PROGRAMME OUTCOME, PROGRAMME SPECIFIC OUTCOME & COURSE OUTCOME

Programme outcome for B.A.:

After completing the B.A. course a student is expected achieve the below mentioned Programme Outcome

- A student should be able to think critically: He/she should be able to take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.
- A student should learn effective communication: Student should acquire the ability to speak, read, write and listen clearly in person and through electronic media in English and in at least one official language of Assam, and make meaning of the world by connecting people, ideas, books, media and technology.
- A student should learn Social Interaction: Elicit views of others, mediate disagreements and help reach conclusions in group settings.
- A student should acquire the knowledge of Effective Citizenship: Demonstrate empathetic social concern and equity centred national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.
- A student should learn Ethics: Recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them.
- A student should acquire the knowledge of Environment and Sustainability: Understand the issues of environmental contexts and sustainable development.
- A student should acquire the knowledge of Self-directed and Life-long Learning: Acquire the ability to engage in independent and life-long learning in the broadest context socio-technological changes.
- A student should understand the basic concepts, fundamental principles, and various theories in the taught subjects.
- A student should realize the importance of literature in terms of aesthetic, mental, moral, intellectual development of an individual and accordingly of the society.
- A student should understand how issues in the social science get influenced by the literature and how the literature can provide solutions to the social issues.

Subject: English

PROGRAMME SPECIFIC OUTCOME

Specific outcome of English major syllabus prescribed by Gauhati University may be cited below:

- The Indian and other literature like European, British etc. provide the students the adequate platform to understand various types of literature and culture.
- The Classical Literature provides a broader view of the literatures of the world, and the possibility of cultural exchange.
- The modern English literature focuses on the latest developments in the field of literature from around the world.
- The texts are cortex in different socio-cultural and political events and movements. The multidimensional knowledge of the subject contained in these texts has a great importance in today's society.
- The syllabus offers a wide variety of optional papers enabling the learners come to know the interrelation of life with literature.
- The conceptions of the writers contains in the compositions of Classical Literature, American and African Literature help the learners to explore more and more new ideas and motivate them to undertake a comparative study.

COURSE OUTCOME

Semester	Course Code	Course Name	Course Outcome
I	ENG-HC-1016	Indian Classical Literature	This paper introduces students to a selection of Classical Literatures of India in English translation. Given that Indian Classical Literature offers a rich and diverse canvas that spans across genres like drama, poetry, the epic narrative as well as short fictional fables, to name a few. This paper will encourage students to think laterally about literatures of the world, and the possibility of cultural exchange.

	ENG-HC-1026	European Classical Literature	This paper introduces students to a selection of Classical Literatures of Europe in English translation. Given that Indian Classical Literature offers a rich and diverse canvas that spans across genres like drama, poetry, the epic narrative as well as short fictional fables, to name a few. While the Aristotelian focus on the examination of the essentials of poetry extended to incorporate discussions on epic and drama, subsequent writers such as Horace drew attention to the purposefulness of the creative exercise. In the theatre the widely divergent compositions by Sophocles and Plautus respectively show the consolidation of a rich cultural discourse. It is this enriching literary tradition that this paper will familiarize with through the study of representative texts belonging to the Classical Period.
II	ENG-HC-2016	Indian Writing in English	This paper develops familiarity with the issues of politics of language and gender, nationalism and modernity pertaining to pre and post-Independence India that have been responsible for the emergence of Indian English literature. It helps to understand the place of English Writing in India in the larger field of English Literature. It enables to learn to discuss critically the use of literary forms of the novel, poetry and drama by Indian English writers in distinctive ways against Indian historical and cultural contexts.
	ENG-HC-2026	British Poetry and Drama	This paper will familiarize the students with the two major forms in British literature from the 14^{th} to the 17^{th} centuries – poetry and drama, apart from acquainting them with the contexts that generated such literatures. It will also enable the students to understand the larger contexts of the Renaissance, the nature of the Elizabethan Age and its predilections for certain kinds of literary activities, and the implications of the emergence of new trends. It will also help the students to understand the seminal issues and preoccupations of the writers and their ages as reflected in these texts.
III	ENG-HC-3016	American Literature	This paper will enable the students with the main trends of American literature in its social and cultural contexts. The texts incorporated in the paper are a historical reflection of the growth of American society and of the way the literary imagination has grappled with such growth and change. Hence, the paper will lead to an acquaintance with the American society in its evolutionary stages from the beginnings of modernism to the present as well as with exciting generic innovations and developments that have tried to keep pace with social changes.

	ENG-HC-3026	Popular Literature	This paper will enable the students to understand the nature of ―Popular literature‖ as a genre and the critical ideas underpinning the theorization of popular literature as well as how it has moved from the margins to earn for itself a fairly important place in the literary and critical consciousness.
	ENG-HC-3036	British Poetry and Drama: 17th and 18th Centuries	This paper will familiarize the students with British literature in the 17th and 18th centuries, a time-period which sees the emergence and establishment of greatly diverse kinds of writings. The selected texts will encourage the students to look at the economic, political and social changes in Britain during this period, such as the shifts from the Puritan Age to the Restoration and Neoclassical periods. It will also enable the students to familiarize with the larger contexts that generated such literatures as well as the possible impacts of the literature on society. The significance of the scientific revolution during this period will be understood in the process of this study.
IV	ENG-HC-4016	British Literature: The 18th Century	This paper will familiarize the students with British literature in the 18th century, an age in which reason and rationality dominated and saw the publication of some of the best novels and works of non-fictional prose and poetry in the English language. This paper will also enable the students to familiarize with quite a number of women writers who were also part of the literary scene and how they represented the age through their various forms of writings.
	ENG-HC-4026	British Romantic Literature	This paper will familiarize the students with the 19th century triumph of the Romantic imagination, expressing itself most memorably in the poetry of Blake, Burns, Wordsworth, Coleridge, Shelley, and Keats as well as the spirit of revolt with very different ideas about the relationship between humans and nature and the role of the poet taking hold. Thus the paper will enable the students to appreciate the essence of the Romantic vision.
	ENG-HC-4036	British Literature: The 19th Century	The paper will expose the students to the ground-breaking efforts of the poets as well to the works of fiction writers who manage to consolidate and refine upon the achievements of the novelists of the previous era. It will familiarize the students the trends from Austen to Rossetti that represents a remarkable literary development and range of works, addressing a very diverse array of social preoccupations.

V	ENG-HC-5016	British Literature: The 20th Century	This paper will familiarize the students with the voice of Modernism in arts and literature, with its urgent desire to break with the codes and conventions of the past, experiment with new forms and idioms, and its cosmopolitan willingness to open itself up to influences coming from other shores. It will also get acquainted with the ethos of postmodernism through a reading of recent poetic and fictional works.
	ENG-HC-5026	Women's Writing	This paper will familiarize the students to the 19th and 20th century writings by women living in different geographical and socio cultural settings. Students will get acquainted with the distinct experiences of women articulated in a variety of genres-poetry, novels, short stories, and autobiography. It will also familiarize the students with the earliest feminist treatises of the western world.
	DSE ENG-HE-5016	History of English Literature and Forms	After studying this paper, students will acquire a sense of the historical development of each literary form. They will gain understanding of the contexts in which literary forms and individual texts emerge. They will learn to analyze texts as representative of broad generic explorations.
	NG-HE-5026	Modern Indian Writing in English Translation	This paper will introduce the students with the richness and diversity of Indian literature written in the regional languages and will testify to the diverse cultural and regional preoccupations in the respective regions these languages belong to.
	ENG-HE-5036	Literature of the Indian Diaspora	This paper will introduce the students with the ideas of transnationalism, exile, migration, displacement, and so on, literature of the diaspora has come to exert a strong presence in the global scene.
	ENG-HE-5046	Nineteenth Century European Realism	This paper will provide an interesting sampling of the traditions that contributed to the growth and consolidation of European Realism in the nineteenth century. Study of these texts will also facilitate the understanding of the gradual movement towards modernism in the twentieth century which was, in many ways, both a response and a reaction to the major tendencies of European Realism.
	ENG-HE-5056	Literary Criticism and Literary Theory	This paper will familiarize students with some important texts on literary criticism and literary theory and inform the students on the shifts in literary interpretations and critical approaches so as to equip them while reading texts across genres.
	ENG-HE-5066	Science Fiction and Detective Literature	This paper will enable the students to explore the ways in which new narrative possibilities have emerged due to the human fascination for crime, mystery and improbable occurrences.

VI	ENG-HC-5016	Modern European Drama	The paper will familiarize the students to the innovative dramatic works of playwrights from different locations in Europe, which taken together represents the wide range of modern drama and its fortunes on the written page and the stage. The selected plays will allow an understanding of the emergence of avant-garde movements and trends and dramatic devices and techniques during the period of modernism which eventually influenced theatrical practices in other nations of the world.
	ENG-HC-5026	Postcolonial Literatures	This paper will familiarize the students to the European Colonialism since the 15th century, and the effects of the experience of colonialism around the world even in the postcolonial era. It will also acquaint the students with some of the novels, short stories and poems from postcolonial literatures across the world, with the texts showcasing the many regional, cultural differences and peculiarities, as well as common and shared experiences of the postcolonial condition.
	DSE ENG-HE-6016	Literature and Cinema	Literature and Cinema are two distinct but equally extraordinary works of art. This paper will enable the students to understand how the two contribute to each other in terms of cultural interaction and re-reading.
	DSE ENG-HE-6026	World Literatures	This paper will encourage students to think laterally about literatures of the world, and the possibility of cultural exchange.
	DSE ENG-HE-6036	Partition Literature	This paper will familiarize the students with the impact of partition on human emotions and values, and the subsequent changes brought out by it in the cultural transmission.
	DSE ENG-HE-6046	Travel Writing	The paper will enable the students to explore the ways in which travel writing has been an indispensible part of English literature, both in terms of its contribution to its richness as well as an avenue for human‘s development. The paper will also explore the ways in which travel accounts of voyage and discovery of new lands led to the development of the genre of travel writing in literature, and how it had positive externalities towards enriching other disciplines like history, geography, science etc.
	ENG-HE-6056	Life Writing	This paper will enable the students to understand the element of narrativization in seemingly linear, transparent, straight forward accounts of lives of significant people set down in memoirs, biographies and letters.

	ENG-HE-6066	Writings from North East India	This paper will familiarize the students with the latest trends in writing by the authors from North-East India and how they represent this part of India in global scenario.

Subject: Assamese

PROGRAMME SPECIFIC OUTCOME

Specific outcome of Assamese major syllabus prescribed by Gauhati University may be cited below:

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1. The syllabus covers wide range of topics on Assamese literature like Romantic literature, Devotional literature, oral literature, etc. The learners can come to know about the various information of Assamese literature at different period of time. Especially through the "Charyapada" the students get the information of the socio-cultural background of Assam.
2. The advent of Neo-Vaishnavism and the composition of Sankardev, Madhavdev and others incorporated in the syllabus and above all the compositions like the "Kirtonghosa", "Bargeet", "Ankiya Nat" etc, not only strengthen the religion but also create awareness among the learners to fight against the social evils like casteism, superstitious etc.
3. The old and modern Assamese poems acquaint the learners with the socio-cultural affairs of the society. These also give inspiration to learners to face the challenges of real life.
4. Through this syllabus the students come to Know Assamese culture, the elements of folk culture, the festivals of Assam and the tradition of sakta, saiva and vaishnava dharma.
5. The knowledge of philosophy gives the opportunity to the learners to know the linguistic pattern of various languages as well as the journey of the Assamese language through various languages like Pali, Prakrit, Apabhramsa, Magadhi etc.
6. The technical literature of Assamese contains poetics (Both Indian and western), Metres, Rhetorics, etc, and the lessons on Assamese grammar give a solid foundation for learning Assamese language.
7. The syllabus of Assamese has incorporated the translation works of the short stories and novels.

COURSE OUTCOME

Semester	Course Code	Course Name	Course Outcome
I	ASM - HC – 1016	History of Assamese literature (Charyapada – Sankari age)	By the study of Honours in Assamese students can taught of ancient periods mainly the age of pre-Sankarism, age of Sankari etc.

