rings over commutative rings, division algorithm and consequences, principal ideal domains, factorization of polynomials, reducibility tests, irreducibility tests, Eisenstein criterion, unique factorization in $Z[x]$. Divisibility in integral domains, irreducibles, primes, unique factorization domains, Euclidean domains.</p>	<p>Remember, Analyse, Apply.</p>
10.	V	MAT-HC-5016: Complex Analysis (Including Practical)	<p>The completion of the course will enable the students to:</p> <p>(i) Learn the significance of differentiability of complex functions leading to the understanding of Cauchy–Riemann equations.</p> <p>(ii) Learn some elementary functions and value the contour integrals.</p> <p>(iii) Understand the role of Cauchy–Goursat theorem and the Cauchy integral formula.</p> <p>(iv) Expand some simple functions as their Taylor and Laurent series, classify the nature of singularities, find residues and apply Cauchy Residue theorem to evaluate integrals.</p>	<p>Unit 1: Properties of complex numbers, regions in the complex plane, functions of complex variable, mappings. Derivatives, differentiation formulas, Cauchy-Riemann equations, sufficient conditions for differentiability. Limits, Limits involving the point at infinity, continuity.</p> <p>Unit 2: Analytic functions, examples of analytic functions, exponential function, Logarithmic function, trigonometric function, derivatives of functions, definite integrals of functions.</p> <p>Unit 3: Contours, Contour integrals and its examples, upper bounds for moduli of contour integrals.</p> <p>Unit 4: Antiderivatives, proof of antiderivative theorem, Cauchy-Goursat theorem, Cauchy integral formula. Liouville’s theorem and the fundamental theorem of algebra.</p> <p>LAB WORK TO BE PERFORMED ON A COMPUTER (MODELING OF THE FOLLOWING PROBLEMS USING MATLAB/MATHEMATICA/ MAPLE ETC.): 1. Declaring a complex number and graphical representation. e.g. $Z_1 = 3 + 4i$, $Z_2 = 4 - 7i$</p>	<p>Understand, Analyse, Apply, Evaluate.</p> <p>Analyse, Understand, Apply.</p> <p>Analyse, Understand, Apply, Evaluate.</p> <p>Apply, Analyse, Create, Evaluate.</p>

				<p>2. Program to discuss the algebra of complex numbers, e.g., $Z_1 = 3 + 4i$, $Z_2 = 4 - 7i$, then find $Z_1 + Z_2$, $Z_1 - Z_2$, $Z_1 * Z_2$ and Z_1 / Z_2.</p> <p>3. To find conjugate, modulus and phase angle of an array of complex numbers. e.g. $Z = [2+ 3i, 4-2i, 6+11i, 2-5i]$</p> <p>4. To compute the integral over a straight line path between the two specified end point e. g., $\oint \text{Sin}z dz$, along the contour C which is a straight line path from $1+i$ to $2-i$.</p> <p>5. To perform contour integration e.g., (i) $\oint (z^2 - 2z + 1) dz$ along the Contour C given by $x=y^2+1$; $-2 \leq y \leq 2$. (ii) $\oint (z^3+2z^2+ 1) dz$ along the contour C given by $x^2 + y^2 = 1$, which can be (iii) parameterized by $x = \cos (t)$, $y = \sin (t)$ for $0 \leq t \leq 2\pi$.</p> <p>6. To plot the complex functions and analyze the graph. e.g., (i) $f(z) = z, iz, z^2, z^3, e^z$ and $(z^4 - 1)^{\frac{1}{4}}$, etc.</p> <p>7. To perform the Taylor series expansion of a given function $f(z)$ around a given point z. The number of terms that should be used in the Taylor series expansion is given for each function. Hence plot the magnitude of the function and magnitude of its Taylors series expansion, e.g., (i) $f(z) = \exp(z)$ around $z = 0$, $n = 40$ and</p>	
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				<p>(ii) $f(z) = \exp(z^2)$ around $z = 0$, $n = 160$.</p> <p>8. To determine how many terms should be used in the Taylor series expansion of a given function $f(z)$ around $z = 0$ for a specific value of z to get a percentage error of less than 5%. e.g., for $f(z) = \exp(z)$ around $z = 0$, execute and determine the number of necessary terms to get a percentage error of less than 5 % for the following values of z: (i) $z = 30 + 30i$ (ii) $z = 10 + 103i$</p> <p>9. To perform Laurents series expansion of a given function $f(z)$ around a given point z. e.g., (i) $f(z) = (\sin z - 1) / z^4$ around $z = 0$ (ii) $f(z) = \cot(z) / z^4$ around $z = 0$.</p>	
11.	V	MAT-HC-5026: Linear Algebra	<p>The course will enable the students to:</p> <p>(i) Learn about the concept of linear independence of vectors over a field, and the dimension of a vector space.</p> <p>(ii) Basic concepts of linear transformations, dimension theorem, matrix representation of a linear transformation, and the change of coordinate matrix.</p> <p>(iii) Compute the characteristic polynomial, eigenvalues, eigenvectors, and eigenspaces, as well as the geometric and the algebraic multiplicities of an eigenvalue and apply the basic diagonalization result.</p>	<p>Unit 1: Vector spaces and subspaces, null space and column space of a matrix, linear transformations, kernel and range, linearly independent sets, bases, coordinate systems, dimension of a vector space, rank, change of basis.</p> <p>Unit 2: Eigenvectors and eigenvalues of a matrix, the characteristic equation, diagonalization, eigenvectors of a linear transformation, complex eigenvalues, Invariant subspaces and Cayley-Hamilton theorem.</p> <p>Unit 3: Inner product, length, and orthogonality, orthogonal sets, orthogonal projections, the Gram-Schmidt process, inner product spaces; Diagonalization of symmetric matrices, the Spectral Theorem.</p>	<p>Remember, Understand, Apply, Evaluate.</p> <p>Understand, Apply, Evaluate.</p> <p>Understand, Apply, Evaluate.</p>

			<p>(iv) Compute inner products and determine orthogonality on vector spaces, including Gram–Schmidt orthogonalization to obtain orthonormal basis.</p> <p>(v) Find the adjoint, normal, unitary and orthogonal operators.</p>		
12.	V	MAT-HE-5016: Number Theory	<p>This course will enable the students to:</p> <p>(i) Learn about some fascinating discoveries related to the properties of prime numbers, and some of the open problems in number theory, viz., Goldbach conjecture etc.</p> <p>(ii) Know about number theoretic functions and modular arithmetic.</p> <p>(iii) Solve linear, quadratic and system of linear congruence equations.</p>	<p>Unit 1: Linear Diophantine equation, prime counting function, statement of prime number theorem, Goldbach conjecture, linear congruences, complete set of residues, Chinese Remainder theorem, Fermat’s Little theorem, Wilson’s theorem.</p> <p>Unit 2: Number theoretic functions, sum and number of divisors, totally multiplicative functions, definition and properties of the Dirichlet product, the Mobius Inversion formula, the greatest integer function, Euler’s phi function, Euler’s theorem, reduced set of residues, some properties of Euler’s phi-function.</p>	<p>Remember, Understand, Analyse, Apply.</p> <p>Remember, Understand, Analyse, Apply.</p>
13.	V	MAT-HE-5066: Programming in C (Including Practical)	<p>After completion of this paper, student will be able to:</p> <p>(i) Understand and apply the programming concepts of C which is important to mathematical investigation and problem solving.</p>	<p>Unit 1: Variables, constants, reserved words, variable declaration, initialization, basic data types, operators and expression (arithmetic, relational, logical, assignment, conditional, increment and decrement), hierarchy of operations for arithmetic operators, size of and comma operator, mixed mode operation and automatic (implicit) conversion, cast (explicit) conversion, library functions, structure of a C program, input/output functions and statements.</p>	<p>Understand, Apply, Create.</p>

			<p>(ii) Learn about structured data-types in C and learn about applications in factorization of an integer and understanding Cartesian geometry and Pythagorean triples.</p> <p>(iii) Use of containers and templates in various applications in algebra.</p> <p>(iv) Use mathematical libraries for computational objectives.</p> <p>(v) Represent the outputs of programs visually in terms of well formatted text and plots.</p> <p>(vi) In practical students learn about the roots of a quadratic equation, solution of an equation using N-R algorithm, $\sin(x)$, $\cos(x)$ with the help of functions.</p>	<p>Unit 2: Control Statements: if-else statement (including nested if-else statement), switch statement. Loop control Structures (for and nested for, while and do-while). Break, continue, go to statements, exit function.</p> <p>Unit 3: Arrays and subscripted variables: One and Two-dimensional array declaration, accessing values in an array, initializing values in an array, sorting of numbers in an array, addition and multiplication of matrices with the help of array. Functions: function declaration, actual and formal arguments, function prototype, calling a function by value, recursive function.</p>	<p>Understand, Apply, Create.</p> <p>Understand, Apply, Analyse, Create.</p>
14.	VI	MAT-HC-6016: Riemann Integration and Matric Space	<p>The course will enable the students to:</p> <p>(i) Learn about some of the classes and properties of Riemann integrable functions, and the applications of the Fundamental theorems of integration.</p> <p>(ii) Know about improper integrals including, beta and gamma functions.</p>	<p>Unit 1: Riemann integration: upper and lower sums; Darboux integrability, properties of integral, Fundamental theorem of calculus, mean value theorems for integrals, Riemann sum and Riemann integrability, Riemann integrability of monotone and continuous functions on intervals, sum of infinite series as Riemann integrals, logarithm and exponential functions through Riemann integrals, improper integrals, Gamma functions.</p> <p>Unit 2: Metric spaces: definition and examples, sequences in metric spaces, Cauchy sequences, complete metric spaces. Open and closed balls, neighbourhood, open set, interior of a set. Limit point</p>	<p>Remember, Understand, Analyse, Apply, Create.</p>

			<p>(iii) Learn various natural and abstract formulations of distance on the sets of usual or unusual entities. Become aware one such formulations leading to metric spaces.</p> <p>(iv) Analyse how a theory advances from a particular frame to a general frame.</p> <p>(v) Appreciate the mathematical understanding of various geometrical concepts, viz. Balls or connected sets etc. in an abstract setting.</p> <p>(vi) Know about Banach fixed point theorem, whose far-reaching consequences have resulted into an independent branch of study in analysis, known as fixed point theory.</p> <p>(vii) Learn about the two important topological properties, namely connectedness and compactness of metric spaces.</p>	<p>of a set, closed set, diameter of a set, Cantor's theorem. Subspaces, dense sets, separable spaces.</p> <p>Unit 3: Continuous mappings, sequential criterion and other characterizations of continuity. Uniform continuity. Homeomorphism, Contraction mappings, Banach contraction mapping principle. Connectedness, connected subsets of \mathbb{R}, connectedness and continuous mappings.</p>	<p>Remember, Understand, Analyse.</p> <p>Remember, Understand, Analyse, Create.</p>
15.	VI	MAT-HC-6026: Partial Differential Equations (Including Practical)	<p>The course will enable the students to:</p> <p>(i) Formulate, classify and transform first order PDEs into canonical form.</p> <p>(ii) Learn about method of characteristics and separation of variables to solve first order PDE's.</p>	<p>Unit 1: Introduction, Classification, Construction of first order partial differential equations (PDE). Cauchy's problem for first order equations, linear equations of the first order, Integral surfaces passing through a given curve, Nonlinear partial differential equations of the first order, Cauchy's method of characteristics, Charpit's method. Solutions satisfying given conditions, Jacobi's method.</p>	<p>Understand, Apply, Evaluate.</p>

			<p>(iii) Classify and solve second order linear PDEs.</p> <p>(iv) Learn about Cauchy problem for second order PDE and homogeneous and non-homogeneous wave equations.</p> <p>(v) Apply the method of separation of variables for solving many well-known second order PDEs.</p>	<p>Unit 2: Canonical form of first order PDE, Method of separation of variables for first order PDE.</p> <p>Unit 3: Reduction to canonical forms, Equations with constant coefficients, General solution.</p> <p>Practical /Lab work to be performed in a Computer Lab: Modelling of the following similar problems using Mathematica /MATLAB/ Maple/ Maxima/ Scilab etc.</p> <ol style="list-style-type: none"> 1. Solution of Cauchy problem for first order PDE. 2. Plotting the characteristics for the first order PDE. 3. Plot the integral surfaces of a given first order PDE with initial data. 4. Solution of wave equation $\frac{\partial^2 u}{\partial t^2} = c^2 \frac{\partial^2 u}{\partial x^2}$ for any two of the following associated conditions: <ul style="list-style-type: none"> (a) $u(x,0) = \phi(x)$; $u(x,0) = \psi(x)$, $x \in R$; $t > 0$ (b) $u(x,0) = \phi(x)$; $u_t(x,0) = \psi(x)$; $u(0,t) = 0$, $x > 0$; $t > 0$ (c) $u(x,0) = \phi(x)$; $u_t(x,0) = \psi(x)$; $u_x(0,t) = 0$, $x > 0$; $t > 0$ (d) $u(x,0) = \phi(x)$; $u_t(x,0) = \psi(x)$; $u(0,t) = 0, u(1,t) = 0$; $x > 0$; $t > 0$ 5. Solving systems of ordinary differential equations. 	<p>Understand, Analyse, Apply, Evaluate.</p> <p>Understand, Analyse, Apply, Create, Evaluate.</p>
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DEPARTMENT OF PHYSICS
DARRANG COLLEGE, TEZPUR

6. B.Sc Physics

Programme Specific Outcomes :

A program outcome (PO) represents the knowledge, skills and attitudes of the students at the end of a degree program. Program Specific Outcomes (PSO) means what the graduate students of a specific degree program should be able to do and Course Outcomes (CO) are the resultant knowledge skills that the students acquire at the end of the course. It defines the cognitive processes a course provides.

PROGRAM OUTCOMES:

Students taking admission to the program of B.Sc. are expected to get equipped with following:

PO1: - Explaining the basic scientific principles and methods.

PO2: -Inculcate scientific thinking and awareness among the student.

PO3: - Ability to communicate with others in regional language and in English.

PO4: - Ability to handle the unexpected situation by critically analysing the problem.

PO5: - Understanding the issues related to nature and environmental contexts and sustainable development.

PROGRAM SPECIFIC OUTCOME:

After the successful completion of the programme, a student will be able to:

PSO1:- Improve scientific attitude and temperament in experimental skills, data analysis, calculations, measurements, the strength of equations, formulae, graphs, mathematical tools to tackle the problems.

PSO2:- Understand theories, concepts and significance of physics and its relevance in present day Technology.

PSO3: - Create interest in the subject and improve technological aspect through mini projects, projects, models, demonstrations, presentations etc.

PSO4: - Gain the knowledge of quantum mechanical concepts applicable in understanding behaviour of nano-materials and applications in nanotechnology.

PSO5:- Understand various types of crystal structures and symmetries and understand the relationship between the real and reciprocal space and learn the Bragg's X-ray diffraction in crystals.

PSO6:- Enhance academic abilities, personal qualities and transferable skills this will give them an opportunity to develop as responsible citizens

POS7. Gain knowledge and understanding of various mathematical techniques used in physics such as the Frobenius method, Fourier series, solutions of different types of differential equations, the use of complex functions, integral transforms, curve fitting, and least square fit as well as C/C++, Computational techniques and Python programming for solving various theoretical problems.

POS8. Acquire the ability to understand the properties of matter, viz., elasticity, surface tension and viscosity as well as the theory of relativity.

POS9. Understand waves and oscillation and gain knowledge of various wave phenomena related to optics like interference, diffraction, and Holography and use them to determine wavelengths of light from multiple sources.

POS10. Understand electricity and magnetism, electromagnetic theory starting with Maxwell's equations, propagation of EM waves, polarization, and wave Guides and network theorems and analyse the results experimentally.

POS11. Gain knowledge of thermal physics covering the basic laws of thermodynamics, entropy, kinetic theory of gases, and real gases and evaluate Experimental outcomes to measure thermal conductivity of good and bad conductors.

POS12. Understand various digital circuits starting with CRO, integrated circuits, Boolean algebra and their applications in timers, flip-flops, counters, shift registers, and microprocessors.

POS13. Gain familiarity with concepts of modern physics, viz., Planck's quantum theory, Heisenberg uncertainty principle, and Eigen value problems in Confined particles; then move forward to Schrodinger equations, bound states and ideas of atomic physics.

POS14. Understand analog systems with diodes, transistors, amplifiers, and OPAMP and their various day-to-day applications.

POS15. Acquire knowledge and understanding of crystal structures, magnetic properties, dielectric properties, superconductivity, and hysteresis loop of ferro-magnets and experimentally find dielectric constants and magnetic susceptibility.

POS16. Understand the concepts of both classical and quantum statistical physics and analyse large samples of data both theoretically and using computational techniques.

POS17. Gain knowledge of classical dynamics, fluid dynamics, nuclear physics, radioactive decay, particle physics, and astrophysics along with detailed information regarding our universe and planetary systems as well as numerous experimental techniques.

POS18. Understand the basic instrumental skills and their usages through practice.

POS19. Build a strong basis for pursuing various career options.

COURSE OUTCOMES :**SEMISTER-I**

Sl. No.	SEMESTER	PAPER CODE & TITLE	COURSE OUTCOMES	UNIT /CHAPTER	BLOOM'S TAXONOMIC LEVELS
1	I	PHY-HC-1016 Mathematical Physics I	CO1: -Successful students should be able to understand vector and its applications in various fields, CO2: -Learn Differential equations and its applications, different coordinate systems, concept of probability and error CO3: -Students should be able to understand Orthogonal curvilinear coordinate, CO4: -Dirac Delta function, Probability Theory of errors and their use in solving problems in various physical fields.	Unit I: Vector Calculus	Remember, Understand, Apply, Analyse, Evaluate
				Unit II: First and Second order differential Equations	Remember, Understand, Apply, Analyse, Evaluate
				Unit III: Orthogonal Curvilinear Coordinates	Remember, Understand, Apply, Analyse, Evaluate, Create
				Unit IV: Dirac Delta function and its Properties	Remember, Understand, Apply, Analyse, Evaluate
				Unit V: Introduction to Probability	Remember, Understand, Apply, Analyse, Evaluate
				Unit VI: Theory of Errors	Remember, Understand, Apply, Analyse, Evaluate
2	I	PHY-HC-1026 Mechanics	COURSE OUTCOME	Unit I: Fundamentals Of Dynamics	Remember, Understand, Apply, Evaluate
			CO1: -On successful completion of the course students should be able understand Inertial and non-inertial reference frames, CO2: -Newtonian motion, Galilean transformations, projectile motion, work and energy, CO3: -Elastic and inelastic collisions, motion under central force, simple harmonic oscillations, CO4: -Special theory of relativity.	Unit II: Work and Energy	Remember, Understand, Apply, Analyse, Evaluate
				Unit III: Collisions	Remember, Understand, Apply, Evaluate
				Unit IV: Rotational Dynamics	Remember, Understand, Apply, Analyse, Evaluate
				Unit V: Elasticity	Remember, Understand, Apply
				Unit VI: Fluid Motion	Remember, Understand, Apply
				Unit VII: Gravitation and Central Force Motion	Remember, Understand, apply, Analyse, evaluate
				Unit VIII: Oscillations	Remember, Understand, Apply
				Unit IX: Non-inertial system	Remember, Understand, apply, Analyse, evaluate
				Unit X: Special Theory of Relativity	Remember, Understand, Apply

SEMISTER-II

SL. NO	SEMESTER	PAPER CODE & TITLE	COURSE OUTCOMES	UNIT /CHAPTER	BLOOM'S TAXONOMIC LEVELS
3	II	PHY-HC-2016 Electricity & Magnetism	CO1: - After successful completion of this course, students will be able to Understand electric and magnetic fields in matter, Dielectrics properties of matter magnetic properties of matter, CO2: -Electromagnetic induction, applications of Kirchhoff's law in different circuits, applications of network theorem in circuits.	Unit I: Electric Field and Electric Potential	Remember, Understand, Apply, Analyse, Evaluate
				Unit II: Dielectric Properties of Matter	Remember, Understand, Apply, Analyse, Evaluate create
				Unit III: Magnetic Field	Remember, Understand, Apply, Analyse, Evaluate
				Unit IV: Magnetic Properties of Matter	Remember, Understand, Apply, Analyse, Evaluate
				Unit V: Electromagnetic Induction	Remember, Understand, Apply, Analyse, Evaluate
				Unit VI: Electrical Circuits	Remember, Understand, Apply, Analyse, Evaluate, Create
				Unit VII: Network Theorems	Remember, Understand, Apply, Analyse, Evaluate, Create
				Unit VIII: Ballistic Galvanometer	Remember, Understand, Apply, Analyse, Evaluate,
4	II	PHY-HC-2026 Waves and Optics	COURSE OUTCOME	Unit I: Superposition of Collinear harmonic Oscillations	Remember, Understand, Apply, Analyse,
			CO1: - After successful completion of this course, students will be able to Understand superposition of harmonic oscillations, different types of wave motions, CO2: -Superposition of harmonic waves, interference and interferometer, diffraction, holography.	Unit II: Superposition of Two Perpendicular Harmonic Oscillations	Remember, Understand, Apply, Analyse, Evaluate, Create
				Unit III: Wave Motion	Remember, Understand, Apply, Analyse, Evaluate, Create
				Unit IV: Velocity of Waves	Remember, Understand, Apply, Analyse
				Unit V: Superposition of Two Harmonic Waves	Remember, Understand, Apply, Analyse, create
				Unit VI: Wave Optics	Understand, Apply, Analyse, Evaluate
				Unit VII: Interference	Understand, Apply, Analyse, Evaluate
				Unit VIII: Interferometer	Remember, Understand, Apply, Analyse, Evaluate
				Unit IX: Diffraction	Understand, Apply, Analyse, Evaluate

SEMISTER-III

SL. NO	SEMESTER	PAPER CODE & TITLE	COURSE OUTCOMES	UNIT /CHAPTER	BLOOM'S TAXONOMIC LEVELS
5	III	PHY-HC-3016 Mathematical Physics II	CO1: - After successful completion of the course, students will be able to solve differential equation using power series solution method, CO2: -Solve differential equation using separation of variables method, CO3: -Special integrals, different properties of matrix, Fourier series.	Unit I: Frobenius Method and Special function	Remember, Understand, Apply, Analyse, Evaluate
				Unit II: Partial Differentia l Equations	Remember, Understand, Apply, Analyse, Evaluate
				Unit III: Some Special Integrals	Remember, Understand, Apply, Analyse, Evaluate
				Unit IV: Matrix	Remember, Understand, Apply, Analyse, Evaluate, Create
				Unit V: Fourier Series	Remember, Understand, Apply, Analyse, Evaluate
6	III	PHY-HC-3026 Thermal Physics	COURSE OUTCOMES	Unit I: Zeroth and First Law of Thermodynamics	Remember, Understand, Apply
			CO1: Upon successful completion, students will have the knowledge and skills to identify and describe the statistical nature of concepts and laws in thermodynamics, CO2: -In particular: entropy, temperature, Thermodynamics potentials, Free energies, CO3: - Maxwell's relations in thermodynamics, behaviour of real gases.	Unit II: Second Law of Thermodynamics	Remember, Understand, Apply, Evaluate
		Unit III: Entropy		Remember, Understand, Apply, Evaluate, analyse	
		Unit IV: Thermodynamic Potentials		Remember, Understand, Apply, Evaluate	
		Unit V: Maxwell's Thermodynamic relations		Remember, Understand, Apply, Evaluate	
		Unit VI: Distribution of Velocities		Remember, Understand, Apply, Evaluate	
		Unit VII: Molecular Collisions		Remember, Understand, Apply, Evaluate	
		Unit VIII: Real Gases		Remember, Understand, Apply, Evaluate	

7	III	PHY-HC-3036 Digital Systems & Applications	COURSE OUTCOME	Unit I: Introduction to CRO	Remember, Understand, Apply, Analyse
			<p>CO1: -: After successful completion of the course student will be able to understand the working principle of CRO,</p> <p>CO2: -Develop a digital logic and apply it to solve real life problems,</p> <p>CO3: Analyse, design and implement combinational logic circuits,</p> <p>CO4: -Classify different semiconductor memories,</p> <p>CO5: -Analyse, design and implement sequential logic circuits,</p> <p>CO6: -Analyse digital system design using PLD,</p> <p>CO7: -Simulate and implement combinational and sequential circuits.</p>	Unit II: Integrated Circuits	Remember Understand.
				Unit III: Digital Circuits	Understand, Apply, Analyse.
				Unit IV: Boolean Algebra	Remember, Understand, Apply, Analyse, Evaluate
				Unit V: Data Processing Circuits	Understand Apply
				Unit VI: Arithmetic Circuits	Understand, Apply, Analyse,
				Unit VII: Sequential Circuits	Understand, Apply
				Unit VIII: Timers-IC555	Understand, Apply,
				Unit IX: Shift Registers	, Understand, Apply, Analyse,
				Unit X: Counters (4 bits)	Understand, Apply,
				Unit XI: Computer Organization	Remember, Apply, Analyse,
			Unit XII: Intel 8085 Microprocessor Architecture	Understand, Apply, Analyse.	
			Unit XIII: Introduction To Assembly Language	Remember, Understand, Apply,	
8	III	PHY-SE-3014 Physics Workshop Skills	COURSE OUTCOME	Unit I: Introduction	Remember, Understand,
			<p>CO1:-The aim of this course is to enable the students to familiar and experience with various mechanical and electrical tools through hands-on mode.</p>	Unit II: Mechanical Skill	Remember, Understand, Apply &Analyse.
				Unit III: Electrical and Electronic Skill	Remember, Understand, Apply &Analyse.
				Unit IV: Introduction to prime movers	Remember, Understand, Apply &Analyse.

