DHAKUAKHANA COLLEGE

PROGRAMME OUTCOMES (PO)
PROGRAMME SPECIFIC OUTCOMES (PSO)
AND
COURSE OUTCOMES (CO)

Dhakuakhana College offers three years degree programme in Arts and Science streams i.e. B.A. and B.Sc. Each programme is designed with a numbers of expected outcomes. These are as follows.

Programme Outcome of Bachelor of Arts (B.A.):

PO-1: Students will acquire knowledge in the Social Sciences and humanities and able to participate in and contribute to the society through critical thinking.

PO-2: They will be able to understand the intertwined of Socio-economic, historical, geographical, political, ideological, philosophical and cultural traditions with the society.

PO-3: Students will be equipped with the qualities of critical thinking, effective communication, good citizenship, human capital and others.

PO-4: Students will be sensible to social issues and problems and contribute to their solutions.

PO-5: Students will be aware of contemporary challenges and threats to the society such as Terrorism, Environmental Crisis, human rights violations, superstitious beliefs, gender inequalities and so on.

Programme Outcome of Bachelor of Science (B.Sc.):

PO-1: This programme will instil sense scientific temperaments among students such as observation, analytical mind-set, logical argument, systematic approach to the problem.

PO-2: This sense of scientific temper and attitude among the students which will help the society in its progress.

PO-3: This programme will enhance problem solving skills of the students.

PO-4: Students will be able to appear in different competitive Examinations and engage themselves in different fields.

PO-5: Students will be equipped with the qualities of critical thinking, effective communication, good citizenship, human capital and others.

Course Outcomes (CO):

Subjects: Anthropology, Assamese, Botany, Chemistry, Economics, Education, English, History, Mathematics, Philosophy, Physics, Political Science, Sociology, Zoology

Department of Anthropology
Programme Specific Outcomes and Course Outcomes

SEMESTER-WISE COURSE STRUCTURE FOR CHOICE BASED CREDIT SYSTEM IN B.A/ B.Sc. ANTHROPOLOGY Core (Honours) Course

CORE COURSE (14 papers) (6 credit per paper)	SEMSTER	Ability Enhancement Compulsory Course (AECC) (2 papers) (2 credit per paper)	Ability Enhancement Elective Course(AEEC) (Skill Based) (2 papers) (2 credit per paper)	Elective: Discipline Specific DSE (4 papers) (6 credit per paper)	Elective: Generic(GE) 4 papers *(To be taken from other discipline)* (6 credit per paper
ANTHROPOLOGY-C1-101 INTRODUCTION TO BIOLOGICAL ANTHROPOLOGY	I	Communicative English			GE-1 INTRODUCTION TO BIOLOGICAL ANTHROPOLOGY
ANTHROPOLOGY –C2-102 INTRODUCTION TO SOCIO - CULTURAL ANTHROPOLOGY		Alt. English/MIL			
ANTHROPOLOGY –C3-201	II	Environmental Science			GE-2

ARCHAEOLOGICAL ANTHROPOLOGY					ARCHAEOLOGICAL ANTHROPOLOGY
ANTHROPOLOGY –C4-202 FUNDAMENTALS OF HUMAN ORIGIN AND EVOLUTION					
ANTHROPOLOGY –C5-301 TRIBES AND PEASANTS IN INDIA	III		ANTHROPOLOGY-SEC-1.1		GE-3 INTRDUCTION TO SOCIO-CULTURAL ANTHROPOLOGY
ANTHROPOLOGY –C6-302 HUMAN ECOLOGY: BIOLOGICAL AND CULTURAL DIMENSIONS					
ANTHROPOLOGY –C7-303 BIOLOGICAL DIVERSITY IN HUMAN POPULATIONS					
ANTHROPOLOGY –C8-401THEORIES OF CULTURE AND SOCIETY	IV		ANTHROPOLOGY-SEC-1.2		GE-4 RESEARCH METHODS IN ANTHROPOLOGY
ANTHROPOLOG					

Y –C9-402 HUMAN GROWTH AND DEVELOPMENT					
ANTHROPOLOGY –C10-403 RESEARCH METHODS					
ANTHROPOLOGY –C11-501 HUMAN POPULATION GENETICS	V		ANTHROPOLOGY-DSE-1		
ANTHROPOLOGY –C12-502 ANTHROPOLOGY IN PRACTICE			ANTHROPOLOGY-DSE -2		
ANTHROPOLOGY –C13-601 DISSERTATION	VI			ANTHROPOLOGY DSE -3	
ANTHROPOLOGY –C14-602 ANTHROPOLOGY OF INDIA				ANTHROPOLOGY DSE -15	

Core (Honours) Courses for Anthropology with Course Code and Course Name

SEMESTER	Course No.	Course Name	Credit
	ANTHROPOLOGY-C1-101	Introduction to Biological Anthropology –101	4
	ANTHROPOLOGY-C1-101-	*Practical*	2

I	PRACT.		
	ANTHROPOLOGY-C2-102	Introduction to Socio Cultural Anhropology-102	4
	ANTHROPOLOGY-C2-102-PRACT.	*Practical*	2
II	ANTHROPOLOGY-C3-201	*Archaeological Anthropology-201*	4
	ANTHROPOLOGY-C3-201-PRACT.	*Practical*	2
	ANTHROPOLOGY-C4-202	Fundamentals of Human Origin and Evolution-202	4
	ANTHROPOLOGY-C4-202-PRACT.	*Practical*	2
III	ANTHROPOLOGY-C5-301	Tribes and Peasants in India-301	4
	ANTHROPOLOGY-C5-301-PRACT.	*Practical*	2
	ANTHROPOLOGY –C6-101	Human Ecology; Biological and Cultural Dimension-302	4
	ANTHROPOLOGY -C6-101-PRACT.	*Practical*	2
	ANTHROPOLOGY –C7-102	Biological Diversity in Human Population-303	4
	ANTHROPOLOGY –C7-101-PRACT.	*Practical*	
IV	ANTHROPOLOGY –C8-401	Theories of Culture and Society-401	4
	ANTHROPOLOGY –C8-401- PRACT.	*Practical*	2
	ANTHROPOLOGY -C9-402	Human Growth and Development-402	4
	ANTHROPOLOGY -C9-402-PRACT.	*Practical*	2
	ANTHROPOLOGY -C10-403	Research Methods-403	4
	ANTHROPOLOGY -C10-403- PRACT.	*Practical*	2
V	ANTHROPOLOGY –C11-501	Human Population Genetics-501	4
	ANTHROPOLOGY –C11-501 -PRACT.	*Practical*	2
	ANTHROPOLOGY –C12-502	Anthropology in Practice-502	4
	ANTHROPOLOGY –C12-502- PRACT.	*Practical*	2

VI	ANTHROPOLOGY-C13-601	Dissertation-601	4
	ANTHROPOLOGY-C13-601- PRACT.	*Practical*	2
	ANTHROPOLOGY-C14-602	Anthropology of India-602	4
	ANTHROPOLOGY-C14-602- PRACT.	*Practical*	2

Discipline Specific Elective (DSE) Courses for Anthropology Honours

SEMESTER	COURSENo.	*CouseName*	Credit
V (Any Two Papers)	ANTHROPOLOGY-DSE-1	Tribal Cultures in India	4
	ANTHROPOLOGY -DSE-1-PRACT.	P*ractical*	2
	ANTHROPOLOGY -DSE-2		6
V I (Any two Papers)	ANTHROPOLOGY -DSE-3	Human Genetics	*4*
	ANTHROPOLOGY -DSE-601- PRACT.	*Practical*	2
	ANTHROPOLOGY -DSE-15		6

Skill Enhancement Courses (SEC) for Anthropology Core (Honours) Course

III	ANTHROPOLOGY - SEC-1.1	Business and Corporate Anthropology	2
IV	ANTHROPOLOGY – SEC-1.2	*Tourism Anthropology*	2

Semester wise list of Anthropology Generic Elective papers for the students taking Honours in other disciplines

SEMESTER	COURSE No. *Course Name*	Credit
I	ANTHROPOLOGY -GE-101 Introduction to Biological Anthropology	4
	ANTHROPOLOGY -GE-101-PRACT. *Practical*	2
II	ANTHROPOLOGY -GE-201 Archaeological Anthropology	4
	ANTHROPOLOGY -GE-201- PRACT. *Practical*	2
III	ANTHROPOLOGY -GE-301 Introduction to Socio Cultural Anthropology	4
	ANTHROPOLOGY -GE-301- PRACT. *Practical*	2
IV	ANTHROPOLOGY -GE-401 Research Methods in Anthropology	4
	ANTHROPOLOGY -GE-401- PRACT. *Practical*	2

PROGRAMME: B.A/B.Sc. ANTHROPOLOGY

Department of Anthropology	After successful completion of three year degree program in Anthropology a student will be able -
Programme Outcomes (PO)	PO-1. To define the different terms, statements of different concepts in all disciplines of Anthropology. (Knowledge) PO-2. To explain and demonstrate the major concepts in all disciplines of Anthropology. (Understanding) PO-3. To solve the problem and also think methodically, independently and draw a logical conclusion. (Skill) PO-4. By using different practical implements carryout different practical related to course. (Skill) PO-5. To create an awareness of the impact of anthropology on the environment, society, and development inside the human community. (Application) PO-6. To inculcate demographic survey among different communities by applying different field methods. (Application) PO-8. To use modern techniques and decent equipments of Anthropology laboratory (Application)
Programme Specific Outcomes (PSO)	PSO-1. To acquire the knowledge of Anthropology through theory andpracticals. PSO-2. To explain nomenclature, human anatomy, evolution and origin, society, culture, prehistory and other concepts in all disciplines of anthropology. PSO-3. To solve statistical problems. PSO-4. To understand good laboratory practices and safety. PSO-5. To develop research oriented skills. PSO-6. To make aware and handle the sophisticated laboratory instruments/equipments.
Course Outcomes	
SEMESTER-I: Core (Honours) Course	

Course	Outcomes After completion of these course students will be able -
ANTHROPOLOGY-C1-101: Introduction to Biological Anthropology	CO 1. To understand History and development, Aim and scope of modern Biological Anthropology and its relationship with allied disciplines. CO 2. To understand the Human variation and different theories of evolution like Lamarkism, Darwinism etc. CO 3. To understand the relation of non-human primates with human evolution. CO 4. To understand various racial classification, UNESCO statement of race and human Genome research.
ANTHROPOLOGY-C2-102: Introduction to Socio Cultural Anthropology	CO 1. To understand the scope, relevance and relationship of social Anthropology CO 2. To understand the different concepts like Society, Culture, Status, Role, Social fact, Social system etc. CO 3. To understand ethnographic fieldwork with the help of historical methods.
SEMESTER-II: Core (Honours) Course	
Course	Outcomes After completion of these course students will be able -
ANTHROPOLOGY-C3-201: Archaeological Anthropology	CO 1. To understand the scope, relation and methods of studying Archaeological Anthropology. CO 2. To understand the different dating methods for construction of the past, plistocene climatic change. CO 3. To understand the different cultural methods with emphasis on manufacture of tools, tool typology and technology.
ANTHROPOLOGY-C4-202: Fundamentals of Human Origin and Evolution	CO 1. To understand theorigin of primate with special reference to Hominoids. CO 2. To understand the distribution and phylogenetic status of Australopitecine, Homo habilis, Homo Erectus, Homo Sapiens and modern Humans.. CO 3. To understand the Hominisation process.