II	ASM – HC– 2016	Introduction to Language	Students can learn about the formation of Assamese language its basic structure and so on.
	ASM – HC– 2026	Criticism of Literature	By the study of this paper students can learn eastern and western criticism of literature and its various components related it.
III	ASM – HC– 3016	Entry to Assamese Literature	Through this paper students can motivate regarding various aspect of Assamese Literature mainly folk tales, poems writing, short story writing, articles writing and also can learn about the auto-Biography of great man like (Bhabendra Nath Saikia, Krishna Kanta Handique, Homen Borgohain) travel literature and so on.
	ASM – HC– 3026	Introduction to Assamese Poetry	Students can learn about the origin formation writing style of the poems in various ages.
	ASM – HC– 3036	Assamese Culture	Through this paper students can learn about the History of Assamese culture and its important in the society
IV	ASM – HC– 4016	Comparative study of Indian Literature	Though this paper students can learn about the introduction of comparative literature, Short Stories and Novels.
	ASM – HC– 4026	Assimilation of Assamese literature - Aryan and non-Aryan	Though this paper students can learn the origin of Assamese language and its relation with non-Aryan and to days component of Assamese language.
	ASM – HC– 4036	Assamese Prose literature (From the beginning to eighteen century)	Students can learn about the Assamese Prose History mainly Sakardeva‘s Ankiya Nat, Bhattadeva khatha-gita, khatha-guru charit and satsari Assam Burangi.
V	ASM – HC– 5016	Assamese drama and style of performance (From the beginning to eighteen century)	Though this paper students can learn about the History of Assamese Drama, style of its performance on the age of Sankardeva, Pre-independence and post-independence age. Again, they learn activity of gayan-bayan etc.
	ASM – HC– 5026	Assamese Grammar	Though this paper students can learn about the alphabet, sentences, tense, number etc. again they will be learned about sentence and its rules of formation in Assamese language.
VI	ASM – HC– 6016	Assamese Short Story and Novel	Though this paper students can learn about the History of short stories, Novels and its necessity in the field of Assamese literature.

	ASM – HC– 6026	History of Assamese Script	Though this paper student can learn about the History of Assamese alphabet as example copper plates, inscriptions etc. and in the reigns of Bhaskar Varma Dubi and Nidhanpur rule.

Subject: Economics

PROGRAMME SPECIFIC OUTCOME

Specific outcome of Economics major syllabus prescribed by Gauhati University may be cited below:

1. The students will understand the all important economic behavior of individual economic unit.
2. The students will be able to know the macro-economic structure of an economy.
3. The students will be able to know how prices are set under different market structure.
4. The students will be able to learn the role of money and monetary policy in an economy
5. The students will be able to learn calculus and mathematics in Economics
6. The students will be able to learn the concept of economic development and growth.
7. The students will be able to learn the principles of public finance.
8. The students will be able to learn different statistical techniques used in Economics
9. The students will be able to learn principles of econometrics.
10. The students will be to learn the impact of economic activity on environment.
11. The students will be able to learn history of Economic thought.

COURSE OUTCOME

Semester	Course Code	Course Name	Course Outcome
I	ECO-HC-1016	Introductory Micro Economics	This course is designed to expose the students to the basic principles of microeconomic theory. The emphasis will be on thinking like an economist and the course will illustrate how microeconomic concepts can be applied to analyze real-life situations
	ECO-HC-1026	Mathematical methods in Economics-I	The objective of this sequence is to transmit the body of basic mathematics that enables the study of economic theory at the undergraduate level
II	ECO-HC-2016	Introductory Macro Economics	This course aims to introduce the students to the basic concepts of Macroeconomics. This course discusses the preliminary concepts associated with the determination and measurement of aggregate macroeconomic variable

	ECO-HC-2026	Mathematical methods in Economics- II	The objective of this course is to transmit the body of basic mathematics that enables the study of economic theory at the undergraduate level, specifically the courses on microeconomic theory, macroeconomic theory, statistics and econometrics set out in this Syllabus
III	ECO-HC-3016	Intermediate Micro Economics I	The course is designed to provide a sound training in microeconomic theory to formally analyze the behaviour of individual agents
	ECO-HC-3026	Intermediate Macro Economics I	This course introduces the students to formal modeling of a macro-economy in terms of analytical tools. It discusses various alternative theories of output and employment determination in a closed economy in the short run as well as medium run, and the role of policy in this context
	ECO-HC-3036	Statistical methods for Economics	This is a course on statistical methods for economics. It begins with some basic concepts and terminology that are fundamental to statistical analysis and inference. It then develops the notion of probability, followed by probability distributions of discrete and continuous random variables and of joint distributions.
IV	ECO-HC-4016	Intermediate Micro Economics-II	The emphasis will be on giving conceptual clarity to the student coupled with the use of mathematical tools and reasoning. It covers general equilibrium and welfare, imperfect markets and topics under information economics.
	ECO-HC-4026	Intermediate Macro Economics -II	In this course, the students are introduced to the long run dynamic issues like growth and technical progress. It also provides the micro-foundations to the various aggregative concepts
	ECO-HC-4036	Introductory Econometrics	This course provides a comprehensive introduction to basic econometric concepts and techniques. It covers statistical concepts of hypothesis testing, estimation and diagnostic testing of simple and multiple regression models.
V	ECO-HC-5016	Indian Economy I	This course reviews major trends in economic indicators and policy debates in India in the post-Independence period, with particular emphasis on paradigm shifts and turning points
	ECO-HC-5026	Development Economics I	The course begins with a discussion of alternative conceptions of development and their justification. It then proceeds to aggregate models of growth and cross-national comparisons of the growth experience that can help evaluate these models.

	DSE 1 ECO-HE-5016	Economics of Health &Education	This course provides a microeconomic framework to analyze, among other things, individual choice in the demand for health and education, government intervention and aspects of inequity and discrimination in both sectors. It also gives an overview of health and education in India.
	DSE-2 ECO-HE-5026	Money and Financial Market	This course exposes students to the theory and functioning of the monetary and financial sectors of the economy. It highlights the organization, structure and role of financial markets and institutions. It also discusses interest rates, monetary management and instruments of monetary control. Financial and banking sector reforms and monetary policy with special reference to India are also covered.
	DSE-3 ECO-HE-5036	Public Finance	This course is a non-technical overview of government finances with special reference to India. It will look into the efficiency and equity aspects of taxation of the centre, states and the local governments and the issues of fiscal federalism and decentralization in India. The course will be useful for students aiming towards careers in the government sector, policy analysis, business and journalism.
VI	ECO-HC-6016	Indian Economy II	This course examines sector-specific polices and their impact in shaping trends in key economic indicators in India. It highlights major policy debates and evaluates the Indian empirical evidence. Given the rapid changes taking place in the country, the reading list will have to be updated annually.
	ECO-HC-6026	Development Economics II	It begins with basic demographic concepts and their evolution during the process of development. The structure of markets and contracts is linked to the particular problems of enforcement experienced in poor countries. The governance of communities and organizations is studied and this is then linked to questions of sustainable growth. The course ends with reflections on the role of globalization and increased international dependence on the process of development
	DSE 1 ECO-HE-6016	Environmental Economics	This course focuses on economic causes of environmental problems. In particular, economic principles are applied to environmental questions and their management through variousEconomic institutions, economic incentives and other instruments and policies

	DSE-2 ECO-HE-6026	International Economics	This course develops a systematic exposition of models that try to explain the composition, direction and consequences of international trade, and the determinants and effects of trade policy. It concludes with an analytical account of the causes and consequences of the rapid expansion of international financial flows in recent years.
	DSE-3 ECO-HE-6036	The Economy of Assam	Syllabus yet to be prepared by the University

Subject: Education

PROGRAMME SPECIFIC

OUTCOME

Specific outcome of Education major syllabus prescribed by Gauhati University may be cited below:

1. To understand the scientific foundational theories and principles of education.
2. To enable the students to understand the relation between education and psychology and different methods of educational psychology.
3. To acquaint the students with the development of education system in ancient, medieval, colonial and post-colonial period in India along with Assam.
4. To acquaint the students with education as a social process and how it can be understand from the social perspective.
5. To acquaint the learner with the emerging issues in education like different literacy programmes, women empowerment, Human rights, globalization, vocationalization of secondary education.
6. To help the students to acquire knowledge of the concept of measurement and evaluation in education and they will understand the different types of educational tests and their uses.
7. To enable the students to understand the concept and scope and objectives of Educational Technology like teaching technology, behavioral technology and instructional technology.
8. To enable the students to understand the concept, scope and importance of environmental education.
9. To acquire knowledge about the three major philosophies of education — Idealism, Naturalism and Pragmatism and to familarise with the Indian schools of philosophical thought — Vedic, Buddhist and Islamic thought.
10. To acquaint the students with the teaching learning process, the principles, maxims fundamental of teaching.
11. To enable the students to understand the basic concepts related to development psychology.

12. To enable the students to understand the concept of continuing education and Distance education and its relevance to the changing society.
13. To help the students to understand the meaning and importance of special education on persons with disabilities, education provisions and support services of special children.
14. To enable the students to understand the basic concepts of management, organization and administration.

COURSE OUTCOME

Semester	Course Code	Course Name	Course Outcome
I	EDU-HC-1016	Principles of Education	• To acquaint the students with the sound principles of education • To acquaint the students with the important concepts of Education, Curriculum, Democracy, Discipline and Freedom. • To develop knowledge about different Aims of Education, various types of Curriculum, Correlation of Studies and Forms of Discipline. • To familiarize the students with democratic idea of modern education.
	EDU-HC-1026	Psychological Foundations of Education	• To make the students understand the relationship between education and psychology and 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, measurement, and concept of emotional intelligence.
	EDU-HG-1016	Foundations of Education	• To acquaint with the principles of education • To gain knowledge about different various Forms and Aims of Education • To understand the concept and importance of Discipline and Freedom. • To acquire knowledge about the concept of Emotional and National Integration and International Understanding.
II	EDU-HC-2016	Philosophical and Sociological Foundations of Education	• Know the concept of philosophy and its relationship with education. • Understand the educational implications of different Indian schools of philosophy as well as different Western schools of philosophy. • Know the concept of sociology and its relationship with education and to develop the understanding about the concept of educational sociology, social groups and socialisation.

	EDU-HC-2026	Development of Education in India	• Recount the concept of Ancient Indian education system • Describe the education system in Ancient India, particularly Vedic Education and examine the education system in Medieval India and education system during British Period
	EDU-HG-2016	Psychology of Adolescents	• To enable the students to understand the period of adolescence • To enable the students to understand the significance of the adolescence period in human life and to know about various problems associated with this stage • To enable the students to understand the development aspects of adolescence, importance of adolescence period and problems associated with this stage.
III -VI	-	-	Syllabus yet to be prepared by the University

History

PROGRAMME SPECIFIC OUTCOME

Specific outcome of History major syllabus prescribed by Gauhati University may be cited below:

1. To understand the meaning and scope of history and its relation with other disciplines.
2. The students will be acquainted with history of India according to its various phases like – Paleolithic, Mesolithic and Neolithic.
3. The students will understand the state-formation process under the Mauryas, Guptas etc.
4. Will be acquainted with the history of ancient civilizations of the world viz. Mesopotamia, Greece, Chinese, and Roman.
5. The students will understand the rise of Turks and Afghans in India and its affect on state, society and economy.
6. Will help the students to know the history of ancient medieval and modern Assam along with its various dynasties and their impact upon society, polity, economy etc.
7. Will help the students to know about advent of Mughal in India and expansion of their territory.
8. Will help the students to know about history of Europe and its transition from Medieval to modern age.
9. Will help the students to know about the arrival of the British in India and their expansion and consolidation.
10. Will help the students to understand the existence of science and technology in pre-colonial India

COURSE OUTCOME

Semester	Course Code	Course Name	Course Outcome
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**.**
	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.
II	HIS-HC-2016	History of India	On successful completion of this course the students will be able to Explain the economic and socio-cultural connections, transitions and stratifications during the

Hindi

PROGRAMME SPECIFIC OUTCOME

Specific outcome of Hindi major syllabus prescribed by Gauhati University may be cited below:

1. The learners are acquainted with the information‘s of various periods of Hindi literature like Bhaktikal, Ritikal as well as the modern period.
2. Through the compositions of the poets like Bihari, Ghanananda, Bhushan and others and also by reading like Novels, Essays and Hindi poems etc, the learners get inspiration to fare the realities of life especially the Sakhi‘ of Kabir gives lesson to understand the day to day affairs of family life.
3. The knowledge of philosophy gives the opportunity to the learners to know the linguistic pattern as well as socio-cultural affairs of various people of the country.
4. Through the compositions of vidyapati the learners become familiar with the Maithili language and its characteristics. Above all the spiritual essence contained in the writing also gives the lessons of the traditional value system of our country.
5. The talents of the writers reflected in the compositions of the Assamese writers acquaint the learners with the life and literature of Assam and its culture.
6. Metre, Rhetoric, Rasa, etc have been incorporated in the syllabus to give a solid foundation of Hindi technical literature to the students.