SEMISTER-IV

SL. NO.	SEMESTER	PAPER CODE & TITLE	COURSE OUTCOMES	UNIT /CHAPTER	BLOOM'S TAXONOMIC LEVELS
9	IV	PHY-HC-4016 Mathematical Physics III	CO1: On successful completion of the course students will able to solve complex integrals using residue theorem, CO2:- Apply Fourier and Laplace transforms in solving differential equations, CO3: -Understand properties of Tensor like Transformation of coordinates, contravariant and co-variant tensors, indices rules for combining tensors.	Unit I: Complex Analysis	Remember, Understand, Analyse, Evaluate
				Unit II: Complex Integration	Remember, Understand, Analyse, Evaluate
				Unit III: Fourier Transforms	Remember, Understand, Analyse, Evaluate
				Unit IV: Laplace Transforms	Remember, Understand, Analyse, Evaluate
				Unit V: Tensor Algebra	Remember, Understand, Analyse, Evaluate
10	IV	PHY-HC-4026 Elements of Modern Physics	COURSE OUTCOMES	Unit I: Quantum Theory and Blackbody Radiation	Remember, Understand, Analyse, Evaluate
			CO1: On completion of the course students will be able to understand modern development in Physics, CO2: -Starting from Planck's law, it development of the idea of probability interpretation and the formulation of Schrodinger equation. CO3: -Students will also get preliminary idea of structure of nucleus, radioactivity Fission and Fusion and Laser	Unit II: Uncertainty and Wave-Particle Duality	Remember, Understand, Analyse, Evaluate
				Unit III: Schrödinger Equation	Remember, Understand, Analyse, Evaluate
				Unit IV: One-Dimensional Box And Step Barrier	Remember, Understand, Analyse, Evaluate
				Unit V: Structure of the Atomic Nucleus	Remember, Understand, Analyse, Evaluate
				Unit VI: Radioactivity	Remember, Understand, Analyse, Evaluate
				Unit VII: Detection of Nuclear radiation	Remember, Understand, Analyse, Evaluate
				Unit VIII: Fission and Fusion	Remember, Understand, Analyse, Evaluate
				Unit IX: Lasers	Remember, Understand, Analyse, Evaluate

11	IV	PHY-HC-4036 Analog Systems & Applications	COURSE OUTCOMES	Unit I: Semiconductor Diodes	Remember, Understand, Apply, Analyse
			<p>CO1: - On successful completion of the course students will be able to understand about the physics of semiconductor p-n junction and devices such as rectifier diodes, Zener diode, photodiode etc. and bipolar junction transistors,</p> <p>CO2: -Transistor biasing and stabilization circuits,</p> <p>CO3: -The concept of feedback in amplifiers and the oscillator circuits,</p> <p>Co4: -Students will also have an understanding of operational amplifiers and their applications.</p>	Unit II: Two-Terminal Devices and the Applications	Remember, Understand, Apply, Analyse
				Unit III: Bipolar Junction Transistors	Understand, Apply, Analyse
				Unit IV: Amplifiers	Remember, Understand, Apply, Analyse
				Unit V: Coupled Amplifier	Understand, Apply, Analyse
				Unit VI: Feedback in Amplifiers	Remember, Apply, Analyse
				Unit VII: Sinusoidal Oscillators	Understand, Apply, Analyse
				Unit VIII: Operational Amplifiers	Understand, Apply,
				Unit IX: Applications of Op-Amps	Understand, Apply, Analyse, create
				Unit X: Conversion	Remember, Understand, Apply,
12	IV	PHY-SE-4014 Basic Instrumentation Skills		COURSE OUTCOMES	Unit I: Basic of Measurement
			<p>CO1:-This course is to get exposure with various aspects of instruments and their usage through hands-on mode. Experiments listed below are to be done in continuation of the topics.</p>	Unit II: Electronic Voltmeter	Remember, Understand, Analyse
				Unit III: Cathode Ray oscilloscope	Remember, Understand, Analyse
				Unit IV: Use of CRO for the measurement of voltage	Remember, Understand, Apply, Analyse
				Unit V: Signal Generators and Analysis Instruments	Understand, Apply, Analyse
				Unit VI: Impedance Bridges & Q-Meters	Remember, Apply, Analyse
				Unit VII: Digital Instruments	Remember, Apply, Analyse
				Unit VIII: Digital Multimeter	Understand, Apply,

SEMISTER-V

SL. NO	SEMESTER	PAPER CODE & TITLE	COURSE OUTCOMES	UNIT /CHAPTER	BLOOM'S TAXONOMIC LEVELS
13	V	PHY-HC-5016 Quantum Mechanics and Applications.	<p>CO1: -: On successful completion of the course students will be able to understand the principles in quantum mechanics, such as the Schrödinger equation, the wave function,</p> <p>CO2: -The uncertainty principle, stationary and non-stationary states, time evolution of solutions, as well as the relation between quantum mechanics and linear algebra.</p> <p>CO3: -Students will be able to solve the Schrödinger equation for hydrogen atom.</p> <p>CO4: - Students will have the concepts of angular momentum and spin, as well as the rules for quantization and addition of these, spin-orbit coupling and Zeeman Effect.</p>	Unit I: Time Dependent Schrödinger Equation	Remember, Understand, Apply, Analyse, Evaluate
				Unit II: Time Independent Schrödinger Equation	Remember, Understand, Apply, Analyse, Evaluate
				Unit III: Bound States	Remember, Understand, Apply, Analyse, Evaluate
				Unit IV: Hydrogen-Like Atom	Remember, Understand, Apply, Analyse, Evaluate
				Unit V: Atoms in Electric & Magnetic Fields	Remember, Understand, Apply, Analyse, Evaluate
				Unit VI: Many Electron Atoms	Remember, Understand, Apply, Analyse, Evaluate
14	V	PHY-HC-5026 Solid State Physics	COURSE OUTCOME:	Unit I: Crystal Structure	Remember, Understand, Apply, Analyse, Evaluate
			<p>CO1: -On successful completion of the course students should be able to explain the main features of crystal lattices and phonons,</p> <p>CO2: -Understand the elementary lattice dynamics and its influence on the properties of materials,</p>	Unit II: Elementary Lattice Dynamics	Remember, Understand, Apply, Analyse, Evaluate
				Unit III: Magnetic Properties Of Matter	Remember, Understand, Apply, Analyse, Evaluate
				Unit IV: Dielectric Properties Of Materials	Remember, Understand, Apply, Analyse, Evaluate
				Unit V: Ferroelectric Properties of Materials	Remember, Understand, Apply, Analyse, Evaluate

			CO3: -Describe the main features of the physics of electrons in solids;	Unit VI: Free Electron Theory of Metals	Remember, Understand, Apply, Analyse, Evaluate
			CO4: -Explain the dielectric ferroelectric and magnetic properties of solids.	Unit VII: Superconductivity	Remember, Understand, Apply, Analyse, Evaluate
			CO5: -And understand the basic concept in superconductivity.		
15	V	PHY-HE-5046 Physics of Devices and Instruments	COURSE OUTCOME	Unit I: Devices	Remember, understand, apply, analyse, evaluate
			CO1: Upon completion of this course, students will be able to gain knowledge on advanced electronics devices such as UJT, JFET, MOSFET, CMOS etc., CO2: -Detailed process of IC fabrication, CO3: -Digital Data serial and parallel Communication Standards along with the understanding of communication systems.	Unit II: Power supply and Filters	Remember, understand, apply, analyse, evaluate
				Unit III: Active and Passive Filter	Remember, understand, apply, analyse, evaluate
				Unit IV: Multivibrators	Remember, understand, apply, analyse, evaluate
				Unit V: Phase Locked Loop (PLL)	Remember, understand, apply, analyse, evaluate
				Unit VI: Processing of Devices	Remember, understand, apply, analyse, evaluate
				Unit VII: Digital Data Communication Standards	Remember, understand, apply, analyse, evaluate
				Unit VIII: Introduction to communication systems	Remember, understand, apply, analyse, evaluate

16	V	PHY-HE-5056 Nuclear and Particle Physics	COURSE OUTCOME	Unit I: General Properties of Nuclei	Remember, understand, apply,
			<p>CO1: -Upon completion of this course, students will have the understanding of the sub atomic particles and their properties.</p> <p>CO2: - They will gain knowledge about the different nuclear techniques and their applications in different branches of Physics and societal application.</p> <p>CO3: - The course will develop problem-based skills and the acquire knowledge can be applied in the areas of nuclear, medical, archeology, geology and other interdisciplinary fields of Physics and Chemistry.</p>	Unit II: Nuclear Models	Remember, understand,
				Unit III: Radio activity decay	Remember, understand, apply, analyse, evaluate
				Unit IV: Nuclear Reactions	Remember, understand, apply, analyse, evaluate
				Unit V: Interaction Of Nuclear Radiation With matter	Remember, understand, apply, analyse, evaluate
				Unit VI: Detector for Nuclear Radiations	Remember, understand, apply, analyse, evaluate
				Unit VII: Particle Accelerators	Remember, understand, apply, analyse, evaluate
				Unit VIII: Particle physics	Remember, understand

SEMISTER-VI

SL. NO.	SEMESTER	PAPER CODE & TITLE	COURSE OUTCOMES	UNIT /CHAPTER	BLOOM'S TAXONOMIC LEVELS
17	VI	PHY-HC-6016 Electromagnetic Theory	CO1: On successful completion of the course students will acquire the concepts of Maxwell's equations, CO2: Propagation of electromagnetic (EM) waves in different homogeneous-isotropic as well as anisotropic unbounded and bounded media, CO3: Production and detection of different types of polarized EM waves, CO4: General information as wave guides and fibre optics.	Unit I: Maxwell Equations	Remember, understand, Evaluate, apply
				Unit II: EM Wave Propagation in Unbounded Media	Remember, understand, Evaluate, apply
				Unit III: EM Wave in Bounded Media	Remember, understand, Evaluate, apply
				Unit IV: Polarization Of Electromagnetic Wave	Remember, understand, Evaluate, apply
				Unit V: Rotatory Polarization	Remember, understand, Evaluate, apply
				Unit VI: Optical Fibres	Remember, understand, , apply, create
18	VI	PHY-HC-6026 Statistical Mechanics	COURSE OUTCOME	Unit I: Classical Statistics	Remember, understand, apply
				Unit II: Classical Theory Of Radiation	Remember, understand, apply
			CO1: On successful completion of the course students will be learn the techniques of Statistical Mechanics to apply in various fields including Astrophysics, CO2: Semiconductors, Plasma Physics, Bio-Physics, Chemistry and in many other directions.	Unit III: Quantum Theory of Radiation	Remember, understand, apply
				Unit IV: Bose-Einstein Statistics	Remember, understand, apply

19	VI	PHY-HE-6046 Astronomy and Astrophysics	COURSE OUTCOME	Unit I: Stellar properties	Remember, understand, apply, analyse, evaluate
			<p>CO1: - Upon completion of this course, students will be able to understanding the origin and evolution of the Universe.</p> <p>CO2: -The course will give a comprehensive introduction on the measurement of basic astronomical parameters such as astronomical scales, luminosity and astronomical quantities.</p> <p>CO3: - It will give an overview on key developments in observational astrophysics.</p> <p>CO4: -Students will have the idea of the instruments implemented for astronomical observation, the formation of planetary system and its evolution with time,</p> <p>CO5: -The physical properties of Sun and the components of the solar system; and stellar and interstellar components of our Milky Way galaxy.</p> <p>CO6:-Students will have the understanding of the origin and evolution of galaxies, presence of dark matter and large-scale structures of the Universe.</p>	Unit II: The Sun and the solar system	Remember, understand, apply,
				Unit III: Positional Astronomy	Remember, understand, apply, analyse
				Unit IV: Astronomical Techniques	Remember, understand, apply, analyse
				Unit V: Galaxies	Remember, understand, apply,
				Unit VI: Large Scale Structure and cosmology	Remember, understand, apply, analyse

20	VI	PHY-HE-6056 Classical Dynamics	COURSE OUTCOME	Unit I: Classical Mechanics of Point Particles	Remember, understand, apply, analyse, evaluate
			CO1: Upon completion of this course, students will have the overview of Newton's Laws of Motion, CO2: -Special Theory of Relativity by 4-vector approach and fluids. CO3: -Students will also have the understanding of the Lagrangian and Hamiltonian of a system. CO4: -By the end of this course, students will be able to solve the seen or Unseen problems/ numerical in classical mechanics.	Unit II: Small Amplitude Oscillations	Remember, understand, apply
				Unit III: Special Theory of relativity	Remember, understand, apply, analyse,
				Unit IV: Fluid Dynamics	Remember, understand, apply, analyse, evaluate

DEPARTMENT OF STATISTICS
DARRANG COLLEGE, TEZPUR

7. B.A./ B.Sc Statistics:

Programme Specific Outcomes:

After the completion of the programme, a student will be able to understand the following:

1. Statistical Knowledge:
 - Graduates should possess a solid foundation in statistical theories, methods, and techniques.
 - Understand the principles of probability and statistical inference.
 - Demonstrate proficiency in handling and analyzing data sets.
2. Mathematical Foundation:
 - Develop a strong mathematical background, particularly in calculus and linear algebra, which are essential for advanced statistical methods.
3. Data Analysis and Interpretation:
 - Acquire skills in collecting, organizing, and interpreting data.
 - Apply statistical tools and software for data analysis, drawing meaningful conclusions from datasets.
4. Research Design and Methodology:
 - Understand the principles of experimental and observational study designs.
 - Develop the ability to design surveys and experiments, considering ethical and practical aspects.
5. Statistical Software Proficiency:
 - Gain proficiency in using statistical software such as R, SPSS, or Python for data analysis.
 - Learn to implement statistical techniques through software applications.
6. Communication Skills:
 - Develop effective communication skills, including the ability to articulate statistical concepts and findings to both technical and non-technical audiences.
 - Create clear and concise reports, presentations, and visualizations of statistical results.
7. Critical Thinking and Problem-Solving:
 - Foster critical thinking skills to evaluate statistical methods and their applications critically.
 - Develop problem-solving skills, applying statistical techniques to address real-world challenges.

8. Probability Modelling:

- Understand and apply probability models to describe and analyse uncertain events.
- Explore the role of probability in decision-making and risk assessment.

9. Statistical Consulting:

- Gain experience in providing statistical consultation to individuals or organizations.
- Apply statistical methods to solve practical problems in various fields.

10. Ethical Considerations:

- Understand the ethical considerations related to statistical analysis, data collection, and reporting.
- Demonstrate ethical behaviour in statistical practice.

11. Specialization Areas:

- Depending on the program, students may have the option to specialize in areas such as biostatistics, econometrics, or data science, tailoring their education to specific career goals.

12. Continuous Learning:

- Develop a mindset for continuous learning and staying updated on emerging statistical methods and technologies.

Overall, the B.A. / B.Sc. in Statistics program aims to equip students with a strong statistical foundation, analytical skills, and the ability to apply statistical methods to real-world problems. Graduates are prepared to contribute meaningfully to fields such as finance, healthcare, government, and research, where statistical analysis plays a crucial role in decision-making and problem-solving.

Course Outcomes:**Course under CBCS (GU)**

SL. NO.	SEMESTER	PAPER CODE & TITLE	COURSE OUTCOMES	UNIT /CHAPTER	BLOOM'S TAXONOMIC LEVELS
1	I	STA-HC-1016 Descriptive Statistics	Students will acquire knowledge on:- 1. The use of statistics and its significance in a variety of fields, including social science, engineering, medicine, and agriculture. 2. Various data formats, data structure, tabular and graphical data display, assessment of summary measures including central tendency, dispersion and location etc. 3. Concept of correlation, various correlation coefficients- Pearson's correlation coefficient, Spearman's rank correlation coefficient, partial correlation coefficient and Multiple correlation coefficient. 4. Concept of Principle of least squares for curve fitting and regression lines. 5. The idea and Construction of different types of Index numbers	Unit I: <i>Statistical Methods</i>	Remember, Understand, Apply, Analyse , Evaluate
				Unit II: <i>Measures of Central Tendency</i>	Remember, Understand, Apply, Analyse , Evaluate
				Unit III: <i>Bivariate Data</i>	Remember, Understand, Apply, Analyse , Evaluate
				Unit IV: <i>Index Numbers</i>	Remember, Understand, Apply, Analyse , Evaluate
2	I	STA-HC-1026 Calculus	Students will acquire knowledge on:- 1. Limits on function, continuous function, Partial and total differentiation, L Hospital's rule. 2. Maxima and minima of functions of one and two variables, Euler's theorem, and Leibnitz's rule for successive differentiation. 3. Integral Calculus, Definite Integral, Double Integral, Beta and Gamma functions. 4. Differential equation of first order and higher order. 5. Partial differential equations, their formation and solution	Unit 1: <i>Differential Calculus</i>	Remember, Understand, Apply, Analyse , Evaluate
				Unit 2: <i>Integral Calculus</i>	Remember, Understand, Apply, Analyse , Evaluate
				Unit 3: <i>Differential Equations</i>	Remember, Understand, Apply, Analyse , Evaluate
				Unit 4: <i>Partial Differential Equations</i>	Remember, Understand, Apply, Analyse , Evaluate

3	II	STA-HC-2016 Probability and Probability Distribution	<p>Students will acquire knowledge :-</p> <ol style="list-style-type: none"> To distinguish between random and non-random experiments. Regarding event probabilities, the Bayes theorem is used to calculate inverse probability and calculate event probability using a mathematical approach. On discrete and continuous random variable and their probability distribution including expectation and moments. On discrete distribution such as Binomial, Poisson, Geometric, Negative Binomial, Hyper geometric, and on continuous distribution such as normal, exponential, uniform, etc. 	Unit 1: <i>Probability</i>	Remember, Understand, Apply, Analyse , Evaluate
				Unit 2: <i>Random variables</i>	Remember, Understand, Apply, Analyse , Evaluate
				Unit 3: <i>Mathematical Expectation and Generating Functions</i>	Remember, Understand, Apply, Analyse , Evaluate
				Unit 4: <i>Mathematical Expectation and Generating Functions</i>	Remember, Understand, Apply, Analyse , Evaluate
4	II	STA-HC-2026 Matrices	<p>Students will acquire knowledge :-</p> <ol style="list-style-type: none"> Understanding the relationship between a polynomial equation's roots and coefficients, solving biquadratic and cubic equations when certain conditions are met regarding the equations' roots, vector space, and the linear dependence and independence of vectors all span vector space. On fundamental concepts of matrices and determinants, ranks of matrix, characteristics root and characteristics vectors, quadratic form etc. 	Unit 1: <i>Theory of equations</i>	Remember, Understand, Apply, Analyse , Evaluate
				Unit 2: <i>Algebra of matrices</i>	Remember, Understand, Apply, Analyse , Evaluate
				Unit 3: <i>Determinants of Matrices</i>	Remember, Understand, Apply, Analyse , Evaluate
				Unit 4: <i>Matrices</i>	Remember, Understand, Apply, Analyse , Evaluate
5	III	STA-HC-3016 Sampling Distribution	<p>Students will acquire knowledge on :-</p> <ol style="list-style-type: none"> Order statistic and related sampling distributions. Parameter statistic, statistical hypothesis, basic principles underlying test of significance (large and small sample test) with applications. 	Unit 1: <i>Order Statistics</i>	Remember, Understand, Apply, Analyse , Evaluate
				Unit 2: <i>Sampling Distributions</i>	Remember, Understand, Apply, Analyse , Evaluate
				Unit 3: <i>Exact sampling distributions</i>	Remember, Understand, Apply, Analyse , Evaluate

			3. Derivation of exact sampling distribution of statistics like “t”, Chi-square and “F”	Unit 4: <i>Sampling distribution</i>	Remember, Understand, Apply, Analyse , Evaluate
6	III	STA-HC-3026 Survey Sampling & Indian Official Statistics	Students will acquire knowledge on:- 1. Population, sample, difference between census and sample survey. 2. Sampling error and non-sampling error. 3. The fundamentals of sample surveys, various random sample drawing methods (e.g., basic random sampling, stratified random sampling, systematic sampling, cluster sampling, double sampling, etc.), and the circumstances in which these methods are appropriate 4. Probability proportional to size sampling. 5. When estimating population parameters, auxiliary variables are used in ratio and regression methods of estimation. 6. Sources of Official statistics, methods of collection of Official Statistics in India under MoSPI.	Unit 1: <i>Survey Sampling</i>	Remember, Understand, Apply, Analyse , Evaluate
				Unit 2: <i>Stratified random sampling</i>	Remember, Understand, Apply, Analyse , Evaluate
				Unit 3: <i>Ratio and Regression Method of Sampling</i>	Remember, Understand, Apply, Analyse , Evaluate
				Unit 4: <i>Official Statistics</i>	Remember, Understand, Apply, Analyse , Evaluate
7	III	STA-HC-3036 Mathematical Analysis	Students will acquire knowledge on:- 1. Real number representation, including recognizing real number sequences and their characteristics. 2. Sequences and different test to study their convergence and divergence, Limits of sequence 3. Infinite series and their convergence. 4. Limits, continuity and differentiability 5. Interpolation, extrapolation, divided difference, finite difference, and various interpolation techniques 6. Difference equation and their solutions.	Unit 1: <i>Real Analysis</i>	Remember, Understand, Apply, Analyse , Evaluate
				Unit 2: <i>Infinite Series</i>	Remember, Understand, Apply, Analyse , Evaluate
				Unit 3: <i>Limits, Continuity and Differentiability</i>	Remember, Understand, Apply, Analyse , Evaluate
				Unit 4: <i>Numerical Analysis</i>	Remember, Understand, Apply, Analyse , Evaluate

8	III	STA-SE-3014 Statistical Data analysis using software packages	Students will acquire knowledge on:- 1. How to handle data and its analysis using software packages such as ms excel, spss, mini tab, mat lab 2. Loading data, plotting a graph, viz. histogram, box plot, stem leaf, frequency polygon, pie chart and ogive. 3. Generating automated reports:- Descriptive Statistics, correlation and line of regression 4. Curves, random number generation, and sampling techniques. Application issues based on normal probability plots and appropriate distribution fitting. 5. Creating and managing statistical analysis projects, imports data, code, editing, basics of statistical inferences, p-values and confidence intervals.	Unit 1: <i>Graphical Representation</i>	Understanding & Applying
				Unit 2: <i>Report Generation</i>	Understanding & Applying
				Unit 3: <i>Fitting Curves</i>	Understanding & Applying
				Unit 4: <i>Analysis</i>	Understanding & Applying
9	IV	STA-HC-4016 Statistical Inference	Students will acquire knowledge on:- 1. Idea of point estimation and criteria for a good estimator. 2. Cramer Rao inequality, Rao Blackwell and Lehman Scheff theories and their application in minimum variance bound estimator. 3. Different methods of estimation 4. Statistical hypothesis, type I and type II errors. 5. The concept of optimum tests under different situations. 6. The concept of likelihood ratio test and its important properties. 7. Sequential Probability Ratio Test (SPRT).	Unit 1: <i>Estimation</i>	Remember, Understand, Apply, Analyse , Evaluate
				Unit 2: <i>Methods of Estimation</i>	Remember, Understand, Apply, Analyse , Evaluate
				Unit 3: <i>Principles of test of significance</i>	Remember, Understand, Apply
				Unit 4: <i>Principles of test of significance</i>	Remember, Understand, Apply
10	IV	STA-HC-4026 Linear Models	Students will acquire knowledge on:- 1. Linear Estimation, use of Gauss Markov set up in estimation of parameters, Gauss Markov theorem. 2. Regression and simple linear regression model, testing of hypothesis in case of simple regression model.	Unit 1: <i>Gauss-Markov Set-up</i>	Remember, Understand, Apply, Analyse , Evaluate
				Unit 2: <i>Regression Analysis</i>	Remember, Understand, Apply, Analyse , Evaluate
				Unit 3: <i>Analysis of Variance</i>	Remember, Understand, Apply, Analyse , Evaluate