SEMESTER-III: Core (Honours) Course	
Course	Outcomes After completion of these course students will be able -
ANTHROPOLOGY-C5-301: Tribes and Peasants in India	CO 1. To understand anthropological concept of tribes. CO 2. To understand the tribes and their relation with wider world. CO 3. To understand the Anthropological concept of village and ethnicity issues of tribal people.
ANTHROPOLOGY-C6-302: Human Ecology; Biological and Cultural Dimension	CO 1. To understand different concept of ecology, methods of human ecology, adaptation to different ecological places and ecological rules. CO 2. To understand impact of industrialization, urbanization, agriculture and peasantry on Human society. CO 3. To understand the different subsistence economy of human society and to know about Neolithic revolution and hydraulic civilization.
ANTHROPOLOGY-C7-303: Biological Diversity in Human Population	CO 1. To understand the biological variability, race population genetics. CO 2. To understand the racial classification of Indian population, pre and pro historic racial elements and linguistic classification of Indian population. CO 3. To understand the role of biocultural factors, different demographic perspectives and genetic diversity.
SEMESTER-IV: Core (Honours) Course	
Course	Outcomes After completion of these course students will be able -
ANTHROPOLOGY-C8-401: Theories of Culture and Society	CO 1. To understand emergence of anthropology, evolutionary theory like evolutionism, diffusionism, functionalism, structruralism etc. CO 2. To understand the emergence of field work tradition.
ANTHROPOLOGY-C9-402: Human Growth and Development	CO 1. To understand the human growth and development with prenatal and postnatal growth, different biocultural factors influencing growth, nutritional epidermology, mal nutrition, kwashiorkor and marasmus. .

	CO 2. To understand nutritional status, human physique and body composition and somatotyping. CO 3. To understand the biocultual adaptation to environmental stresses.
ANTHROPOLOGY - C10-403: Research Methods	CO 1. To understand the research design and fieldwork tradition in Anthropology. CO 2. To understand the tools and techniques of data collection, politics of research, and how to write chapterization, bibliography etc. CO 3. To understand the different statistical methods.

SEMESTER-V: Core (Honours) Course	
Course	Outcomes After completion of these course students will be able -
ANTHROPOLOGY-C11-501: Human Population Genetics	CO 1. To understand the mendelian inheritance, chromosomal theory, polymorphism, hardy Weinberg principle. CO 2. To understand the mutation, natural selection, genetic drift, migration, and matting patterns.
ANTHROPOLOGY - C12-502: Anthropology in Practice	CO 1. To understandthe academic anthropology, role of anthropology in development and future dynamic of anthropology. CO 2. To understand different constitutional perspective and human rights.
SEMESTER-VI: Core (Honours) Course	
Course	Outcomes After completion of these course students will be able -
ANTHROPOLOGY - C13-601: Dissertation	CO 1. To understand the different methods applied to make research project. CO 2. Learn to communicate with different communities by applying different methods.

ANTHROPOLOGY - C14-602: Anthropology of India	CO 1. To understand the history and development of anthropology in India. CO 2. To understand caste system, jati, varna, gender hierarchier and constitutional safeguard of ST and SC. CO 3. To understand the concept of Indian village and concept like sanskritisation, westernization etc.

Dhakuakhana College
Department of Assamese
Programme Specific Outcomes and Course Outcomes

I. Definition:

Programme-By Programme we mean the set of disciplines, Bachelor of Arts, in this case.

Programme Specific-By Programme Specific, we mean the specific discipline or subject or department. Here, the Programme Specific is Bachelor of Arts in Assamese (B. A. Assamese).

Course- By course we mean compartment of studies area. We can easily understand it as paper(s).

Core Course- by Core Course, we mean honours paper in B. A. Assamese. The terminology used in CBCS.

Discipline Specific Elective- by DSE, we mean the course students get to select in their 5th and 6th semester of the programme. This terminology is used in CBCS.

Generic Elective- by GE, we mean the course (paper) that students of different department's honour students can choose as their elective. This course will be offered to students from 1st semester to 4th semester of the programme. This terminology is used in CBCS.

II. Courses offered under Bachelor of Arts in Assamese, Dhakuakhana College:

The Department of Assamese of Dhakuakhana College is offering Three Years UG Course (Bachelor of Arts in Assamese). The Programme comprises of total 6 (six) semesters i.e. 1st, 2nd, 3rd, 4th, 5th and 6th Semester.

Under Choice Based Credit System (CBCS), the programme Specific is divided into 14 Core Course (CC) and 4 Discipline Specific for those who take honours in Assamese. It also offers Generic Elective (GE) for those students taking honours other than Assamese. It offers 4 GE papers.

While under non-CBCS, the programme Specific is divided into 14 Major papers. It also offers Pass course/ General paper for those students taking honours other than Assamese. The pass course is offered to students from 1st semester to 4th semester.

Being affiliated to Dibrugarh University, in terms of end semester evaluation and grading, the Department follows the grading system as per prescribed by the university for both Choice Based Credit System (CBCS) as well as Non-CBCS.***

III. PROGRAMME SPECIFIC OUTCOMES

i. CHOICE BASED CREDIT SYSTEM (CBCS)

The Department being affiliated to Dibrugarh University follows the syllabus as prescribed by the University. We pay keen attention on the outcomes mentioned below so that our society and students can go through and embrace the necessity of Assamese Language and Literature. Under CBCS, the subject Outcomes are:

A. HONOURS (CORE)

1) Students will be able to understand the basic concept and knowledge of Assamese Language and Literature.
2) The department will enhance students' mental power in arriving at any decision analytically and critically.
3) Students will be able to understand the basic concept of language and Assamese Language.
4) The department will increase critical understanding/thinking of the students in the light of Indian Literature & Assamese literature.
5) The study of Assamese Literature will acquaint students with various Modern western and Indian Writers who writes so many famous books in their life.
6) The subject intends to imbibe classical Indian literature values, Religious text in students' life.

7) Students will able to learn Assamese proof reading by reading this course.
8) By reading Assamese, Major Students will able to understand the History of Assamese Short story, Novel, poetry and Drama etc.
9) The subject enabled students to value the values of human.
10) The subject also will help students to understand the concept of world literature.
11) The Subject also will help to understand the various Language and Language branches of world. Especially they will understand the Indo Aryan language and the various branches of Tibbeto-burman language.

B. ABILITY ENHANCEMENT COMPUSORY COURSE (AECC)
C. SKILL ENHANCEMENT COURSE (SEC)
D. DISCIPLINE SPECIFIC ELECTIVES (DSE)
E. GENERIC ELECTIVES(GE)

Course Outcomes

i. CHOICE BASED CREDIT SYSTEM (CBCS)

In order to let students and guardians know the productivity of studying Assamese, we brought forth the following course outcome under CBCS:

A. HONOURS (CORE)

Course Code	Outcomes
ASMM1 C1 (History of Assamese Literature)	After completion of the course students will be able to have a close acquaintance with history of Old and Mediaval Assamese literature as a whole. In this paper they will learn about Assamese folk literature, and written literature from early age.
ASMM2 C2 (History of Assamese Literature)	1) By Reading this course students will able to understand the history of Modern Assamese literature and the concept and trends of contemporary Assamese literature.
ASMM3 C3 (Introduction to Linguistics)	1) This course will help students to understand the basic concept of Linguistics. Without basic concept of Linguistics, students cannot proceed to other part of Language papers.

ASMM 4 C4 (Poetics)	After completion of the course students will be able to- 1) Understand the basic theory of Indian Aesthetics and its history.
ASMM 5 C5 (Literary Criticism)	After completion of the course students will be able to- 1) Identify, compare and distinguish the concept of literature. They will know about the definition of literature and the various part of literature. 2) They know about the theory of all branches of literature
ASMM 6 C6 (Selection from Assamese Poetry)	1) Reading this course, students can understand the history of Assamese poetry and Trends. 2) Students will be able to acquaint themselves with various poems and poets of Assamese Literature.
ASMM 7 C7 (Studies on the culture of Assam)	After completion of the course students will be able to 1) Understand the basic concept of Culture. 2) North east is culturally very rich and student can easily understand the culture of all tribes of north east. 3) This course will help to understand the life style, food habit, rituals and all other thing about north east tribes.
ASMM 8 C8 (Theory and practice of Comparative Literature)	After completion of the course students will be able to 1) Students will able to understand the concept of comparative literature history and theory. 2) Critically evaluates and explain recent development in Indian comparative literature and world literature. 3) It will help to understand the value of translation and other translated literature to Assamese.
ASMM 9 C9 (Indo-Aryan Languages and Assamese)	1) This course will educate students to create the knowledge of Indo Aryan Language and Literature. 2) It will help to understand the grammatical trends of Sanskrit language and development of Assamese Language.
ASMM 10 C10 (Selection from Assamese prose)	1) The course will help students to understand the trends and history of Assamese prose. By reading selected part of Assamese prose students can understand the glorious history of Assamese prose.
ASMM 11 C11 (Assamese Drama)	After completion of the course students will be able to 1) Critically evaluates and explain recent development of Assamese Drama. 2) Understand the difference between old Assamese drama and new Assamese drama.

ASMM 12 C12 (Studies on Assamese Linguistics)	1) The course helps students to understand Assamese Linguistic. 2) The course help student to know the sentence structure of Assamese Language. 3) The course enabled students to value the values of grammatical side of language.
ASMM 13 C13 (Selection from Assamese Prose)	1) The course helps students to know the various Assamese literature such as short story, Novel, Biography and autobiography, travel literature, science literature.
ASMM 14 C14 (Language and Script of Assam)	After completion of the course students will be able to 1) Understand the history of Indo Aryan Languages with special reference to Assamese Language. 2) History of Assamese scripts, other languages script and its trends.

B. Ability Enhancement Compulsory Course. (AECC)

Course Code	Outcomes
AECC (Communicative Assamese)	1. This is a common course for all (Arts, Science & Commerce). By reading this course students can know the communication skill of writing and speaking which is very important to present life. This course help students to pronunciation of Assamese words, making Assamese sentence, knows about good writing etc.