COURSE OUTCOME

Semester	Course Code	Course Name	Course Outcome
I	HINDI-HC-1016	Hindi Sahitya Ka Itihas	1. This course aims to get students acquainted with Adikal of history of Hindi literature. 2. This course provides the students information of Adikal and its historical Importance. 3. This course also seeks to help the students to know about the Bhaktikal & Ritikal also.
	HINDI-HC-1026	HINDI Sahitya Ka itihas Adhunik Kal	1. This course helps the students to get the knowledge of Adhunik Kal & his importance. 2. It also helps them to know about the Diwedi Yugin & Kariboli used in every way of life.
II	HINDI-HC-2016	Adikalin evam Madhya Kalin HINDI Kavita	1. This course aims to know the students about the old poetry. 2. Beside the information of life & literary work of Kavi Vidyapati, Kabir, Surdas, Tulsidas & Bihari.
	HINDI-HC-2026	Adhunik HINDI Kavita Chhyavad Tak	1. The objective of the couse is to study in Chhyavad yug about the Poet Bhartendu, Maitheli Saran Gupta & Mahadevi Verma. 2. Student also benefitted and know about the Bhasa development & emotion of Mahadevi Verma.
III	HINDI-HC-3016	Chhyawadottar HINDI Kavita	1. This course aim to acquainted students with some Chhayawadottar HINDI Kavita. 2. Students know about the Kavi & his view to the Chhayawacottar HINDI Kavita.
	HINDI-HC-3026	Bhartiya Kavya Shastra	1.The study of the Bhartiya Kavya Shastra embraces all Acharyas Bhartiya Kavya Shastra concept about Kavya ke LEkhan, Kavya hetu,Dhawni ke Siddant, Vakroki & ouchitya ki Awadharna.
	HINDI-HC-3036	Pashchatya Kavya Shastra	1. Students know the view of Western Poetics as like as Plato, Avastu, Wordsworth, T.S Eliot about Paschatya Kavya Shastra.

IV	HINDI-HC-4016	Bhasha Vigyan Hindi Bhasha evam Devnagri Lipi	1. This course aim about the students benefit with the Bhasha & Boli. 2. This paper also help t student about the Dhawani, aur uska Vargikaran,Dhawani parivartan ke karan &vakya vigyon. 3. This course is also help the students in the field of HINDI bhasha ka vdbhav & vikas and also know the language of Awadhi, Braj, Khariboli Devangrilipi also.
	HINDI-HC-4026	HINDI Katha Sahitya	1. The student knows about the Upanyas and how to apply it in their life. 2. The students also read some story and learn the principle of their characters.
	HINDI-HC-4036	HINDI Natak evam ekanki	1. Students provide the historical information about the Natak & ekanki. 2. The character of natak & ekanki has also helped the students.
V	HINDI-HC-5016	HINDI Nibandh evam anya gadya vidhaye	1. This paper also help the student to know about the Nibandh, Sansmaran, Rekha chitra, Paribhasha Swaroop & tatwa. 2. Students are also inspired the view of Nibandhkar as likeas Sardar pawan singh, Ramchandra Shukla, Mahadevi Verma etc.
	HINDI-HC-5026	Prayojan Mulak Hindi	1. Students are benefited by this paper & also get the knowledge about the HINDI Bhasa, Rajbhasha &Rajbhasa ki Samvaidhanik Sthiti. 2. Students also know the Prayojanmulak HINDI,Pramukh Lakshan, Sanchar Madhyam, Aakashvani Doordarshan, Chal chitra aso. 3. This paper also helps the students to know about the sarkari patra, Tippani, Masado Lekhani, Aalekhan,Paribhashik Sabdavali & Anuwad.
VI	HINDI-HC-6016	HINDI Ki sahityik patra karita	1. Students know about Patrakarita. 2. This paper also describes the many sahityik patrika as like bhartendu yugin sahityik patra karita & others etc.
	HINDI-HC-6026	Hindi Project Work	Hindi Prayojan Karay.
			Ruling houses, empires and the politico-administrative nuances of early Indian History from 300 BCE to 300 CE.

	HIS-HC-2026	Social Formations and Cultural Patterns of The Medieval World	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 there.
III	HIS-HC-3016	History of India III (c. 750 -1206)	The completion of this paper will enable the students to elate 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 foreign influence and the changes brought in its wake in the
	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 14th to the 16th century CE. They will be able to explore and analyse the significant historical shifts and events and the resultant effects on the
	HIS-HC-3036	History of India IV (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.
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 causal factors of the intellectual and revolutionary currents of both
	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
	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 able them to relate to the socio-economic and religious orientation of the people of Medieval period in

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 occurred in Europe in the period between 1780 and 1939. They will also be also to critically analyse the evolution of social classes, nation states, evolution of capitalism and nationalist sentiment in Europe. They will also be able to relate to the variety of causes that dragged the world into
	HIS-HC-5026:	History of India VII (c. 1780 - 1857)	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
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 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
	HIS-HC-6026:	History of Modern Europe II (c. 1780 - 1939)	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 working class movements, socialist upsurge and the economic forces of the two wars and the other ideological shifts of Europe in the period.

Subject: Philosophy

PROGRAMME SPECIFIC OUTCOME

Specific outcome of Philosophy major syllabus prescribed by Gauhati University may be cited below:

- The programme helps students to analyze the ways in which humans experience the world and to develop a sense of value.
- The study of philosophy is intrinsically as well as extrinsically valuable. The students of philosophy can develop the ability in critical thinking skills.
- They understand the concept of right and wrong, understand the moral principles and their

application in everyday life.

- They develop the ability to summarize and explain difficult ideas and concepts in their own.
- The students also develop the ability to understand reality from different perspectives and examine different sides of an issue as well as students learn to improve their analytical writing skills through this programme.
- The programme helps student to develop the creative and independent thinking.
- The student of philosophy develops ability in research methodology, specifically stating and defending a clear and substantive thesis.
- The programme helps student to carefully and insightfully analyzed argument, rhetoric expressed in various media like print, television, radio and social media.

COURSE OUTCOME

Semester	Course Code	Course Name	Course Outcome
I	PHI-HC-1016	Indian Philosophy- I	Indian philosophy has been concern with various philosophical problems such as nature of the world, nature of reality, nature of knowledge, logic, ethics and the philosophy of religion. Indian philosophy creates awareness about the spiritual aspects of individual as well as ancient philosophical traditions of India.
	PHI-HC-1026	Logic- I	Logic helps students to clarify thought process and make correct reasoning. Also Modern or Symbolic Logic gives us the knowledge of the formal techniques of evaluating arguments and deductive systems.
II	PHI-HC-2036	Greek Philosophy	As Greek philosophy deals with wide variety of subjects like political philosophy, ontology, aesthetic etc, it helps a student to know about the origin of philosophy and cultural.
	PHI-HC-2046	Logic II	Same as Logic I
III	PHI-HC-3066	Indian Philosophy- II	Same as Indian Philosophy- I
	PHI-HC-3076	Ethics	Through the study of ethics an individual can look upon his life critically evaluate his actions and make decisions freely. It gives us the knowledge of ethical theory with
			the help of which we can apply it to specific discipline or issues including business, science, medicine and technology etc.
IV	PHI-HC-4086	Contemporary Indian Philosophy	Through the study of Contemporary Indian Philosophy students are acquainted with the humanistic approach of life and philosophy. With the help of which they become aware about the reconciliation between the forces of tradition with the concept of modernity.

	PHI-HC-4096	Philosophy of Religion	Philosophy of Religion help students to analyze philosophically various religious points of view and at the same time the study of comparative religion brings tolerant attitude in one‘s life.
	PHI-HC-4106	Social and Political Philosophy	The study of Social Philosophy makes a student aware about their social behaviors, duties and responsibilities etc as well as the study of political philosophy allows student to examine the complex nature of political power. By studying Political Philosophy student can know what makes a government legitimate, what rights and freedoms it should protect, what form it should take etc.
V	PHI-HC-5116	Analytic Philosophy	Analytic philosophy which is also called as a Linguistic Philosophy is based on the idea that the philosophical problems can be solved through the analysis of their terms in a pure and systematic logic.
	PHI-HC-5126	Phenomenology and existentialism	Phenomenology is the study of structures of consciousness as experiences from the first person point of view as well as it is related to under key discipline in philosophy, such as ontology, epistemology, logic and ethics. The study of Existentialism helps student to know about the man‘s existence, freedom, emotion, action etc. It helps student to develop a consistent scale of values, authenticate their existence by being committed these values. As a philosophical trend it also helps students to construct a systematic thought.
VI	PHI-HC-6136	Philosophy of mind (Western/Indian)	From the study of Philosophy of Mind students can know the philosophical study of the nature of mind, mental events, mental functions, mental properties and consciousness and of the nature of their relationship with the physical body.
	PHI-HC-6146	Meta Ethics	Through the study of Meta Ethics student can know the connection between values, reason for actions, human motivation, etc. which address many of the issues commonly bound up with the nature of freedom and its significant.

Subject: Political Science

PROGRAMME SPECIFIC OUTCOME

Specific outcome of Political Science major syllabus prescribed by Gauhati University may be cited below:

1. Political science as a subject acquainted the students to understand various theories of political science and its history and approaches, and an assessment of its critical.
2. The study of political Science will help the students to know about the constitution of India and how the constitutional provisions are applied in the administrative system of the country. It helps them to know the various rights and Duties of the Citizen.
3. Political Science is useful to understand the mechanisms of modern governmental systems.
4. The subject enables the students to understand the various theories of International Relations and dynamics involved with it. The study of Political Science is also useful for understanding both national and international foreign policies.
5. Political science also deals with various ideals like Rights, Justice, Liberty, Equality, etc.
6. The subject is also helpful in inculcating democratic values, good citizenship, etc.
7. With the help of studying Political Science students will able to understand prevailing political culture in a political system and thereby they get themselves acquaint with the political process of the political system.
8. The study of Political Science is helpful in understanding the political development that takes place in a particular political system.
9. The students get themselves aware about the Human Rights, working of various International Organisations in different field of Human Development through the study of Political Science.
10. The subject imparts the lesson of co-operation and toleration among the students.
11. This subject introduces students to the key debates on the meaning and nature of globalization by addressing its political, economic, social and cultural and technological dimension.
12. The subject provides an introduction to the discipline of Public Administration. It encompasses public administration in its historical context with an emphasis on various classical and contemporary administrative theories.
13. The subject enables the students to understand the political philosophy of the Indian and western political thinkers and their applicability in present context.
14. The subject provides the knowledge of contemporary political Ideologies and issues in the global context the student.

COURSE OUTCOME

Semester	Course Code	Course Name	Outcome
I	POL-HC-1016	Understanding Political Theory	The course syllabus is divided into two sections. Section A deals with the idea of political theory, its history and approaches, and an assessment of its Critical and contemporary trends. On the other hand, Section B is designed to reconcile political theory and Practice through reflections on the ideas and practices related to democracy
	POL-HS-1026	Constitutional Government and Democracy In India	This course acquaints students with the constitutional design of state structures and institutions, and their actual working overtime. The Indian Constitution accommodates conflicting impulses (of liberty and justice, territorial decentralization and a strong union, for instance) within itself. The course traces the embodiment of some of the conflicts in constitutional provisions, and shows how these have played out in political practice. It further encourages a study of state institutions in their mutual interaction, and in interaction with the larger extra-constitutional environment.
II	POL-HC-2016	Political Theory-Concepts and Debates	This course is divided into two sections. Section A helps the student familiarize with the basic normative concepts of political theory. Each concept is related to a crucial political issue that requires analysis with the aid of our conceptual understanding. This exercise is designed to encourage critical and reflective analysis and interpretation of social practices through the relevant conceptual toolkit. Section B introduces the students to the important debates in the subject. These debates prompt us to consider that there is no settled way of understanding concepts and that in the light of new insights and challenges, besides newer ways of perceiving and interpreting the world around us, we inaugurate new modes of political debates.
	POL-HC-2026	Political Process in India	Actual politics in India diverges quite significantly from constitutional Legal rules. An understanding of the political process thus calls for a different mode of analysis - that offered by political sociology. This course maps the working of ‗modern' institutions, premised on the existence of an individuated society, in a context marked by communitarian solidarities, and their mutual transformation thereby. It also familiarizes students with the working of the Indian state, paying attention to the contradictory dynamics of modern state power.

III	POL-HC-3016	Introduction to Comparative Government and Politics	This is a foundational course in comparative politics. The purpose is to familiarize students with the basic concepts and approaches to the study of comparative politics. More specifically the course will focus on examining politics in a historical framework while engaging with various themes of comparative analysis in developed and developing countries.
	POL-HC-3026	perspectives on public administration	The course provides an introduction to the discipline of public administration. This paper encompasses public administration in its historical context with an emphasis on the various classical and contemporary administrative theories. The course also explores some of the recent trends, including feminism and ecological conservation and how the call for greater democratization is restructuring public administration. The course will also attempt to provide the students a comprehensive understanding on contemporary administrative developments.
	POL-HC-3036	Perspectives on International Relations and World History	This paper seeks to equip students with the basic intellectual tools for understanding International Relations. It introduces students to some of the most important theoretical approaches for studying international relations. The course begins by historically contextualizing the evolution of the international state system before discussing the agency structure problem through the levels-of-analysis approach. After having set the parameters of the debate, students are introduced to different theories in International Relations. It provides a fairly comprehensive overview of the major political developments and events starting from the twentieth century. Students are expected to learn about the key milestones in world history and equip them with the tools to understand and analyze the same from different perspectives. A key objective of the course is to make students aware of the implicit Euro -centricism of International Relations by highlighting certain specific perspectives from the Global South.
IV	POL-HC-4016	Political Processes and Institutions in Comparative Perspective	In this course students will be trained in the application of comparative methods to the study of politics. The course is comparative in both what we study and how we study. In the process the course aims to introduce undergraduate students to some of the range of issues, literature, and methods that cover comparative political.