			3. Analysis of variance(ANOVA), Different type of models in ANOVA. 4. How to carry out ANOVA and Analysis of Covariance for one way and two classified data. 5. How to predict from a fitted model	Unit 4: <i>Model Checking</i>	Remember, Understand, Apply, Analyse , Evaluate
11	IV	STA-HC-4036 Statistical Quality Control	Students will acquire knowledge on:- 1. The meaning of quality and its dimension 2. How the concept of quality arises since World War II. 3. How to construct control charts for variables and attributes to determine whether the given quality of the product is under control or not. 4. Sampling inspection plan in product control. 5. The concept of six sigma.	Unit 1: <i>Statistical Process Control</i>	Understanding & Applying
				Unit 2: <i>Control Charts for Variables</i>	Understanding & Applying
				Unit 3: <i>Acceptance Sampling Plan</i>	Understanding & Applying
				Unit 4: <i>Six-Sigma</i>	Understanding & Applying
12	IV	STA-SE-4014 Statistical Data Analysis using R	Students will be able to learn :- 1. How to load data and use graphical representation for analysis. 2.To produce automated reports that includes thorough lines of regression, correlation, and descriptive statistics. 3. Random number generation, sampling procedures viz. SRSWR and SRSWOR and fitting of suitable distributions and their applications. 4. Basics of statistical inference viz. testing of hypothesis and confidence intervals.	Unit 1: <i>Plotting Graphs</i>	Understanding & Applying
				Unit 2: <i>Report Generation</i>	Understanding & Applying
				Unit 3: <i>Generation of Random Numbers</i>	Understanding & Applying
				Unit 4: <i>Statistical Analysis</i>	Understanding & Applying
13	V	STA-HC-5016 Stochastic Processes and Queuing Theory	Students will acquire knowledge on:- 1. Generating functions, bivariate probability generating functions, and Stationary Processes 2. Markov chains including the notion of transition probability matrix, classification of States and chains. 3. Poisson process, its properties and application in real life problem. 4. Different types of queuing models and waiting time distribution.	Unit 1: <i>Probability Distributions</i>	Remember, Understand, Apply, Analyse , Evaluate
				Unit 2: <i>Markov Chains</i>	Remember, Understand, Apply, Analyse , Evaluate
				Unit 3: <i>Poisson Process</i>	Remember, Understand, Apply, Analyse , Evaluate
				Unit 4: <i>Queuing System</i>	Remember, Understand, Apply, Analyse , Evaluate

14	V	STA-HC-5026 Statistical Computing using C/C++ Programming	Students will acquire knowledge on:- 1. Basic structure of C programming language with different data types 2. Different types of operators (viz. arithmetic, relational, logical etc) and their expressions. 3. Loops and arrays used in C programming	Unit 1: <i>C Programming</i>	Understanding & Applying
				Unit 2: <i>Decision making and Arrays</i>	Understanding & Applying
15	V	STA-HE-5016 Operations Research	Students will acquire knowledge on :- 1. Operation research (O.R), its history, various types of O.R problems. 2. Mathematical formulation of LPP, solution of LPP by graphical and simplex method. 3. Transportation problem and its initial and optimal solution using different methods. 4. Game theory including rectangular game and its solution by different method. 5. Inventory, their types, characteristics and inventory control system.	Unit 1: <i>Operations Research</i>	Remember, Understand, Apply, Analyse , Evaluate
				Unit 2: <i>Transportation Problem</i>	Remember, Understand, Apply, Analyse , Evaluate
				Unit 3: <i>Game theory</i>	Remember, Understand, Apply, Analyse , Evaluate
				Unit 4: <i>Inventory Management</i>	Remember, Understand, Apply, Analyse , Evaluate
16	V	STA-HE-5026 Time Series Analysis	Students will acquire knowledge on :- 1. Time series data, its application to various fields and components of time series. 2. Estimation of trend, seasonal variation, cyclical variation and irregular variations using different methods. 3. Forecasting by exponential smoothing.	Unit 1: <i>Introduction to Time Series</i>	Remember, Understand, Apply, Analyse , Evaluate
				Unit 2: <i>Introduction to Time Series</i>	Remember, Understand, Apply, Analyse , Evaluate
				Unit 3: <i>Moving averages</i>	Remember, Understand, Apply, Analyse , Evaluate
				Unit 4: <i>Forecasting and smoothing to Time Series</i>	Remember, Understand, Apply, Analyse , Evaluate
17	VI	STA-HC-6016 Design of Experiments	Students will acquire knowledge on : 1. Design of experiments, its terminology and basic principles. 2. Construction of standard designs such as Completely Randomized design, Randomized Block Design and Latin Square Design and their application to analyze experimental data using ANOVA technique.	Unit 1: <i>Design of Experiments</i>	Remember, Understand, Apply, Analyse , Evaluate
				Unit 2: <i>Design of Experiments</i>	Remember, Understand, Apply, Analyse , Evaluate

			<p>3. Relative efficiency of CRD, RBD and LSD and analysis of RBD and LSD with one missing observation.</p> <p>4. Strip Plot Design, Split Plot Design and Incomplete Block Design.</p> <p>5. Construction and analysis of 2^n ($n \leq 5$) factorial design, 3^2 design.</p> <p>6. Confounding, construction of total and partially confounded design for 2^n ($n \leq 5$)</p>	<p>Unit 3: <i>Factorial Experiments</i></p>	<p>Remember, Understand, Apply, Analyse , Evaluate</p>
18	VI	STA-HC-6026 Multivariate Analysis and Non-Parametric Methods	<p>Students will acquire knowledge on :-</p> <p>1. Bivariate normal distribution along with their properties.</p> <p>2. Multivariate normal distribution and their properties.</p> <p>3. Partial and multiple correlation and their properties.</p> <p>4. Nonparametric method of testing of hypothesis.</p>	<p>Unit 1: <i>Bivariate and Multivariate Distributions</i></p>	<p>Remember, Understand, Apply, Analyse , Evaluate</p>
				<p>Unit 2: <i>Multivariate Normal Distributions</i></p>	<p>Remember, Understand, Apply, Analyse , Evaluate</p>
				<p>Unit 3: <i>Non-parametric Tests</i></p>	<p>Remember, Understand, Apply, Analyse , Evaluate</p>
19	VI	TA-HE-6026 Demography and Vital Statistics	<p>Students will be able to know:</p> <p>1. The different sources for collection demographic data and its errors.</p> <p>2. The use of balancing equation for population change.</p> <p>3. Population composition and dependency ratio.</p> <p>4. The basic measures of mortality, fertility and population growth.</p> <p>5. The concept of stable and Stationary population.</p> <p>6. The concept of life table and their construction.</p>	<p>Unit 1: <i>Population Theory</i></p>	<p>Understanding & Applying</p>
				<p>Unit 2: <i>Measurement of Mortality</i></p>	<p>Understanding & Applying</p>
				<p>Unit 3: <i>Life Table</i></p>	<p>Understanding & Applying</p>
				<p>Unit 4: <i>Measurement of Fertility</i></p>	<p>Understanding & Applying</p>

Course under FYUGP (GU)

SL. NO.	SEMESTER	PAPER CODE & TITLE	COURSE OUTCOMES	UNIT /CHAPTER	BLOOM'S TAXONOMIC LEVELS
1	I	STA101 Descriptive Statistics & Probability	Students will acquire knowledge on:- 1. The use of statistics and its significance in a variety of fields, including social science, engineering, medicine, and agriculture. 2. Various data formats, data structure, tabular and graphical data display, assessment of summary measures including central tendency, dispersion and location etc. 3. To distinguish between random and non-random experiments. 4. Regarding event probabilities, the Bayes theorem is used to calculate inverse probability and calculate event probability using a mathematical approach. 5. On discrete and continuous random variable and their probability distribution including expectation and moments.	Unit I: <i>Statistical Methods</i>	Remember, Understand, Apply, Analyse , Evaluate
				Unit II: <i>Measures of Central Tendency, Dispersion and location</i>	Remember, Understand, Apply, Analyse , Evaluate
				Unit 3: <i>Probability</i>	Remember, Understand, Apply, Analyse , Evaluate
				Unit 4: <i>Random variables and Expectations</i>	Remember, Understand, Apply, Analyse , Evaluate

DEPARTMENT OF ZOOLOGY
DARRANG COLLEGE, TEZPUR

8. B.Sc Zoology

Program Outcomes, Program Specific Outcomes and Course Outcome

The Department of Zoology at Darrang College, Tezpur, is affiliated with Gauhati University, Guwahati, Assam and conforms to the university's approved curricula. The programs offered by the department are B.Sc. in Zoology and M.Sc. in Zoology. The detailed statement of the programme outcomes, programme-specific outcomes, and course outcomes for the UG and PG programmes is shown here.

Programme Outcomes (B.Sc. in Zoology)

- PO1 - Students gain knowledge and skill in the fundamentals of animal sciences, understand the complex interactions among various living organisms.
- PO2 – Analyses complex interactions among the various animals of different phyla, their distribution and their relationship with the environment.
- PO3 – Apply the knowledge of internal structure of cell, its functions in control of various metabolic functions of organisms.
- PO4 – Understands the complex evolutionary processes and behaviour of animals.
- PO5 – Correlates the physiological processes of animals and relationship of organ systems.
- PO6 – Understanding of environmental conservation processes and its importance, pollution control and biodiversity and protection of endangered species.
- PO7 – Gain knowledge of small scale industries like sericulture, fish farming, bee keeping, aquaculture, animal husbandry, poultry farm.
- PO8 – Understands about various concepts of genetics and its importance in human health.
- PO9– Apply ethical principles and commit to professional ethics and responsibilities in delivering his duties.
- PO10 – Apply the knowledge and understanding of Zoology to one's own life and work.
- PO11 – Develops empathy and love towards the animals

Programme Specific Outcomes: (B.Sc. in Zoology)

PSO1. Understand the nature and basic concepts of cell biology, genetics, taxonomy, physiology, biochemistry, ecology, evolutionary biology, developmental biology and applied and economic zoology.

PSO2. Analyse the relationships among animals, plants and microbes.

PSO3. Perform procedures as per laboratory standards in the areas of Taxonomy, Physiology, Ecology, Cell biology, Genetics, Applied Zoology, Clinical science, tools and techniques of Zoology, Toxicology, Entomology, Nematology, Sericulture, Biochemistry, Fish biology, Animal biotechnology.

PSO4. Understand the development, growth, reproduction, structural and physiological adaptations, and behavior of different forms of animal life.

PSO5. Comprehend the relationships between structure and function at different levels of biological organization (e.g., molecules, cells, organs, organisms, populations, and species) in animals and their coordinated functions (physiological, biochemical, endocrine, and immune system).

PSO6. Understand biological techniques, bioinformatics, and the application of statistics in biological science.

PSO6. Understand the applications of biological sciences in Apiculture, Aquaculture, Sericulture, Animal Husbandry, and Poultry Farm.

PSO7. Learn more about efficient communication techniques and approaches to problem resolution.

PSO8. Contributes the knowledge for Nation building

Course Outcomes: (B.Sc. in Zoology)

SEMESTER	PAPER CODE & TITLE	COURSE OUTCOMES	UNIT / CHAPTER
<u>UG SEMESTER I</u>	ZOO-HC-1016 NonCordates-1	Describe general taxonomic rules on animal classification, Classify Phylum Protozoa to pseudocoelomates with taxonomic keys	1, 2, 3, 4, 5, 6
	ZOO-HC-1016 NonCordates-1 (Practical)	Students have the ability to comprehend and acquire knowledge on how to prepare whole mount of the entire organism, including the life cycle of different kingdoms and phyla.	1,2,3,4,5,6,7,8
	ZOO-HC-1026 Principle of Ecology	Pupils are able to comprehend the fundamental principle with particular relevance to the ecosystem and community. In the applied ecology section, students will also learn about the procedures involved in managing and conserving species.	1,2,3,4, 5
	ZOO-HC-1026 Principle of Ecology (Practical)	Through the practical study, students will learn about the practical use of various population traits, community services, and ecosystem resources. They will gain an understanding of ecology through visits to national parks, biodiversity centres, and wildlife sanctuaries.	1,2,3 4
<u>UG SEMESTER II</u>	ZOO-HC-2016 Non- Chordates II: Coelomates	Students can comprehend the traits and categorization, social interactions, and evolutionary relevance of coelomates.	1,2,3,4,5,6
	ZOO-HC-2016 Non- Chordates II: Coelomates (Practical)	Students are able to understand about the museum specimen, anatomical and morphological structure and preparation of slide.	1,2,3,4, 5
	ZOO-HC-2026 Cell Biology	Students are able to understand about the structure and function of cell and cellular organelles, process of cell division and cell communication.	1,2,3,4,5,6, 7,8
	ZOO-HC-2026 Cell Biology (Practical)	Students are able to understand about the preparation of various stains and fixatives, determination of protein, mucopolysaccharides and chromosome	1,2,3,4

Course Outcomes: (B.Sc. in Zoology)

SEMESTER	PAPER CODE & TITLE	COURSE OUTCOMES	UNIT /CHAPTER
<u>UG SEMESTER III</u>	ZOO-HC-3016 Diversity of Chordata	Students are able to gain conceptual knowledge of vertebrates, their adaptations and associations in relation to their environment.	1,2,3,4,5,6,7,8,9,10
	ZOO-HC-3016 Diversity of Chordata(Practical)	Students are able to understand about the general characteristics, classification, and identification of chordates	1,2,3,4,5,6,7
	ZOO-HC-3026 Animal Physiology: Controlling and Coordinating Systems	Students gain fundamental knowledge of animal physiology, Seeks to understand the mechanisms that work to keep the animal body alive and functioning, Students are taught the detailed concepts of digestion, respiration, excretion, the functioning of nerves and muscles, cardiovascular system, endocrine system and reproductive system.	1,2,3,4,5,6
	ZOO-HC-3026 Animal Physiology: Controlling and Coordinating Systems (Practical)	Students are able to understand and learned about the various microscopic procedures including microtomy, permanent slides study.	1,2,3,4
	ZOO-HC-3036 Fundamentals of Biochemistry	Students are able to understand all the biochemical components of the body system. Interactions and interdependence of physiological and biochemical processes.	1,2,3,4,5
	ZOO-HC-3036 Fundamentals of Biochemistry (Practical)	Students are able to understand various technique of separation and determination of protein, lipid, carbohydrates etc.	1,2,3,4,5
<u>UG SEMESTER IV</u>	ZOO-HC-4016 Comparative Anatomy of Vertebrates	Students are able to understand about the Comparative knowledge of Integumentary, Digestive, Circulatory, Urinogenital, Nervous and Skeletal system of various classes of vertebrates.	1,2,3,4,5,6,7,8
	ZOO-HC-4016 Com Anatomy of Vertebrates (Practical)	Students are able to understand various skeletal parts of different organisms and their structural component.	1,2,3,4,5, 6

	ZOO-HC-4026 Animal Physiology: Life Sustaining Systems	Functions of the body are studied in this part. It includes nutrition, respiration, excretion, circulation, nervous and hormonal coordination etc.	1,2,3,4,5
	ZOO-HC-4026 Animal Physiology: Life Sustaining Systems (Practical)	Students will be able to learn to determine the blood group, haemoglobin content, enumerate the RBC and WBC count and able to measure the blood pressure. Moreover, they will be able to examine the histological slides of different organs of mammalian tissues.	1,2,3,4,5,6
	ZOO-HC-4036 Animal Physiology: Biochemistry of Metabolic Processes	Students are able to understand metabolic process including carbohydrates, lipid and protein and also ATP production.	1,2,3,4,5
	ZOO-HC-4036 Animal Physiology: Biochemistry of Metabolic Process (Practical)	Students are able to learn various essays from serum and tissues.	1,2,3,4,5

Course Outcomes: (B.Sc. in Zoology)

SEMESTER	PAPER CODE & TITLE	COURSE OUTCOMES	UNIT /CHAPTER
<u>UG SEMESTER IV</u>	ZOO-HC-5016 Molecular Biology	Students are able to understand in details about the nucleic acid, DNA replication, Protein synthesis and its modification and gene regulation.	1,2,3,4,5,6,7,8
	ZOO-HC-5016 Mol Biol (Practical)	Students are able to understand about the estimation of DNA, RNA and protein synthesis	1,2,3,4,5,6
	ZOO-HC-5026 Principles of Genetics	Students are able to understand about the Mendelian inheritance, interaction of genes, mutation and its effects.	1,2,3,4,5,6,7,8
	ZOO-HC-5026 Principles of Genetics (Practical)	Students are able to learn about the pedigree analysis, gene interaction study.	1,2,3,4,5,6

	ZOO-HE-5016 Computational Biology and Biostatistics	Students are able to learn about application of computers in biological science; different tools of bioinformatics	1,2,3,4,5,6
	ZOO-HE-5016 Computational Biology and Biostatistics (Practical)	Students will have a practical hand on experience on retrieval of sequences from databases, construction of phylogenetic tree, prediction of protein structure, performing statistical test.	1,2,3,4,5,6
	ZOO-HE-5036 Endocrinology	Students are able to learn different endocrine glands, their function and secretion, diseases related to endocrine gland, hormonal regulation etc.	1,2,3,4
	ZOO-HE-5036 Endocrinology (Practical)	Students are able to identify different endocrine gland through permanent slide study.	1,2,3,4
<u>UG SEMESTER VI</u>	ZOO-HC-6016 Developmental Biology	Students are able to acquire a thorough knowledge of embryonic development along with the factors affecting it.	1,2,3,4,5
	ZOO-HC-6016 Developmental Biology (Practical)	Students will be able to learn different developmental stages through microscopic study of permanent slides and also from culture based study of certain animals.	1,2,3,4,5
	ZOO-HC-6026 Evolutionary Biology	Students are able to learn different concept of evolution, fossils, process of speciation and population genetics	1,2,3,4,5,6,7,8,9
	ZOO-HC-6026 Evolutionary Biology (Practical)	Students are able to learn different types of fossils, application of Hardy-Weinberg principle and construction of phylogenetic tree.	1,2,3,4,5
	ZOO-HE-6016 Biology of Insecta	Students are able to learn general features of insects their classification, physiology, insect society their importance, insect plant interaction etc.	1,2,3,4,5,6
	ZOO-HE-6016 Biology of Insecta (Practical)	Students are able to identify different kinds antennae, legs, mouthparts, wings and their preservation, collection etc.	1,2,3,4,5,6,7,8,9
	ZOO-HE-6056 Dissertation	Acquire practical knowledge and get the hands on practice in the various Biological sciences. This will help the students to pursue research further in their desired field.	

III. PROGRAMME OUTCOME – B.COM

DEPARTMENT OF COMMERCE DARRANG COLLEGE, TEZPUR

The completion of B.Com programme will enable students to accomplish the following programme outcome:

1. Students will be able to acquire the ability to understand and explain the fundamental concepts in of accounting, finance, banking, management, marketing, advertising, economics, taxation, mathematics and statistics, information technology, and business environment.
2. Students will be able to record, classify, and summarize financial transactions, apply accounting standards and principles to prepare accurate financial reports, and make informed financial decisions based on analysis of basic financial information.
3. Students will be able to understand about various organizational structures, acquaint themselves with the knowledge and skills regarding management principles and functions required to run an organization, apply management principles and theories in practical situations, demonstrate effective leadership skills, analyze and solve management problems, and make informed decisions to enhance organizational effectiveness.
4. Students will be able to understand the diverse components and functions of the financial system, the role of regulatory bodies, the impact of policies on economic growth, and the development of analytical skills to evaluate and navigate financial markets effectively.
5. Students will be able to acquire knowledge of various laws relating to business, corporate sector, financial sector, labour, taxation, international business, etc.
6. Students will be able to analyze consumer behaviour, develop marketing strategies, utilize marketing tools and techniques, and evaluate marketing campaigns to effectively target and engage customers in diverse market environments.
7. Students will be able to develop entrepreneurial mindset and skills, and zeal to pursue entrepreneurship as a profession and reap the benefits of self-employment.
8. Students will be able to understand the functions and working of the market and determination of equilibrium price and output under various market forms.
9. Students will be able to acquaint themselves with statistical and mathematical skills like collection, organization, tabulation, and analysis of empirical data, and acquire in-depth knowledge of correlation, regression and time series analysis and their associated problems and other related issues.
10. Students will be able to develop the skill of E-Filing of income tax returns, TDS returns, and GST returns.
11. Students will be able to understand the key economic principles, policies, and factors that shape the Indian economy, major trends in economic indicators and policy debates in India in the post-Independence period, and sector-specific policies and their impact in shaping trends in key economic indicators in India.
12. Students will be able to develop communication skills, professional skills, managerial and accounting skills, and thus will be industry ready after the completion of the course.

COURSE OUTCOMES: B.COM (CBCS)

Subject code	Subject	Course outcome
SEMESTER-I		
BCM-AE-1014	Business Communication (English/Hindi/MIL)	<ul style="list-style-type: none">• The objective lies in preparing the students for better communicative skills through vocabulary building and written correspondences.• Secondly to equip the students with enhanced communicative mediums through new technologies.• To boost the confidence among students through practical lessons on Presentation, Group Discussion, Personal Interview etc.
	Business Communication (Assamese)	<ul style="list-style-type: none">• From this book the students are expected to learn about the modern technology such as Power Point, Emails, Correspondence through letters, internet and also how to publish their own writings in public newspapers. The students are facilitated the same through the book prescribed for them.
	Business Communication (MIL)	<ul style="list-style-type: none">• To equip students with the effective faculties of reading, writing, comprehension and communication.• Secondly to equip the students with enhanced communicative mediums through new technologies
COM-HC-1026	Financial Accounting	<ul style="list-style-type: none">• Acquire conceptual knowledge of financial accounting• Learn about accounting information, accounting principles and the use of accounting standard• Understand the theory of measurement of Business Income• Learn Computerized accounting system with practical application of Tally-ERP 9• Learn the procedure of preparation of Final Accounts• Learn the concept of Hire-Purchase, Installment Payment System and Branch Account
COM-HC-1036	Business Law	<ul style="list-style-type: none">• Impart basic knowledge of the important business legislation along with relevant case law.
COM-GE-1046(A)	Micro Economics	<ul style="list-style-type: none">• To understand the consumer buying behaviour and their process of decision making to create demand.• To understand the supply side of the market and producers' equilibrium through cost and revenue.
COM-GE-1046(B)	Investing in Stock Markets	<ul style="list-style-type: none">• Provide basic skills to operate in stock markets and the ways of investing in it.• Enable the student to take up investment in stock markets independently.