C. Skill Enhancement Course (SEC)

Course Code	Outcomes

SEC-1 (Introduction to Translation and practice)	By reading this course students can learn about the concept of translation and importance of translation. At present days translation is very important part of literature and without translation no one can reading the whole world literature. They also able to know the various types of translation. Practically they also know how to translate from English, Hindi, and Bangla to Assamese by reading this course.
SEC-2 (Preparation of Research papers)	Now research is very much important for academic life. By reading this course a student can learn about writing of research papers. This course also provides the concept of various research works such as thesis, dissertation, and synopsis and tried to elaborate the methodology of research.

D. Discipline Specific Elective (DSE)

Course Code	Course Outcomes
DSE-1 (Assamese Grammar, Lexicon, and Idiomatic Usages)	By reading these course students will be able to know about Assamese pronunciation, Assamese spelling, Assamese Lexicon and its use, use of Assamese Idiomatic usages in daily life. Basically this paper clear Assamese grammatical concept.
DSE-2 (Introduction to Indian Literature)	There are 23 constitutional language in India and more than 1600 dialects in all over India. There are different types of literary activities in India and it is written in different language. By reading this course student can able to understand the concept of Indian literature, Indian author, and various types of literary activity.
DSE-3 (Introduction to World Literature)	World literature is a modern concept about literary work of all over world. It is a new term use in literary reading. By reading this course students will be able to understand the concept of world literature by reading various types of literary work by various writers.
DSE-4(A) Special Author DSE-4-(B) Project.	(A) By reading this course student will be able to understand specially one prominent writer of Assam. There are five authors in this course and student can select any one. They can widely know about the life and literary work of the author by reading this course. (B) This course is different from other. It is a project paper. In this course student can learn how to doing research work, selection of research topic, research methodology, field study etc. this course help students to future life in research.

E. GENERIC ELECTIVES (For students opting other than Assamese as honours subject)

Course Code	Outcomes
GE1(A) (Performing Arts) GE1(B) (Culture of Assam and Cultural Tourism)	After completion of the course students will be able to **A)** Have the basic concepts of performing art, knowledge, categories of performing arts and variety of performing art. They can also learn about folk musical instruments and its use by reading this course. **B)** Have the basic concept of cultural tourism of Assam. There are so many opportunity in Assam for cultural tourism and industry. Students can understand these areas by reading this course.
GE2 (Teaching of Assamese Literature)	After completion of the course students will be able to 1) Familiarized themselves with the basic ideas of Assamese Literature Teaching. They can understand the objectives of Assamese Literature Teaching, how to making of lesion plane and how can help lesion plane in literature teaching,
GE3 (Teaching of Assamese Language)	After completion of the course students will be able to 1) Have the basic concepts of teaching of Assamese Language, important of Language teaching, method of teaching, reading, writing and hearing of Assamese Language. They can familiar with Assamese grammar by reading this course.
GE4 (Sociology of Assamese Literature)	After completion of the course students will be able to 1) Acquaint themselves with basic concepts of Sociology of Literature. Sociology of literature is a new concept for literary theory and it is going popular day by day. Students learn sociology of literature in the context of Assamese literature. They can understand the basic concept and basic ideas bout sociology of literature by reading this course.

Dhakuakhana College
Department of Botany
Programme Specific Outcomes and Course Outcomes

Programmes Offered

A. Bachelorof Science in Botany

The Department of Botany is offering three year Bachelor of Science in Botany. The Programme comprises of total 6 (six) semesters i.e. 1st, 2nd, 3rd, 4th, 5th and 6thSemester. For imparting the programme based learning experiences, the syllabus of Dibrugarh University is being adopted. In case of end semester evaluation and grading, Choice Based Credit System (CBCS) as prescribed by the Dibrugarh University is being followed.

Under Choice Based Credit System (CBCS)

Programme Outcomes (Bachelor of Science in Botany)

After completion of the programme, it is expected that the students will be able to,

1) Think Critically - Get ability to apply the process of science by formulating hypotheses and design experiments based on the scientific method.
2) Analyze and interpret results generated through studies in botany, taxonomical treatments, field studies, excursion tours and laboratory techniques used in the subject.
3) Use quantitative reasoning by using mathematical calculations and graphing skills to solve problems in plant science (Botany)
4) Effective Communication and collaborate with other disciplines by effectively communicating the fundamental concepts of Botany in written and oral format.
5) Identify credible scientific sources to interpret and evaluate the evidences
6) Understand the relationship between science and society by recognizing and discussing logical, scientific and ethical issues in Botany subject.
7) .Environment and Sustainability: Understand the issues of environmental contexts and sustainable development with respect to assessment, conservation and utilization of floral diversity.
8) Qualitative and quantitative estimate the number of floral components by using enumeration and suitable sampling and techniques.
9) Use appropriate plant molecular techniques and use of instrumentation realated to it.
10) Practice safe laboratory procedures, using appropriate protective, biosafety and emergency procedures.
11) Documentation and report writing on experimental protocols, results and conclusions, study tours and filed visits etc.

Programme Specific Outcomes
HONOURS (CORE)

Semester	Outcomes

wise Programme	
1ST	After completion of the programme the undergraduate students will be able to introduce with the basic knowledge of the structure, forms and reproduction of algae, Bacteria and Viruses.
	After completion of the programme the undergraduate students will be able to introduce with the basic knowledge of the structural and functional aspects of cell and cell organelles and the tools and techniques used in modern biological study.
2ND	After completion of the programme the undergraduate students will be able to introduce with the basic knowledge of the structure, forms and reproduction of fungi and their economical importance.
	After completion of the programme the undergraduate students will be able to introduce with the basic knowledge of structure, forms and reproduction, evolution of tissue systems, seed habit in higher cryptogams and gymnosperms.
3RD	After completion of the programme the undergraduate students will be able to introduce with the basic knowledge of tissue and tissue systems, development of primary and secondary plant bodies and development of male and female reproductive components & their functions.
	After completion of the programme the undergraduate students will be able to introduce with the basic knowledge of economically important plants and their utilization of different parts for human welfare.
	After completion of the programme the undergraduate students will be able to introduce with the basic knowledge of the plant genetics and principles of genetics.
4TH	After completion of the programme the undergraduate students will be able to introduce with the basic knowledge of the structure and function of genetic materials, their replication, transcription and transduction.
	After completion of the programme the undergraduate students will be able to introduce with the basic knowledge of the basic principles and concept of plant ecology, structure and function of natural plant units, role of plants on improvement of habitat and phytogeography.
	After completion of the programme the undergraduate students will be able to introduce with the fundamental knowledge of Angiosperm morphology and classification with special reference to the phylogenetic relationship of various taxa.
5TH	After completion of the programme the undergraduate students will be able to introduce with the fundamental knowledge of the process and mechanisms of plant reproduction.
	After completion of the programme the undergraduate students will be able to know the different physiological processes in plant life.

6TH	After completion of the programme the undergraduate students will be able to know the different metabolic processes involved with plant life.
	. After completion of the programme the undergraduate students will be able to know the application of modern tools and techniques in biological science.

ELECTIVES (Discipline Specific)

Semester wise Programme	Outcomes
5TH	After completion of the programme students will be able to 1)Understand the different biological techniques which can be used to study different biological processes. 2)Understand the application of different microbes for industrial purposes and also their role in environment.
6TH	After completion of the programme students will be able to 1)Understand different methods of plant improvement and breeding techniques. 2)Understand different horticulture crops, cultivation and post-hervest technologies.

ELECTIVES (For students opting other than Botany as honours subject)

Semester wise Programme	Outcomes
1ST	After completion of the programme students will be able to know different forms of plant life
2ND	After completion of the programme students will be able to know about the interaction of plant life with the surroundings and also to identification, classification and nomenclature of plants.
3RD	After completion of the programme students will be able to understand the types of plant tissues, their arrangement and also to plant reproduction.
4TH	After completion of the programme students will be able to understand different physiological phenomenon and metabolism of plants.

<u>Course Outcomes</u>

HONOURS

Course Code	Outcomes

BC101T	After completion of the programme students will be able to 1. Understand the diversity among Algae. 2. Know the systematic, morphology and structure, of Algae. Understand the life cycle pattern of Algae. 3. Understand the useful and harmful activities of Algae, Bacteria &Viruses
BC102T	After completion of the course students will be able to 1. Understand the Biochemical nature of cell. 2. Know the chemical nature of biomolecules. 3. Understand the different types of interaction in Biomolecules. 4. Structure and general features of enzymes.
BC203T	On completion of the programme students will be able to 1)Understand the Biodiversity of Fungi 2) Know the Economic Importance of Fungi 3)Know about different types of plant diseases and their distribution.
BC204T	1) Understand the morphological diversity of Bryophytes, Pteridophytes and Gymnosperms 2) Understand the economic importance of the Bryophytes. , Pteridophytes and Gymnosperms 3) Know the taxonomic position, occurrence, thallus structure, reproduction of Bryophytes, Pteridophytes and Gymnosperms
BC305T	After completion of the programme students will be able to 1) Understand the scope & importance of Anatomy. 2) Know various tissue systems. 3) Understand the normal and anomalous secondary growth in plants and their causes
BC306T	After completion of the course students will be able to 1) Understand the role plants in human welfare. 2)Gain knowledge about various plants of economic use. 3) Know importance of plants & plant products.
BC307T	After completion of the course students will be able to 1) Understand the principle of heredity. 2) Gain Knowledge about the fine structure of hereditary material. 3) Understand about the mechanism of inheritance.
BC 408 T	After completion of the course students will be able to 1) Understand the biochemical nature of nucleic acids, their role in living systems, experimental evidences to prove DNA as a genetic material. 2) Understand the process of synthesis of proteins and role of genetic code in polypeptide formation.
BC 409T	After completion of the course students will be able to 1)Know on ecology, and ecological dynamics. 2)Ability to correlate ecological dynamics and regulation of vital processes on earth as biogeochemical cycles. 3) Ability to interpret ecosystem services, ecological resilience, ecological economics, and landscape ecology.