	POL-HC-4026	Public Policy and Administration in India	The paper seeks to provide an introduction to the interface between public policy and administration in India. The essence of public policy lies in its effectiveness in translating the governing philosophy into programs and policies and making it a part of the community living. It deals with issues of decentralization, financial management, citizens and administration and social welfare from a non-western perspective.
	POL-HC-4036	Global Politics	This course introduces students to the key debates on the meaning and nature of globalization by addressing its political, economic, social, cultural and technological dimensions. In keeping with the most important debates within the globalization discourse, it imparts an understanding of the working of the world economy, its anchors and resistances offered by global social movements while analyzing the changing nature of relationship between the state and trans-national actors and networks. The course also offers insights into key contemporary global issues such as the proliferation of nuclear weapons, ecological issues, international terrorism, and human security before concluding with a debate on the phenomenon of global governance.
V	POL-HC-5016	Classical Political Philosophy	This course goes back to Greek antiquity and familiarizes students with the manner in which the political questions were first posed. Machiavelli comes as an interlude inaugurating modern politics followed by Hobbes and Locke. This is a basic foundation course for students.
	POL-HC-5026	Indian Political Thought-I	This course introduces the specific elements of Indian Political Thought spanning over two millennia. The basic focus of study is on individual thinkers whose ideas are however framed by specific themes. The course as a whole is meant to provide a sense of the broad streams of Indian thought while encouraging a specific knowledge of individual thinkers and texts. Selected extracts from some original texts are also given to discuss in class. The list of additional readings is meant for teachers as well as the more interested students.
VI	POL-HC-6016	Modern Political Philosophy	Philosophy and politics are closely intertwined. We explore this convergence by identifying four main tendencies here. Students will be exposed to the manner in which the questions of politics have been posed in terms that have implications for larger questions of thought and existence.

	POL-HC-6026	Indian Political Thought-II	Based on the study of individual thinkers, the course introduces a wide span of thinkers and themes that defines the modernity of Indian political thought. The objective is to study general themes that have been produced by thinkers from varied social and temporal contexts. Selected extracts from original texts are also given to discuss in the class. The list of additional readings is meant for teachers as well as the more interested students.

Sanskrit

PROGRAMME SPECIFIC OUTCOME

Specific outcome of Sanskrit major syllabus prescribed by Gauhati University may be cited below:

1. It gives importance on the inheritance of great cultural heritage of India, which gives a broader vision to the learners to understand their life.
2. The syllabus gives an overall idea of Sanskrit literature and provides the students the information of History of Sanskrit literature.
3. It acquaints the learners with the preliminary concepts of various disciplines like the Vedic literature, Epic literature, Philosophy, Medical science, Vedic Mathematics, Vastu Sastra, Poetics, etc.
4. The knowledge of Philology gives opportunity to the learners to know the linguistic patterns as well as socio-cultural conditions of various linguistic groups.
5. It prepares the students to face the examination and the challenges of real life as well.
6. The information and knowledge, incorporated in the ancient texts inspire the students for interdisciplinary research activities, which lead to the sustainable development of the nation.
7. It acquaints the learners with the technical and scientific literature in Sanskrit. The technical literature comprises Poetics, Rhetoric, Prosody, etc.
8. The lessons on Sanskrit Grammar give a solid foundation to learn the structure of Sanskrit language.
9. The learners are acquainted with the basic information on Computer.
10. It possesses all the potentialities to develop human resources as it inculcates the spirit of ethical values, which is considered to be the foundation of Sanskrit culture.

COURSE OUTCOME

Semester	Course Code	Course Name	Course Outcome
I	SKT- HC-1016	Classical Sanskrit Literature (Poetry)	1. This course aims to get students acquainted with Classical Sanskrit Poetry. 2. This course provides the students the information of History of Sanskrit literature, especially the development of Sanskrit literature. 3. The course also seeks to help students to negotiate texts independently.
	SKT- HC-1026	Critical Survey of Sanskrit Literature	1. This course aims to get acquaint the students with the journey of Sanskrit literature from Vedic literature to Purāṇa. 2. It also intends to give an outline of different Śāstric traditions, through which the students will be able to know the different genres of Sanskrit Literature and Śāstras.
II	SKT-HC-2016	Classical Sanskrit Literature (Prose)	This course aims to acquaint students with comprehensive information of Classical Sanskrit Prose literature. Origin and development of prose, Important prose romances and fables Sanskrit, etc., have also been included here to acquaint the students with the history of Sanskrit Prose literature. 2. Besides the information of history this course also seeks to help students to select the Sanskrit texts for independent literary study.
	SKT-HC-2026	Self-Management in the Gītā	1. The objective of this course is to study the philosophy of self-management in the Śrīmadbhagavadgītā. 2. This course helps the students for creative writing and analytical study. 3. This also guides the students to find out the relevance of Śrīmadbhagavadgītā in present context. 4. It helps the students to understand the broader perceptive of life. 5. It helps the students to know various ways of maintaining balance between thought and action.
III	SKT-HC-3016	Poetics and literary criticism	1. This course aims to acquaint students with three most famous dramas of Sanskrit literature which represent three stages in the growth of Sanskrit drama. 2. Mudrārāksasa of Viśakhadatta is a drama, written on the political background which acquaints the students with a different genre of Sanskrit drama.

	SKT-HC-3026	Poetics and literary criticism	1. The study of Sāhityaśāstra (Sanskrit Poetics) embraces all poetic arts and includes concepts like alaṁkāra, rasa, rīti, vakrokti, dhvani, aucitya etc. The entire domain of Sanskrit poetic has flourished with the topics such as definition of poetry and divisions, functions of word and meaning, theory of rasa and alaṁkāra (figures of speech) and chandas (metre), etc. All these familiarize the students with the fundamental technical structures of Sanskrit literature. 2. This develops capacity for creative writing and literary appreciation.
	SKT-HC-3036	Indian Social Institutions and Polity	Social institutions and Indian Polity have been highlighted in Dharma-śāstra 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 Saṁhitās, Mahābhārata, Purāṇa, Kauṭilya's Arthaśāstra and other works known as Nītiśāstra.
IV	SKT-HC-4016	Indian Epigraphy, Paleography and Chronology	1. This course aims to acquaint the students with the epigraphical journey in Sanskrit, the only source which directly reflects the society, politics, geography and economy of the time. 2. The course also seeks to help students to know the different styles of Sanskrit writing.
	SKT-HC-4026	Modern Sanskrit Literature	1. 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.
	SKT-HC-4036	Sanskrit and World Literature	1. 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.
V	SKT-HC-5016	Vedic Literature	1. This course on Vedic literature aims to introduce various types of Vedic texts. Students will also be able to read one Upaniṣad, namely, Muṇḍaka, where primary Vedānta-view is propounded.
	SKT-HC-5026	Sanskrit Grammar	To acquaint the students with general Sanskrit Grammar.
VI	SKT-HC-6016	Ontology and Epistemology	1. This course aims to get the students acquainted with the cardinal principles of the Nyāya-Vaiśeṣika philosophy through the Tarkasaṁgraha and to enable students to handle philosophical texts in Sanskrit. 2. It also intends to give them an understanding of essential aspects of Indian Philosophy.

	HC-6026	Sanskrit Composition and Communication	1.This paper aims at teaching composition and other related information based on Laghusiddhāntakaumudī Vibhaktyartha Prakarana.

Programme outcome for B.Sc.:

After completing the B.Sc. course a student is expected achieve the below mentioned Programme Outcome

- A student should be able to think critically: He/she should be able to take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.
- A student should learn effective communication: Student should acquire the ability to speak, read, write and listen clearly in person and through electronic media in English and in at least one official language of Assam, and make meaning of the world by connecting people, ideas, books, media and technology.
- A student should learn Social Interaction: Elicit views of others, mediate disagreements and help reach conclusions in group settings.
- A student should acquire the knowledge of Effective Citizenship: Demonstrate empathetic social concern and equity centred national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.
- A student should learn Ethics: Recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them.
- A student should acquire the knowledge of Environment and Sustainability: Understand the issues of environmental contexts and sustainable development.
- A student should acquire the knowledge of Self-directed and Life-long Learning: Acquire the ability to engage in independent and life-long learning in the broadest context socio-technological changes
- A student should understand the basic concepts, fundamental principles, and the scientific theories related to various scientific phenomena and their relevancies in the day-to-day life.
- A student should acquire the skills in handling scientific instruments, planning and performing in laboratory experiments,
- A student should acquire The skills of observations and drawing logical inferences from the scientific experiments.
- A student should be able to analyse the given scientific data critically and systematically and the ability to draw the objective and conclusions.
- A student should be able to think creatively to propose novel ideas.

- A student should realize how interdisciplinary approach helps in providing better solutions and new ideas for the sustainable development.
- A student should be able to develop scientific outlook not only with respect to science subjects but also in all aspects related to life.
- A student should be imbibed ethical, moral and social values in personal and social life leading to highly cultured and civilized personality.

Programme Specific outcome for BSc.(Science)

Subject: Botany

PROGRAMME SPECIFIC OUTCOME

Specific outcome of Botany major syllabus prescribed by Gauhati University may be cited below:

1. Critically evaluation of ideas and arguments by collection relevant information about the plants, so as recognize the position of plant in the broad classification and phylogenetic level.
2. Acquire depth and breadth of knowledge/expertise in the field of Plant Identification.
3. Iinterpretation of collected information and use taxonomical information to evaluate and formulate a position of plant in taxonomy.
4. Students will be able to collect datas, formulate and analyse the collecting data but applying scientific methods.
5. Students will be able to present scientific hypotheses and data both orally and in writing in the formats.
6. Students will be able to access the primary literature, identify relevant works for a particular topic, and evaluate the scientific content of these works.
7. Students will be able to use physical principles (physics, chemistry) for bio- chemical analysis and also analyse data by using statistical and mathematical formulas
8. Students will be able to identify the major groups‘ plants and be able to classify them within a phylogenetic framework. They will be able to compare and contrast the characteristics of plants, algae, and fungi that differentiate them from each other and from other forms of life.
9. Students will be able to use the evidence of comparative biology to explain the theory of evolution for the unity and diversity of life on earth. They will be able to use specific examples to explain how modification has shaped plant morphology, physiology, and life history.
10. Students will be able to explain the functions at the level of gene, genome, cell, tissue, flower development of plants. They can also be able to give specific examples of physiological adaptations, reproductions, development and mode of life cycle of different forms of plants.
11. Students will be able to explain the ecological interconnections among different life forms on earth by

tracing nutrient and energy flow through environment and structure of populations, communities and ecosystems.

12. Students will be able to explain the experimental techniques and methods of analysis for their area of specialization within biology.

COURSE OUTCOME

Semester	Course Code	Course Name	Course Outcome
I	BOT-HC-1016	Phycology and Microbiology	1. Understand the diversity among Algae. 2. Know the systematic, morphology and structure, of Algae. 3. Understand the life cycle pattern of Algae. 4. Understand the useful and harmful activities of Algae.
			5. Understand the Microbial world and their diversity 6. Know the Economic Importance of Microbes 7. Know the harmful effects of microbes 8. Know the role of microbes in Research activities
	BOT-HC-1026	Biomolecules and Cell biology	1. Know the chemical nature of biomolecules. 2. Understand the different types of interaction in Biomolecules. 3. Structure and general features of enzymes. 4. Concept of enzyme activity and enzyme inhibition. 5. Understand the Biochemical nature of cell and cell organallies 6. Know about the cell divisions: mitosis & meiosis 7. know the endomembrane system and protein transport
II	BOT-HC-2016	Mycology and Phytopathology	1. Understand the Biodiversity of Fungi and understand the life cycle pattern of Fungi 2. Know the Economic Importance of Fungi 3. Know the terminologies in plant pathology. 4. Understand the scope and importance of Plant Pathology. 5. Know the prevention and control measures of plant diseases and its effect on economy of crops.