SEMESTER-II

ENV-AE-2014	Environmental Studies	<ul style="list-style-type: none">• To provide the knowledge of environment education, its importance and various environmental related issues.• To make aware of students for various environmental effects and social responsibilities for protection and reservation of natural resources.
COM-HC-2026	Corporate Accounting	<ul style="list-style-type: none">• Acquire conceptual knowledge of• Corporate Accounting and learn about the process of preparation of Final accounts of Joint Stock Company (as per Companies Act, 2013)• Learn about the concept and methods of valuation of Goodwill and Shares• Learn about the concepts and accounting treatment of Right Shares, Bonus Shares and Buy Back of Shares• Learn the basic concepts of Holding Company as per Companies Act and Accounting Standards and preparation of Consolidated Balance Sheet.
COM-HC-2036	Corporate Laws	<ul style="list-style-type: none">• Impart basic knowledge of the provisions of the Companies Act 2013• Impart basic knowledge of the provisions of the Depositories Act, 1996.• Impart knowledge on practical aspects through case studies involving issues in corporate laws.
COM-GE-2046(A)	Macro Economics	<ul style="list-style-type: none">• To provide basic knowledge of macroeconomic variables.• To understand the working of the variables in determining equilibrium.• To understand the policy framework of the economy in the light of open economy.
COM-GE-2046(B)	Insurance & Risk Management	<ul style="list-style-type: none">• Develop an understanding among students about identifying analyzing and managing various types of risk.• Understand principles of insurance and its usefulness in business.• Impart knowledge on regulatory framework

SEMESTER-III

COM-HC-3016	Computer Applications in Business	<ul style="list-style-type: none">• To provide computer skills and knowledge for commerce students and to enhance the student understands of usefulness of information technology tools for business operations.• To enable the students familiar with the practical applications for preparing business information.
COM-HC-3026	Income-tax Law and Practice	<ul style="list-style-type: none">• Acquire basic knowledge and equip themselves with application of principles of Income Tax Act 1961 and the relevant rules.• Learn to compute taxable income under different heads of income.• Learn the computation of income tax liability and deduction available.• Learn to file Income Tax Return electronically

COM-HC-3036	Management Principles and Applications	<ul style="list-style-type: none"> • Gain knowledge of the principles and practices of management techniques. • Understand the various managerial functions in detail. • Apply principles of management in real business environment.
COM-GE-3046(A)	Business Statistics	<ul style="list-style-type: none"> • To provide knowledge to students about the basic statistical tools that are used in business and commerce and thus provide them with an expertise in managerial decision making so as to effectively handle statistical data vis-a-vis the application of these tools.
COM-GE-3046 (B)	Operation Research in Business	<ul style="list-style-type: none"> • To Provide knowledge to the learners in the field of decision making, Queuing Theory, replacement techniques and reliability so as to equip them for business forecasting and decision making
COM-SEC-HC-3054(A)	Entrepreneurship	<ul style="list-style-type: none"> • Comprehend the role of entrepreneurship in social economic development at local, state, national and global level. • Evaluate the necessary techniques and formalities involved in building start-ups. • Develop an entrepreneurial mindset and zeal to pursue entrepreneurship as a profession and reap the benefits of self-employment
COM-SEC-HC-3054(B)	New Venture Planning	<ul style="list-style-type: none"> • Understand the process of identifying new business opportunities, researching and developing a business concept and analyzing the resources and strategies necessary to implement. • Learn about startups and how new ventures can be fruitfully operated.

SEMESTER-IV

COM-HC-4016	Cost Accounting	<ul style="list-style-type: none"> • To acquaint with the basic concepts used in cost accounting. • Learn about various elements of cost like Materials, Labour and Overheads. • Learn the concept and calculation of cost in special situation like Job Costing, Contract Costing and Process Costing. • Acquire knowledge of Integral and Non-Integral System
COM-HC-4026	Business Mathematics	<ul style="list-style-type: none"> • To provide the learners with the basic knowledge of mathematical tools so as to familiarise them with the application of these tools in business and economic situations.
COM-HC-4036	Human Resource Management	<ul style="list-style-type: none"> • Gain knowledge of the processes to apply Human Resource Management Principles and techniques in dealing with human capital in organizations. • Understand emerging challenges of HRM, methods of acquiring human resource, training them and measuring their performances. • Learn issues related to Voluntary Retirement Scheme (VRS), downsizing, fringe benefits, HRIS, HRA, social security, employee welfare and ethics in HRM.
COM-GE-4046 (A)	Indian Economy	<ul style="list-style-type: none"> • To give a clear picture of the major problems of Indian economy and their solutions. • To understand the history of growth and development of the economy. • To understand reforms introduced. • To inculcate spirit of entrepreneurship

COM-GE-4046 (B)	Micro Finance	<ul style="list-style-type: none"> • Make the students understand the basic concepts of micro-finance and its importance. • Develop understanding about the institutional structure of microfinance in India. • Develop understanding about the management of micro-finance institutions. • Impart knowledge about microfinance in Indian context.
COM-SEC-HC-4054 (A)	E-Commerce	<ul style="list-style-type: none"> • To provide knowledge about various ecommerce tools, techniques, security issues for conducting business transactions through electronic means. • To Provide practical skills for online transaction, e-payment and web designing methods etc.
COM-SEC-HC-4054	(B) E-Filing of Returns	<ul style="list-style-type: none"> • Acquire concepts and practical knowledge about E-filing of Returns Learn how to register on Income Tax E-filing Website and file various Income Tax returns. • Learn about the concept of TDS and E-filing of TDS returns. • Acquire the knowledge about the relevant notification regarding E-filing of GST returns and the process of filling the same.
SEMESTER-V		
COM-HC-5016	Principles of Marketing	<ul style="list-style-type: none"> • Gain basic knowledge of concepts, principles, tools and techniques of marketing. • Understand about marketing mix components, consumer behaviour, market segmentation, consumerism. • Apply the learnt concepts in the context of recent developments in marketing.
COM-HC-5026	Fundamentals of Financial Management	<ul style="list-style-type: none"> • Familiarize the students with the principles and practices of financial management.
COM-DSE-HC-5036(A)	Management Accounting	<ul style="list-style-type: none"> • Acquire conceptual knowledge of various tools and techniques of Management Accounting. • Development of Managerial decision-making skill. • Learn the preparations of various budgets required in a business organisation. • Acquire the knowledge of Standard Costing and variance analysis
COM-DSE- HC-5036(B)	Advanced Financial Accounting	<ul style="list-style-type: none"> • Advanced knowledge on Financial Accounting applicable in Business of special nature and on Government Accounting. • Learn the accounting treatment for preparation of Royalty Accounts. • Acquire the knowledge of Insurance claim and Departmental accounts. • Learn the accounting treatment of Amalgamation and dissolution of Partnership firm
COM-DSE- HC-5036(C)	Advertising	<ul style="list-style-type: none"> • Acquire knowledge of the basic concepts of advertising as a promotional tool and medium of communication. • Understand major media types, developing advertising appeals and measuring advertising effectiveness in view of social, ethical and legal aspects of advertising in India.
COM-DSE- HC-5036(D)	Banking	<ul style="list-style-type: none"> • Provide knowledge of Banking principles, procedures and techniques in accordance with current legal requirements and professional standards.
COM-DSE- HC-5036(E)	Computerised Accounting System	<ul style="list-style-type: none"> • Provide skills for designing Computer based accounting system
COM-DSE- HC-5036(F)	Indian Financial System	<ul style="list-style-type: none"> • Provide students the basic knowledge of Indian Financial System and its components, institutions and their functions.

SEMESTER-VI

COM-HC-6016	Auditing and Corporate Governance	<ul style="list-style-type: none"> • Acquire knowledge of auditing principles, procedures and techniques in accordance with current legal requirements and professional standards • Acquire knowledge of conducting audit of Limited Company • Learn about Cost audit, Tax audit and Management audit • Get an overview of the principles of Corporate Governance and Corporate Social Responsibility
COM-HC-6026	Indirect Tax Laws	<ul style="list-style-type: none"> • Acquire the basic knowledge of Indirect Tax Laws • Learn various provisions of Central Excise and Custom Laws • Acquire knowledge about the structure of GST in India • Learn the procedure of registration, levy and collection of Tax under GST.
COM-DSE- HC-6036(A)	Fundamentals of Investment	<ul style="list-style-type: none"> • Familiarize the students with different investment alternatives. • Introduce students to the framework of investment analysis and valuation • Highlight the role of investor protection.
COM-DSE- HC-6036(B)	Consumer Affairs and Customer Care	<ul style="list-style-type: none"> • Know their rights as a consumer, the social framework of consumer rights and legal framework of protecting consumer rights. • Understand the procedure of redressal of consumer complaints and the role of different agencies in establishing product and service standards • Comprehend the business firm's interface with consumers and the consumer related regulatory and business environment.
COM-DSE- HC-6036(C)	Advanced Corporate Accounting	<ul style="list-style-type: none"> • Acquire conceptual knowledge of accounting standards • Learn about Corporate Annual Reports – its contents and Provisions • Learn about the preparation of Liquidators Final Statement of Accounts • Learn about the preparation of accounts of Banking and Insurance Companies
COM-DSE- HC-6036(D)	International Business	<ul style="list-style-type: none"> • Familiarize the students with the concepts, importance and dynamics of international business • Highlight India's involvement with global business. • Theoretical foundations of international business to the extent these are relevant to the global business operations and developments.
COM-DSE- HC-6036(E)	Industrial Relations and Labour Laws	<ul style="list-style-type: none"> • Learn the concept of employer-employee relations discipline, collective bargaining, workers participation in management, arbitration, adjudication and negotiations to manage industrial disputes and conflicts. • Evaluate the different labour laws related to trade unions, industrial disputes, provisions relating to health, safety, welfare measure and working hours in factories.
COM-DSE- HC-6036(F)	Business Research Methods and Project Work	<ul style="list-style-type: none"> • Learn Research Methodology • Demonstrate innovative thinking/ideas for future applications • Orient the students for research work • Acquire practical experience of Field Survey and working with various secondary datasets.

IV. PROGRAMME OUTCOME – BCA

DEPARTMENT OF COMPUTER SCIENCE (BCA) DARRANG COLLEGE, TEZPUR

Programme Outcomes of BCA

The completion of the BCA Programme shall enable a student to:

- i) To communicate technical information both orally and in writing
- ii) Apply the knowledge gained in core courses to a broad range of advanced topics in computer science, to learn and develop sophisticated technical products independently.
- iii) To design, implement, and evaluate computer-based system, process, component, or program to meet desired needs by critical understanding, analysis, and synthesis
- iv) Identify applications of Computer Science in other fields in the real world to enhance the career prospects
- v) Realize the requirement of lifelong learning through continued education and research.
- vi) Use the concepts of best practices and standards to develop user interactive and abstract application
- vii) Understand the professional, ethical, legal, security, social issues and responsibilities

Course outcome of BCA Programme

Sl. No.	Semester	Course Code and Course Name	COURSE OUTCOMES
1	1 st	BCA-HC-1016 Introduction to C programming	At the end of the course, the student will 1. Understand concepts of data representation, information processing and coding systems. 2. It will help understand algorithm and its uses. 3. understand a programming language syntax and its definition. 4. Be able to write simple programs in C language by using basic control structures (conditional statements, loops, switches, branching, etc.). 5. be able to create a programmable model for a problem given. 6. Understand a function concept and how to deal with function arguments and parameters. 7. Be able to Use Array and pointers.
		BCA-HC-1026 Computer Fundamentals & ICT Hardware	At the end of the course, the student will have detail knowledge about the different components of a computer and their functioning. They will also gather knowledge about of data representation, information processing and computer arithmetic.
		BCA-HG-1026 Office Automation	At the end of this course the students will: be able to create documents, spreadsheets, make small presentations and would be acquainted with internet. They will be able to use different inbuilt tools for better creation and presentation of documents. It will help them for efficient Internet Research as well as General Office Skills like File Management, Record Filing, Telephone & Email.
		ENG-AE-1014 English Communication	At the end of this course the students will: Be able to identify deviant use of English both in written and spoken forms. They will be able to recognize the errors of usage and correct them and write simple sentences without committing errors of spelling and grammar and developing own competence in using the language. It will help them to use language for speaking with confidence in an intelligible and acceptable manner
2	2 nd	BCA-HC-2016 Mathematics –I	At the end of this course the students will: have knowledge of basic mathematical concepts and techniques like Set theory, Matrix and determinant and their uses.
		BCA-HC-2026 Digital Logic Fundamentals	At the end of this course the students will: Know the characteristics of various digital circuit components; Understand the utilization of components; Learn Postulates of Boolean algebra and to minimize combinational Functions. Design and analyze combinational and sequential circuits and Know about the logic families and realization of logic gates.
		BCA-HG-2016 Basic Electronics	Will learn in detail about different types of analog and digital circuit and their uses.

		ENV-AE-2014 Environmental Studies	At the end of this course the students will be able to understand environmental studies&its importance. They will be able to understand the various types of pollution and hazards caused by them and will understand ways to monitor environment and the various greentechnologies and will have knowledge about the various Acts enacted for the protection of the environment.
3	3 rd	BCA-HC-3016 Software Engineering	At the end of this course the students will be able to understand the requirement of end-user and to do different types of system analysis and study including feasibility study. It will also enable them to design and implement a system to making a software.
		BCA-HC-3026 Data Structure and Algorithms	At the end of this course, a student will be able to understand and use the process of abstraction using a programming language. It will help them to analyse step by step and develop algorithms to solve realworld problems and implementation of various data structures like Stack, Queue, Linked Lists, Trees and Graphs. They will have knowledge of various searching and sorting techniques
		BCA-HC-3036 Database Management System	At the end of this course, a student will be able to design and implement properly structured databases that match the standards based under realistic constraints and conditions. The learners will be able to comprehend the use of SQL (Structured Query Language) to define and manipulate database information and to describe and develop Relational Algebra and Relational Calculus queries
		BCA-SE-3014 Web Technology	At the end of this course, a student will be able to create static and dynamic web pages using HTML, XHTML, DHTML and CSS (Cascading Style Sheet). They will be able to build dynamic web pages using JavaScript (Client-side programming).
		BCA-HG-3026 Positive Psychology	At the end of this course, a student will be able to understand basic concepts of positive psychology and to identify and appreciate the strengths in themselves and others. They will have an awareness of different applications and implications of positive psychology in day to day life.
4	4 th	BCA-HC-4016 Computer Organization and Architecture	At the end of this course the students will be able to understand the basics of instructions sets and their impact on processor design and to demonstrate an understanding of the design of the functional units of a digital computer system. The learners will be able to evaluate cost performance and design trade-offs in designing and constructing a computer processor including memory and to design a pipeline for consistent execution of instructions with minimum hazards. Will have ability to recognize and manipulate representations of numbers stored in digital computers.
		BCA-HC-4026 Mathematics-II	At the end of this course, the students will have knowledge and understandings of concept like Graph Theory, Logic etc.
		BCA-HC-4036 Object Oriented Programming in C++	At the end of this course, the students will have knowledge and understandings of concept like <i>Object and Class</i> , Encapsulation, Constructor, Abstraction, Polymorphism, Inheritance. They will be able to apply the different types of polymorphism and inheritance and other concept of object-oriented programming in a solvable problem.
		BCA-SE-4034 Advanced Web Technology	At the end of this course, a student will be able to create dynamic web pages using PHP and other server-side programming languages. They will be able to interact with database component using different server-side programming languages.
		BCA-HG-4026: Information Security and Cyber Laws	At the end of this course, a student will be able to understand the different forms and types of digital crime. They will get knowledge of Cryptography techniques and its applications. They will also get some knowledge about the provision of different punishment for any kind of cyber crime under IT Act 2008.

5	5 th	BCA-HC-5016 Java Programming	At the end of this course, a student will be able to write basic programs in Java programming language. They will also be able to understand and use concepts like objects and classes, names of special functions, exception handling, multithreaded Java programs
		BCA-HC-5026 Operating System	At the end of this course student will have detailed knowledge of different functions of operating system like Memory Management, Process Management, I/O Management, file management etc.
		BCA-HE-5016 Project/Dissertation	The students will work on any project (basically a software development project) based on the concepts studied in core/elective or skill based elective courses. The project should be based on real-life important topics in Computer Science and IT. The learner should be able to develop their skills in the world of technology, innovation, and research.
		BCA-HE-5046 Programming in Python	At the end of this course, a student will be able to write basic programs in Python programming language. They will also be able to understand and use different concepts like function, methods, list, string, tuple, data structure and object-oriented programming.
6	6 th	BCA-HC-6016 System Administration using Linux	At the end of this course, a student will be able to understand the role and responsibilities of a Unix system administrator. They will also be able to install and configure the Linux operating system, manage the resources and security of a computer running Linux at a basic level and to make effective use of Unix utilities and scripting languages
		BCA-HC-6026 Computer Networks	At the end of this course, a student will be able to understand the different functions of different layers of ISO-OSI Model.
		BCA-HE-6036 Multimedia and Applications	At the end of this course, a student will be able to design basic graphics application programs, including animation and design applications that display graphic images to given specifications
		BCA-HE-6066 Artificial Intelligence	At the end of this course, a student will have basic understandings of different AI Concepts like knowledge representation, and understanding natural languages. They will also be able to write basic programs in PROLOG.

V. PROGRAMME OUTCOME – BSC (BIOTECHNOLOGY)

DEPARTMENT OF BIOTECHNOLOGY (BSC) DARRANG COLLEGE, TEZPUR

Details of Programme outcomes and Course outcome of B.Sc, Biotechnology Programme

Programme outcomes of B.Sc, Biotechnology Programme

After completing the B.Sc. Biotechnology programme, a student is expected to achieve the below-mentioned programme outcomes:

Programme outcome 1: Students develop competencies in the area of basic and applied biological sciences.

Programme outcome 2: Augmenting the subject acquaintance of students by using traditional and modern ICT based teaching methods.

Programme outcome 3: To enrich students' understanding and train them in various branches of Biotechnology such as biochemistry, genetics, molecular biology, immunology, enzymology, fermentation technology, environmental biotechnology, Bio-analytical tools, Genomics and proteomics, Recombinant DNA technology, Biotechnology and human welfare etc.

Programme outcome 4: Biotechnology is an interdisciplinary course, so it helps the students to acquire technological competence by connecting disciplinary and interdisciplinary aspects of biotechnology.

Programme outcome 5: Acquire knowledge in students of biotechnology enabling their applications in industry and research.

Course outcome of B.Sc, Biotechnology Programme

Sl. No.	SEMESTER	PAPER CODE & TITLE	COURSE OUTCOMES	UNIT/ CHAPTER	BLOOM'S TAXONOMY LEVEL
1	1 st Semester	Introduction to the living world	<ul style="list-style-type: none"> ➤ This course/paper make students familiar with the living world i.e., about different living processes, how species live with interactions with another species and environment etc. 	1,2,3,4,5	Remembering, Understanding
2	2 nd Semester	Mammalian Physiology (BIT-HC-2016)	<ul style="list-style-type: none"> ➤ This paper explain mammalian anatomy and physiology: describe cellular levels of organization, and the basics of biochemistry and cell biology. ➤ It make students understand the physiological and biochemical phenomenon such as digestion, movement, co-ordination, sensory and motor mechanisms, circulation etc. 	1,2,3,4	Understanding, Remembering, Analyzing
3	2 nd Semester	Plant Physiology (BIT-HC-2026)	<ul style="list-style-type: none"> ➤ Plant physiology concerned with functional aspects of plants, all internal metabolic activities of plants. ➤ It makes students familiar to Photosynthesis & respiration process etc. ➤ Explains the growth and development of plants, the transport phenomenon of water and transpiration. 	1,2,3,4	Understanding, Remembering, Analyzing
4	2 nd Semester	Developmental Biology (BIT-HG-2046)	<ul style="list-style-type: none"> ➤ Developmental biology explains to understand how an organism develops- how a single cell becomes an organized grouping of cells that is then programmed at specific times to become specialized for certain tasks. 	1,2,3,4	Understanding, Remembering
5	2 nd Semester	EVS (ENG-AE-1014)	<ul style="list-style-type: none"> ➤ This paper will be useful for students in developing ideas on environmental issues ➤ To make students aware of sustainable development and conservation of our environment at large. 	1,2,3,4,5	Remembering Understanding Applying

6	3 rd Semester	Genetics (BIT-HC-3016)	<ul style="list-style-type: none"> ➤ This paper concerned with the history and scope of Genetics. ➤ To study the laws and concepts of Mendelian inheritance. ➤ Principles of deviation from Mendelian inheritance with examples. ➤ Concepts of multiple alleles with examples. ➤ Understanding the mechanism of sex determination in different organisms. ➤ Application of statistical concepts used in health medical science, plants and animal system ➤ Interpretation of results commonly used in statistical analysis 	1,2,3,4	Understanding, Remembering
7	3 rd Semester	General Microbiology (BIT-HC-3026)	<ul style="list-style-type: none"> ➤ This fundamental paper on Microbiology discusses the importance of microorganisms ➤ The course throws light on types of microorganisms in and around humans ➤ At the end of the course, the student has understanding on the metabolism and mechanism of microbial life 	1,2,3,4	Understanding, Remembering
8	3 rd Semester	Chemistry I (BIT-HC-3036)	<ul style="list-style-type: none"> ➤ This paper helps students to understand/critically examine the chemistry of transition metals, structure and bonding. ➤ Students will be able to explain the fundamentals of equilibrium and non-equilibrium thermodynamics, statistical mechanics, polymer chemistry and apply the concepts to solving problems. 	1,2,3,4	Understand and Remember
9	3 rd Semester	Enzymology (BIT-SE-3014)	<ul style="list-style-type: none"> ➤ It helps the students to learn the significant features of the biochemical catalysts. ➤ It helps the students to learn the methodology involved in assessing the enzyme activity and mechanism of enzyme action. ➤ It illustrates the enzyme catalysis, kinetics and regulatory aspects. 	1,2,3,4	Understanding, Remembering, Analyzing

10	3 rd Semester	Bioethics and Biosafety (BIT-HG-3016)	<ul style="list-style-type: none"> ➤ This course gives students a brief knowledge about IPR (Intellectual Property rights) especially about patent and Indian Patent Law. ➤ It makes students accustomed with the concepts of Bioethics and how bioethics plays a very important role in the field of Biology and Biotechnology ➤ It makes students acclimatized to the concept of Biosafety and why/how biosafety is important while working in different levels of biological/ biotechnological laboratories. ➤ At the end of the course, the student would have gained sufficient knowledge to act as a responsible scientist and environmentally conscious. 	1,2,3	Understanding, Remembering, Analyzing, Applying
11	4 th Semester	Molecular Biology (BIT-HC-4016)	<ul style="list-style-type: none"> ➤ This paper deals with understanding the molecular aspects of the biology. ➤ It majorly emphasizes the concepts of central dogma of molecular biology spanning from DNA Replication till Protein synthesis and Reverse transcription. ➤ It also helps in understanding the concepts of cellular function. 	1,2,3,4	Understanding, Remembering, Analyzing
12	4 th Semester	Immunology (BIT-HC-4026)	<ul style="list-style-type: none"> ➤ This course gives an overview on the immune system including organs, cells and receptors. ➤ The students learn about molecular basis of antigen recognition, hypersensitivity reaction, antigen-antibody reactions etc. ➤ The course develops in the student an appreciation for principles of immunology and its applications in treating human diseases. 	1,2,3,4	Understanding, Remembering, Analyzing
13	4 th Semester	Chemistry II (BIT-HC-4036)	<ul style="list-style-type: none"> ➤ Students will able to describe/examine the concepts and theories of chemical kinetics and electrochemistry, and the applications of molecular dynamics, fast reactions and energy storage. 	1,2,3,4	Understanding, Remembering

14	4 th Semester	Industrial Fermentations (BIT-SE-4014)	<ul style="list-style-type: none"> ➤ This course/paper aims to make students familiar with different fermentations processes used in Industries. ➤ There is a lot of industrial usage of the fermentation process. Fermentation is used to produce antibiotics, several vaccines, and insulin etc. Foods such as bread, beer, wine, and cheese are produced by the fermentation process. Single-cell protein production requires fermentation. 	1,2,3,4	Understanding, Remembering
15	4 th Semester	Entrepreneurship Development (BIT-HG-4016)	<ul style="list-style-type: none"> ➤ This course is to create awareness about entrepreneurship among students. This course focuses on motivating students for entrepreneurship. 	1,2,3	Understanding, Remembering, Analyzing
16	5 th Semester	Bioprocess Technology (BIT-HC-5016)	<ul style="list-style-type: none"> ➤ The course aims to provide fundamental insights to bioprocess technology, techniques and basic principle components of fermentation technology. ➤ It exploits microbial fermentation and their uses for manufacturing of products which have huge industrial significance. ➤ At the end of the course, the student will have a better appreciation for the role of biotechnology in industry using microbes. 	1,2,3,4	Understanding, Remembering
17	5 th Semester	Recombinant Technology (BIT-HC-5026)	DNA <ul style="list-style-type: none"> ➤ Familiarize the students with basic concepts of genetic engineering. ➤ Outline the fundamental steps of genetic engineering and describe these versatile tools and techniques employed in genetic engineering. ➤ Discuss the techniques used to probe DNA for specific gene of interest. ➤ Explain the methodology of PCR and its applications. ➤ Understanding the applications of rDNA technology from academic and industrial perspective. 	1,2,3,4	Understanding, Remembering