BC 410T	After completion of the course students will be able to 1) Know the conceptual development of „taxonomy‟ and „systematics‟ 2) Understand the Phylogeny of angiosperms. 3) Learn the wide activities in angiosperm and trends in classification. 4) Learn about the characters of biologically important families of angiosperms. 5) Understand various rules, principles and recommendations of plant nomenclature produces in plant identification. 6) Understand major evolutionary trends in various parts of angiospermic plants
BC511T	After completion of the course students will be able to 1) Know the methods of pollination and fertilization. 2) Know fertilization, endosperm and seed structure. 3)Understand the structure of various types of anther and pollen grain and their development.
BC512T	After completion of the course students will be able to 1) Learn about mineral nutrition in plants. 2) Understand the growth regulators and their function in developmental processes in plants. 3) Know about Photosynthesis and Respiration in plants. 4) Understand process of plant-water relation & the process of translocation of solutes in plants 5) Know the physiology of flowering plants.
BC613T	After completion of the course students will be able to 1) Know concept of plant metabolism. 2) Know carbon assimilation in plants 3) Know about the signal transduction in plant cell.
BC614	After completion of the course students will be able to 1) Know the scope of plant tissue culture technology; knowledge in molecular tools such as enzymes nomenclature, different types of vectors, DNA markers and blotting techniques. 2) Students will be able to design the strategies for genetic engineering through modern techniques like electroporation, microinjection and liposome mediated transformation studies. 3) Application of biotechnology for genetically engineered products such as human growth hormone etc.

ELECTIVES (Discipline Specific)

Title of the Course	Outcomes

DSEBD 501T	After completion of the course students will be able to 1) Understand about the principle of microscopy. 2) Know about Radioisotopes & Spectrophotometry. 3) Know about TLC, GLC, HPLC and ion-exchange chromatography. 4) Know about Bio-statistical analysis such as mean, median mode etc..
DSEBD 504T	After completion of the course students will be able to 1) Understand the Scope of microorganism in different industrial production and their role in our environment. 2) Know the importance of microbes in agriculture. 3)Know the role of microbes in sewage and domestic waste water treatment. 4) Know about the microbial enzymes of industrial interest and enzyme immobilization.
DSEBD605T	After completion of the course students will be able to 1) Know about the plant breeding for improvement of crop plants. 2) Know about the concept and mechanism of quantitative inheritance and polygenic inheritance. 3) Understand about inbreeding depression and heterosis.
DSEBD606T	After completion of the course students will be able to 1) Understand about land and water management strategies. 2) Know about different forest products and their management. 3) Describe about Renewable and Non-Renewable source of energy and their management and conservation.

ELECTIVES(For students opting other than Botany as honours subject)

Course Code	Outcomes
GE101T Biodiversity	After completion of the course students will be able to 1) Understand the diversity among Algae. 2) Know the systematic, morphology and structure, of Algae; Understand the life cycle pattern of Algae. 3)Understand the Biodiversity of Fungi 4) Know the Economic Importance of Fungi 5) Understand the morphological diversity of Bryophytes, Pteridophytes and Gymnosperms 6) Understand the economic importance of the Bryophytes. , Pteridophytes and Gymnosperms 7) Know the taxonomic position, occurrence, thallus structure, reproduction of Bryophytes, Pteridophytes and Gymnosperms

GE201T Plant Ecology& Taxonomy	After completion of the course students will be able to 1) Acquire knowledge on classification of plant families, their characteristics and its economic importance. 2) Students learned about the interaction between biotic and abiotic components of the environment. 3) Know about the concept of energy flow in the ecosystem. 4) Acquire knowledge about Biometrics and Numerical taxonomy. 5) Know about the principles of botanical nomenclature
GE301T Plant Anatomy & Embryology	After completion of the course students will be able to 1) Understand the scope & importance of Anatomy. 2) Know various tissue systems. 3) Understand the normal and anomalous secondary growth in plants and their causes. 4) Know the methods of pollination and fertilization. 5) Know fertilization, endosperm and seed structure.
GE401T Plant Physiology & Metabolism	After completion of the course students will be able to 1) Learn about mineral nutrition in plants. 2) Understand the growth regulators and their function in developmental processes in plants. 3) Know about Photosynthesis and Respiration in plants. 4) Understand process of plant-water relation & the process of translocation of solutes in plants 5) Know the physiology of flowering plants. 6) Know the process of Nitrogen metabolism in plants.

Dhakuakhana College
Department of Chemistry
Programme Specific Outcomes and Course Outcomes

Students will gain an understanding of

1. **Paper code C-101:** Wave mechanical picture of atomic structure, periodic properties of elements, chemical bonding
2. **Paper code C-102:** Kinetic molecular model of a gas, behaviour of real gases etc, properties of various states of matters and idea and application of solubility and solubility product of sparingly soluble salts
3. **Paper code C-201:** Knowledge of basic organic chemistry, isomerism, relative configuration and different types of organic reactions.
4. **Paper code C-202:** Chemical thermodynamics, their mathematical expression &

application and solutions and colligative properties.

5. **Paper code C-301:** The chemistry of s, p block elements, noble gases, inorganic polymers& metallurgy.
6. **Paper code C-302:** Preliminary knowledge on the synthesis, properties of organic compounds of Halogen & oxygen containing Functional groups.
7. **Paper code C-303:** Details on phase equilibria, chemical kinetics, catalysis and surface chemistry.
8. **Paper code C-401:** Vivid knowledge on coordination chemistry and its application extended to biological system.
9. **Paper code C-402:** The preparation and properties of different classes of nitrogen containing compounds, heterocyclic compounds of both synthetic and natural origin.
10. **Paper code C-403:**The basic knowledge on electrochemistry, various laws governing electro chemical process and their application.
11. **Paper code C-501**: Organic synthesis, retro synthesis, and to understand biochemistry.
12. **Paper code C-502:** The various aspects of photo chemistry and quantum chemistry.
13. **Paper code C-601:** Various aspects of knowledge on organometallic chemistry, its application and Inorganic Reaction Mechanism.
14. **Paper code C-602:** Application of Spectroscopy (UV – visible, IR and NMR), carbohydrates, dyes and polymers.

Dhakuakhana College
Department of Economics
Programme Specific Outcomes and Course Outcomes

Programme Specific Outcomes

1. The learners will understand basic concepts of economics and their importance.
2. It will provide the scope for learning about consumer's and producer's behaviour.
3. It will familiarize economic theories and their application in practical life.
4. Students will get the opportunity to learn the application of mathematics and statistics in economics.
5. It will enable the students to understand the tax, fiscal and trade policies of the country.
6. It will enrich the knowledge of learners and hence will raise their role in society as well as in the nation.
7. Students will be able to acquire knowledge of international trade and policies.

Course Outcomes

B.A./B.Sc. First Year (1st& 2nd Semester)

Paper (ECNHC101): Introductory Microeconomics

- Create awareness of consumer's and producer's behaviour in practical life.
- Students will understand about different market forms and pricing strategies of different markets.
- The learners will realize the significance of inputs and the pricing policies as per their demand and supply.
- Enable to understand the basis of demand and supply and its further application.
- Students will gain knowledge of basic microeconomic theories and their application.

Paper (ECNHC102 &ECNHC202): Mathematical Methods for Economics

- The learners will get the opportunity to learn mathematics and its application in economics.
- Students will get the opportunity to acquire knowledge of basic mathematics which helps the students for different state and national level competitive exam.
- Mathematical economics will enrich the knowledge of economics.
- The learners will get the opportunity to learn the different model of mathematics which can apply in economics.

Paper (ECNHC201): Introductory Macroeconomics

- Familiarize the concept of macroeconomics and the variables related to it.
- It will help the students to understand the functioning of an economy.
- Students will able to learn about the nation's international economic transaction with the rest of the world.
- It will also enrich the knowledge of interrelated macroeconomics variables, like income, employment, output etc.
- Students will able to grasp the real economic situation by the application of various macroeconomic theories.

B.A./B.Sc. 2nd Year (3rd& 4th Semester)

Paper (ECNHC301 & ECNHC401): Essentials of Microeconomics & Advanced Microeconomics

- Deepening the knowledge of microeconomic theories and the behaviour of consumers' and producers'.
- It will make the students understand basic concepts by using mathematical tools.
- Students will able to understand the characteristics, nature of competitive firms.
- It will enable the students to understand the concepts of costs, revenues and profits.

Paper (ECNHC302 &ECNHC402): Essentials of Macroeconomics & Advanced Macroeconomics

- It will help the students to understand the consumption and investment function.
- Familiarize the causes and nature of inflation and unemployment and the relationship between them.
- Enrich analytical capability on macroeconomic problems of the nation.
- The student will be able to understand the open economy and a nation's balance of payments.

Paper (ECNHC303): Statistical Methods for Economics

- Students will be able to acquire the knowledge of statistical tools and their application.
- Makes the students understand on statistical tools and technique which will help them in the collection, presentation and analysis of data.
- Students will get knowledge on the Hypothesis and its significance in the research.
- This paper will help the students in interpreting data and its importance in practical life.

Paper (ECNHC403): Introductory Econometrics

- It will introduce the concepts and techniques of econometrics.
- It will enhance the knowledge on statistical concepts of hypothesis, estimation and diagnostic checking of simple and multiple regression models.
- This paper will introduce econometrics models which can be applied for the interpretation of data.
- Students will be able to understand and analyze research papers and articles after understanding statistical tools and models.

B.A./B.Sc. 3rd Year (5th& 6th Semester)

Paper (ECNHC501 &ECNHC601): Indian Economy-I & Indian Economy-II

- Students will understand the condition of the Indian economy on the eve of independence.
- This paper will provide knowledge on the major trends in economic indicators in India in the post-independence period with particular emphasis on paradigm shifts and turning points.
- Students will get the opportunity to learn India's economic position in comparison to a few Asian economies.
- Learners will be able to explore and analyze the problems of poverty and unemployment and the programmes taken by the government for their alleviation.
- Students will be able to understand sector-specific policies and their impact in shaping trends in key economic indicators in India.

Paper (ECNHC502 & ECNHC602): Development Economics-I & Development Economics-II

- Students will understand the conceptions of development and their justification.
- Students will be benefited by studying aggregate models of growth and their prevalence and limitation in the present world.
- Gets the opportunity to explore the connections between growth and inequality.
- Gets the opportunity to understand the link of political institutions to growth and inequality.
- Makes the students understand the relationship between economy and environment, how economic principles are applied to environmental questions and their management through various economic institutions, economic incentives and other instruments and policies.
- Gets the opportunity to understand on evaluation of environmental projects such as Cost-Benefit Analysis and Environmental Impact Assessments.

Paper (ECNHDSE501): Economics of Health and Education

- Students will understand the role of health in human development.
- Students will be able to look into the cost and benefits of investment in health and the health care delivery system and health financing in India.
- This paper will be able to deliver the knowledge on the overview of the education sector in India, like literacy rate, school participation etc.
- This will also provide the microeconomic foundations of health economics.

Paper (ECNHDSE502): Applied Econometrics

- Students will be benefited by learning the foundation in applied econometric analysis which will develop skills required for empirical research in economics.
- The student will be highly benefited in higher education and research.
- Students will be able to understand more in economic research by learning regression models, dynamic econometrics models, advanced methods in regression analysis and panel data models.