	BOT-HC-2026	Archegoniate	1. Understand the morphological diversity of Bryophytes. 2. Understand the economical and ecological importance of the Bryophytes. 3. Know the taxonomic position, occurrence, thallus structure, reproduction of Bryophytes. 4. Understand the morphological diversity of Pteridophytes. 5. Understand the economic and ecological importance of the Pteridophytes 6. Know the taxonomic position, occurrence, thallus structure, reproduction of Pteridophytes. 7. Know the evolution of Bryophytes and Pteridophytes.
III	BOT-HC-3016	Anatomy of Angiosperms	1. Understand plant communities and ecological adaptations in plants. 2. Understand the tissues and tissue systems of Plants 3. Know the wood anatomy 4. Know the anatomical difference of dicot and monocot 5. Know the origin, development, arrangement and diversity in size and shape of leaves.
	BOT-HC-3026	Economic Botany	1. Know the major introduced plant species, concept of centre of origin and their importance 2. Know about crop domestication and loss of genetic diversity 3. Understand the evolution of new crops /varieties 4. Know about the germplasm diversity 5. Understand the economic importance of various plant species.
	BOT-HC-3036	Genetics	1. Know about the genomic organization or living organisms, study of genes genome, chromosome etc. 2. Gain knowledge on Mendels genetics and its extensions 3. Know about variation in chromosome number and structure 4 understand about population and evolutionary genetics
IV	BOT-HC-4016	Molecular Biology	1. Gain knowledge about the mechanism of DNA replication. 2. Gain knowledge of transcription in prokaryotes and eukaryotes. 3. Gain knowledge of Processing and modification of RNA. 4. Gain knowledge of protein synthesis, its modification and its involvement in formation of polypeptides.

	BOT-HC-4026	Plant Ecology and Phytogeo-graphy	1. Understands the inter-relationship between the living world and environment 2. Know the soil profile and role of climate in soil development 3. Understand the concept of ecology and its specification 4. Understands Ecosystem and its components 5. Understands the principles, endemism, biomes and phytogeographical divisions of India
	BOT-HC-4036	Plant Systematics	1. Gain knowledge of plant identification, concept of classification, principle and rules of nomenclature 2. Gain knowledge of origin and evolution of angiosperm and their evolutionary relationship 3. Know biometrics, numerical taxonomy and cladistics 4. Know the history of plant classification
V	BOT-HC-5016	Reproductive Biology of Angiosperm	1. Gain knowledge of reproductive development of Angiospermic plant 2. Understand the pollination and fertilization mechanism 3. Gain knowledge embryo, endosperm, seed, structure and their development 4. Know about apomixes and polyembryony
	BOT-HC-5026	Plant Physiology	1 .Gain knowledge of Plant water relationship 2. Gain knowledge of mineral nutrition, nutrient uptake and translocation 3. Gain knowledge of plant growth regulators, Physiology of flowerings 4. Gain knowledge of crytochromes and phototropins
VI	BOT-HC-6016	Plant Metabolism	1. Understand the concept of Metabolism 2. Gain knowledge of mechanism of photosynthesis, respiration, ATP synthesis 3. Gain knowledge of Metabolisms of Carbohydrate, Lipid
			and Nitrogen 4. Understands the Mechanism of signal transduction
	BOT-HC-6026	Plant Biotechnology	1. Understand the method, utilization and importance of Plant Tissue culture. 2. Gain knowledge of DNA technology 3. Gene cloning and method of gene transfer. 4. Gain knowledge on application of Biotechnology

Subject: Chemistry

PROGRAMME SPECIFIC OUTCOME (B. Sc)

Specific outcome of Chemistry major syllabus prescribed by Gauhati University may be cited below:

1. Understand the chemical thermodynamics and kinetics.
2. Understand electrochemistry of organic molecules and their reaction mechanism.
3. Understand the states of matter.
4. Knowledge of electrochemistry.
5. Knowledge of few aliphatic and aromatics organic compounds- their preparation, properties & reactions (hydrocarbon, alkyl halides, alcohol, carboxylic acid, amines, benzene phenols etc.)
6. Understand the classical approach of atomic structure & theories of bonding, nature and properties of non-transition and transition elements.
7. Empowers students to know the basic of quantum chemistry and quantum approach of atomic structure and chemical bonding.
8. Understanding the phase and chemistry of surfaces and collides.
9. To impart the knowledge of coordination compounds in terms of bonding, stability, reactions and electronic spectra.
10. Understand the theories of molecular spectroscopy and ability to use the theories for studying common molecule.
11. Ability to understand the role of metal iron & other essential elements in biology.
12. To impart the knowledge of statistical thermodynamics.
13. Understanding the photochemistry- its physical importance and use in organic chemistry.
14. To impart the knowledge of few natural products and the drug.
15. Ability to analyze organic compounds and inorganic salt intense.
16. Ability to estimate inorganic ions by volumetric, complexometric, graviometric, nedox and precipitation method.
17. Ability to prepare inorganic complex and organic compounds.
18. Ability to determine various physical properties (like viscosity, surface tension, solubility, molecular mass, specific rotation etc).
19. Ability to undertake project work.

COURSE OUTCOME

Sl No	Semester	Paper	Course objective	Learning Outcome
1	I	CHE-HC-1016: INORGANIC CHEMISTRY-I	This course aims at giving students theoretical understanding about the basic constituents of matter – atoms, ions and molecules in terms of their	On successful completion, students would have clear understanding of the concepts related to atomic and molecular structure, chemical

			electronic structure and reactivity. Structure and bonding in/of these are to be dealt with basic quantum chemistry treatment. Reactivity of chemical species based on their electron transfer affinity is introduced. Further, periodic classification of elements in the periodic table and changes in properties along the periods and groups to be studied in detail. Accompanying laboratory course is designed for students to have hands-on experience of basic quantitative analytical techniques related to volumetric titrations.	bonding, periodic properties and redox behaviour of chemical species. Students will also have hands on experience of standard solution preparation in different concentration units and learn volumetric estimation through acid-base and redox reactions.
2		CHE-HC-1026: PHYSICAL CHEMISTRY I	This course contains states of matter-gaseous, liquid and solid sates along with ionic equilibria. A small unit of molecular and crystal symmetry is also there in the course.	In gaseous state unit the students will learn the kinetic theory of gases, ideal gas and real gases. In liquid state unit, the students are expected to learn the qualitative treatment of the structure of liquid along with the physical properties of liquid, viz, vapour pressure, surface tension and viscosity. In the molecular and crystal symmetry unit they will be introduced to the elementary idea of symmetry which will be useful to understand solid state chemistry and group theory in some higher courses. In solid state unit the students will learn the basic solid state chemistry application of x-ray crystallography for the determination of some very simple crystal structures. The students will also learn another important topic "ionic equilibria" in this course.
3	II	CHE-HC-2016: ORGANIC CHEMISTRY I	This course is inducted to apprise students with introduction to organic compounds, electron displacement, type of reagents and reaction intermediates. The chemistry of aliphatic and aromatic hydrocarbon, conformational analysis of cycloalkanes and basic stereochemical phenomena are included. Students are expected to learn different classes learn, explain, describe and analyze different classes of organic compounds, their reactivities and mechanisms along with stereo chemical considerations.	Students will be able to identify different classes of organic compounds, describe their reactivity and explain/analyze their chemical and stereo chemical aspects.
4	II	CHE-HC-2026: PHYSICAL CHEMISTRY II	In this course the chemical thermodynamics, chemical equilibrium, solutions and colligative properties will be taught to the students. Another unit of this course is systems of variable compositions.	In this course the students are expected to learn laws of thermodynamics, thermochemistry, thermodynamic functions, relations between thermodynamic properties, Gibbs Helmholtz equation, Maxwell relations etc. Moreover the students are expected to learn partial molar quantities, chemical equilibrium, solutions and colligative properties. After completion of this course, the

				students will be able to understand the chemical systems from thermodynamic point of view.
5	III	CHE-HC-3016: INORGANIC CHEMISTRY-II	This course starts with the basic principles of metallurgy so as to acquaint the students with the application of the redox chemistry they have learnt in the earlier course on inorganic chemistry. Concepts of protonic and non-protonic acids and bases are introduced for students to appreciate different types of chemical reactions. Periodic behavior of s and p block elements related to their electronic structure and their reactivity is included to acquaint students with the principles governing their reactivity. This course further intend to apprise students about the variety of compounds of the main group elements including oxides, hydrides, nitrides, interhalogens, noble gases and inorganic polymers. As part of the accompanying lab course, experiments involving iodo- and iodi-metric titrations are included for the students to explore other varieties of redox titration. Preparation of simple inorganic compounds is introduced to give hands-on experience of inorganic synthesis.	On successful completion of this course students would be able to apply theoretical principles of redox chemistry in the understanding of metallurgical processes. Students will be able to identify the variety of s and p block compounds and comprehend their preparation, structure, bonding, properties and uses. Experiments in this course will boost their quantitative estimation skills and introduce the students to preparative methods in inorganic chemistry.
6	III	CHE-HC-3026: ORGANIC CHEMISTRY-II	This course is intended to apprise students about different classes of organic compounds, including halogenated hydrocarbons, alcohols, phenols, epoxides, carbonyl compounds and carboxylic and sulfonic acids. Students are expected to learn and differentiate between various organic functional groups; explain, analyze and design transformations between different functional groups.	Students will be able to describe and classify organic compounds in terms of their functional groups and reactivity.
7	III	CHE-HC-3036: PHYSICAL CHEMISTRY-III	The aim of this course is to teach students four important topics of physical chemistry- phase equilibria, chemical kinetics, surface chemistry and catalysis. Phase equilibria and chemical kinetics will be discussed in detail but surface chemistry and catalysis will be introduced to the students.	The students are expected to learn phase rule and its application in some specific systems. They will also learn rate laws of chemical transformation, experimental methods of rate law determination, steady state approximation etc. in chemical kinetics unit. After attending this course the students will be able to understand different types of surface adsorption processes and basics of catalysis including enzyme catalysis, acid base catalysis and particle size effect on catalysis.
8	III	CHE-SE-3024: IT SKILLS FOR CHEMISTS	The objectives of the proposed course are: 1) To provide the basic knowledge of mathematics which are needed to pursue chemistry as major subject. 2) To provide the necessary training for	Course learning outcomes focus on skill development related to basic computer operations and information technology. After completing the course the incumbent is able to use the computer for basic purposes of

			the basic programming knowledge. 3) The course provides information technology literacy and basic skills training for learners with limited experience. 4) To familiarize with the Introductory writing activities and Handling numeric data.	preparing his personnel/business letters, viewing information on Internet (the web), sending mails, using internet banking services etc. After opting this course the students are expected to accumulate the skills in writing activities and Handling numeric data.
9	III	CHE-SE-3034: BASIC ANALYTICAL CHEMISTRY	To familiarize students with different micro and semimicro analytical techniques and help develop the ability to use modern instrumental methods for chemical analysis of food, soil, air and water.	Upon completion of this course, students shall be able to explain the basic principles of chemical analysis, design/implement microscale and semimicro experiments, record, interpret and analyze data following scientific methodology.
10	III	CHE-SE-3044: CHEMICAL TECHNOLOGY & SOCIETY	The objective of the course is to enable students to have a firsthand understanding of different types of equipments needed in chemical technology and offer them concepts regarding some important parameters. The syllabus also emphasizes the dynamic nature of the relations between society on one hand and technological achievement from chemical industries on the other hand. In other words, it tries to explore societal and technological issues from a chemical perspective.	Students shall be familiarized with processes and terminologies in chemical industry, like mass balance, energy balance etc… Learners will be able to use chemical and scientific literacy as a means to better understand the topics related to the society.
11	III	CHE-SE-3054: CHEMOINFORMATICS	The primary objective of this course is to familiarize the students with the use of various computer software and information technology. The students are expected to learn different chemical search engines and utilize them for molecular modelling and structure elucidation with a final goal to compute NMR, IR, mass and other spectra that can be later compared with the experimental data. The course also provides sufficient information and hands on exercises on the use of cheminformatics, with a special emphasis on its application in modern drug discovery.	On the successful completion of the course, the students should be able to explain, interpret and critically examine the utility of computers and software tools to solving chemistry related problems. Recognize, apply, compare and predict chemical structures, properties, and reactivity and; solve chemistry related problems. Employ critical thinking and scientific reasoning to design and safely implement laboratory experiments and keep the records of the same. Compile, interpret and analyze the qualitative/quantitative data and communicate the same in a scientific literature
12	III	CHE-SE-3064: BUSINESS SKILLS FOR CHEMISTS	To familiarize students with important concepts of business operations and intellectual rights as applied to chemical industry.	Students shall be able to explain and/or analyze the important steps of business operations, finance and intellectual property as applied to chemical industry.
13	III	CHE-SE-3074: INTELLECTUAL PROPERTY RIGHTS (IPR)	In this era of liberalization and globalization, the perception about science and its practices has undergone dramatic change. The importance of protecting the scientific discoveries, with commercial potential or the intellectual property rights is being discussed at all levels – statutory, administrative, and judicial. With India ratifying the WTO agreement, it has	After completing this course, students will have in-depth understanding about the importance and types of IPR. This course will also provide the clarity on the legal and economic aspects of the IP system.