18	5 th Semester	Bioinformatics (BIT-HE-5016)	<ul style="list-style-type: none"> ➤ This paper introduces the students to concepts in bioinformatics. ➤ The student will be able to apply basic principles of biology, computer science and mathematics to address complex biological problems. 	1,2,3,4	Understanding, Applying, Analyzing
19	5 th Semester	Ecology & Environmental Management (BIT-HE-5026)	<ul style="list-style-type: none"> ➤ To make students familiar with the concepts of ecology and how all the living beings live in the world interacting with the environment. ➤ The students learn about ecology, biogeochemical cycles, evolution and biomes, biosphere, population ecology etc. ➤ Students will know about the environmental pollutions and how to manage those. 	1,2,3,4	Understanding, Remembering, Analyzing
20	6 th Semester	Bio-Analytical Tools (BIT-HC-6016)	<ul style="list-style-type: none"> ➤ This skill based course will teach the students the various instrumentations that are used in the analytical laboratories. ➤ This course covers both fundamental and applications of the instruments that are routinely used for the characterization of biomolecules. ➤ At the end of the course, the student has the basic knowledge on the theory, operation and function of analytical instruments. 	1,2,3,4,5	Understanding, Remembering
21	6 th Semester	Genomics & Proteomics (BIT-HC-6026)	<ul style="list-style-type: none"> ➤ This course aims to provide the knowledge and practical skills of functional genomics and proteomics ➤ The course also teaches the techniques used in functional genomics. ➤ By the end of the course, students will have the necessary learning to radically advance our understanding of life and transform medicine. 	1,2,3,4	Understanding, Remembering, Analyzing

22	6 th Semester	Biostatistics (BIT-HE-6016)	<ul style="list-style-type: none"> ➤ This course imparts the knowledge of basic statistical methods to solve problems ➤ By the end of the course, the students are able to appreciate the importance of statistics in research and prepares them for a career in research 	1,2,3,4	Understanding, Analyzing, Applying
23	6 th Semester	Dissertation/ Project (BIT-HE-6026)	<ul style="list-style-type: none"> ➤ To make students familiar with the different instruments present in the department and how to use them for research purposes. ➤ Students come to know about how to frame a small research project and achieve its goals. ➤ Students should be able to critically examine research articles, and improve their scientific writing/communication skills. 	-	Understanding, Analyzing, Applying

VI. PROGRAMME OUTCOME – MA (ASSAMESE)

DEPARTMENT OF ASSAMESE (MA) DARRANG COLLEGE, TEZPUR

Programme outcomes:

1. Understand the history of Sanskrit literature and its various dimensions.
2. Understand the rise and development of the Assamese language.
3. Acquire extensive knowledge about Assamese poetry and prose.
4. Understand the art of translation and editing.
5. Develop an understanding of the philosophy behind book-editing.
6. Know about development of different trends of world literature.
7. Know the history of Modern Indian literature and its impact.
8. Understand the relation between ethic and Modern literature.
9. Understand different trends of Assamese novels.
10. Understand the linguistic and cultural aspects of translation.
11. Understand the concept of romanticism, Modernism and Post Modernism.
12. Understand the Indian systems of evaluation of literature.
13. Understand categorization of Assamese poetry into various phases.
14. Develop a critical understanding of ethnic literature of North-East India.
15. Assess the systems of ancient Indian literary critics.
16. Develop an understanding of critical writing.
17. Know the relation between religion and development of Assamese language.
18. Develop an understanding of the social history in the light of the rise of the Assamese language.
19. Understand the changes that have occurred in Assamese prose.
20. Assess the development of major trends of Assamese short stories.
21. Understand the concepts of classicism, romanticism, modernism, structuralism, post-structuralism, feminism with the help of a few selected texts.
22. Understand applied linguistics.
23. Assess the features of Tibeto-Burman language of Assam.
24. Assess the role of women in the context of greater Assamese society and culture.
25. Understand various trends in linguistics.
26. Acquire knowledge about language acquisition.
27. Understand the various facets of editing.

Course Outcomes:

Sl No	Semester	Paper Code & title	Course Outcomes
MA (Honours) Assamese			
1	I	ASM-1016 Rise and development of the Assamese language.	<ul style="list-style-type: none">• Reconstruct the social history of Assam in the light of the rise of Assamese language.• Justify the relationship between tradition of religion and formation of Assamese language.• Compare and contrast the social history of early Assamese form of language with that of the Modern Assamese language.
2	I	ASM-1026 History of Assamese literature: 1889-2015 outcomes.	<ul style="list-style-type: none">• Knowledge on phases of romantic and Modern Assamese literature.
3	I	ASM-1036 Study of culture of Assam.	<ul style="list-style-type: none">• Reconstructed religious belief of the people of ancient Assam and compare it with that of the rest of ancient India.
4	I	ASM-1046 History of Sanskrit Literature: History, features and genres.'	<ul style="list-style-type: none">• Knowledge on the history and heritage of Indian Literary tradition.• Grasp the Indianness in Indian literature.• Foundational knowledge on the features of Sanskrit literature which is considered as the mother of all regional literature including Assamese.
5	I	ASM-1054 Creative writing	<ul style="list-style-type: none">• Compare and contrast the genres of creative writing on the basis of imitation and imagination.• Create a piece of literature and justify its quality.• Describe the experience of reading a piece of literature.
6	II	ASM-2016 Assamese poetry: 1889-2015	<ul style="list-style-type: none">• Categorise Assamese poetry (1889-2015) in group of Romantic and Modern phases.• Describe experience of reading Romantic and Modern Assamese poetry.• Knowledge on the differences between Romantic and modern poetry.
7	II	ASM-2026 Assamese Prose: 1846-2015	<ul style="list-style-type: none">• Trace the development of Assamese prose from 1846 to 2015.• Interpret the changes occurring in Assamese prose.• State the present features of Assamese prose.
8	II	ASM-2036 Assamese Drama and performance: 1857-2015	<ul style="list-style-type: none">• Reconstructed the history of Assamese Drama and performance since 1857.• Enumerate the trends of Assamese Drama since 1857.
9	II	ASM-2046 Indian criticism.	<ul style="list-style-type: none">• Interpret literature from Indian point of view.• Trace the thought systems of ancient Indian literary critics.• Describe the Indian systems of evaluating literature.

10	II	ASM-2054 Editing.	<ul style="list-style-type: none"> • Know about the phases of book history in India. • Critique a manuscript. • Know the philosophy behind the book editing.
11	III	ASM-3016 Assamese Novel: 1890-2015.	<ul style="list-style-type: none"> • Categorize the Assamese Novels into different trends. • Know the effects of the socio-political development on Assamese novels. • Design a spectrum of different themes used in Assamese novels.
12	III	ASM-3026 Translation: Theory and practice	<ul style="list-style-type: none"> • Study on the linguistic and cultural aspects of translation. • Know the problems of different kinds of translation. • Justify the quality of different texts of translation.
13	III	ASM-3066 Varieties of the Assamese language.	<ul style="list-style-type: none"> • Know the different varieties of the Assamese language in the context of contemporary linguistics. • Organize geographical and social varieties of Assamese language.
14	III	ASM-3096 Assamese Vaisnavite, Saiva and Sakta literature	<ul style="list-style-type: none"> • Elaborate the concept of Vaishnavism, Saivism and Saktism and orange literary products under titles like Vaishnava, Sakta and saiva literature • Interpret religious beliefs i.e. Vaishnava, Saiva and Sakta with keeping in mind their humanitarian outlook. • Generate human values out of the religious outlook prevalent in Assam. • Categorize religious literature of Assam and compare Assamese Vaishnavite literature with Assamese Saiva-Sakta literature.
15	IV	ASM-4016 Textual criticism and manuscript Reading.	<ul style="list-style-type: none"> • To study the manuscript tradition in different part of the world. • Generate interest in preservation and restoration of intellectual heritage of a nation.
16	IV	ASM-4026 Applied linguistics	<ul style="list-style-type: none"> • Knowledge on computational linguistics. • Plan to review literature applying discourse, analysis. • State the tools for analyzing the Assamese language.
17	IV	ASM-4046 Assamese short story: 1889-2015	<ul style="list-style-type: none"> • Know the development of the major trends of Assamese short stories. • Describe the emotional effect of reading a few significant Assamese short stories. • Interpret a short story.
18	IV	ASM-4116 Tibeto-Burman language	<ul style="list-style-type: none"> • Knowledge on the linguistic features of Tibeto-Burman language of Assam. • Study the difference among Rabha, Boro, Mising, Karbi communities and compare the Tibeto-Burman language with Assamese and other Indo-Aryan language. • Knowledge on the influence of Tibeto-Burman language on the Assamese language and vice-versa.

VII. PROGRAMME OUTCOME – MSC (BOTANY)

DEPARTMENT OF BOTANY (MSC) DARRANG COLLEGE, TEZPUR

Programme outcomes:

1. PSO1-Understand the diversity, life cycle pattern, phylogeny and economic values of Cryptogamic and Phanerogamic plants of the NE Region.
2. PSO2-Analyse the biotic and abiotic interactions in different ecosystems. Understanding basic concepts and recent trends in Cytology, Genetics and Plant Breeding, Plant Physiology and Biochemistry, Microbiology, Plant Ecology, Mycology and Plant Pathology
3. PSO3-Train up skill human resources in the field of Angiosperm Taxonomy.
4. PSO4- Perform procedures as per laboratory standards in the above mentioned areas. Understand the application of plant resources in agriculture, healthcare, industry and other environmental issues.
5. PSO5-Use appropriate plant molecular techniques and use of instrumentation related to it.
6. PSO6-Practice safe laboratory procedures, using appropriate protective, biosafety and emergency procedures.
7. PSO7-Documentation and report writing on experimental protocols, results and conclusions.
8. PSO8-Study tours and field visits etc.

Course Outcomes:

1. CO- 00I- IST SEMESTER

BOT1016 Diversity I (Algae, Fungi, Bryophytes)

Comprehend the diversity of lower cryptogams (Algae, Fungi, Bacteria, Phytoplasma and viruses. Collection and study of algae, fungi, bacteria from different localities, Identification up to generic level. Recognize the morphology, anatomy, physiology, reproduction and lifecycle pattern. Their diversification and familiarize with various ecological niche. Positive and negative values.

BOT1026 Diversity II (Pteridophytes, Gymnosperm and Angiosperm)

To know about morphological, anatomical and developmental patterns in the bryophytes, pteridophytes and gymnosperms.

To know about the reproductive parts their development and mechanism reproduction and life cycle pattern.

Thallus and wood anatomy, Mechanical tissues (Collenchyma, Sclerenchyma, Stone cells and Xylem), Secretary tissues (Mucilage Canals, Resin canals, Nectaries, and oil glands), laticifers (Latex cells and Vessels). Economic values of the lower plants.

BOT1036 Ecology, Environment and Resource Management

On completion of this course the students are able to analyze various types of ecosystems, correlate different ecosystems. To analyze the threat and suggest conservative measures. The students are also trained in the environmental impact analysis. Students are able to analyze, monitor various physical, chemical and biological properties of soil water and air.

PRACTICAL

BOT1044 Practical: Algae, Fungi, Bryophytes and Pteridophytes

Comprehend the diversity of lower cryptogams (Algae, Fungi, Bacteria, Phytoplasma and viruses. Collection and study of algae, fungi, bacteria from different localities, Identification up to generic level.

Recognize the morphology, anatomy, physiology, reproduction and lifecycle pattern. Their diversification and familiarize with various ecological niche. Positive and negative values.

BOT1054 Practical: Gymnosperm, Angiosperm, Ecology

Study plant morphology Description of a plant specimen. Study of at least 20 locally available families of flowering plants. Identification of genus and species of locally available wild plants. Preparation of botanical keys at generic level by locating key characters. Knowledge of medicinal plant species. Knowledge of secondary metabolites and its use in taxonomy.

CO-002- IIND SEMESTER

BOT2016 Cytogenetics, Plant Breeding & Evolution

Know about the induction of polyploidy in plants using colchicines, methods of application of colchicine. Isolation of biochemical mutants following physical and chemical mutagenic Isolation of chlorophyll mutants following physical and chemical mutagenic treatments. Isolation of morphological mutants following physical and chemical mutagenic treatments. Karyotype analysis, Meiosis of complex translocation heterozygotes. Meiotic behaviour of monosomy, trisomy in plants and its effect. Chromosomal behaviour in mutagen treated plants. Chromatin organization, Structural and Numerical alterations in chromosomes

BOT2026 Microbiology and Plant Pathology

Ideas about fungal diversity and use of fungi and exploring the fungal organisms for their valuable products, medicine, toxicology etc. Cultivation of fungi for food, fermentation, SCP and other microbial products. Familiar with Fermentation technology. Describe the microorganisms that participate in fermentation – production & processes. Evaluate the impact of different types of microorganisms on the final characteristics of the product. Identify the origin of the principal microorganisms of importance in the industrial environment. Know procedures and strategies for mushroom cultivation. Know the role of microorganisms in different production processes in order to improve these processes and ensure their success.

BOT2036 Plant Physiology and Biochemistry

After completion of the course the students are familiar with various physiological aspects involved in the plant development. Also, the role of enzymes in it and mechanism of photosynthesis, respiration, nitrogen and lipid metabolism. The students are able to isolate starch, pectine and various nutritive products from the plants. Qualitative and quantification of the plant contents and its biochemistry and mode /mechanism of synthesis etc.

PRACTICAL

BOT2044 Practical Paper: Microbiology, plant pathology and Cytogenetics

BOT2054 Practical: Plant Physiology Biochemistry

CO-003- IIRD SEMESTER

BOT3016 Reproductive and Developmental Botany, Biostatistics

Know about plants anatomical structure, their developmental patterns.

Plant reproductive parts development of male, female gametophytes and fruits. Vascular tissues and its constituents by sections and maceration, wood anatomy, TS, TLS and RLS Mechanical tissues (Collenchyma, Sclerenchyma, Stone cells and Xylem), Secretary tissues (Mucilage Canals, Resin canals, Nectaries, and oil glands), laticifers (Latex cells and Vessels). Use of statistical methods in understanding biology. Normal and abnormal secondary growth etc.

BOT3026 Molecular Biology, Plant Biotechnology & Bioinformatics

Know about Equipment's required in Tissue culture Lab Media preparation techniques for different plants Sterilization techniques for media as well as for explants Explant Culture.- Anther culture Pollen culture, Micropropagation. Embryo rescue technique. Somaclonal variation. In vitro mutation. Isolation of plant protoplasts and viability testing. Protoplast fusion techniques. Tissue culture of important Horticultural, medicinal plants. Use of computers in understanding biology i.e., emerging field of computational biology.

BOT3036 Open/Elective Paper Environment and Forest Management

Systematically understand biodiversity and its vital role in ecosystem function Identify the importance of biodiversity in natural environments Critically examine biodiversity and human linkages, and help policy formulating for conservation. Application of knowledge in general communication for public extension. Appreciate the need of biodiversity conservation in the context of various developmental pathways and policy framework that the mankind has been undergoing. Concepts of Hotspots, megadiversity regions of the world. Use of modern methods in plant taxonomy viz. Cytological, chemical, embryological. pollen characters along with micromorphological features. Concept of numerical taxonomy. Concept and use of cladistics, phonetics, and molecular tool in biodiversity studies.

PRACTICAL

BOT3044 Practical - Anatomy, Reproductive and Developmental Botany, Biostatistics

BOT3054 Practical- Molecular Biology, Plant Biotechnology & Bioinformatics

CO-004- IVTH SEMESTER CO-004 / 1- IVTH SEMESTER

SPECIAL PAPER: Angiosperm Taxonomy

BOT4015 - BOT4035 Angiosperm Taxonomy Special Paper I , II & III

Deals with naming and classification of plants their interrelationships and evolution. Deals with recent developments in plant systematic and phylogenetics
Criteria used for classification; phases of plant classification and brief history on account. Botanical Nomenclature: Concept of nomenclature, Binomial nomenclature and its advantages. Taxonomic literatures and use of computers in angiosperms taxonomy. Taxonomic evidences: Morphology, anatomy, embryology, palynology, cytology, phytochemistry and numerical taxonomy

BOT4045- Angiosperm Taxonomy Special Paper

**Dissertation BOT4054 - Angiosperm Taxonomy Special
Paper Practical**

CO-004 / II- IVTH SEMESTER

SPECIAL PAPER: Plant Ecology

BOT4115 - BOT4135 - Plant Ecology Special Paper I , II & III

Strategies adopted by the organisms under changing environment in relation to their biogeographic distribution. The students are made conversant with the following topics- Structure of ecosystem: Functions of ecosystem: Community ecology: Biogeography: Environmental pollution in relation to air, water and soil. Use of fertilizer, pesticides and other chemicals in agriculture and hygiene and their disposal. Climate change: Greenhouse gases, their sources, trends and role, Ozone layer and its depletion (Global warming, Sea level rise, UV radiation) acid rain, Bioindicator and biomarkers of environmental health. Biodiversity: Concept, types and situation in India. IUCN categories. Strategies of conservation: In situ conservation & Ex situ conservation measures. Various act related to Bio Diversity conservation and protection and international conventions. Knowledge on ecology, and ecological dynamics CO2 Ability

to correlate ecological dynamics and regulation of vital processes on earth as biogeochemical cycles CO3 Ability to interpret ecosystem services, ecological resilience, ecological economics, and landscape ecology CO4 Set up experiments to appreciate concepts of Ecology CO5 Critically examine the forces impacting ecosystems viz., climate change, stress, population, consumerism, globalization, land use change On completion of this course the students are able to analyze various types of ecosystems, correlate different ecosystems. To analyze the threat and suggest conservative measures. The students are also trained in the environmental impact analysis. Students are able to analyze, monitor various physical, chemical and biological properties of soil water and air.

BOT4145 - Plant Ecology Special Paper

Dissertation BOT4154 - Plant Ecology Special Paper Practical

CO-004 /III - IVTH SEMESTER

SPECIAL PAPER: Mycology and Plant Pathology

BOT4215 - BOT4235: Mycology and Plant Pathology Special Paper I, II & III

Ideas about fungal diversity and use of fungi and exploring the fungal organisms for their valuable products, medicine, toxicology etc. Cultivation of fungi for food, fermentation, SCP and other microbial products. Familiar with Fermentation technology. Describe the microorganisms that participate in fermentation – production & processes. Evaluate the impact of different types of microorganisms on the final characteristics of the product. Identify the origin of the principal microorganisms of importance in the industrial environment. Know procedures and strategies for mushroom cultivation. Know the role of microorganisms in different production processes in order to improve these processes and ensure their success.

BOT4245 - Mycology and Plant Pathology Special Paper Dissertation

BOT4254 - Mycology and Plant Pathology Special Paper Practical

CO-004 / IV- IVTH SEMESTER

SPECIAL PAPER: Plant Physiology and Biochemistry Special Paper

BOT4265 - BOT4285 Plant Physiology and Biochemistry Special Paper I, II & III

Deals with selected topics of high important plant Physiology and Biochemistry. Plant water relations, Enzyme, Photosynthesis, Respiration, Nitrogen Metabolism, Lipid Metabolism, Plant Growth, Plant Development. Special interest was given to focus on membrane biology, molecular thermodynamics, stress biology and its reference to stress management in plants. Discussions on photoperiodism, vernalization and its utilization in development of genetically engineered plants. After completion of the course the students are familiar with various physiological aspects involved in the plant development. Also, the role of enzymes in it and mechanism of photosynthesis, respiration, nitrogen and lipid metabolism. The students are able to isolate starch, pectine and various nutritive products from the plants. Qualitative and quantification of the plant contents and its biochemistry and mode /mechanism of synthesis etc.

BOT4295 - Plant Physiology and Biochemistry Special Paper Dissertation

BOT4304 - Plant Physiology and Biochemistry Special Paper Practical

VIII. PROGRAMME OUTCOME – MA/ MSC (GEOGRAPHY)

DEPARTMENT OF GEOGRAPHY (MA/MSC) DARRANG COLLEGE, TEZPUR

M.A./M.Sc Programme in Geography (CBCS) effective from the academic year 2016

After the completion of the programme, a student will be able to:

1. Understand the basics of the subject, develop a comprehensive understanding of the discipline,
2. Understanding sophisticated models and techniques,
3. Understand Interdisciplinary field – a field that crosses traditional boundaries between academic disciplines or schools of thought,
4. Understand the Principles and Concepts in Geomorphology – Apply geomorphic concepts and techniques in the field,
5. Enrich Knowledge about glacial, fluvial and Aeolian processes,
6. Know about different phenomena of weather and climate specially vagaries of Indian monsoon and techniques of weather forecasting,
7. Understand plant-animal association in varying habitats and environments,
8. Utilize the knowledge in the field while carrying out research on issues of geomorphology, climate and bio-geography, agriculture and economic geography, proceed with tackling a research problem and the steps one should adopt and the tools and craft a geographer usually employs, learn and acquire the skills in applying the advanced techniques of Remote Sensing, GIS and GPS in their study and research, which will lead them to quality research.
9. Understand the location, distribution and spatial organization of economic activities across the world,
10. Know geographical and other factors which influence man's productivity,
11. Know different farming techniques and modernization of agriculture,
12. Apply the historic and contemporary perspective to explain and approach the real world geographic problems,
13. Develop a better understanding of environment from local to global perspectives,
14. Increase awareness towards environment and to equip with the methodologies of need based sustainable developmental plan,
15. Understand population issue in spatial dimension to diagnose the problem issue arise out of population growth,
16. Understand the settlement, both in urban and rural context and equip students to prepare need based sustainable settlement plans and policies,

17. Develop a better spatial perspective of a country like India with greater physical and social disparity. Such issues have both utilitarian and applied aspects in a broader context,
18. Help the students to portray problems as well as resource based in spatial perspectives and encourage the students to accommodate the significance of dimension in planning and policy making,
19. Understand what methods to use for geographical data analysis. Understand the principles of surveying and mapping,
20. Understand the rationale behind use of remotely sensed data its advantages and disadvantages. Understand how GIS/GPS methodologies can be used to address spatial analysis from the theoretical perspective.
21. Appreciate socio-cultural and political dimensions of geographic phenomena. Understand how language, religion, ethnicity tangent with lebensraum, frontiers and boundaries and influence the geography of a region,
22. Derive and understanding of regional development, its approaches, regionalization techniques and the need for conservation and management of resources for development,
23. Learn the different quantitative, cartographic and surveying techniques and its applications in geographical studies,
24. Sensitize the student about the mechanism of climate and its drivers. Learners will explore the impacts on various sectors viz. hydrosphere, cryosphere, and biosphere. Students further learn different organizational setup and policies related to climate change,
25. Learn the scope of south-east Asian countries in regional collaboration, cooperation, in sustainable environmental and resource management,
26. Acquire applied knowledge how any region can be development through proper planning of the resources and other potentials,

Course Outcomes :

Sl. No.	Semester	Paper Code & Title	Course Outcomes	Unit/Chapter	Fink's Taxonomy Levels
1	I	GGY-1016 Nature of Geography	The paper Nature of Geography aims at explaining the nature of the subject. It throws light on the importance of geography and attempts to enrich knowledge. The paper illustrates the basic concepts as well as technical terms which are building blocks of geographic knowledge along with understanding of sophisticated models and techniques with space-time dimension. Through this paper an understanding of the pure and applied nature of Geography along with the key elements in the discipline is possible. The paper also focuses on the relationship of Geography with natural and social sciences.	Defining the field of Geography; Planet earth as the home of man, Place of Geography in the classification of knowledge; relation of geography with natural and social sciences; multi-disciplinary nature of Geography, Geography as a spatial science; Spatial Concepts in Geography	Foundational knowledge, Understand, Remember
				Concept of space and place; Geographic space (Absolute Space and Relative Space); Spatial Process and Pattern; Spatial Organization; Spatial Relationship; Spatial Interaction; Spatial Integration; Spatial Diffusion; Spatial Modeling; Space-Time Dimension in Geography	Understand, Remember
				Basic Branches and Approaches in Geography: Physical and Human; Systematic and Regional; Ideographic and Nomothetic	Understand, Remember
				Place/Region/Territory and scale factor (macro, meso, micro and space content)	Understand, Remember
				Geography: Pure and Applied; Society-Environment Interface and Applied Geography	Understand, Remember
				Scientific Methods in Geography: Routes to scientific Explanation: Induction and Deduction; Key elements in scientific practice	Understand, Remember
				Modes of explanations in Geography: Cognitive explanation, Morphometric explanation, Cause and effect explanation, temporal modes of explanation, Functional explanation, System analysis	Understand, Remember
				Hagget's Integrated Approaches in Geography: Spatial Analysis, Ecological Analysis and Regional Complex Analysis. 10. Pattern-Process Model for geographic enquiry.	Understand, Remember