Paper (ECNHDSE503): Economic History of India

- It will provide the opportunity to learn about the economic development during the second half of British colonial rule.
- Learners will be able to analyze critically by learning the trend and composition of national income, population scenario and changing occupational structure.
- Students will be able to understand the agricultural system of India by learning the contents included in this paper.

- Students will also get the opportunity to enrich their analytical capability by learning the contents of industrial development and the transportation system of India in this paper.

Paper (ECNHDSE504): Game Theory

- Students will learn the basic concepts of game theory through which they can use it to solve some simple problems.
- Some of the important microeconomic models, like Cournot Duopoly model, Bertrand model, the Commons problem, Prisoner's Dilemma, Nash equilibrium can be understood in this paper.
- Various economic application of game theory can be understood here.

Paper (ECNHDSE505): Money and Financial Markets

- Students will learn the theory and functioning of the monetary and fiscal sectors of the economy.
- Students will be benefited by learning the organization, structure and role of financial markets and institutions.
- Students will be able to analyze the economy by learning interest rates, monetary management and instruments of money control.
- Financial and banking sector reforms and monetary policy with special reference to India can be investigated in this paper.

Paper (ECNHDSE506): Public Economics

- Students will get the opportunity to acquire knowledge of government policy from the points of view of economic efficiency and equity.
- Students will understand the nature of government intervention and its implications for allocation distribution and stabilization.
- Students will be able to analyze government taxation and expenditure policies.
- The important concepts like Public goods, market failure and externalities can be learned in this paper.

Paper (ECNHDSE601): Financial Economics

- It will enhance the knowledge of financial economics.
- The analytical capability of the learners will be enhanced by studying basic models used to benchmark the valuation of assets and derivatives.
- Learners will get the opportunity to learn corporate finance which will enrich their financial knowledge.

Paper (ECNHDSE602): Environmental Economics

- Students will understand the value of the relationship between economy and environment and economic causes of environmental problems.
- Students will be able to look deeply into the practical issues by studying how economic principles are applied to environmental questions and their management through various economic institutions, economic incentives and other instruments and policies.
- Students will understand the economic implications of environmental policy as well as valuation of environmental quality, quantification of environmental damages, tools for evaluation of environmental projects such as cost-benefit analysis and environmental impact assessment.
- Students will understand depth knowledge of International environmental problems such as global warming, ozone layer depletion, climate change etc. in this paper.

Paper (ECNHDSE603): International Economics

- The student will properly grasp the composition, direction, and consequences of international trade, and the determinants and effects of trade policy.
- Inclusion of the contents on the international monetary system will increase the knowledge of students in this respective field.
- The inclusion of the exchange rate and its determination in this paper will lead to enhance knowledge of students whereby they will be able to understand and analyze the nation's balance of payments condition.
- Studying international trade theories will make the students understand the reason behind and mutual benefit from international trade.

Paper (ECNHDSE604): The Economy of North-East India

- The learners will properly understand the characteristics as well as the current issues of North-East India.
- The learners will also be able to know the performance and problems of the primary, secondary and tertiary sectors of North-East India.
- Students will be able to analyze the development issues, like poverty, unemployment, flood and erosion etc.

Paper (ECNHDSE605): History of Economic Thought

- The learners will get the opportunity to learn the historical developments in the economic thoughts propounded by different schools.
- The theories may lead to generate new ideas or thought among the learners.
- The learners will be able to understand the contemporary economic policies and ideologies by properly investigating in this paper.
- Students will be able to look into different ideologies followed by different economists and different countries.

Paper (ECNHDSE606): Project/Dissertation

- It will practically provide the opportunity in collecting and interpreting data.
- The learners will be able to apply different statistical tools and model in the project and dissertation.
- The technique of writing PhD thesis and dissertation of M. Phil can be understood through this project or dissertation.

Dhakuakhana College
Department of Education
Programme Specific Outcomes and Course Outcomes

Programmes Offered

A. Bachelor in Education

The Department of Education is offering Education as Generic Elective to three years Bachelor Arts Programme. For imparting the programme based learning experiences, the syllabus of Dibrugarh University is being adopted. In terms of end semester evaluation and grading, both Choice Based Credit System (CBCS) asprescribed by the Dibrugarh University is being followed.

Under Choice Based Credit System (CBCS)

Programme Outcomes (Bachelor of Arts)

After completion of the programme, it is expected that the students will be able to,

1) Know the meaning, concept and aims of education. They will be able to know the philosophical and sociological bases of education,
2) Know the meaning, concept and different branches of psychology. They will possess in-depth knowledge of educational psychology to deal with the complex human behaviour in educational set up.
3) Learn how to construct and administer different psychological tests, conduct psychological experiments alongwith the measurement and evaluation.
4) Know the historical background of education, development of education in pre-independent and post-independent India
5) Get knowledge about the hierarchy and systems involved in educational administration, management and planning. They will also be able to know the inter-relationships between education and economy.

6) Know the prevailing educational systems in other developed nations and the best practices adopted by them.
7) Possess qualities to some extent of a guide or a counsellor to cope up with the psychological, societal or career related issues in educational environment those may affect the pupils' mental health and hygiene.
8) Know the constitutional provisions, recent trends and reforms in policy matters of education with special reference to holistic and inclusive education.
9) Acquaint themselves with the best teaching skills, use of ICT and preparation of lesson plans by way of theoretical knowledge and practical class-room teaching.

Programme Specific Outcomes

GENERIC ELECTIVES(For students opting other than education as honours subject)

Semester wise Programme	Outcomes
1ST	After completion of the programme students will be able to understand the importance of guidance and counselling over an individual's life span.
2ND	After completion of the programme students will be able to know about the constitutional provisions towards human rights and education.
3RD	After completion of the programme students will be able to understand different issues related to mental health and hygiene.
4TH	After completion of the programme students will be able to understand the role of education in economic development and role of economy in the development of education.

Course Outcomes

GENERIC ELECTIVES(For students opting other than education as honours subject)

Course Code	Outcomes
GEED101	After completion of the course students will be able to **C)** describe meaning, nature, purpose and scope of guidance and counselling. **D)** describe the characteristics and functions of guidance and counselling. **E)** state the basic principles of guidance and counselling.

	F) explain the types and areas of guidance and counselling. **G)** use various tools and techniques of guidance in appropriate context. **H)** explain the qualities and role of a counsellor
GEED201	After completion of the course students will be able to 2) explain the meaning, definition, nature, scope, theories and constitutional provisions towards human rights. 3) describe the concept, objectives, principles, need and curriculum for human rights education. 4) describe methods and activities for teaching human right education. 5) describe the factors promoting human right education. 6) describe the basics of human rights education i.e. societal, political, regionalism and limitations of its 7) explain the role of different agencies of human rights education
GEED302	After completion of the course students will be able to 1) explain the need and importance of understanding the concepts of mental health and hygiene in the emerging society. 2) deal with person having psychological and mal-adjustment problems. 3) describe the role of different agencies of society and their impacts on the development of an individual's personality. 4) describe various components of positive psychology and its significance in the teaching learning processes. 5) integrate Yoga in their day to day life for their holistic health.
GEED401	After completion of the course students will be able to 1) describe the meaning, scope and importance of Economics of Education 2) define and illustrate the concepts used in economics of Education. 3) examine the historical development of Economics of Education. 4) explain the concept of Education as a good, demand and supply of education, Utility of Education etc.

Dhakuakhana College
Department of English
Programme Specific Outcomes and Course Outcomes

Programmes Offered

The Department of English offers a 3-year undergraduate programme, comprising of six semesters. With regard to the end semester evaluation and grading, both Choice Based Credit System (CBCS) as prescribed by Dibrugarh University are being followed.

Outcomes under Choice Based Credit System (CBCS)

Programme Outcomes (Bachelors in English)

After the completion of the programme, the students are expected to understand and showcase the following:

1) A synchronic and diachronic approach towards English will be developed amongst the students, since the course teaches them not only about literature in the English language, but several classical and contemporary literatures, as well as socio-political and cultural philosophies from various parts of the world.
2) The students will be able to gain clarity regarding other literatures apart from just literatures in the English language, thereby developing a broader perspective of other cultures.
3) A critical appreciation is developed among the students, which will further help them in their research careers.
4) The students will be able to understand other genres of literature apart from novels, plays and poems, since the programme includes other new genres of popular culture like graphic novels and cinematic productions.
5) An appreciation of Indian literature in English as well as in translation is inculcated within the students, thereby broadening their scope of further research ideas.

Programme Specific Outcomes

B.A. English (H)

Semester-wise Programme	Outcomes
1st semester	• The students will gain knowledge about Indian classical literature translated into English, allowing them to bridge the gap between classical and contemporary Indian literature. • The students will be able to understand the European Classical literature, allowing them to analyze the similarities and dissimilarities between Indian and Western literature.
2nd Semester	• Moving forward with the outcome of first semester, the students will be able to appreciate Indian literature written in English during the colonial and post-colonial times. • The era-wise division of British literature is done and the beginning of British poetry and drama(from 14th to

	17th century)is learnt to be admired by the students.
3rd Semester	• Students are expected to learn the differences between American and British literature, thereby knowing the history of birth of American literature. • The students learn to recognize the importance of popular literature apart from traditional literature. • The students move forward with their understanding of British poetry and drama, which now begins from the 17th century to the 18th century.
4th Semester	• The students are able to gain more knowledge on the aspects of British literature beginning from the 18th to the 19th century. • An appreciation for romantic poetry is also garnered.
5th Semester	• The students are able to enhance their knowledge on literature written by women, both in English and translated works. • They are able to expand their knowledge on British literature from the 20th century.
6th Semester	• Apart from British prose and poetry, the students learn to value the importance of Modern European Drama, which are translated into English. • As postcolonial subjects, the students learn the impact of postcolonialism in literature, which is not just limited to the subcontinent.

Discipline Specific Electives (DSE)

Semester-wise Programmes	Outcomes
5th Semester	• The students are able to appreciate the essence of Indian literature, by learning about various modern regional literatures of India. • The politics of the Indian Diaspora and the emotions encapsulated by the displaced writers is realized by the students. • A critical approach towards literary works is developed. • Various literatures traversing the globe are learnt, allowing the students to conceptualize the differences between the cultures which produce these works.
6th Semester	• The students learn to read texts using several critical discourses. • The students are able to recognize the impact of literature on cinema. • The students learn about the horrors of partition, by reading

	and analyzing the works produced by people who experienced it. • The importance of authenticity as well as imagination while writing a text is learnt to be valued by the students.

Compulsory Course (For First Semester B.A. and B.Sc. students)

- Basic English communication skills are learnt by the students.
- With this course, the students are expected to speak, read and write in proper and grammatically-correct English.