			become obligatory on its part to follow a minimum acceptable standard for protection and enforcement of intellectual property rights. The purpose of this course is to apprise the students about the multifaceted dimensions of this issue.	
14	IV	CHE-HC-4016: INORGANIC CHEMISTRY-III	This course introduces students to coordination chemistry. Various aspects like nomenclature, structure, bonding, variety and reactivity of the coordination compounds are included for the students to appreciate. Bioinorganic chemistry is included in this course to acquaint students on the useful and harmful aspects of metals in biological systems. Through the accompanying lab course, experiments related to gravimetric analysis, synthesis of coordination compounds and separation of metal ions using chromatography is included. This will broaden the experimental skills of the students where students will learn about various aspects of experiment design depending upon the requirements like synthesis, estimation or separation.	On successful completion, students will be able name coordination compounds according to IUPAC, explain bonding in this class of compounds, understand their various properties in terms of CFSE and predict reactivity. Students will be able to appreciate the general trends in the properties of transition elements in the periodic table and identify differences among the rows. Through the experiments students not only will be able to prepare, estimate or separate metal complexes/compounds but also will be able to design experiments independently which they should be able to apply if and when required.
15	IV	CHE-HC-4026: ORGANIC CHEMISTRY-III	The course intrudes students to different classes of N-based compounds, including alkaloids and terpenoids and their potential application. Students are expected to learn about different classes of N-based compounds; their structures, synthesis and reactivity.	Students shall demonstrate the ability to identify and classify different types of N-based derivatives, alkaloids and hetrocyclic compounds/explain their structure mechanism and reactivity/critically examine their synthesis and reactions mechanism.
16	IV	CHE-HC-4036: PHYSICAL CHEMISTRY-IV	The aim of this course is to introduce students with primarily two areas of physical chemistry- electrochemistry and electrical and magnetic properties of atoms and molecules. It contains three units- conductance, electrochemistry and electrical & magnetic properties of atoms and molecules.	In this course the students will learn theories of conductance and electrochemistry. Students will also understand some very important topics such as solubility and solubility products, ionic products of water, conductometric titrations etc. The students are also expected to understand the various parts of electrochemical cells along with Faraday's Laws of electrolysis. The students will also gain basic theoretical idea of electrical & magnetic properties of atoms and molecules.
17	IV	CHE-SE-4014: ANALYTICAL CLINICAL BIOCHEMISTRY	This course is intended to apprise students with various clinically relevant biomolecules, their structures and physiological roles. Students are also expected to learn the basics of analysis of pathological samples (blood and urine).	Students will be able to identify various molecules relevant to a particular pathological condition and their estimation protocols.
18	IV	CHE-SE-4024: GREEN METHODS IN	This course introduces students to the utilization of green chemistry from industrial perspective and provides	Students shall be able to describe and evaluate chemical products and processes from environmental

		CHEMISTRY	exposure to methods by which environmental problems are evaluated and designing of sustainable solutions.	perspective, define and propose sustainable solutions and critically assess the methods for waste reduction and recycling.
19	IV	CHE-SE-4034: PHARMACEUTICAL CHEMISTRY	This primary objective of this course is to introduce students to the fundamentals of drug design and development process, drugs for various diseases available in market, their mode of action and side effects. Students are expected to learn the biosynthetic procedures of various bio-relevant small molecules.	Students will be able to appreciate the drug development process, identify various small molecules used for treatments different ailments and other physiological processes.
20	IV	CHE-SE-4044: CHEMISTRY OF COSMETICS & PERFUMES	This course intends to apprise students about the chemical knowledge related to some of the commonly used cosmetics. Laboratory experiments for preparation of talcum powder, shampoo etc. are included to give hands on experience.	Students will learn about the preparation and chemistry involved with the production different cosmetic. This may encourage students to take up entry level jobs at cosmetics industry or venture into commercial production of cosmetics as an entrepreneur.
21	IV	CHE-SE-4054: PESTICIDE CHEMISTRY	This is a brief and introductory course on pesticides, through which the students will be introduced to various classes of pesticides, their synthesis, applications and possible hazards of their uses.	Students will be able to explain or describe and critically examine different types of pesticides, their activity/toxicity and their applications and the need for the search of an alternative based on natural products.
22	IV	CHE-SE-4064: FUEL CHEMISTRY	This course discusses about the chemistry of various sources of energy. Students are expected to learn about the composition of coal and petroleum products, their extraction, purification methods and usage. A section also covers classification and applications of natural and synthetic lubricants. Students will also learn about the determination and significance of various industrially relevant physical parameters for different fuels and lubricants.	At the end of this course students will learn about the classes of renewable and non-renewable energy sources. Students will learn about the composition of coal and crude petroleum, their classification, isolation of coal and petroleum products and their usage in various industries. They will also learn to determine industrially significant physical parameters for fuels and lubricants.
23	V	CHE-HC-5016: ORGANIC CHEMISTRY-IV	This course introduces students to nucleic acids, amino acids and pharmaceutical compounds. Students will be familiarized with the importance of nucleic acids, amino acids and develop basic understanding of enzymes, bioenergetics and pharmaceutical compounds.	Students will be able to explain/describe the important features of nucleic acids, amino acids and enzymes and develop their ability to examine their properties and applications.
24	V	CHE-HC-5026: PHYSICAL CHEMISTRY V	The aim of this course is to introduce the students with three important areas-quantum chemistry, molecular spectroscopy and photochemistry. In quantum chemistry unit the students will be taught the postulates of quantum mechanics and the application of quantum mechanical ideas in some simple systems such as particle in a box, rigid rotor, simple harmonic oscillator etc. In spectroscopy unit, rotational, vibrational, Raman, electronic, spin resonance, and electronic spectroscopy will be	After completion of this course the students are expected to understand the application of quantum mechanics in some simple chemical systems such as hydrogen atom or hydrogen like ions. The students will also learn chemical bonding in some simple molecular systems. They will able to understand the basics of various kinds of spectroscopic techniques and photochemistry.

			introduced.	
25	V	CHE-HE-5016: APPLICATIONS OF COMPUTERS IN CHEMISTRY	This course intends to make learners familiar with basics of computer language, computer programming, handling of experimental data, curve fitting etc to analyze experimental results. This basic knowledge will help the students to perform and interpret results of various chemistry practicals.	After the completion of this course it will help the student to interpret laboratory data, curve fitting of experimental work, also perform quantum mechanical calculations for various molecular models.
26	V	CHE-HE-5026: ANALYTICAL METHODS IN CHEMISTRY	This is an elective course designed to complement the needs of students who wish to learn more about the qualitative/quantitative characterization and separation techniques. The content of this course aims to cover some of the widely used instrumental techniques for characterization of samples. Experiments included aim at giving students hands on experience using different instrumental techniques and chemical analysis.	On successful completion students will be have theoretical understanding about choice of various analytical techniques used for qualitative and quantitative characterization of samples. At the same time through the experiments students will gain hands on experience of the discussed techniques. This will enable students to take judicious decisions while analyzing different samples.
27	V	CHE-HE-5036: MOLECULAR MODELLING & DRUG DESIGN	The course introduces students to the basic principles of computer assisted drug design, modelling and the important theoretical concepts and programming.	Students will be able to identify basic components of computer and programming as applied to computer assisted design and modelling of molecules.
28	V	CHE-HE-5046: NOVEL INORGANIC SOLIDS	This introductory course intends to make learners familiar with a wide variety of technologically important and emerging materials. It will prepare the learners for studying materials further at the master's level. Prior completion of one introductory UG level course on inorganic and physical chemistry will be essential.	After the completion of this course it will also be possible for the students to opt for studying an interdisciplinary master's programme with an emphasis on the synthesis and applications of various materials or take up a job in the materials production and/or processing industry.
29	V	CHE-HE-5056: POLYMER CHEMISTRY	This is an introductory level course in polymer chemistry. The aim of the course is to introduce the theory and applications of polymer chemistry to the students. Some industrially important polymers and conducting polymers, a promising class of polymeric materials for next generation devices will also be introduced in this course.	After completion of this course the students will learn the definition and classifications of polymers, kinetics of polymerization, molecular weight of polymers, glass transition temperature, and polymer solutions etc. They also learn the brief introduction of preparation, structure and properties of some industrially important and technologically promising polymers.
30	V	CHE-HE-5066: INSTRUMENTAL METHODS OF CHEMICAL ANALYSIS	Students shall be introduced to the fundamental concepts/theory and application of different analytical techniques, as applied to chemistry.	Students shall be able to explain the theoretical basis of different analytical techniques, identify the experimental requirements and compare/analyze the data/results thereof.
31	VI	CHE-HC-6016: INORGANIC CHEMISTRY-IV	The unit on reaction mechanism is included for the students to get acquainted with the kinetic and thermodynamic factors governing the reaction path and stability of inorganic compounds. Organometallic compounds are introduced so as to apprise students about the importance of metal carbon	By studying this course the students will be expected to learn about how ligand substitution and redox reactions take place in coordination complexes. Students will also learn about organometallic compounds, comprehend their bonding, stability, reactivity and uses. They will be familiar with the variety of catalysts

			bond to form complexes and their application as catalysts. Students are expected to learn factors leading to stability of organometallic compounds, their synthesis, reactivity and uses. Qualitative inorganic analysis is included to give students an idea and hands on experience of application of inorganic chemistry. Students should learn how differential reactivity under different conditions of pH can be used to identify variety of ions in a complex mixture. Experiments related to synthesis and characterization of coordination compounds are included to supplement their theoretical knowledge.	based on transition metals and their application in industry. On successful completion, students in general will be able to appreciate the use of concepts like solubility product, common ion effect, pH etc. in analysis of ions and how a clever design of reactions, it is possible to identify the components in a mixture. With the experiments related to coordination compound synthesis, calculation of 10Dq, controlling factors etc. will make the students appreciate the concepts of theory in experiments.
32	VI	CHE-HC-6026: ORGANIC CHEMISTRY-V	This is a basic course in organic spectroscopy and provides introduction to carbohydrate chemistry, dyes and polymers. Students are expected to learn about the different spectroscopic techniques and their applications in organic chemistry. Students shall be apprised with carbohydrate chemistry, dyes and polymers and their structure, reactivity and chemical properties.	Students will be able to explain/describe basic principles of different spectroscopic techniques and their importance in chemical/organic analysis. Students shall be able to classify/identify/critically examine carbohydrates, polymers and dye materials.
33	VI	CHE-HE-6016 : GREEN CHEMISTRY	The learners will be taught about the emerging discipline of green chemistry particularly to differentiate as to how the principles of green chemistry may be applied to organic synthesis.	Apart from introducing learners to the principles of green chemistry, this course will make them conversant with applications of green chemistry to organic synthesis. Students will be prepared for taking up entry level jobs in the chemical industry. They also will have the option of studying further in the area.
34	VI	CHE-HE-6026: INDUSTRIAL CHEMICALS AND ENVIRONMENT	This course provides an introduction to the various industrial gases and inorganic chemicals, their manufacturing processes, applications, storage and the hazards of handling them. Contribution of these industrial chemicals towards air and water pollution and their effects on living organisms and the environment has also been covered. Students are also expected to learn about metallurgy, energy generation industry and the pollution threat they pose. This course also discusses about management of the different kinds of wastes, their safe disposal and the importance of practicing green chemistry in chemical industry.	After successful completion of the course, students would have learnt about the manufacture, applications and safe ways of storage and handling gaseous and inorganic industrial chemicals. Students will get to know about industrial metallurgy and the energy generation industry. Students will also learn about environmental pollution by various gaseous, liquid wastes and nuclear wastes and their effects on living beings. Finally, the students will learn about industrial waste management, their safe disposal and the importance of environment friendly "green chemistry" in chemical industry.
35	VI	CHE-HE-6036: INORGANIC MATERIALS OF INDUSTRIAL IMPORTANCE	To learn the synthetic process, properties and the utility of the industrially important inorganic materials (such as silicates, ceramics, cements, fertilizers, paints, batteries, alloys and explosives). To provide opportunity to learn some	This course will establish the basic foundation of industrial inorganic chemistry among the students. This will be helpful for pursuing further studies of industrial chemistry in future. Experiments will help the Students to gather the experience of

			of the industrial process such as surface coating and catalysis in relevant to industry where heterogeneous catalysis dominates. Experiments are aimed at helping learners acquire hands on experience in qualitative and quantitative analysis of the inorganic materials which are basically manufactured in chemical industries. To learn some industrial techniques such as surface coating etc..	qualitative and quantitative chemical analysis. Students will be capable of doing analysis of the inorganic materials which are used in our daily life. They will have insight of the industrial processes.
36	VI	CHE-HE-6046: RESEARCH METHODOLOGY FOR CHEMISTRY	This course is introduced to impart knowledge about the basic concepts of research and to provide a road map for conducting research Students are expected to identify, explain and apply basic concepts of research; acquire information, recognize various issues related to research and to learn instrumental methods required for research in chemistry.	After completing this course, students should be able to construct a rational research proposal to generate fruitful output in terms of publications and patents in the field of chemical sciences.