2	I	GGY-1026 Geomorphology	The paper Principles and Concepts in Geomorphology highlights on the history of development of geographic ideas along with the recent trends in geomorphology. The paper focuses on the theoretical and conceptual bases, the techniques used in applied geomorphology along with quantitative methods and processes. The development of slopes, morphogenetic regions and geomorphic process study are also discussed in this paper.	History of development of geomorphic ideas; recent trends in Geomorphology	Foundational knowledge, Understand, Remember
				Theoretical bases of Geomorphology: Fundamental concepts in geomorphology: uniformitarianism and catastrophism; system concepts in geomorphology; steady state; and dynamic equilibrium	Understand, Remember
				Concepts and techniques in applied geomorphology: Fluvial geomorphology, Palaeo-geomorphology, Environmental geomorphology	Understand, Remember
				Threshold concepts and applications in geomorphology	Understand, Remember
				Quantitative methods and techniques in geomorphology	Understand, Remember
				Geomorphic processes: endogenetic and exogenetic; Glacial, Fluvial and Aeolian processes	Understand, Remember
				Relationship of climate, vegetation and soil with geomorphic processes	Understand, Remember
				Morphogenetic regions: concept and genesis, differential intensity and rate of operation of geomorphic processes in various morphometric regions	Understand, Remember
				Development of slopes: slope forming processes and slope forms	Understand, Remember
				Methods and techniques of geomorphic process study	Understand, Remember
3	I	GGY-1036 Climatology and Biogeography	The paper Climatology and Biogeography has been divided into two parts. While the first part discusses about the climatology, its field and importance, elements of weather, factors influencing the climate, insolation, global wind system, air masses and fronts along with climatic disturbances, monsoons and classification of world climate among others, the second part concentrates on	Defining the field of Climatology; Importance of Climatology in geographical studies.	Foundational knowledge, Understand, Remember
				Climate and Weather; Elements of Weather; factors influencing climate	Understand, Remember
				Insolation; atmospheric temperature; horizontal and vertical distribution of temperature	Understand, Remember
				Atmospheric Pressure and Global Wind System: Vertical pressure gradient and horizontal pressure system; Surface winds, stratospheric winds, seasonal and local winds	Understand, Remember
				Air masses and Fronts: Characteristics, Origin and modification of air masses, stability and	Understand, Remember

			biogeography in geographic studies. The areas of concern of this part of the paper include the important concepts of biogeography, such as bio-energy cycle, food chain, plant-animal association in varying habitats and ecosystem besides the national forest and environmental policies	instability and their influence on weather and climate	
				Climatic disturbances: cyclones, anticyclones, cloud bursts, drought	Understand, Remember
				Classification of World Climate: Schemes of Koppen and Thornthwaite	Understand, Remember
				Monsoons: Mechanism of development, Distribution of monsoons, Trajectories and Irregularities, Effects of El-Nino, Walker oscillation, etc	Understand, Remember
				Techniques of weather forecasting: conventional and modern	Understand, Remember
				Global warming and climate change and associated impacts and challenges	Understand, Remember
				Defining the field of Biogeography; Its significance, development and approaches	Understand, Remember
				Bio-energy cycles and food-chain	Understand, Remember
				Soil characteristics and their significance	Understand, Remember
				Habitat, Environment and Ecosystem; Plant-Animal Association in varying habitats and environments	Understand, Remember
				Concept of Bio-diversity; Conservation of forest and wild life	Understand, Remember
				National forest and environment policies	Understand, Remember
4	I	GGY-1046 Economic Geography	The paper Economic Geography aims at explaining the significance and theoretical development of this sub branch of geography along with the approaches, concepts and models. Understanding of technology and economic development, economic geography and primary activity, power resources, international trade in selected commodities are key areas of concern in this paper. Besides, the paper also highlights on pattern and problems of manufacturing of selected commodities in USA, UK and Japan.	Field of Economic Geography: Meaning, significance and theoretical development, Approaches to Economic Geography: Theoretical, Institutional and Problem solving	Foundational knowledge, Understand, Remember
				Concepts and Models in Economic Geography: Von Thunen's theory of geographic rent, Spatial Demand Cone, Weberian industrial location model, Suicclair's model, Raw Strong's model, Growth Pole model	Understand, Remember
				Technology and Economic Development: Relation between technology and development, regional disparities in technology applications, levels of economic development-global perspective.	Understand, Remember
				Economic Geography of Primary activity: Geography of pastoral farming, Geography of agriculture, place of agriculture in global economy, critical study of large-scale & small-scale agriculture, Regional pattern of agriculture in the world with	Understand, Remember

				special reference to USA, Israel and China	
				Modernization of Agriculture: Intensification, Crop diversification, Mixed farming	Understand, Remember
				Economic geography of power resources: Global pattern of energy production; Conventional sources of energy - water, coal and petroleum; and non-conventional sources of energy - solar, wind and nuclear	Understand, Remember
				Economic Geography of manufacturing: Patterns and problems of manufacturing (mainly iron and steel and textiles) in the world with special reference to USA, UK and Japan	Understand, Remember
				Economic geography of International trade in selected commodities: Food grain (Rice and Wheat), Tea, Iron and Steel, Petroleum	Understand, Remember
5	I	GGY-1054 Practical on Geomorphology , Climatology and Economic Geography	The paper highlights on Practical utility in the field while carrying out research on issues of climate and bio-geography. This paper has been divided into three sections. The first part - Practicals on Geomorphology helps in developing a deeper understanding about the morphometric analysis, analysis of basin morphology and area-height relationship study. The second part is devoted towards Climatology, here, ways and techniques of climatic data analysis have been discussed. The third part of this paper addresses the practical exercises on mapping and analysis of diverse issues of Economic geography like trend analysis, spatial analysis of crop concentration, determination of level of economic development among many others.	Morphometric Analysis Analysis of Basin Morphology Area-Height Relationship Climograph, Hythergraph and Ergograph, Rainfall dispersion graph, rainfall variability and equipluve maps, Water deficiency and surplus graphs Spatial variation in landuse and cropping pattern of North-East India using pie graph, Trend analysis of production of different commodities with the help of bandgraph and using moving average and least squares methods, Analysis of landholding and income pattern, Choropleth mapping of cropping intensity of N.E. India, Determination of the levels of economic development using simple composite index	Application, Skills, critical thinking, creative thinking, practical thinking

6	II	GGY-2066 Geographic Thought	Introduce the discipline geography and its theoretical development over time. Present contemporary and post-modern perspectives, along with the models that act as a guiding force of the discipline	Geography through the ages; general character of geographic knowledge during the ancient and mediaeval period; impact of explorations and discoveries and European renaissance on the emergence of modern geography	Foundational knowledge, Understand, Remember
				Foundations of modern geography: contribution of German (Humboldt, Ritter, Ratzel), French (Paul Vidal de la Blache), British and American geographers	Understand, Remember
				Evolution of geographic thought (Determinism, Possibilism, Human Ecology, Morphology of Landscape, Areal differentiation) and their impact in the development of the field	Understand, Remember
				Emergence of New Geography: quantitative revolution, school of locational analysis, reactions to nomothetic geography; behavioural, radical and humanistic approaches, existentialism and phenomenology, welfare approach, modernism	Understand, Remember
				Postmodern geography: socio-spatial dialectic and gender perspective, new environmentalism, applied geography	Understand, Remember
				Models in Geography and their applications	Understand, Remember
				Present trend in Indian Geography	Understand, Remember
				Postmodern perspective in Indian Society	Understand, Remember
6	II	GGY-2076 Geography of Environment and Development	To address various issues associated with environment. To related developmental agenda by maintaining pace with environment so that the sole of sustainable development can be achieved.	Meaning of environment; Components of environment and their interrelationship and functioning; Natural and Human environment	Foundational knowledge, Understand, Remember
				Defining Environmental Geography: emergence of environmental geography as a branch of geography; scope and significance of environmental geography	Understand, Remember
				Man-Environment Relationship: historical perspectives on man's interaction with environment; population growth and environment; approaches to the study of man environment relationship	Understand, Remember
				Ecosystem: concept and types of ecosystem;	Understand, Remember

				functioning of ecosystem; Energy flow in ecosystem; bio-geochemical cycles; biosphere as an ecosystem	
				Man and Atmosphere: man as a factor of climate change; industrialization-urbanization and climate; greenhouse effect and global warming	Understand, Remember
				Development processes: Nature and trend of development-global and national perspective	Understand, Remember
				Environment and Development: concept of environment and development; sustainable development	Understand, Remember
				Global Environmental Problems: types and extent of environmental problems, area specific major environmental issues and problems	Understand, Remember
				Environmental Pollution: factors of environmental pollution; types of pollution; major areas of environmental pollution; effects of environmental pollution	Understand, Remember
				Environmental Hazards and Disaster: meaning and types; tectonic disasters; climatic hazards; flood hazards with special reference to floods of Brahmaputra and Barak valleys, Assam	Understand, Remember
				Environmental Management: concept of environmental management; environmental Impact assessment; approaches of environmental management; global and regional Environmental programs and policies.	Understand, Remember

7	II	GGY-2086 Population and Settlement Geography	Enable the students to understand the issues associated with population phenomena both in development and developing world. Understand the field of settlement geography in respect of different settlement models, growth of settlement and rural urban dichotomy	Defining the field of Population Geography; its emergence, trend of development and Significance	Foundational knowledge, Understand, Remember
				Population theories: Malthus theory of population growth; Demographic transition theory	Understand, Remember
				Population Data: Nature, Sources and associated problems	Understand, Remember
				Components of population growth: fertility, mortality and migration; trend of population growth in the world and its different parts; patterns, processes and consequences of migration	Understand, Remember
				Demographic and socio-economic characteristics of population and associated issues: Global perspective and comparison between developed and developing countries	Understand, Remember
				Population- resource relationship, conceptual bases of under population, optimum population, over population and population explosion, population- resource regions.	Understand, Remember
				Defining the field of settlement of geography; its development trend, significance and approaches	Understand, Remember
				Origin and growth of rural and urban settlements; Characteristics of rural and urban settlements; Spatial patterns of settlements	Understand, Remember
				Morphology of rural and urban settlements; theories related to internal structure of urban settlements; distance-decay rule in urban context	Understand, Remember
				Rural-urban relationship: dichotomy and continuum; settlement hierarchy with reference to central place theory; concept of centrality; primate city concept; rank-size rule; concept of urban fringe	Understand, Remember

8		GGY-2096 Geography of Regional Development of India w.s.r.to N.E.India	This course enables the students to development an understanding of India in spatial context, along with its resource based, population, regional disparities of development and India's geographical significance. To develop a better understanding of the North –eastern part of India in respect of its problem and prospects of development	India as a geographical entity; unity in diversity; locational significance	Foundational knowledge, Understand, Remember
				Physical background of regional development: relief, drainage, climate, soil and vegetation	Understand, Remember
				Mineral and power resources and development: iron ore, coal, petroleum and water power potential, and development scenario	Understand, Remember
				Population and development issues: population growth and its socio-economic implications, literacy, urbanization, occupation and social structure and development inequalities	Understand, Remember
				Regional disparities in economic development: agriculture, industry and transport and Communication	Understand, Remember
				India's geo-economic position in Asia and the world; Resource potentials; its economic development policies and international relations	Understand, Remember
				Geography of Regional Development of North-East India, location and strategic significance; the land of seven sisters, Physical characteristics and their relation to development: relief, drainage, climate, soil and vegetation, Natural resources, their utilization and development: forests, coal, petroleum, natural gas and water, and development scenario, Population and development: population growth and distribution, Migration, population characteristics and their socio-economic implications, Agriculture and development: problems of agriculture; agricultural modernization (problems and prospects) and economic development, Spatial pattern of socio-economic development (state level) and strategies for future development	Understand, Remember

9	II	GGY-2104 Practical on Population and Settlement Geography and Regional Development of India and N.E.India	This course enables the students to add a spatial perspective to population and settlement issues through maps and diagrams	Population concentration and density pattern in North East India and Assam, Trend of population growth (Exponential and Non-Linear methods) and population projection of India, N.E. India/Assam/India, Determination of spatial mean center of population, spatial mean center of urban population and settlements of selected areas, Distribution pattern of services/economic activities/settlements using Nearest Neighbour Analysis Statistic, Determination of settlement hierarchy using centrality index, Population Density Gradient Analysis, Mapping volume and direction of population migration in North East India, Analysis of trend of population growth and food production in India, Spatial pattern of population density in Assam (district level) and dispersion of population density in India (state level), Mapping of population distribution of North-East India and analysis of its relationship with Relief, Analysis of connectivity and centrality of transport networks in North East India, Determination of levels of infrastructural development in North East India using simple composite index, Flow pattern of selected commodities of India and N.E. India using standard carto-statistical techniques, Field work (Preferably outside the state)	Application, Skills, critical thinking, creative thinking, practical thinking
10	III	GGY-3116 Quantitative and Cartographic methods in Geography	Students will be given exposure to the use of quantitative and qualitative techniques in geographical analysis including sampling, inferential statistics and analysis of special data. The second part of this course will equip students with mapping and field surveying skills	Methodological developments in geography: quantitative and qualitative; significance of quantification in geographical analysis; limitations of quantitative techniques Significance of cartography in geography; traditional and digital cartography Geographic data matrix; nature and types of geographic data, levels of measurement, data source and acquisition techniques Sampling and its need in geographical data	Foundational knowledge, Understand, Remember Understand, Remember Understand, Remember

				collection; Sampling techniques (Probability and Non-Probability sampling); application of probability in sample selection and sample data analysis	
				Application of inferential statistics in hypothesis testing; parametric and nonparametric tests, selection of significance level	Understand, Remember
				Conceptual basis of quantitative techniques in spatial distribution and concentration, spatial relationship, spatial interaction, spatial diffusion and regional patterns analysis	Understand, Remember
				Principles of surveying; field survey techniques (triangulation, traversing and leveling) and mapping	Understand, Remember
				Principles of mapping; base map preparation; concept of point, line and area; concept of generalization; scale factor; choice of map projection (Zenithal, Conical, Cylindrical and Conventional); map design and layout	Understand, Remember
				Thematic mapping; meaning and type; principles of thematic mapping; basic ideas of isopleth, choropleth and choro-chromatic mapping; concept of three-dimensional representation of geographical data	Understand, Remember
				Techniques of physical and socio-economic data representation and mapping	Understand, Remember
11	III	GGY-3123 Fundamentals of Remote Sensing, GIS and GPS	This is part of the M.A./M.Sc. Geography and provides students with an introduction to remote sensing , GIS and GPS methodologies. Students will learn data acquisition and principles of interpretation of remotely sensed data. They will be instructed in how GIS/GPS facilitate the analysis of RS data	Basic Concepts and Principles of Remote Sensing, Field of GIS: Basic concepts, principles, components and functions, Introduction to GPS technology and its working principles	Foundational knowledge, Understand, Remember
				Significance of remote sensing in geography as spatial data acquisition tool, Airborne and Satellite Remote Sensing: Data products and characteristics, Remote Sensing Data Interpretation: Visual and digital techniques; digital image processing, Application of Remote Sensing in geomorphology, land use/ land cover, forestry, rural and urban landscape study,	Understand, Remember
				Data type and structure of GIS; Raster and Vector	Understand, Remember

				data structure, Spatial analysis techniques and thematic representation of data in GIS, GIS Softwares; Licensed and Open Source, Application areas of GIS in geographical study	
				GPS elements and types of signals and receivers and data acquisition techniques; Accuracy of GPS data; Concept and principle of DGPS, Application areas of GPS in geographical study	Understand, Remember
12	III	GGY-3133 Research Methods in Geography	This course will enable students to: Understand how to approach a research problem. Understand how to collect data, review literature and analyse data	Meaning of research and geographic research; types of research; Introduction to research methodology in geography	Foundational knowledge, Understand, Remember
				Formulation of a research problem, Research design: statement of the problem, objectives, and hypothesis/ research questions, methodology, significance, review of research works and referencing. Inductive and deductive approaches in geographic research, concept development, model building and hypothesis testing. Questionnaire design, data collection, data processing and analysis	Understand, Remember
				Research write-up	Application, Skills, critical thinking, creative thinking, practical thinking
13	III	GGY-3146 Social, Cultural and Political Geography	This course will equip students to: Comprehend the social aspects of geographical phenomena and their interface within the realm of cultural geography. Understand how geography influences political issues and their spatial dimensions	Defining the field of social geography; development of social geography in Anglo-American countries and India, Defining the field of cultural geography; its trend of development and significance, Defining the field of political geography and its significance	Foundational knowledge, Understand, Remember
				Concept of social space, social group, social structure, social differentiation, social diversity, plurality, socio-spatial inequalities, social well-being	Understand, Remember

				Sauer's Morphology of Landscape School Themes and concepts in cultural geography: cultural hearth, cultural area, cultural region, cultural landscape, cultural history, cultural ecology, cultural diffusion and cultural integration Patterns of world cultural regions with reference to (a) language, (b) religion and (c) ethnicity	Understand, Remember
				Historical development of political geography; schools of thought: landscape school, ecology school and organismic school, Approaches to the study of political geography: historical, morphological and functional, Concepts in political geography: lebensraum, state and nation, core- periphery and capital, frontier and boundary, buffer zone, rim-land , geopolitics, heartland and its theory and political economy, International relations; India's relations with neighbours; Act East Policy, Geopolitical problems in global and Indian context	Understand, Remember
14	III	GGY-3156-7 Regional Development Planning	Students will be able to: Understand the concept of a region from a Geographic perspective and its ramifications in planning. Gain and understanding of the various theories and techniques of regionalization and multi level planning	The Concept of region and regional development	Foundational knowledge, Understand, Remember
				Identification of regions: (8 lectures) (a) Resource regions (b) Functional Regions (c) Problem Regions	Understand, Remember
				Conservation and management of resources for regional development	Understand, Remember
				Approaches to regional planning: Synoptic, functional and ad-hoc or specific	Understand, Remember
				Theories of spatial distribution: (a) Central place theory of Christaller (b) Growth Pole theory of Perroux and Boudeville (c) Core-periphery theory of Frederick (d) Cumulative causation theory of Gunnar Myrdal (e) Multi-level Growth Foci concept of R. P. Misra	Understand, Remember
				Methods of regionalization and techniques of regional planning, Decentralization and Multi-level planning, Town and Country Planning	Understand, Remember

15	III	GGY-3164 Practical on Quantitative and Cartographic Methods	To provide students with skills to use quantitative techniques in data analysis and use multivariate analysis. Students will put skills learnt in a previous course to practical use in constructing various projections and in understanding surveying using standard equipment. Students on finishing this course will be equipped with the knowledge of several quantitative techniques applicable to geographic data. Develop skills in map reading, data interpretation of physical geographic and socioeconomic data	Application of elementary matrix algebra in multivariate data analysis, Application of probability distributions (normal, poisson and binomial) in geographical analysis, Application of relevant hypothesis testing techniques (parametric and nonparametric) in geographical data analysis; use of z, t, f and χ^2 (Chi-square) statistics, Simple and multiple correlation and regression analysis; non-linear relationship (ranksize relationship and distance decay) analysis, Spatial interaction, population potential surface, spatial diffusion, shape index and transport network analysis, Techniques of multivariate analysis in areal classification and regionalisation: (a) Triangular graph and combination analysis (b) Composite scores - composite z score and principal component analysis, Data Grouping Techniques for Choropleth mapping and Accuracy Assessment: Equal step, parameters of normal distribution, nested means, quartiles and equal-area, Traversing and topographic surveying with the help of prismatic compass and theodolite, Contouring and profile levelling with the help of dumpy level, Construction of map projections- (i) Zenithal gnomonic (Equatorial case) (ii) Lambert's conical equal-area projection (iii) Gall's cylindrical stereographic projection (iv) Mercator's projection (v) Mollweide's projection, Map reading and analysis, preparation of base map, Representation of physical and socio-economic data using band graph, pie graph, sphere diagram, flow chart, isolines and transect chart, Representation of land and population by topological space diagram (grid cells) for comparative study	Application, Skills, critical thinking, creative thinking, practical thinking
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16	IV	GGY-4176 Environment and Climate Change	This course emphasize on sensitization of climate change. It explores various aspects of climate and associated subject matter. The course is divided into three parts, mechanism of climate change; impacts, adaptation, and mitigation to climate change; Organization and Policies related to climate change. The main objectives are: I. To understand the mechanism of climate system II. To explore the impacts, adaptation and mitigation to climate change III. To assess objectives, policies and reports of various organizations working on climate change	Introduction to ecology and the scientific methods: using observation, experiments and models to understand ecological patterns and processes	Foundational knowledge, Understand, Remember
				Ecology and society: livelihood environment and development, environmental valuation and accounting	Understand, Remember
				Ideologies of environmentalism, Issues of environment and equity	Understand, Remember
				Environment of land, water and forest in North east India	Understand, Remember
				Traditional Ecological Knowledge and belief system	Understand, Remember
				Anthropogenic (green house-Kyoto gases) and natural radioactive forcing (Solar cycles-Milankovich cycle)	Understand, Remember
				Atmospheric circulation, El Niño Southern Oscillation (ENSO), Walker Circulation, Indian Ocean dipole clouds, aerosols	Understand, Remember
				Evaluation of climate models, climate projection and prediction	Understand, Remember
				Climate change: Impacts, vulnerabilities, adaptation and mitigations strategies: global, sectorial, regional)	Understand, Remember
Organization and policies: IPCC, UNCOP, ISA, NAPCC, INCCA	Understand, Remember				
17	IV	GGY4186 Geography of Bhutan, Bangladesh and Myanmar	To have a basic understanding of the regional geography of selected south Asian countries in the context of growing importance of the region and India's look east policy	Location and situation of Bhutan; locational significance in relation to India; geo-political history, Location and situation of Bangladesh; locational significance in relation to India; geo-political history, Location and situation of Myanmar; locational significance in relation to India; geo-political history	Foundational knowledge, Understand, Remember
				Bhutan: Physical Framework: Physiography, climate, vegetation, forest policy and biodiversity, Socio-Cultural Background: Population, ethno-religious and linguistic composition, literacy and educational pattern, urbanization level, Economic Geography: Resource potential, agriculture, industry, transport	Understand, Remember

				system, tourism development, trade relations with India, patterns of economic development	
				Bangladesh: Physical Framework: Physiography, climate, soil, vegetation and environmental problems, Background: Population, ethno-religious composition, literacy and educational pattern, urbanization level, population problems and policies, Economic Geography: Resource potential, agriculture, place of consumer goods industry, transport system, tourism development, trade relations with India, problems and prospects of economic development	Understand, Remember
				Myanmar: Physical Framework: Physiography, climate, vegetation, biodiversity and environmental policies, Socio-Cultural Background: Population, ethno-religious and linguistic composition, literacy and educational pattern, urbanization level, Economic Geography: Resource potential, agriculture, industry, transport system, nature of tourism development, trade relations with India, problems and prospects of economic development	Understand, Remember
18	IV	GGY4193 Remote Sensing and GIS (Practical)	This paper aims at imparting knowledge to the students in the field of technological development of the subject with special reference to Remote Sensing, GIS and GPS	Fundamentals of Photogrammetry: determination of photo scale, object height, slope between two points and relief displacement, Interpretation of aerial photographs and preparation of land use map, settlement map and road map, Interpretation of satellite imagery and preparation of land use/ land cover and fluvialgeomorphic maps, Digitization of different layers of spatial information (Point, line and polygon) and their thematic representation, Study of changing land use and river course using remote sensing and GIS techniques, GPS data collection (Point, Line and Polygon) and plotting	Application, Skills, critical thinking, creative thinking, practical thinking