Elective Course (For First semester B.A. and B.Sc. students)

- The students learn the basic aspects of fictional and non-fictional prose.
- The ability of close reading is enhanced within the students.

Course Outcomes

Honours (Core)

Course Code and Name	Outcomes
10100 (Indian Classical Literature)	• The students will be acquainted with the rich cultural heritage of ancient India, through classical literary works. • The students will be able to appreciate the Sanskrit art form, encapsulated in texts like *The Mahabharata*, Kalidasa's*AbhijnanaShakuntalam*and Sudraka's*Mrcchakatika*. • Along with Sanskrit texts, the students will be familiarized with Assamese literary texts of classical sensibilities, especially Shankardeva's*ParijataHarana*.
10200 (European Classical Literature)	• The students will acquire knowledge of the literature of ancient Greece and Rome. • The course will help the students to recognize some of the greatest European classics like Homer's *The Iliad*, Ovid's *Metamorphoses* and the satires of Horace. • It will also help the students to understand different literary genres like tragedy, comedy, epic, satire, criticism and so forth.
20100 (Indian Writing in English)	• The students will be acquainted with the culture, tradition, social values and historical background of India through the body of Indian literary works written in the English language. • The students will also understand the broader realm of post-colonial literature and the Indian Diaspora. • Issues like identity politics, gender differences, home, dislocation, language among other will be assimilated by the students.

20200 (British Poetry and Drama: 14th to 17th Centuries)	• The students will gather knowledge on three specific eras of British literature: the Age of Chaucer, Pre-Elizabethan and Elizabethan periods. • The students will understand two genres of British literature, poetry and drama, from the 14th to the 17th century. • The students will be familiarized with the spirit of English Renaissance through plays and poetry prescribed in the course.
30100 (American Literature)	• The students will be introduced to the various historical events of America, through American literature. • The students will learn about the meaning of the Great American Dream, the transcendentalist movement, the great economic depression and so forth. • The dark history of slavery and the problematic portrayal of race in the south of America will be learnt by the students.
30200 (Popular Literature)	• Primarily designed to entertain the masses and designated as a branch devoid of academic scholarship, Popular literature will be introduced to the students. • The students will be acquainted with genres like crime thriller, graphic fiction, children's literature and so forth. • The students will also learn about queer theory, gender and identity issues prevalent in the contemporary world.
30300 (British Poetry and Drama: 17th and 18th Centuries)	• The students will learn about the religious and secular thoughts in Britain during the 17th and 18th century. • The students will be acquainted with the genres like Mock-epic, satire along with different styles of writing like the Comedy of Manners. • The students will learn to critically analyze the position of women in England during the 17th and 18th century.
40100 (British Literature: 18th Century)	• The students will learn about the Enlightenment and Neoclassical period of English literature, spanning from the 18th century. • The students will be acquainted with the genre of English novel, beginning from the 18th century. • The students will also acquire knowledge on the new modes of expression in English literature like irony and satire used to describe the society's ills.
40200 (British Romantic Literature)	• The students will learn about the literature of the English romantic period, with a better understanding of the concept of Nature. • The Gothic novel will be introduced to the students through Mary Shelley's *Frankenstein.* • The students will understand the concept of Reason and

	Imagination, and their impact on Romantic literature.
40300 (British Literature: 19th Century)	• The students will be acquainted with the impact of scientific ideology and utilitarian values in the English society through the literary works of the 19th century. • The students will learn about the groundbreaking theories propounded by Darwin, Marx and Freud. • The students will understand the ideas of marriage and sexuality, faith and doubt through the works prescribed.
50100 (Women's Writing)	• The students will be introduced to women's writing, thereby learning about the various ways in which power operates against women. • The students will be familiarized with the thoughts, anxieties, fears, desires and emotions of women through their literary works. • The students will be able to situate women's writing in a space that transcends the male writing tradition.
50200 (British Literature: The Early 20th Century)	• The students will be able to delineate Twentieth-century British literature and the impact of the First World War on this era. • The students will learn about the ramifications of Capitalism on this era, which is reflected through the literature of that time. • They will learn about Modernism in British Literature, thereby being able to define the philosophies of symbolism, existentialism, cubism, Dadaism, expressionism and nihilism.
60100 (Modern European Drama)	• The students will be acquainted with the revival of drama in Europe during the twentieth-century. • Plays of dramatists like Beckett, Ibsen, Brecht and Ionesco will make the students capable of understanding the political, social, individual and economic condition of post-war Europe. • They will be able to understand the impact of war and what it effect wars might have on the psyche of the witnesses and survivors.
60200 (Postcolonial Literatures)	• The students will extend their knowledge on the importance of postcolonial literature, which had already been introduced to them in course 20100. • The students will learn to deploy postcolonial theory in order to engage with texts within a postcolonial framework. • They will be able to focus on issues like language, identity, displacement, colonization, decolonization, nationalism, race, ethnicity and so forth.

Discipline Specific Electives (DSE)

CourseCode and Name	Outcomes
50110 (Modern Indian Writing in English Translation)	• The students will learn about the importance of writings in regional languages of India by reading these their English translations. • The students will be acquainted with the works of Indian writers working on regional literatures. • They will be familiarized with various notions of Indian Literature including modernity, caste, gender, resistance, languages and aesthetics of translations.
50120 (Literature of the Indian Diaspora)	• The students will be able to increase their knowledge on diasporic literature written in English, and how such literature deals with alienation, displacement, nostalgia and quest for identity amongst others. • They will be able to understand the issues that haunt writers who have settled abroad, despite being Indians in terms of roots and emotional make-up. • The students will learn about the importance of a collective identity that resides in a shared sociocultural experience, rather than locating this identity in terms of geography.
50130 (Literary Criticism)	• The students will learn about the major trends in literary criticism from the Romantic period to the present time. • The students will be familiarized with summarizing and criticizing, along with citing from critics' interpretations. • They will be acquainted with various criticisms including Romantic theory of poetry, modernist theory, New Criticism and feminist criticism.
50140 (World Literatures)	• The students will be familiarized with the form and content of texts that are part of different spatialities. • They will be acquainted with literatures from across the world and will therefore form an idea on the importance of world literature. • They will learn about various aspects of world literatures including memory, hybridity, race, culture, literary translation, politics and aesthetics amongst others.
60110 (Literary Theory)	• The students will be acquainted with four relevant discourses: Marxism, Feminism, Poststructuralism and Postcolonial Studies. • They will be able to apply deploy these discourses while reading and analyzing a literary text. • The will learn about the various political, social, economic, gendered, and cultural values that resulted in the formation of these theories.

60120 (Literature and Cinema)	• The students will learn about the theories of adaptation from text to screen. • They will be able to appreciate major works of cinema and literary narrative. • They will be able to analyze the modes of transformation when it comes to adapting a piece from the text to the screen. • They will be able to critically understand the differences between Hollywood and Bollywood.
60130 (Partition Literature)	• The students will be able to understand the trauma related to the Partition of India through literary texts that captures the sense of that time. • The unheard voices during the Partition, especially women's narrative, will be learnt by the students. • They will be able to acknowledge the brutality of communalism and violence, and the emotions of homeless and exile related to the Partition of India.
60140 (Travel Writing)	• The students will be acquainted with various travellers' accounts of places from the past to the present. • They will understand the importance of travel writing, because of the genre's ability to document the ways of foreign culture. • They will be able to acknowledge the impact of religion, gender and globalization on travel writings.

Compulsory Course (for 1st semester B.A. and B.Sc. students)

Course Code and Name	Outcomes
10310 (English Communication)	• The students will learn about the theory, fundamentals and tools of communication, thereby developing their vital communication skills. • They will be familiarized with language of communication and various speaking skills like personal communication, social interactions and communication in professional situations including interviews, group discussions and office environments. • Their reading and writing skills will also be developed, which is necessary for their future academic life.

Elective (for 1st semester B.A. and B.Sc. students)

Course Code and Name	Outcomes
10320	• The students will be able to understand the ways of interpreting

(Alternative English)	and analyzing literary texts, especially fiction. • They will learn about various critical theories including ideas of race, ethnicity, caste, linguistics and so forth

Dhakuakhana College
Department of History
Programme Specific Outcomes and Course Outcomes

CHOICE BASED CREDIT SYSTEM (CBCS)
HONOURS (CORE)

Course Code	Outcomes
Course Code: 1 Course Title: HISTORY OF INDIA- I	The objective of this course is to analyse the various source materials for the reconstruction of Ancient Indian History, the tools of historical reconstruction, the various ancient cultures, the technological, economic, Political, religion and Philosophy of the period concerned
Course Code: 2 Course Title: SOCIAL FORMATIONS AND CULTURAL PATTERNS OF THE ANCIENTWORLD	The students will be acquainted with the evolution of mankind, the beginning of food production, the Bronze Age., advent of iron, the slave society in ancient Greece, the economy and the Political culture of the ancient Greece.
Course Code: 3 Course Title: HISTORY OF INDIA II	The objective of this course is to acquaint the students with agrarian economy, the growth of urban centres in northern and central India and the Deccan as well as craft production, trade routes and coinage (ii) Varna, jati, gender, marriage and property relations Process of State Formation and the Mauryan and post-Mauryanplities with special reference to the Kushnas, Satavahanas and Gana-Sanghas.Land grants, land rights and peasantry, urban decline and (iii)Gupta empire and post Gupta polities and the religion philosophy and society circa 300 BCE-CE 750.
Course Code: 4 Course Title: SOCIAL	The learners will be acquainted with the Roman Empire and slave society as well as the cultur and trade. (ii) Economic development in Europe from 7th to 14th centuries covering production, technological developments, growth of towns and trade.