PROGRAMME SPECIFIC OUTCOME (M. Sc)

The aim of the programme is to provide students with the appropriate level of modern and comprehensive chemical education required for the technologically advancing society. The courses are designed to stimulate the interest and equip the students in chemistry with the critical thinking and problem-solving skills which enable them to contribute to the academic and industrial requirements of the nation. Two years PG Chemistry programme will expose students sufficiently in laboratory skills and academic training in chemistry including multidisciplinary subjects like Biochemistry, Biotechnology, Environmental chemistry, medicinal chemistry, and Natural product Chemistry etc. On completion of the PG Chemistry Programme, a learner will be able to:

1. Articulate in-depth understanding of core knowledge on Chemistry
2. Demonstrate skills and competencies to conduct scientific experiments of Chemistry
3. Utilize the knowledge to pursue research in the field of Chemical Science
4. Analyze and categorize chemicals applying different modern techniques and equipment
5. Perform a job efficiently in diverse fields such as public service, industries, business, banking, development-planning etc.
6. Understand the causes of environmental pollution and can open up new methods for environmental pollution control.

COURSE OUTCOME (M. Sc)

Semester	Course Code	Course Name	Course Outcome
I	CH101	Inorganic Chemistry 1	Explain, correlate and critically examine the chemistry of main group elements, transition metals, structure and bonding of organometallic compounds and solid state materials.
	CH102	Organic Chemistry 1	Appreciate/\demonstrate/explain the unique features of organic reactions mechanism, reaction intermediates and stereochemistry, and solve related problems.
	CH103	Physical Chemistry 1	Explain the fundamentals of equilibrium and non-equilibrium thermodynamics, statistical mechanics, polymer chemistry and apply the concepts to solving problems
	CH104	Quantum Chemistry	Explain the theoretical basis of quantum chemistry, and critically examine/interpret the theories/principles.
	CH105	Spectroscopy 1	Explain/identify the theoretical basis of different spectroscopic techniques and show their application in analyzing experimental data.
	CH106	Symmetry and Group Theory in Chemistry	Explain/describe/rationalize molecular structure and bonding using group theory, and apply molecular and crystallographic symmetry to solving chemistry problems.
	CH107	Practical Organic Chemistry	Perform qualitative and quantitative analysis of organic compounds and mixtures, implement multi-step organic synthesis and operate common/sophisticated instruments.
II	CH201 .	Inorganic Chemistry 2	Explain, interpret critically and examine aspects related to bonding, structure, reactivity of inorganic metal complexes, their electronic and magnetic properties and aspect related to photo chemistry and nuclear and radiochemistry
	CH202	Organic Chemistry 2	Recognize, explain and interpret the mechanistic details of photochemical, pericyclic, oxidation and reduction reactions, and predict the structural and stereo-chemical characteristics of products.
	CH203	Physical Chemistry 2	Describe and critically examine the concepts and theories of chemical kinetics and electrochemistry, and the applications of molecular dynamics, fast reactions and energy storage.
	CH204	Spectroscopy 2	Explain, interpret and examine the basic working principle of magnetic resonance and mass spectroscopic techniques and their application in chemistry analysis.
	CH205	Green Chemistry	Recognize, describe and compare relationships between Green Chemistry and chemical laboratory and industry, particularly in the design of safer chemicals and processes.

	CH206.	Practical Inorganic Chemistry	Demonstrate experimental skills encompassing synthesis, characterization of different inorganic materials, set-up experiments and use analytical equipments.
III	CH301	Biochemistry	Recognize, describe, interpret and analyse the chemical and biochemical processes that occur in living organisms.
	CH302	Modern methods of analysis	Explain and demonstrate the application of different analytical techniques in chemistry, particularly in chemical analysis and structure elucidation
	CH303	Foundations of organic synthesis	Identify/explain the concept of selectivity in organic reactions, and describe the stages of synthetic planning in the synthesis of complex molecules.
	CH304	Seminar course	Acquire better communication and presentation skills.
	CH305	Practical Physical Chemistry	Explain, plan and perform various physical chemistry experiments and hence interpret and critically analyze the results.
	CH306	Solid state and Materials Chemistry	Describe, Examine and differentiate between various materials, and design/plan novel materials for applications.
	CH307 .	X-ray Crystallography	Explain the basis of crystal symmetry, X ray crystallography and interpret/rationalize the important methods of experimental X-ray structure determination
	CH308	Environmental Chemistry	Demonstrate an understanding of environmental chemistry, viz. air, water and soil chemistry and identify the relation between atmosphere, solar radiation and ozone formation.
	CH309	Surface Chemistry and Catalysis	Explain the basic physics and chemistry of ‗surface chemistry', distinguish and critically examine the industrial applications of catalysis from interdisciplinary point of view.
IV	CH401	Natural Products Chemistry	Identify different types of natural products and describe important methods of extraction, their synthesis, and biosynthesis.
	CH402	Advanced Organic Synthesis	Design synthesis strategies, describe important methods for synthesizing complex molecules and hence recognize/predict stereo chemical aspects of different types of reactions as applied to organic synthesis.
	CH403	Quantum and Computational Chemistry	Explain/compare and anlyse the quantum mechanical (approximate) formalisms and be apply these formulation to setting up of basis set functions for structure calculation and properties of molecules.
	CH404	Catalysis Science and Technology	Identify and explain the different types of catalysts, preparation methods, their activation/deactivation including design of catalytic reactors and formulates the design/synthesis new catalysts.

	CH405.	Nanoscience and Nanotechnology	Identify, explain and distinguish different types of nanomaterials, their properties and various applications.
	CH406	Advanced Bioinorganic Chemistry	Explain, distinguish and rationalize the role of metal ions in functioning of biological systems, toxicity due to metal ions, the role in a disease and therapy.
	CH407	Supramolecular Chemistry	Explain, classify, critically examine supramolecular systems, and explicate the underlying principles, with regard to concepts of molecular recognition, self-assembly, catalysis and devices.
	CH408.	Organometallic Chemistry	Synthesis, structure and reactivity of organometallic compounds, reagents, demonstrate/plan their use in important synthetic reactions.
	CH409	Medicinal Chemistry	Identify, compare and explain aspects related to drug design, drug action and SARs.
	CH410	NMR Methods for Structure Elucidation	Explain, interpret and apply NMR spectroscopic methods for structure elucidation of complex molecules and in conformation analysis.
	CH411	Project Dissertation	Critically examine research articles, and improve their scientific writing as well as communication skills.

Subject: Mathematics

PROGRAMME SPECIFIC OUTCOME

Specific outcome of Mathematics major syllabus prescribed by Gauhati University may be cited below:

1. Ability to learn algebra, abstract algebra linear algebra & vector.
2. Ability to understand calculus and differential equation.
3. Ability to learn Trigonometry, Spherical and astronomy.
4. Knowledge of coordinate geometry and topology.
5. Activity to learn real and numerical analysis.
6. Ability to learn rigid dynamics, aydrostatics and mechanics.
7. Understand the probability and optimization theory of mathematics.
8. Knowledge of discrete mathematics.
9. Ability to learn and apply the computer programming in C.
10. Ability to undertake project work.

COURSE OUTCOME

Semester	Course code	Course name	Course outcome
I	MAT-HC-1016	Calculus	• Differentiate & integrate functions to tackle several problems in studies like life science, physics, economics, etc.
	MAT-HC-1026	Algebra	• The foundational ideas of Mathematics such as relations and functions, complex numbers & basic matrix algebra are taught. • Solve system of linear equations required in many problems of physics
II	MAT-HC-2016	Real Analysis	• Students are introduced to the concept of real analysis. • They can check the convergence of real sequences & series which are often required in probability theory and other studies.
	MAT-HC-2026	Differential Equation	• Solve differential equations and apply the study of exponential decay model, exponential growth of population, drug assimilation into blood.
III	MAT-HC-3016	Theory of Real Functions	• Learn about continuous and differentiable functions from pure mathematical point of view. • L'Hospital rules help better handle difficult differentiations
	MAT-HC-3026	Group Theory	• Introduction to the study of symmetries of a rigid body using group theory. • Helps to study atomic models in chemistry and also to check solvability of a polynomial
	MAT-HC-3036	Analytic Geometry	• Analytic study of basic geometric structures such as parabola, hyperbola and their 3-dimensional analogues
IV	MAT-4016	Multivariation Calculus	• Extend one dimensional calculus to two and higher dimensions. • Green's theorem, Gauss Divergence theorem applies to several problems in complex analysis and partial differential equations.
	MAT-HC-4026	Numerical Method	• Learn about basic numerical ideas as bisection method to approximate solutions to equations. • Learn about computer friendly methods to solve large problems.
	MAT-HC-4036	Ring Theory	• Ring, another abstract algebraic structure that helps better understand polynomials.
V	MAT-HC-5016	Riemann Integration And Metric Spacse	• Understand integration as explained by Riemann and Darboux. • Relation between integration and infinite series is also studied. • A generalization of distance, named metric is studied and the topology of metric space.

	MAT-HC-5026	Linear Algebra	• Discuss the idea of vector spaces and inner product spaces. • Understand what a linear transformation does geometrically and link it with the concept of matrices.
VI	MAT-HC-6016	Complex Analysis	• Discuss calculus in the complex field. • Use complex theoretic ideas to solve different real integrals.
	MAT-HC-6026	Partial Differential Equations	• Learn about various methods of solving PDEs and use it to solve problems in physics like the motion of a vibrating string.

Subject: Physics

PROGRAMME SPECIFIC OUTCOME

Specific outcome of Physics major syllabus prescribed by Gauhati University may be cited below:

1. Knowledge of mathematical methods for vector analysis, vector differentiation, integration of vectors, curvilinear co- ordinate system, Matrix, differential equations, Algebric operation etc.
2. Ability to understood mechanics.
3. Ability to understood waves & oscillation.
4. Knowledge of ray optics wave optics and modern optics.
5. Ability to understand the properties of matter: elasticity, surface tension & viscosity.
6. Ability to understand electrostatic and magneto statics.
7. Knowledge of classical, quantum and statistical mechanics.
8. Knowledge of computer and ability to apply computer language.
9. Know Understanding the edge of astrophysics and nuclear physics.
10. Understanding the theory of relativity.
11. Ability to undertake project work.

COURSE OUTCOME

Semester	Course Code	Course Name	Course Outcome
I	PHY-HC-1016	Mathematical Physics I	Mathematical physics is considered as the language of physics. The knowledge on mathematical physics provides the students more problem solving skill and deep understanding on physics.
	PHY-HC-1026	Mechanics	This course would empower the student to acquire engineering skills and Practical knowledge, which help the student in their everyday life. This syllabus will cater the basic requirements for their higher studies. This course will provide a theoretical basis for doing experiments in related areas.
II	PHY-HC-2016	Electricity and magnetism	These courses help students to provide a sound foundation in electricity and electrodynamics as well as in basic electronics, which have the key role in the development of Modern technological world. It is also the theoretical foundation of different practical in physics.
	PHY-HC-2026	Wave and optics	This course builds on the ideas of harmonics motion to cover in-depth the concept of waves in physics with particular reference on sound and light wave as the special case. Upon successful completion of this course, the students will learn different wave and optical
			phenomena such as superposition, polarization, interference, diffraction and different diffraction of images.
III	PHY-HC-3016	Mathematical Physics II	This course also focuses on computer programming and numerical analysis to emphasize its role in solving problems in Physics
	PHY-HC-3026	Thermal physics	This course develops a working knowledge of thermodynamics and to use this knowledge to explore various aspect in material science and the physics of condensed matter. Kinetic theory of gases provide the nature of gases in different conditions like pressure, temperature, volume etc.
	PHY-HC-3036	Digital system and applications	This course will help to understand the functioning and operation of CRO to measure physical quantities in electrical and electronic circuits. Student will learn the basics of IC and digital circuits, and difference between analog and digital circuits, various logic GATES and their realization using diodes and transmitters. The fundamental of Boolean algebra and their role in constructing digital circuits will be learnt by students. Learning about combinatorial and sequential systems by building block circuits to construct multi-vibrators and counters will also be the part of the course. Understand basics of microprocessor and assembly language programming with examples will be provide in the last unit.

IV	PHY-HC-4016	Mathematical Physics III	Knowledge of various mathematical tools like complex analysis, integral transform will equip the student with reference to solve a given ODE, PDE. These skills will help in understanding the behavior of the modeled systems. In the laboratory course, the students will apply their C^{++}/Scilab programming language to solve different problems like (i) Solution first- and second- order ordinary differential equations with appropriate boundary conditions, (ii) Evaluation of the Gaussian integrals, (iii) Evaluation of a converging infinite series up to a desired accuracy, (iv) Evaluation of the Fourier coefficients of a given periodic function, (v) Plotting the Legendre polynomials and the Bessel functions of different orders and interpretations of the results, (vi) Least square fit of a given data to a graph,
	PHY-HC-4026	Elements of Modern Physics	This course offer main aspects of the inadequacies of classical mechanics and understand historical development of quantum mechanics and ability to discuss and interpret experiments that reveal the dual nature of matter. This course provides the central concepts of quantum mechanics: wave functions, momentum and energy operator, the Schrodinger equation, time dependent and time independent cases, probability density and the normalization techniques, skill development on problem solving e.g. one dimensional rigid box, tunneling through potential barrier, step potential, rectangular barrier. The properties of nuclei like density, size, binding energy, nuclear forces and structure of atomic nucleus, liquid drop model and nuclear shell model and mass formula are also discussed in this course.