19	IV	GGY4206 (7) Regional Development Planning	To provide requisite knowledge on the various issues on development and also the planning process. Also to impart concepts and ideas how regional development can be attained through proper planning of the resources	Regional Development Planning for sustainable development: Some perspectives from the globe	Foundational knowledge, Understand, Remember
				Development indicators: Per capita income, energy consumption, resource and infrastructure base, and demographic indicators	Understand, Remember
				Pattern of World economic development: agriculture, industrial, commercial and technological	Understand, Remember
				Regional Planning in India in relation to Five Year Plans	Understand, Remember
				Regional development perspectives in Israel, Netherlands, Indonesia	Understand, Remember
				Urban policy and urban planning in India	Understand, Remember
				Planning for problems areas, depressed regions: Case study from India	Understand, Remember
				Case studies of regional development planning exercises - National Capital Region; North East Council; Components of Physical Plan: Neighborhood planning	Understand, Remember
20	IV	GGY4214 (7) Regional Development Planning (Practical)	To know the different skills and methods used in regional development planning with special reference to India and Assam	<p>Regionalization using methods of:</p> <p>(a) Overlapping of different themes</p> <p>(b) Ranking using mean and standard deviation.</p> <p>(c) Factor analysis</p> <p>Network analysis:</p> <p>(a) Application of aggregate connectivity for regional development using alpha, beta, gamma and cyclomatic Number</p> <p>(b) Application of shape and tortuosity indices for developing planning strategy,</p> <p>Delimiting influence areas of nodal centers using:</p> <p>(a) Breaking point method</p> <p>(b) Gravity potential method and potential surface mapping,</p> <p>Application of input-output analysis for prediction of short-range change in regional development,</p> <p>Exercises on shift share analysis for regional studies</p>	Application, Skills, critical thinking, creative thinking, practical thinking

21	IV	GGY 4223 (7) Regional Development Planning (Dissertation)	To get acquainted with dissertation writing methods and processes	<p>Each student will have to prepare a dissertation under the guidance of respective teacher as per specialization following appropriate methodology, data base and literature review.</p> <p>The dissertation duly signed by the guide concerned has to be submitted to the department at least one week before the scheduled date of examination.</p> <p>The marks distribution of dissertation in the final semester examination is as follows:</p> <p>(i) Total marks: 40</p> <p>(ii) Evaluation of Content: 25 (average between external and internal examiners)</p> <p>(iii) Viva-voce: 15 (exclusively by the external examiner)</p>	Application, Skills, critical thinking, creative thinking, practical thinking
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IX. PROGRAMME OUTCOME – MSC (ZOOLOGY)

DEPARTMENT OF ZOOLOGY (MSC) DARRANG COLLEGE, TEZPUR

- Using bioinformatics techniques, students will be able to identify the main groups of organisms, with an emphasis on animals, and classify them within a phylogenetic framework. Students will be able to contrast and compare the traits that set animals apart from other living forms.
- Students will be able to explain how the theory of evolution provides the only scientific explanation for the unity and diversity of life on Earth using the data from comparative biology.
- Students will be able to explain how animal morphology, physiology, life history, and behaviour have been moulded by descent with modification using concrete examples.
- Students will be able to describe how genes, genomes, cells, tissues, and organs function in living things. They will be able to provide precise instances of the physiologic adaptations, growth, reproduction, and behaviour of many living species by utilizing this information.
- Pupils will be able to follow the movement of nutrients and energy through the environment to explain the ecological interconnectivity of life on Earth. They will be able to connect the environment's physical characteristics to the composition of populations, communities, and ecosystems.
- Students will be able to show mastery of the analytical and experimental strategies relevant to their particular field of biology specialization.
- Students will employ modern biochemical and molecular techniques to organise and execute research.
- Students will be able to exhibit expertise in aquaculture management practises, induced breeding, insect culture, etc.
- Students will design and conduct experiments using modern molecular and biochemical methods. When necessary, they will employ statistical techniques to analyse data, develop and test hypotheses, and recognise the limitations of inferences made from experimental data. There will be a focus on troubleshooting in laboratories and classes.

Course Outcomes: (M.Sc. in Zoology)

SEMESTER	PAPER CODE & TITLE	COURSE OUTCOMES	UNIT /CHAPTER
<u>PG SEMESTER I</u>	ZOO-1014 Biosystematics and Biostatistics	<ul style="list-style-type: none"> ➤ To identify the major groups of organisms with an emphasis on animals and be able to classify them within a phylogenetic framework also using bioinformatics tools. Students can compare and contrast the characteristics of animals that differentiate them from other forms of life. ➤ To use the evidence of comparative biology to explain how the theory of evolution offers the only scientific explanation for the unity and diversity of life on earth. They can use specific examples to explicate how descent with modification has shaped animal morphology, physiology, life history, and behavior. ➤ To explain how organisms function at the level of gene, genome, cell, tissue, organs and organ-systems. Drawing upon this knowledge, they can provide specific examples of the physiological adaptations, development, reproduction and behavior of different forms of life ➤ To explicate the ecological interconnectedness of life on earth by tracing energy and nutrient flows through the environment. They will be able to relate the physical features of the environment to the structure of populations, communities, and Ecosystem. 	1, 2
	ZOO-1024 Bioinformatics and Instrumentation	<p>Students will acquire knowledge to:</p> <ul style="list-style-type: none"> ➤ Explain which type of data is available from the most common protein sequence and structure databases (UniProt, GenBank, ProteinData Bank, CATH). ➤ Explain the theories underlying the most common methods for sequence searches and sequence alignments, and in particular knows the principle and main steps for pairwise and multiple sequence alignments; ➤ Explain and is able to apply the main steps of dynamic programming for simple alignments of short sequences; • List methods to uncover structure-function relationship in proteins and knows their underlying principles; ➤ Explain the principles of computational methods for the prediction of secondary structure elements from protein sequence, prediction and modeling of three-dimensional protein structures (homology modeling, threading and ab initio methods). ➤ Understand the principle and uses of the instrument in the analysis of different biological samples, Implement the knowledge of instrument in analyzing the sample. 	1, 2

SEMESTER	PAPER CODE & TITLE	COURSE OUTCOMES	UNIT / CHAPTER
<u>PG</u> <u>SEMESTER I</u>	ZOO-1034 Evolution and Chronobiology	<ul style="list-style-type: none"> ➤ Understand the biological evolution of the organisms that inhabit the Earth today are different from those that inhabited it in the past. ➤ Understand that natural selection is one of the several processes that can bring about evolution, although it can also promote stability rather than change ➤ Understand that the four propositions underlying Darwin's theory of evolution through natural selection are: (1) more individuals are produced than can survive; (2) there is therefore a struggle for existence; (3) individuals within a species show variation; and (4) offspring tend to inherit their parents' characters. ➤ Understand that the three necessary and sufficient conditions for natural selection to occur are: (1) a struggle for existence; (2) variation; and (3) inheritance. 	
	ZOO-1044 Genetics and Cytogenetics	<p>Students will acquire knowledge to</p> <ul style="list-style-type: none"> ➤ Get a broad understanding of core molecular genetics concepts including molecular biology, genetics. ➤ Acquire working knowledge in a defined skill set of molecular biology and biotechnology protocols, including PCR, genetic mapping, gene isolation and cloning, DNA sequencing, and sequence analysis. ➤ Set key concepts of genome organization and manipulation in depth, such as assembly of physical maps of genomes, sequencing methods and strategies, genome annotation and bioinformatics, comparative genomics, ➤ global gene expression profiling. 	1, 2
<u>PG</u> <u>SEMESTER I</u>	ZOO-1054 Ecology and Environmental Biology	<p>Students will acquire knowledge</p> <ul style="list-style-type: none"> ➤ To understand how individuals interact with members of their own species and with organisms of another species ➤ To explain how populations of a species grow, change and are distributed across the range of their suitable habitats ➤ To appreciate how communities of species are assembled and how they interact on an ecosystem level, across short and geological time-scales 	1, 2
<u>PG</u> <u>SEMESTER I</u>	ZOO-1064 Biochemistry	<p>Students will acquire knowledge</p> <ul style="list-style-type: none"> ➤ On the synthesis of proteins, lipids, nucleic acids, and carbohydrates and their role in metabolic pathways along with their regulation at the epigenetic, transcriptional, translational, and post-translational levels including RNA and protein folding, modification, and degradation. ➤ Regulation by non-coding RNAs will be tied to the developmental and physiological functioning of the organism. ➤ To understand the mechanism of Enzyme action and their regulation in biochemical pathway. ➤ To understand the thermodynamic principle ➤ of biological systems and bioenergetics. 	1, 2

<p style="text-align: center;"><u>PG</u> <u>SEMESTER</u> <u>II</u></p>	<p>ZOO-2014 Biodiversity</p>	<p>Students will acquire knowledge to</p> <ul style="list-style-type: none"> • Understand the concepts and theory in biodiversity science and management from interdisciplinary perspectives and at an advanced level; • Assess the modes through which conservation builds and extends power and describe in detail the factors that explain the emergence and performance of different governance modes; • Appreciate the role of ethics, values and norms in producing culturally attuned and effective conservation interventions; • Understand new technological forces for the future of biodiversity science and management; 	<p>1, 2</p>
<p style="text-align: center;"><u>PG</u> <u>SEMESTER</u> <u>II</u></p>	<p>ZOO-2024 Endocrinology</p>	<p>Students will acquire knowledge to</p> <ul style="list-style-type: none"> • Understand the role, metabolic function of various endocrines, its specific secretions and also the disorder and pathophysiology. • Understand the mechanism of hormone action, signal transduction system • Understand the role and function of neurosecretory hormones of insects and crustacean 	<p>1, 2</p>
<p style="text-align: center;"><u>PG</u> <u>SEMESTER</u> <u>II</u></p>	<p>ZOO-2034 Development Biology</p>	<p>Students will acquire knowledge to</p> <ul style="list-style-type: none"> • Understand and master basic concepts of developmental biology • Understand how fertilization and cleavage occur • Understand the process and consequence of gastrulation • Understand mesoderm induction and neural induction • Understand basic concepts of organogenesis • Understand basic concepts of growth, regeneration and aging • Understand basic concepts of gene expression and regulation 	<p>1, 2</p>
<p style="text-align: center;"><u>PG</u> <u>SEMESTER</u> <u>II</u></p>	<p>ZOO-2044 Animal cell culture and genetic engineering</p>	<p>Students are able to:</p> <ul style="list-style-type: none"> • Understand theoretical concept to maintain cultures of animal cells and established cell lines with good viability, minimal contamination and appropriate documentation. • Understand the episodic tasks relevant to cell culture, including preparation and evaluation of media, cryopreservation and recovery, and assessment of cell growth/health. • Able to recognize and troubleshoot problems common to routine cell culture. • Understand the importance of plasmids and viruses to genetic engineering. • Know the natural function of restriction endonucleases and how a normal bacterial cell protects its DNA from their activity. • Understand how “sticky ends” are formed and their importance to gene technology. • Describe how a chimeric genome is constructed. • Explain the four steps of genetic engineering experiments. • Distinguish between the techniques of selection and screening of clones. • Explain how to screen for clones that contain a desired gene fragment. • Understand the value of and the processes involved with the polymerase chain reaction (PCR). 	<p>1, 2</p>

<u>PG SEMESTER II</u>	ZOO-2054 Animal Behaviour	By the completion of this course, students set a comprehensive understanding of the behavior of animals. They will understand the proximate controls of behavior including the role of hormones, the animal's genotype and the animal's environment in the development of behavior. Much of our work will take an evolutionary approach, consequently, students will have a comprehensive understanding of the adaptive significance of behavior, emphasizing animal communication, social behavior, territoriality, sexual selection and mating systems.	1, 2
<u>PG SEMESTER II</u>	ZOO-2064 Animal Physiology	Student sets knowledge on: <ul style="list-style-type: none"> • Cellular mechanisms of solute and water transport used by animals living in different environments • The different energy requirements of an animal at rest and during exercise, and how this is reflected in the functioning of the oxygen transporting systems • How the cardiovascular and respiratory systems are integrated and controlled • How animals use aerobic and anaerobic forms of metabolism for ATP production. • How animals move with muscles and navigate their movement by the neural control. The basic control processes of the nervous and endocrine systems • How animals have adapted to their environment with different ways of urine formation to excrete nitrogen wastes and water • Carry out physiological studies in the laboratory • Interpret physiological data and phenomena critically 	1, 2
<u>PG SEMESTER III</u>	ZOO-3014 Cell Biology	This course help to understand the biology of cells of prokaryote and higher organisms: The structure, function, and biosynthesis of cellular membranes and organelles; cell growth and oncogenic transformation; transport, receptors, and cell signaling; the cytoskeleton, the extracellular matrix, and cell movements; chromatin structure, cell cycle, regulation of cell cycle, apoptosis, regulation of gene expression in prokaryotes and eukaryotes and RNA editing.	1, 2
<u>PG SEMESTER III</u>	ZOO-3024 Immunology, Microbiology and Parasitology	Understand the structural features of the components of the immune system as well as their functions, lymphoid organs, monoclonal antibody, structure of antibody, antigen antibody interaction <ul style="list-style-type: none"> • Understand the microbial diversity, microbial pathogenesis and applied microbiology • Understand the concept of parasitism, life cycle of economically important parasites of man and domesticated 	1, 2
<u>PG SEMESTER III</u>	ZOO-3034 Reproductive Biology	Understand the comparative structure and function of the male and female reproductive systems <ul style="list-style-type: none"> • Understand the physiology of gametogenesis, embryogenesis, pregnancy, parturition and lactation • Understand the endocrine, neuro-endocrine and environmental factors regulate reproduction • strategies for the management of reproduction and fertility in animals; including the application of assisted reproductive technologies 	1, 2
	ZOO-3044	Understand the economic importance of insects <ul style="list-style-type: none"> • Insect vectors, pest 	1, 2


	Entomology and Aquatic Biology	<ul style="list-style-type: none"> • Role of insects in ecosystem. • Concept of pest management. •Understand the limnology, aquatic resources of North East India, major threats of fresh water ecosystem, fish germplasm diversity of North East India 	
	ZOO-3056 Integrative Biology	Understand the concept NET/SLET and Gate oriented question and approach to tackle the question and their concepts. recombination and population genetics has been provided viathis paper.	1, 2
<u>PG SEMESTER IV Special Paper Fish biology & Fishery science</u>	Z-4014 Fish Taxonomy & Study of Fish Growth & Population	Students understand details about Taxonomic methods for identification of fresh water fishes including Modern Trends in Fish Taxonomy; Fish Barcoding, Developing concept about Absolute and relative Growth, Length-weight relationships of Fish, Species Diversity Indices, Fish Species Richness, Relative abundance	1,2,3,4,5,6,7
	Z-4024 Fish Physiology & Fish Genetics	Develop concept about various physiological events of Fish including Digestion, Respiration, Excretion, Osmoregulation, endocrine systems etc. and about Population genetics, Hardy-Weinberg principle: Test of equilibrium, application and properties of equilibrium populations	1,2,3,4,5,6,7
	Z-4034 Capture Fisheries & Ecosystem management	Students are exposed to know about Fishery resources of the major river systems of India; Fish and Fisheries of River Brahmaputra; Coldwater Fish & fisheries of India and Floodplain wetland (beel) fisheries	1,2,3,4,5,6,7
	Z-4044 Aquaculture & Fish Biotechnology	Undertand about different culture systems of fish, Non-conventional methods of fish farming ; Aquarium keeping and Aquaculture Management	1,2,3,4,5,6,7
	Z -4054 Fish Pathology & Post harvest technology	Understand about different fish diseases, Techniques for isolation and identification of fungi; Basics of mycological and virological techniques and fish biotechnology	1,2,3,4,5,6,7
	Z-4066 Dissertation	Developing skill for Research work related to Fish Biology and Fishery Science	
	Z-4072 Practical paper-I (Taxonomy, Fish Biology & Aquaculture)	Practical related to Fish Taxonomy, Fish Biology & Aquaculture Identification of commercially important fresh water fish species ; Comparative biometric assessment of representative freshwater fish species; Fish osteology , Dissection of different systems, Haematological studies and Water chemistry	1,2,3,4,5,6,7



OFFICE OF THE PRINCIPAL
DARRANG COLLEGE
 ESTD. 1945

T.O & P.O. Tezpur, Phone No 03712-220014 (Principal) Fax no. 03712-224337

 darrangcollege@gmail.com

 Tezpur, Sonitpur - 784001 Assam

2.6.1. Programme Outcomes (POs) and Course Outcomes (COs) for all programmes offered by the institution:


Serial Number	Department	Link to View CO & PO	
1.	Assamese	CO (M.A)	https://darrangcollege.ac.in/upload/dept_course_outcome/1714634404.docx
		CO (B.A.)	https://darrangcollege.ac.in/upload/dept_course_outcome/1714634343.docx
		PO (M.A.)	https://darrangcollege.ac.in/upload/dept_program_outcome/1714634247.doc
		PO (B.A)	https://darrangcollege.ac.in/upload/dept_program_outcome/1714634164.doc
2.	Bengali	CO	https://darrangcollege.ac.in/upload/dept_course_outcome/1708622907.docx
		PO	https://darrangcollege.ac.in/upload/dept_program_outcome/1708623236.docx
3.	Biotechnology	CO	https://darrangcollege.ac.in/upload/dept_course_outcome/1709634467.pdf
		PO	https://darrangcollege.ac.in/upload/dept_program_outcome/1709628974.pdf
4.	Bodo	CO	https://darrangcollege.ac.in/upload/dept_course_outcome/1707586725.pdf
		PO	https://darrangcollege.ac.in/upload/dept_program_outcome/1707586780.pdf
5.	Botany	CO	https://darrangcollege.ac.in/upload/dept_course_outcome/1714057143.pdf
		PO	https://darrangcollege.ac.in/upload/dept_program_outcome/1714057190.pdf

6.	Chemistry	CO	https://darrangcollege.ac.in/upload/dept_course_outcome/1707631384.pdf
		PO	https://darrangcollege.ac.in/upload/dept_program_outcome/1707631417.pdf
7.	Commerce	CO	https://darrangcollege.ac.in/upload/dept_course_outcome/1707550413.pdf
		PO	https://darrangcollege.ac.in/upload/dept_program_outcome/1707550490.pdf
8.	Computer Science	CO	https://darrangcollege.ac.in/upload/dept_course_outcome/1709477020.pdf
		PO	https://darrangcollege.ac.in/upload/dept_program_outcome/1709475298.pdf
9.	Economics	CO	https://darrangcollege.ac.in/upload/dept_course_outcome/1714127078.pdf
		PO	https://darrangcollege.ac.in/upload/dept_program_outcome/1714127359.docx
10.	Education	CO	https://darrangcollege.ac.in/upload/dept_course_outcome/1714801526.docx
		PO	https://darrangcollege.ac.in/upload/dept_program_outcome/1714801597.docx
11.	English	CO	https://darrangcollege.ac.in/upload/dept_course_outcome/1707665905.pdf
		PO	https://darrangcollege.ac.in/upload/dept_program_outcome/1707665164.pdf
12.	Geography	CO	https://darrangcollege.ac.in/upload/dept_program_outcome/1707718647.docx
		PO	https://darrangcollege.ac.in/upload/dept_program_outcome/1707718647.docx
13.	Hindi	CO	https://darrangcollege.ac.in/upload/dept_course_outcome/1707808989.pdf
		PO	https://darrangcollege.ac.in/upload/dept_program_outcome/1714822475.pdf
14.	History	CO	https://darrangcollege.ac.in/upload/dept_course_outcome/1709538568.pdf

		PO	https://darrangcollege.ac.in/upload/dept_program_outcome/1709538751.pdf
15.	Home Science	CO	https://darrangcollege.ac.in/upload/dept_course_outcome/1709296520.docx
		PO	https://darrangcollege.ac.in/upload/dept_program_outcome/1714819376.docx
16.	Mathematics	CO	https://darrangcollege.ac.in/upload/dept_course_outcome/1709474581.docx
		PO	https://darrangcollege.ac.in/upload/dept_program_outcome/1709474642.docx
17.	Nepali	CO	https://darrangcollege.ac.in/upload/dept_course_outcome/1708407506.docx
		PO	https://darrangcollege.ac.in/upload/dept_program_outcome/1708407598.pdf
18.	Philosophy	CO	https://darrangcollege.ac.in/upload/dept_course_outcome/1707712569.docx
		PO	https://darrangcollege.ac.in/upload/dept_program_outcome/1707712668.docx
19.	Physics	CO	https://darrangcollege.ac.in/upload/dept_course_outcome/1707723669.pdf
		PO	https://darrangcollege.ac.in/upload/dept_program_outcome/1707723692.pdf
20.	Political Science	CO	https://darrangcollege.ac.in/upload/dept_course_outcome/1709374015.pdf
		PO	https://darrangcollege.ac.in/upload/dept_program_outcome/1709373962.pdf
21.	Psychology	CO	https://darrangcollege.ac.in/upload/dept_course_outcome/1709378412.pdf
		PO	https://darrangcollege.ac.in/upload/dept_program_outcome/1709378497.pdf
22.	Sanskrit	CO	https://darrangcollege.ac.in/upload/dept_course_outcome/1707761616.docx
		PO	https://darrangcollege.ac.in/upload/dept_program_outcome/1707762307.doc

23.	Sociology	CO	https://darrangcollege.ac.in/upload/dept_course_outcome/1707982293.docx
		PO	https://darrangcollege.ac.in/upload/dept_program_outcome/1707982256.docx
24.	Statistics	CO	https://darrangcollege.ac.in/upload/dept_course_outcome/1707723669.pdf
		PO	https://darrangcollege.ac.in/upload/dept_program_outcome/1707723692.pdf
25.	TTM	CO	https://darrangcollege.ac.in/upload/dept_course_outcome/1707549864.docx
		PO	https://darrangcollege.ac.in/upload/dept_program_outcome/1707549892.docx
26.	Zoology	CO	https://darrangcollege.ac.in/upload/dept_course_outcome/1714193573.pdf
		PO	https://darrangcollege.ac.in/upload/dept_program_outcome/1714193522.pdf




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Darrang College
Tezpur, Assam

DARRANG COLLEGE, TEZPUR ASSAM, INDIA

<https://darrangcollege.ac.in>
e-mail: darrangcollege@gmail.com



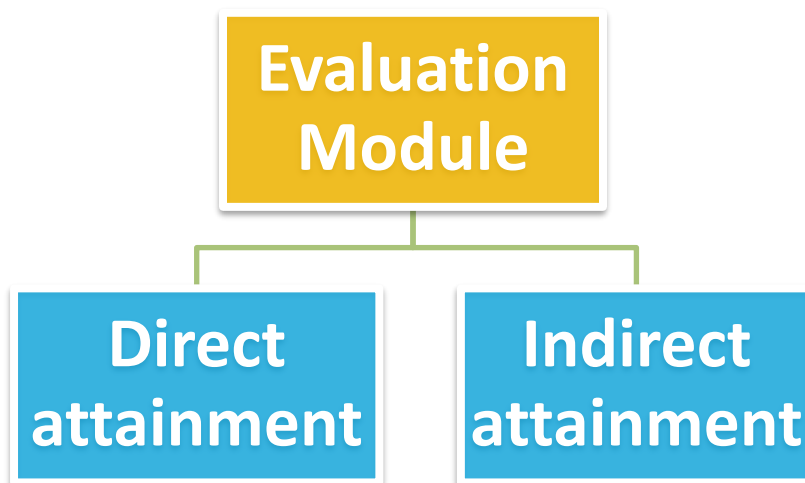
**ATTAINMENT OF
PROGRAMME OUTCOMES (POs)
AND
COURSE OUTCOMES (COs)**



Policy Document for Evaluation of Programme Outcome

Darrang College, Tezpur is affiliated to Gauhati University and follows all norms prescribed by the university in regard to admission, curriculum design, teaching-learning evaluation, exams and results. The parent university has designed the outline of course outcome however it does not provide any procedure to measure the achievement of Programme outcome (PO) and Course outcome (CO).

Darrang College has designed a policy document through committee formation for measuring POs and COs of students.



Direct attainment:

1. Direct attainment of COs is determined from the comparative analysis of students' results from 1st semester to final semester.
2. It can be achieved through conduct of project works or home assignments.
3. It can be measured through observing the progression of students to higher education.
4. Direct attainment of programme outcome can be understood by students' absorption/placement in jobs.