FORMATIONS AND CULTURAL PATTERNS OF THE MEDIEVAL WORLD	
Course Code: 5 Course Title: HISTORY OF INDIA III (c. 750 -1206)	The students will acquire knowledge about the sources for the reconstruction of early medieval Indian history (ii) Information regarding political structure and social and religious institutions (iii) The agrarian structure and social change of the period under study (iv) Trade and commerce, guilds and process of urbanization
Course Code: 6 Course Title: RISE OF THE MODERN WEST - I	The students will be acquainted with (I) The transition from feudalism to capitalism (II) The voyages to the new world, the Renaissance (III) The Religious Reformation (IV) The 16th century Economic Developments (V) The emergence of European state system
Course Code: 7 Course Title: HISTORY OF INDIA IV (c.1206 - 1550)	The learners will gather information regarding (i) The sources, vernacular histories and epigraphy (ii) The various dynasties ruling Delhi (iii) Emergence of Bahmani kingdom and Vijaynagara Empire (iv) The social and economic developments, the religion, society and culture during the late medieval India
Course Code: 8 Course Title: RISE OF THE MODERN WEST - II	This paper will help the students to know about the 17th century European crisis, the English Revolution (ii) The Scientific development from 15th to 17th century , Growth of mercantilism (iii) End of Absolute Monarchy and growth of Parliamentary Democracy (iv) The American and Industrial Revolution
Course Code: 9 Course Title: HISTORY OF INDIA V (c. 1550 - 1605)	The students will have information regarding the Persian sources and vernacular literary traditions (ii) The growth and consolidation of the Mughal Empire (iii) Mughal policies in the North West Frontier and the Deccan (iv) The land rights and revenue system, agriculture, trade under the Mughals (v) Political and religious ideas of the period concerned
Course Code: 10 Course Title: HISTORY OF INDIA VII (c. 1605 - 1750s	The learners will have an idea about the various sources and historiography of the Mughal period (ii) Expansion of the Mughal rule, the Sufi orders (iii) Auragzeb's religious policy, religious institutions, Decline of the Mughal Empire, Growth of regional polities and state formation under the Rajputs and the Marathas. (iv) 18th Century Debate (v) Trade, craft, monetary and market system, urban centres and Indian Ocean trade networks
Course Code: 11 Course Title:	The objective of this course is to help the students (i) To be acquainted with the various factors that led to the French Revolution of 1789 (ii) The Art and Culture of the R evolution (iii) The

History of Modern Europe- I (c. 1780-1939)	Restoration of royal dynasties, the radical movements, the evolution of social classes, Industrialization, the First World War and Administrative Reorganization in Italy and Germany.
Course Code: 12 Course Title HISTORY OF INDIA VI (c. 1750 - 1857)	The Paper tries to examine the transition of India into a Colonial domain of the British and also showsthat this transition was not unilinear as the Colonial state had to face resistance from the natives.
Course Code: 13 Course Title HISTORY OF INDIA VIII (c. 1857 - 1950)	The paper will endeavour to highlight the growth of Indian Nationalismand the National Movement for Freedom. In this connection it will highlight the responses of the various sections of the people. (ii) It will also describe the initial transition from the Colonial to the Post-Colonial era.
Course Code: 14 Course Title HISTORY OF MODERN EUROPE II (c. 1780 -1939)	The Objective of this Course is to acquaint the Students with (i) Liberal Democracy, Working Class Movements and Socialism in the 19th and 20th Centuries: (ii) Crisis of Feudalism in Russia and Experiments in Socialism (iii) War and Crisis: c. 1880-1939 and (iv) Post 1919 Political Development, Cultural and Intellectual Developments since c. 1850

DSEHIS5 Paper I EARLY AND MEDIEVAL ASSAM TILL 1826	The objective of this paper is to give a general outline of the history of Assam from the 13th century to the occupation of Assam by the English East India Company in the first quarter of the 19th century. It aims to acquaint the students with major stages of developments in the political, social and cultural history of the state during the most important formative period.
DSEHIS6 HISTORY OF MODERN ASSAM: 1826 –1947	The course aims at acquainting the students with the socio-political and economic developments in Assam during the Colonial regime. It also deals with the growth of Nationalism and the role of the Provinces in the National Movement for independence.

Dhakuakhana College
Department of Mathematics
Programme Specific Outcomes and Course Outcomes

Program Outcome	After successful completion of three years B.Sc /B.A. program in Mathematics a student will have a good understanding of major concepts in all disciplines of Mathematics.
Program Specific Outcome	After successful completion of the program students will be able • To develop patience and perseverance when solving critical problems and logical resonings. • To improve the mathematical skills in a practical way. • To enhance the critical thinking ability of the students. • To transmit mathematics ideas both orally and in practically. • To inculcate interest among students to participate in seminars, workshops, conferences etc. • To develop their reasoning abilities. • To enable the students to demonstrate the various concepts of Mathematics from both pure and applied branches of Mathematics. • To understand the historical and contemporary role of Mathematics and be able to place the discipline properly in the context of other human intellectual achievement. • To know how and when to use technology in higher Mathematics.
Course Outcome	Course Outcomes of Choice Based Credit System (CBCS)

Course	Outcomes
C1.1 Calculus	After going through this course the students will be able to • apply Calculus in real life problems • formulate mathematical models
C1.2 Algebra	After going through this course the students will be able to • describe various algebraic structures on sets • identify the algebraic structures present in different branches of Sciences
C2.1 Real Analysis	After going through this course the students will be able to • identify the properties of the number system. • describe various analytical properties of the real number system.
C2.2 Differential Equations	After going through this course the students will be able to • use the techniques to solve differential equations • apply these techniques in various mathematical models used in real life problems
C3.1 Theory of Real Functions	After going through this course the students will be able to • discuss limit, continuity and differentiability of

		real valued functions • expand functions in series and different form of remainders
	C3.2 Group Theory I	After going through this course the students will be able to • describe various group structures on sets • identify the group structures present in different branches of sciences
	C3.3 PDE and Systems of ODE	After going through this course the students will be able to • make mathematical formulations and their solutions of various physical problems; design mathematical models used in heat, wave • describe the Laplace equation and their solutions
	C4.1 Numerical Methods	After going through this course the students will be able to • discuss various numerical methods and interpolation formulae • apply numerical techniques for solving differential equation
	C4.2 Riemann Integration and Series of Functions	After going through this course the students will be able to • Riemann integration, improperintegrals • differentiation and integration of powerseries
	C4.3 Ring Theory and Linear Algebra I	After going through this course the students will be able to • describe various ring structures on sets • solve the system of linear equations
	C5.1 Multivariate Calculus	After going through this course the students will be able to • extend the concepts from one variable calculus to function of several variables • demonstrate the ability to think critically and solving application of real world problems involving double/triple integrals
	C5.2 Group Theory II	After going through this course the students will be able to • apply results from preliminary concepts to solve contemporary problems • apply in communication theory, electrical engineering, computer science and cryptography
	C6.1 Metric Spaces and Complex	After going through this course the students will be able to

	Analysis	• describe various properties of metrics paces • complex number system, its differentiation and integration
	C6.2 Ring Theory and Linear Algebra II	After going through this course the students will be able to • apply theorems proof/ solution techniques to solve real worldproblems • find the matrix associated with a linear transformation w.r.t. given bases and can understand the relationship between operations of linear transformations and corresponding matrices
	DSE1.1 Analytical Geometry	After going through this course the students will be able to • sketch parabola, ellipse and hyperbola • solve various geometrical problems analytically
	DSE1.2 Portfolio Optimization	After going through this course the students will be able to define portfolio optimization andapply them to real world problems
	DSE1.3 Financial Mathematics	After going through this course the students will be able to • build quantitative models of financial mathematics/industries • apply models to obtain information of practical value in the financial mathematics
	DSE2.1 Mathematical Modeling	After going through this course the students will be able to solve differential equations andlinear programming problems used in mathematical modelling
	DSE2.2 Mechanics	After going through this course the students will be able to • describe Moment of a force and couple, general equation of equilibrium • solve Problems of translation and rotation of rigid bodies
	DSE2.3 Number Theory	After going through this course the students will be able to • obtain solutions of Diophantine equations • define number theoretic functions
	DSE2.4 Bio-Mathematics	After going through this course the students will be able to discuss various models and techniquesto study Bio-mathematical real life problems.
	DSE2.5 Industrial Mathematics	After going through this course the students will be able to

		• use various type of numerical methods to model problems and use simulation to solve problem • apply different methods to solve financial problems
	DSE 3.1 Hydro-Mechanics	After going through this course the students will be able to describe the basic properties of Fluid Mechanics
	DSE3.2 Linear Programming	After going through this course the students will be able to • describe various optimization techniques pertaining to linear programming. • apply linear programming to problems arising out of real life problems.
	DSE 3.3 Discrete Mathematics	After going through this course, the students should be able to • explain various discrete structures. • design graph theoretic models of real life problems.
	DSE3.4 Theory of Equations	After going through this course the students will be able to discuss various properties of algebraic equations, symmetric properties of roots and determination of roots.
	DSE 3.5 Dynamical Systems	After going through this course the students will be able to discuss the qualitative properties of difference/differential equations
	DSE 4.1 Mathematical Methods	After going through this course the students will be able to • construct mathematical models or real world problems. • solve real world problems through the studied theories.
	DSE 4.2 Boolean Algebra and Automata Theory	After going through this course the students will be able to • define a lattice • identify various lattice properties and apply them to describe switching circuits.
	42 DSE4.3 Probability and Statistics	After going through this course the students will be able to • characterize the statistical techniques. • define various statistical distributions and obtain their related properties • describe the mathematical theory of probability
	DSE 4.4 Differential	After going through this course the students will be able to

	Geometry	• describe various properties of space curves, surfaces and Geodesics • discuss the properties of algebra and calculus of tensors
	SEC-1.1 Logic and Sets	After going through this course the students will be able to • analyze the truth and falsity of a logical statement • differentiate between a logical statement and an ordinary statement • define and describe various properties of sets.
	SEC-1.2 Computer Graphics	After going through this course the students will be able to • indentify the core concepts of computergraphics • apply graphics programming techniques to create and design computer graphics scans
	SEC-2.1 Graph Theory	After going through this course the students will be able to • describe the fundamental properties of Graph Theory • identify different representations of a Graph for practical applications
	SEC-2.2 Operating System: Linux	After going through this course the students will be able to • test the linux process model and explain how linux schedule processes and provide inter-processcommunication • explore how linux implements files systems and manages input output devices
	GE-1.1 Differential Calculus	After going through this course the students will be able to • differentiate functions • find tangent normal, curvature, asymptotes etc
	GE-1.2 Object Oriented Programming in C++	After going through this course the students will be able to • write C-programmes to solve Mathematical problems • design algorithms to solve problems
	GE-1.3 Finite Element Methods	After going through this course the students will be able to • describe finite element methods • differential equations using finite element methods
	GE-2.1 Differential	After going through this course the students will be

	Equation	able to describe various methods for solving differential equations
	GE-2.2 Econometrics	After going through this course the students should be able to design models and solve problems related to Economic issues
	GE-3.1 Real Analysis	After going through this course the students will be able to • analyse the properties of the number line • describe various analytical properties of the real number system
	GE3.2 Cryptography and Network Security	After going through this course the students will be able to • discuss the principles of Cryptography • explain various ways of attacks in complex networks. • explain the structure and organization of the complex network.
	GE 3.3 Information Security	After going through this course the students will be able to describe security issues and data integrity
	GE-4.1 Algebra	After going through this course the students will be able to • describe various algebraic structures onsets • identify the algebraic structures present in different branches of Sciences
	GE-4.2 Applications of Algebra	After going through this course students will be able to • explain various algebraic structure • solve system of linear equations.
	GE4.3 Combinatorial Mathematics	After going through this course students will be able to • use combinatorial approach in solving algebraic problems • explain counting principles.