	PHY-HC-4036	Analog System and Applications	At the end of the course the student is expected to assimilate the following and possesses basic knowledge of the following, ▪ N and P- type semiconductors, mobility, drift velocity, fabrication of P-N junctions; forward and reverse biased junctions. ▪ Application of PN junction for different type of rectifiers and voltage regulators. ▪ NPN and PNP transistors and basic configurations namely common base, common emitter and common collector, and also about current and voltage gain. ▪ Biasing and equivalent circuits, coupled amplifiers and feedback in amplifiers and oscillators. ▪ Operational amplifiers and knowledge about different configurations namely inverting and non-inverting and applications of operational amplifiers in D to A and A to D conversions. ▪ To characterize various devices namely PN junction diodes, LEDs, Zener diode, solar cells, PNP and NPN transistors. Also construct amplifiers and oscillators using discrete components. Demonstrate inverting and non-inverting amplifiers using op-amps.
V	PHY-HC-5016	Quantum Mechanics and application	After an exposition of inadequacies of classical mechanics in explaining microscopic phenomena, quantum theory formulation is introduced through Schrodinger equation in this course. The interpretation of wave function of quantum particle and probabilistic nature of its location and subtler points of quantum phenomena are exposed to the student. Through understanding the behavior of quantum particle encountering a i) barrier, ii) potential, the student gets
			exposed to solving non-relativistic hydrogen atom, for its spectrum and eigen functions. Study of influence of electric and magnetic fields on atoms will help in understanding Stark effect and Zeeman Effect respectively.
	PHY-HC-5026	Solid State Physics	This course provides an introduction to the physics of Condensed Matter or solid state physics. This study attempts to explain various types of phenomena like different crystalline unit cell, magnetic properties of matter, super-conductivity and super fluidity. This is considered as the basic concept towards the material science.

VI	PHY-HC-6016	Electromagnetic Theory	Achieve an understanding of the Maxwell‘s equations, role of displacement current, gauge transformations, scalar and vector potentials, Coulomb and Lorentz gauge, boundary conditions at the interface between different media. Apply Maxwell‘s equations to deduce wave equation, electromagnetic field energy, momentum and angular momentum density and wave propagation in the unbounded, bounded, vacuum, dielectric, guided and unguided media. Understand the fundamentals of propagation of electromagnetic waves through optical fibres and calculate numerical apertures for step and graded indices and transmission losses.
	PHY-HC-6026	Statistical Mechanics	This course gives the basic concepts and definition of physical quantities in classical statistics and classical distribution law and the application of classical statistics to theory of radiation. Understanding the failure of classical statistics and need for quantum statistics. Learn the following statistics to derive and understand, 1. Bose Einstein statistics and its applications to radiation 2. Ferm-Dirac statistic and its applications to quantum systems.

Subject: Statistics

PROGRAMME SPECIFIC OUTCOME

Specific outcome of Statistics major syllabus prescribed by Gauhati University may be cited below:

1. Knowledge of descriptive statistics
2. Understanding the probability theory and its applications in different fields.
3. Ability to understand numerical and computational techniques.
4. Ability to understand application of mathematical methods (like integral calculus, differential calculus, matrices, vector space etc.).
5. Knowledge of standard discrete distribution and continuous distribution.
6. Ability to understand sampling distribution and statistical inference.
7. Knowledge of sample survey and operation research.
8. Knowledge of statistical influence and applied statistics such as econometrics, demand analysis, time series analysis, statistical quality control.
9. Knowledge of computer programme and ability to understand analysis.
10. Ability to undertake project work.
11. Understanding the design of experiment.

COURSE OUTCOME

Semester	Paper Code	Course Name	Course Outcome
I	STA-HC-1016	Descriptive Statistics	After completion of this paper, the students will be able to explore the basic knowledge of statistics such as collection, tabulation, comparison, presentation of data. He will also able to find out the variation and the relationship among the variables. He will able to study about the, standard of living of people of various regions by acquiring the knowledge of index number.
	STA-HC-1026	Calculus	After completion of this paper, students are able to explain the relationship between the derivative of a function as a function and the nation of the derivative as the slope of the tangent line to a function at a point. students can aquire different techniques of solving various problems engineering and science. They can distinguish between linear, nonlinear, partial and ordinary differential equations.
II	STA-HC-2016	Prpbability and Probability Distribution	After completion of this paper, students are able to understand the principle of probability theory and probability distribution for discrete and continuous random variables along with pmf, pdf, distribution functions etc. They can also able to understand the
			marginal and conditional probabilities and covariance of two random variables. They can able to derive the probability distributions relevant to functions of random variables.
	STA-HC-2026	Algebra	After completion of this paper, students are able to understand the technique of the solution of different types of equations like quadratic, biquadratic, cubic etc. they can acquire knowledge about different types of matrices, adjiont and inverse of a matrix, solution of set of linear equations, rank of a matrix, characteristic roots and characteristic vectors and their properties, quadratic forms.
III	STA-HC-3016	Sampling Distribution	After studying this paper students will able to understand the concept of sample ,population, parameter, statistic, distribution of a statistic, hypothesis, type-I and type-II erroretc .They can aquire knowledge about chi-square distribution, t-distribution, F-distribution and their properties and applications in different fields.

	STA-HC-3026	Survey Sampling & Indian Official Statistics	With this paper students can achieved idea about different sampling techniques of, drawing samples from a population. They will able to use simple random sampling with and without replacement, stratified random sampling, systematic sampling, cluster sampling etc. They can also acquire the knowledge about the role of MoSPI, CSO, NSSO, National Statistical Commission.
	STA-HC-3036	Mathematical Analysis	After completion of this paper, students are able to understand real numbers, different type of sets, principle of convergence, monotonic sequence. They can aquire knowledge about the infinite series, limit, continuity, and differentiability of a function, application of mean value theorem, Taylor‘s theorem. They can also have idea about the application of different formulae of interpolation, central differences, numerical integration, solution of difference equations.
IV	STA-HC-4016	Statistical Inference	With this paper students can understand the concept of estimation, unbiasedness, sufficiency, consistency, efficiency, methods of estimation , principle of test of significance, sequential probability ratio test.
	STA-HC-4026	Linear Model	By this paper student can achieve the knowledge of least square method, Gauss-Markov theorem, regression analysis, concept of fixed, random and mixed effect model, analysis of variance and covariance in one-way and two-way classified data for fixed effect model, prediction of fitted model.
	STA-HC-4036	Statistical Quality Control	After completion of this paper, the students will get the basic knowledge of statistical process control, different types of control charts like X-bar & R-chart, X-bar & S-chart np-chart, p-chart, c-chart and u-chart .They can also get knowledge of single and double acceptance sampling plan, concept of Six Sigma.
V	STA-HC-5016	Stochastic Processand Queuing Theory	Students will be able to understand the concept of probability generating function, stochastic process, stationary process, Markov chain and its order, transition probability, classification of state .They can also get the knowledge of poisson process and its properties, Queuing system.
	STA-HC-5026	Statistical Computing using C/C^{++} Programming	Students will be able to gain the basic knowledge of different operators and expressions used im C/C++ programming. They will also be familiar with some loops and arrays used in programming.

VI	STA-HC-6016)	Design of Experiment	Students will get knowledge of different design like CRD, RBD, LSD, split plot design, strip plot design, incomplete block design, BIBD and their application in analysis of data found in different fields. They can also be familiar with the different factorial experiment and their utilities in different fields.
	STA-HC-6026)	Multivariate Analysis and Nonparametric Methods	Student will get the knowledge of bivariate and multivariate normal distribution along with their properties and applications in various fields. They will also get the concept of different non-parametric test such as Kolmogrov Smirnov test, Sign test, Wilcoxon-Mann-Whitney test, Kruskal-Wallis test and their practical applications.

Subject: Zoology

PROGRAMME SPECIFIC OUTCOME

Specific outcome of Zoology major syllabus prescribed by Gauhati University may be cited below:

- Broad understanding of animal diversity, including knowledge of the scientific classification; evolutionary relationships among the animals and the adaptations they show.
- Understanding of ecology and relationship between biological, chemical and physical factors of the environment; the need of wildlife conservation and management.
- Understanding of how organisms function at the level of the gene, genome, cell, tissue, organ and organ-system. Drawing upon this knowledge, they are able to study the histology and comprehend the comparative anatomy of the organisms.
- Understanding of the development, growth, reproduction, various structural and physiological adaptations as well as behaviour of different forms of animal life.
- Understanding the relationships between structure and functions at different levels of biological organization (e.g., molecules, cells, organs, organisms, populations, and species) in animals and their coordinated function (Physiological, Biochemical, Endocrine and Immune system).
- Understanding the Biological Techniques, Bioinformatics and the application of statistics in Biological science.
- Understanding of the applied biological sciences or economic Zoology such as sericulture, apiculture, aquaculture, lac culture, pest and its management for their career opportunities.
- Make able to think logically from the knowledge gathered undertaking research

project, assimilate and analysis of the data and ideas and concluding in the form of project report.

COURSE OUTCOME

Semester	Course Code	Course Name	Course Outcome
I	ZOO-HC- 1016	Non Cordates -1	Students are able to understand about the characters and classification and life cycle of various Protista, Porifera, Cnideria, Ctinophora, Platyhelminthes and Nemathhelminthes
		Non Cordates -1 (Practical)	Student are able to understand and learned how to prepare whole mount, life cycle of various organism included under above mentioned kingdoms and phyla.
	ZOO-HC-1026	Principle of Ecology	Students are able to understand about the basic principle with special reference to population
			community and ecosystem. At the same time in applied ecological part student will aware with the process of wildlife conservation and management
		Principle of Ecology (Practical)	Through the practical study Students will come to know about the practical use of various population characteristics, community and ecosystem services. Visit to National park /Biodiversity Park/ wildlife sanctuaries will give them live study of ecology.
II	ZOO-HC-2016	Non-Chordates Ii: Coelomates	Students are able to understand about the characters and classification, social life and evolutionary significance Coelomates.
		Non-Chordates Ii: Coelomates (Practical)	Students are able to understand about the museum specimen, anatomical and morphological structure and preparation of slide.
	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.
		Cell Biology (Practical)	Students are able to understand about the preparation of various stains and fixatives, determination of protein, mucopolysaccharides and chromosome
III	ZOO-HC-3016	Diversity of Chordata	Students are able to understand about the general characteristics, classification, metamorphosis and animal distribution.
		Diversity of Chordata (Practical)	Students are able to understand about the general characteristics, classification, metamorphosis and animal distribution.

	ZOO-HC-3026	Animal Physiology: Controlling and Coordinating Systems	Students are able to understand the entire animal's functions of the body which includes nutrition. Respiration, heart, excretion, nerve physiology etc in which all structure, function, process and control.
		Animal Physiology: Controlling and Coordinating Systems (Practical)	Students are able to understand and learned about the various microscopic procedures including microtomy, permanent slides study.
	ZOO-HC-3036	Fundamentals of Biochemistry	Students are able to understand all the biochemical components of the body system are studied. It helps the student to get a view about the chemical compositions of different chemical compounds such as enzymes, hormones and other secretions. It also includes the pathway and chemical which are responsible for the energy production in our body
		Fundamentals of Biochemistry (Practical)	Students are able to understand and learned various technique of separation and determination of protein, lipid, carbohydrates etc.
IV	ZOO-HC-4016	Comparative Anatomy of Vertebrates	Students are able to understand about the comparative structures of heart, aotic arches, kidney, balancing organ, hearing organ, thyroid, respiratory organs, brain of different animals which give them a definite idea not only the structure but also the structural development of that organ and how they become modified according to their need and environment.
		Comparative Anatomy of Vertebrates (Practical)	Students are able to understand and learned various skeletal parts of different organisms and their structural component.
	ZOO-HC-4026	Animal Physiology: Life Sustaining Systems	The entire animal's functions of the body are studied in this part. It includes nutrition, Respiration, heart, excretion, nerve physiology etc in which all structure, function, process and control.
IV	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.
		Biochemistry of Metabolic Processes	Students are able to learn various essays from serum and tissues.
V	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.
		Molecular Biology (Practical)	Students are able to understand about the estimation of DNA, RNA and protein synthesis.

	ZOO-HC-5026	Principles of Genetics	Students are able to understand about the Mandelian inheritance, interaction of genes, mutation and its effects.
		Principles of Genetics (Practical)	Students are able to learn about the pedigree analysis, gene interaction study.
VI	ZOO-HC-6016	Developmental Biology	Students are able to acquire a thorough knowledge of embryonic development along with the factors affecting it.
	ZOO-HC-6026	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.