Indirect attainment:

1. Through analysis of Students' Satisfaction Survey.
2. Through Students' feedback process.



3. Indirect attainment of COs can be facilitated through students' involvement in co-curricular activities.
4. Through interaction in mentor-mentee sessions.
5. Through laboratory work in practical subjects.
6. Through students' class performance while conducting class presentations, group discussions etc.
7. Through field visits and excursions.

Assessment Guidelines

1. The attainment of POs should be in alignment with COs.
2. Question papers (internal evaluation) to be set to accommodate all the COs.
3. The average marks scored in evaluating against each CO will indicate the CO attainment.
4. Attainment gaps can be identified.
5. Faculty members can deploy strategies to reduce the attainment gaps.
6. If the assessment is in alignment with the COs, the performance of students indicates the CO attainment.



ANALYSIS OF RESULTS AND PROGRSSION OF STUDENTS

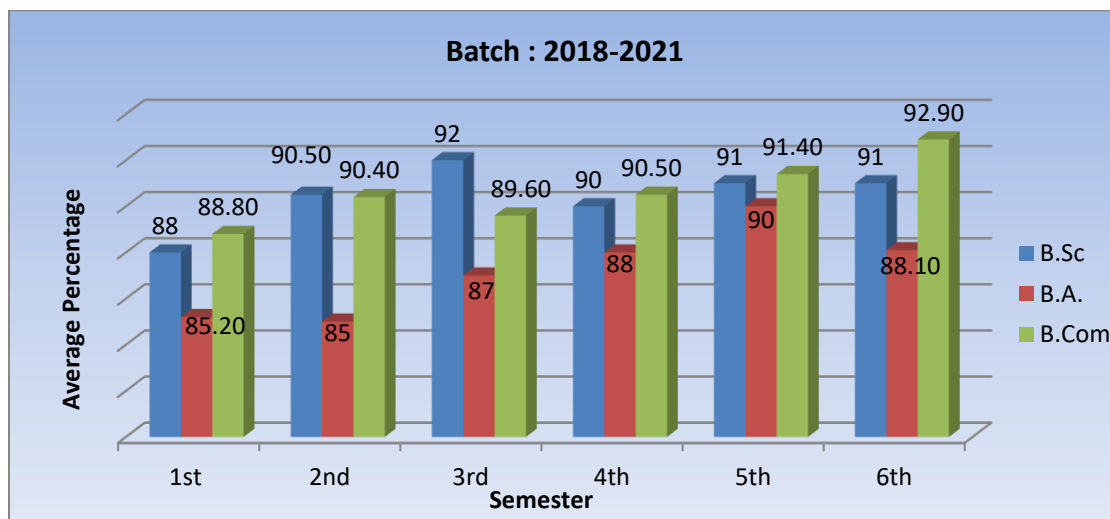
Darrang College, Tezpur, Assam

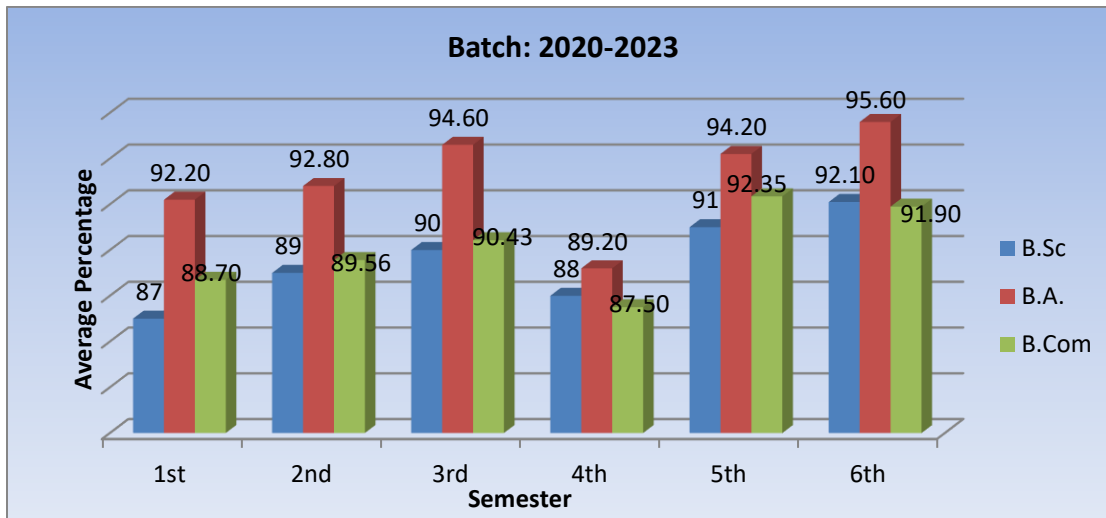
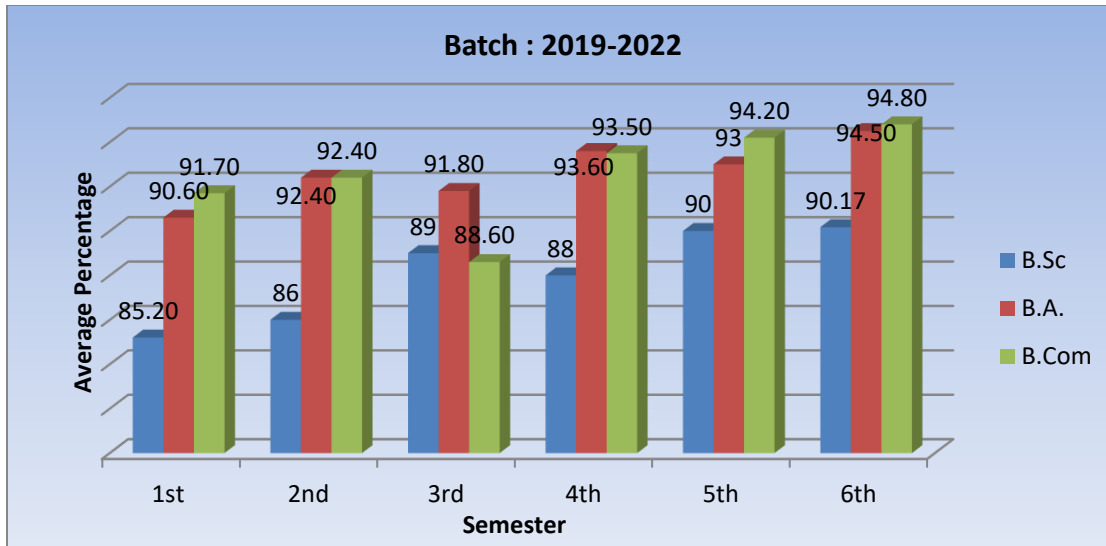
- I. The college uses statistical analysis to assess student performance in each programme in order to measure the achievement of Programme Outcomes (POs).

Each PO's attainment is measured through a method that is accomplished by

- i) Evaluating the academic progress of the students from their first to their last semester
- ii) Comparing the students' average graduation percentage to the average percentage they obtained in the first semester.

Students' academic performance through 1st semester to final semester in each Programme for 2018-2021, 2019-2022 and 2020-2023 batches





According to the aforementioned charts, there has been a steady upward trend in the marks/GPA of B.A., B.Sc., and B. Com students from the first to the final semester.

The average percentage that the students obtained in their first semester and their graduation were compared using a *Paired t-test*. To ascertain whether there is a significant difference between the means of two paired measurements, an inferential statistical method called a *Paired t-test* is employed. We have employed a *Paired t-test* since we are interested in learning if the academic performance of students during their first semester and upon graduation differs significantly from zero or not.



Prior to conducting the test, we establish the null hypothesis (H_0) as follows:

$H_0: \mu_1 - \mu_2 = 0$ i.e. there is no significant difference between students' academic performance in the first semester and their performance upon graduation.

Against the alternative hypothesis (H_1), which states that:

$H_1: \mu_1 - \mu_2 > 0$, students' academic performance at graduation is superior to that in the first semester.

Here, μ_1 represents the average percentage that the students obtained in their first semester, and μ_2 is the average percentage that they received when they graduated.

Table 1

Statistical summary metrics and t-statistic values for students' academic performance in the B.A. programme

Batch	Mean Percentage		Mean differences (Graduation - 1 st Semester)	t- value	d.f.	p-value
	1 st Semester	Graduation				
2018-2021	85.2	88.1	2.9	23.13	583	0.000
2019-2022	90.6	94.5	3.9	23.64	584	0.000
2020-2023	92.2	95.6	3.4	29.91	645	0.000

Table 2

Statistical summary metrics and t-statistic values for students' academic performance in the B.Sc. programme

Batch	Mean Percentage		Mean differences (Graduation - 1 st Semester)	t- value	d.f.	p-value
	1 st Semester	Graduation				
2018-2021	88	91	3	17.81	219	0.000
2019-2022	85.2	90.17	4.97	19.20	228	0.000
2020-2023	87	92.1	5.1	13.47	149	0.000

**Table 3****Statistical summary metrics and t-statistic values for students' academic performance in the B.Com programme**

Batch	Mean Percentage		Mean differences (Graduation - 1 st Semester)	t- value	d.f.	p-value
	1 st Semester	Graduation				
2018-2021	88.8	92.9	4.1	17.89	220	0.000
2019-2022	91.7	94.8	3.1	19.36	231	0.000
2020-2023	88.7	91.9	3.2	21.30	257	0.000

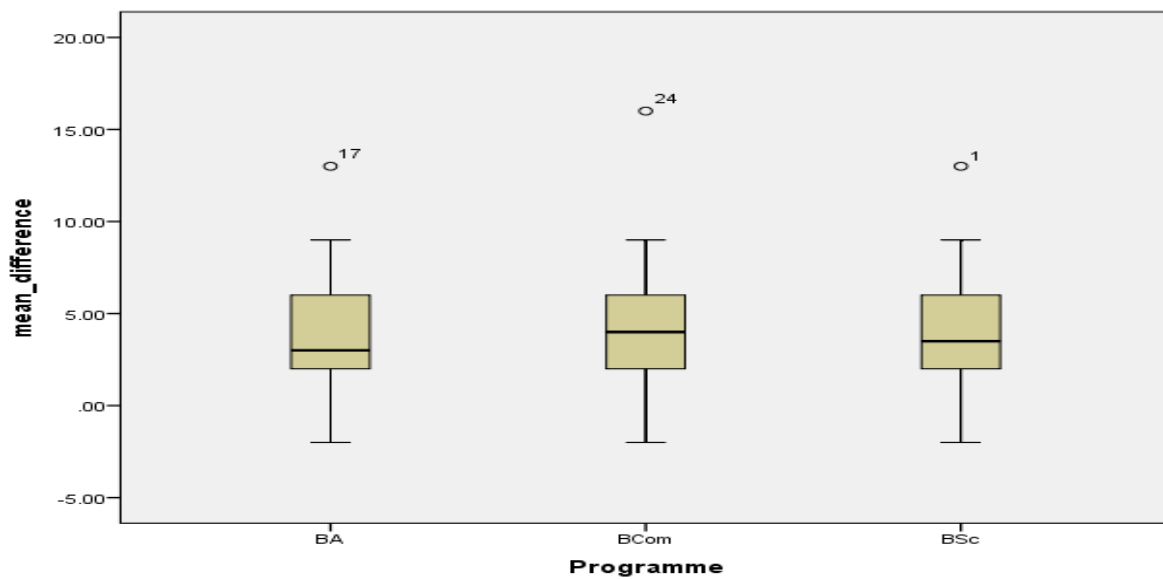
According to the aforementioned statistics, the average percentage of students completing their graduation for B.A. (Table 1), B.Sc. (Table 2) and B.Com (Table 3) is higher than the average percentage of students completing their 1st semester for each batch.. Additionally, the mean differences make it evident that, starting with the first semester, students' average performance in each PO has improved. In order to determine if these differences are statistically significant, we now employ the *Paired t-test* results. The tables show that all of the t-statistic values are higher than 1.65, which is the t-statistic value for a one-tailed test at the 5% level of significance (because our alternative hypothesis is one-tailed). Furthermore, for each batch in every programme, the p-values are less than the alpha threshold of significance, which is 5% or 0.05. As a result, we are able to reject our null hypothesis and draw the conclusion that students perform better academically at graduation than they did during their first semester.

For every batch, a **box plot** is created to show the mean difference between the average percentage that the students obtained in their first semester and their average percentage upon graduation. A **box plot** is a kind of graphic that uses the first quartile, median, maximum, third quartile, and minimum values as the five statistical summary measures to represent a set of numerical data. To illustrate how far the extreme values are from the majority of each student's mean difference values, box plots have been employed in this instance.

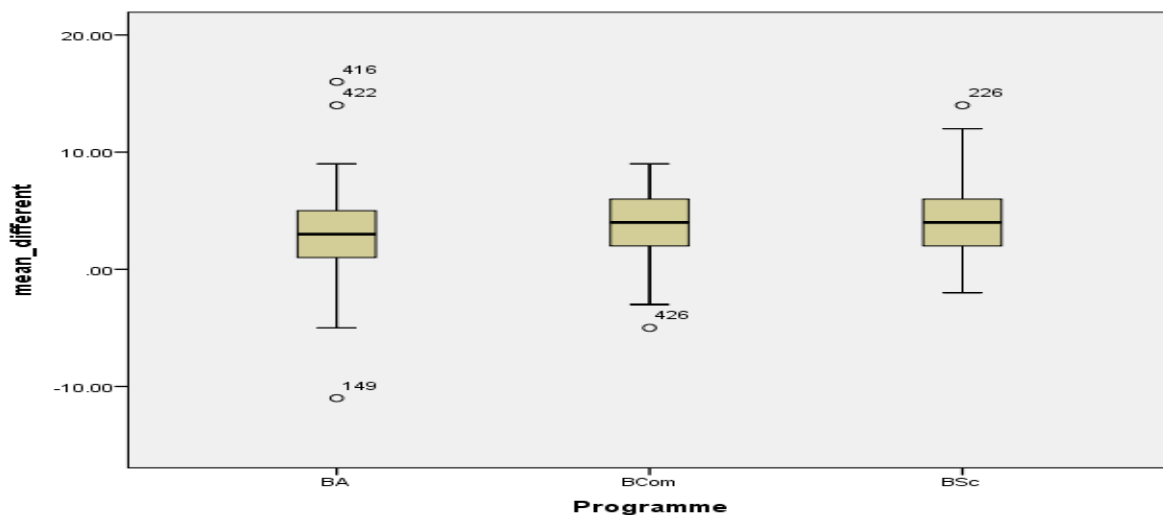


Typically, the vertical line that emanates from the box's edge is drawn to the furthest extent possible within the parameters of the data set in question. Outliers are any observations that fall outside of these lines, either above or below. In this case, we could read the outliers lying below as students who, on average, performed worse at graduation, and the outliers lying above as students who performed very well compared to the other students. As can be seen from the above, there are one outlier each in the B.A., B.Sc. and B. Com programme for the batch 2018–2021, and just one outlier in the B.Sc. programme for batch 2017–2020.

BATCH: 2018–2021

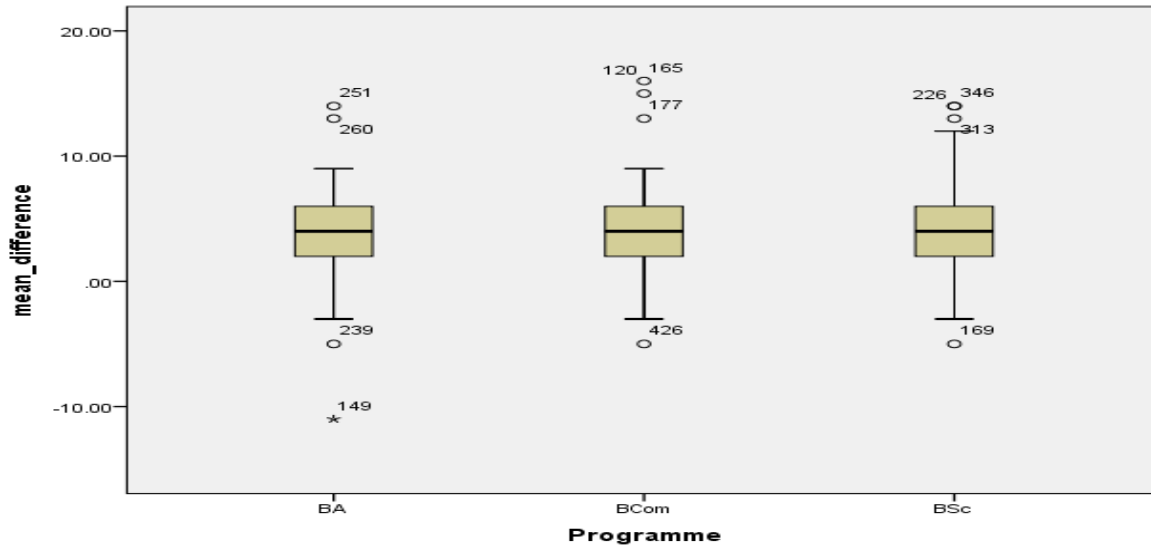


BATCH: 2019–2022



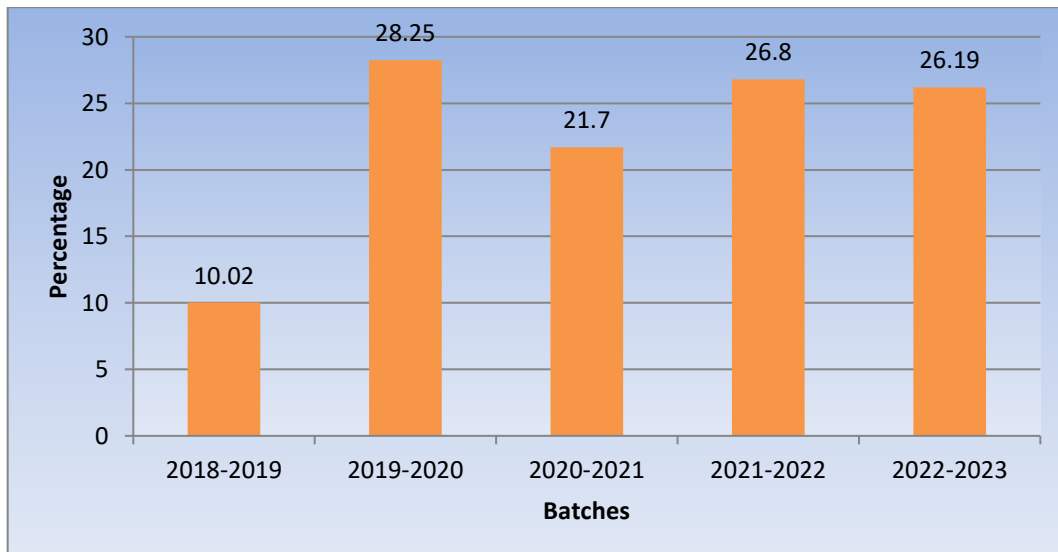


BATCH: 2020–2023



II. The college assesses the advancement of its students to higher institutions and employment placements as means of measuring the achievement of Programme Outcomes (PO).

Students’ progression to higher institution and placements of job

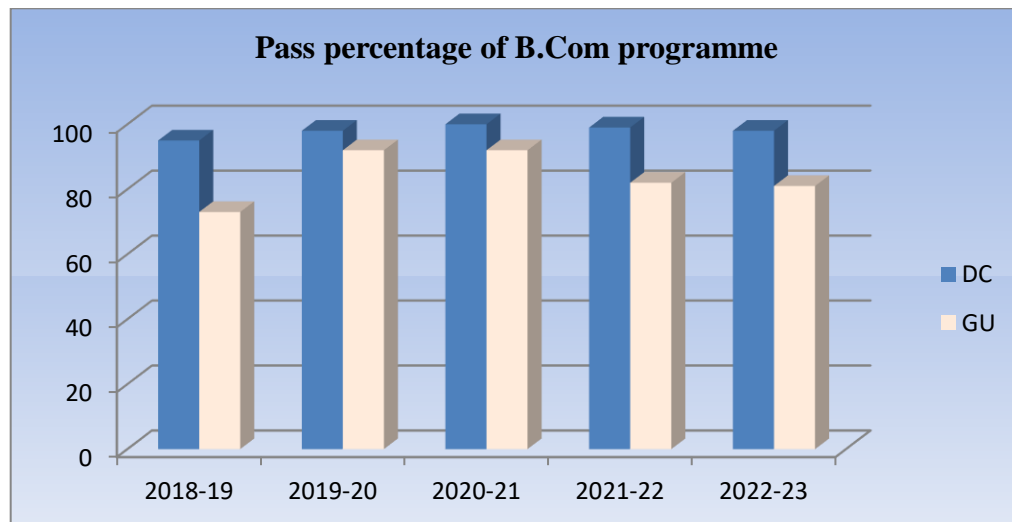
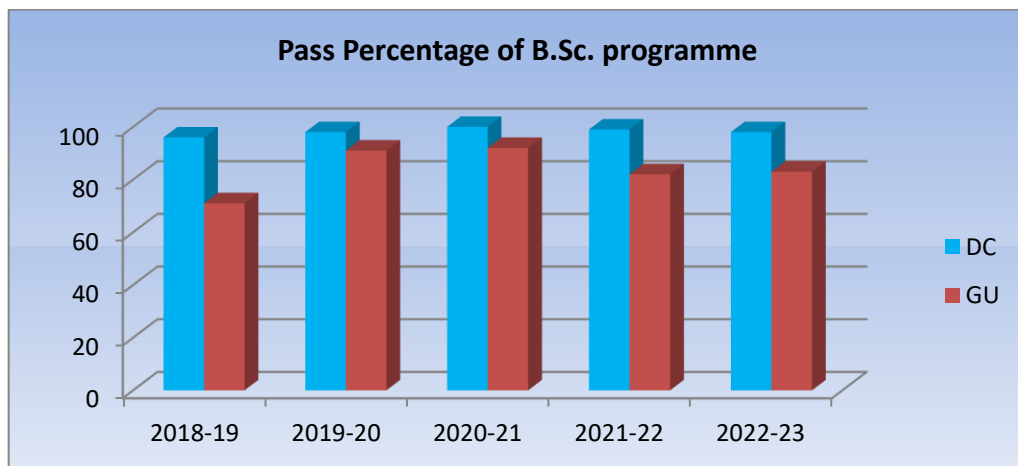
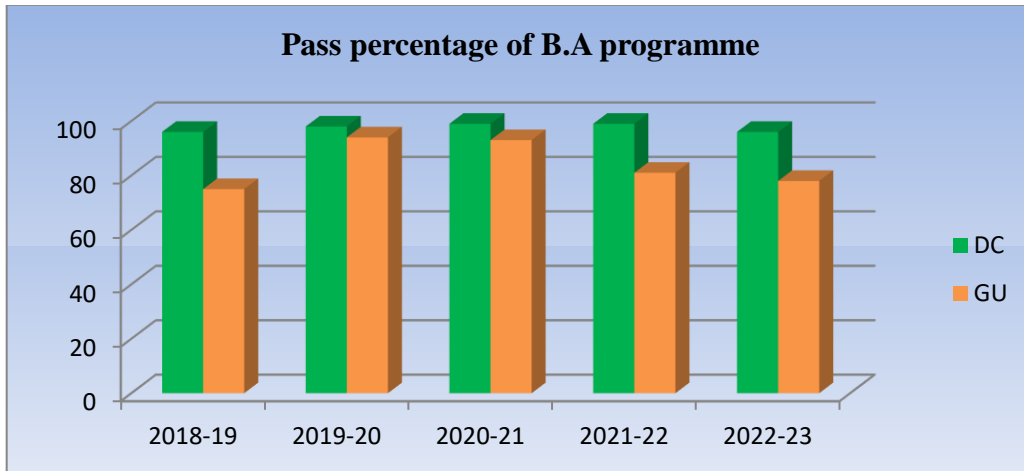


The accompanying chart shows that, in terms of students' advancement to further higher education and employment placements, the college has satisfactory results for the past five years.



III. Comparison between affiliated university results and college undergraduate results.

The overall pass percentages of the affiliated university and Darrang College are compared.





The aforementioned data makes it clear that our college's pass rate is consistently quite satisfactory and the graph is rising higher in recent years.

CONCLUSION: It is evident from the study and analysis of the data that the students of Darrang College have very high PO and CO attainment which is very encouraging for us.