Dhakuakhana College
Department of Philosophy
Programme Specific Outcomes and Course Outcomes

I. Courses offered under Bachelor of Arts in Philosophy, Lakhimpur Girls' College:

The Department of Philosophy of Dhakuakhana College is offering Philosophy as Generic Elective in 1st, 2nd, 3rd, 4th, Semester under CBCS. Generic Elective (GE) is designed for those students taking honours other than Philosophy. It offers 4 GE papers.

Being affiliated to Dibrugarh University, in terms of end semester evaluation and grading, the Department follows the grading system as per prescribed by the university for both Choice Based Credit System (CBCS).

II. PROGRAMME SPECIFIC OUTCOMES

ii. CHOICE BASED CREDIT SYSTEM (CBCS)

The Department being affiliated to Dibrugarh University followed the syllabus as prescribed by the university. In the present days, many students thought that Philosophy is not important for life since it was not offered in school syllabus, we are here bringing out the outcome/subject outcome below so that our society and students can go through and embrace the necessity of Philosophy. Under CBCS, the subject outcome are:

A. GENERIC ELECTIVES(GE)

1) The department ensureproper understanding of the basic concepts of Philosophy concerning theories of knowledge, categories of knowledge, theories of Truth, etc. and help students apprehend the necessity of Philosophy in this post-modern world.
2) Students will be able to use the basic Aristotelian's and symbolic logic in most of their daily usage.
3) Philosophy helps students journey briefly into all the schools of Indian Philosophy and assist the students to appreciates the various schools of Indian Philosophy and their major doctrines, identify their lives' epistemological and metaphysical problems with them, then create a way out to overcome it.
4) The subject helps the students acquaint themselves with basic concepts of applied Ethics concerning value of human life, environmental ethics, professional ethics, modern ethical issues such as medical ethics, euthanasia, abortion, doctor-patient relation, media ethics, privacy, problem of yellow journalism, ethical issues in cyber space, etc.

III. Course Outcomes

ii. CHOICE BASED CREDIT SYSTEM (CBCS)

In order to let students and guardians knows the productivity of studying Philosophy, we brought forth the following course outcome under CBCS:

F. GENERIC ELECTIVES (For students opting other than Philosophy as honours subject)

Course Code	Outcomes
GEPL1 GE1 (Introduction to Philosophy)	After completion of the course students will be able to **A)** Have the basic concepts of Philosophy concerning theories of knowledge, categories of knowledge, theories of Truth, etc. **B)** Apprehend the necessity of Philosophy in this post-modern world.
GEPL2 GE2 (Introduction to Logic)	After completion of the course students will be able to 8) Familiarized themselves with the basic ideas of Aristotelean and Symbolic Logic. 9) Apply symbols in their day to day usage of proposition.
GEPL3 GE3 (Fundamentals of Indian Philosophy)	After completion of the course students will be able to 2) Have a close acquaintance with Indian Philosophy as a whole. 3) Appreciates the various schools of Indian Philosophy and their major doctrines 4) Identify their lives' basic epistemological and metaphysical problems in classical philosophy and overcome it.
GEPL4 GE4 (Applied Ethics)	After completion of the course students will be able to 2) Acquaint themselves with basic concepts of applied Ethics concerning value of human life, environmental ethics and professional ethics. 3) Acquaint themselves with the modern ethical issues such as medical

	ethics, euthanasia, abortion, doctor-patient relation, media ethics, privacy, problem of yellow journalism, ethical issues in Cyber Space, etc.

Dhakuakhana College
Department of Physics
Programme Specific Outcomes and Course Outcomes

Programmes Offered:

The Department of Physics offers three year Bachelor in Physics Programme comprising of six semesters viz. 1st, 2nd, 3rd, 4th, 5th and 6th. End semester evaluation and grading is done by two methods, Choice Based Credit System (CBCS) and Non-CBCS, as prescribed by the Dibrugarh University. From the session 2019-2020, CBCS system is introduced by the Dibrugarh University.

Programme Outcome (POC): Bachelor in Physics:

After completion of the three years Bachelor programme in Physics (B.Sc in Physics) the students will able to:

POC-1:	Acquire knowledge and understand the major concepts in all of the prescribed courses in Physics.
POC-2:	Solve problems in different branches of physics by acquiring theoretical and practical knowledge of the respective branches.
POC-3:	Know the importance of physics in our life and apply their scientific knowledge to design, study, analysis, and records the results of Physics experiments.
POC-4:	Enter different field of physics for higher study by considering their choices and interests.
POC-5:	Create awareness about the importance and impact of Physics in the society and develop scientific attitude among the non-scientific community.
POC-6:	To inculcate the scientific temperament in the students to combat harmful and destructive social evils.
POC-7:	Use modern techniques, delicate equipments and modern softwares.

POC-8:	Built the spirit of innovation for future research workers.
POC-9:	Acquire language skills in both written and communicative expressions in scientific expressions.

Programme Specific Outcomes (PSOC):

I. Major/ Honours in Physics:	
Semester	Outcomes
1st Semester	After completion of the programme students will be able to: PSOC-1: Able to acquire knowledge about mechanics and properties of matter (Non-CBCS), Calculus, orthogonal curvilinear coordinates, Introductory idea of probability and Dirac Delta function and C & C++ programmes (CBCS). PSOC-2: Mechanics: Fundamental of Dynamics, work & Energy, Collisions, Elasticity, Gravitation, Non inertial system Relativity (CBCS).
2nd Semester	After completion of the programme students will be able to: PSOC-1: Acquire some knowledge of thermal physics & wave oscillation (Non-CBCS), and Electricity and Magnetism (CBCS). PSOC-2: Able to acquire some knowledge of Wave & Optics Wave motion & velocity, Superposition of Harmonic wave. (CBCS)
3rd Semester	After completion of the programme students will be able to: PSOC-1: Know about Optics (Non- CBCS), and Fourier series, Frobenius method & special functions, Theory of Errors, Partial Differential Equation(CBCS) PSOC-2: Know about Electricity and Magnetism (Non-CBCS), and acquire some knowledge of thermal physics (CBCS). PSOC-3: Know about Digital systems and Applications (CBCS).
	After completion of the programme students will be able to:

4th Semester	PSOC-1: Able to acquire knowledge about vector, matrices, calculus and some portion of quantum mechanics (Non-CBCS), and Complex analysis, Integrals transformations, Laplace Transformations (CBCS). PSOC-2: Able to acquire knowledge about Knowledge Quantum Mechanics (Non-CBCS), and Elements of modern physics (CBCS). PSOC-3: Able to acquire knowledge about analog systems and applications (CBCS).
5th Semester	After completion of the programme students will be able to: PSOC-1: Knowledge about differential equation, complex variables, Fourier series (Non-CBCS), and Knowledge about Quantum Mechanics (about some topics), C/ C++/ Scilab (CBCS). PSOC-2: Knowledge about Electrodynamics and special relativity (Non-CBCS), and Knowledge about Solid State Physics (CBCS). PSOC-3: Knowledge about atomic & molecular physics, (Non-CBCS). PSOC-4: Knowledge about Electronics- analog& digital (introductory) Electronics (Non-CBCS).
6th Semester	After completion of the programme students will be able to: PSOC-1: Acquire knowledge about Statistical Mechanics (Non-CBCS), and Electromagnetic Theory CBCS). PSOC-2: Acquire knowledge about Condensed Matter Physics (Non-CBCS), and Statistical Mechanics (CBCS). PSOC-3: Able to acquire knowledge Nuclear Physics (Non-CBCS). PSOC-4: Able to acquire knowledge Atmospheric/Space & Atmospheric physics/ Laser & its application/ Material science & Nano materials (Non-CBCS).

II. Electives: Discipline Specific Electives (DSE) [Students with Physics Major/Honours]

Semester	Outcomes
5th semester DSE1 (CBCS)	After completing the course, a student will be able to: PSOC-1: Understand the underlying facts in the development of classical mechanics and the advantages of its formulation over Newtonian mechanics.

	PSOC-2: Describe mechanics of a system in terms of equation of motion. PSOC-3: Understand Lagrangian formulation and Hamiltonian formulation of mechanics and their applications in mechanical problems. PSOC-4: Study the theoretical analysis of systems oscillating with small amplitudes. PSOC-5: Observe the peculiar phenomena when transformed from Newtonian relativity to special relativity and to understand the concept of space-time.
5th semester DSE2 (CBCS)	After completing this course, a student will be able to : PSOC-1: Know about various devices like UJT, FET, MOSFET, CMOS etc. and its application to different electronic circuits. PSOC-2: Design rectifiers, passive and active filter, multivibrators etc. PSOC-3: Familiarize with the IC fabrication techniques. PSOC-4: Learn about digital data communication standards and also about communication systems. OR PSOC-1: Introduce the fundamental concepts of Astrophysics to the interested students. PSOC-2: Motivate students to pursue the further study in future in these challenging, fascinating and important fields of Physics. OR PSOC-1: Acquire knowledge on origin and evolution of the Earth and Universe. PSOC-2: Acquire knowledge on structure, composition and dynamics of the Earth from crust up to space. PSOC-3: Understand the interaction among different components of the Earth. PSOC-4: Get familiar with the weather and climate systems, climate change. PSOC-5: Increase people awareness of the scientific process of the Earth and its role in the exploration of the Universe.
6th Semester DSE3 (CBCS)	After the end of the course, a student will be able to: PSOC-1: Understand various concepts in Nuclear Physics. PSOC2: Emphasize on the existing connections with other domains of Physics, in particular Quantum Mechanics, Mathematical Physics and Particle Physics.
6th Semester (CBCS) DSE4	The aim of the course is to: PSOC-1: Provide a systematic coverage and insight into the promising area of nano materials in order to facilitate the understanding of the nature and prospects for the field. PSOC-2: Provide information about various synthesis and characterization

	techniques of nano materials. PSOC-3: Discuss optical and electronic transport properties of nano materials. PSOC-4: Discuss applications of nano materials. OR PSOC-1: Gather sufficient knowledge about the fascinating behaviour of nanomaterials and tuning of such properties for different applications. PSOC-2: Obtain information on experimental methodologies with necessary theoretical background, which may be useful for pursuing further study on the areas of nanoscience and technology.
III. General/ Generic Physics: (For students honours in subject other than Physics or students without Major/ Honours in any subject)	
1st Semester PHYG-101(Non CBCS) DSC-1A (CBCS)	At the completion of this course, a student will be able to: <u>For non CBCS-</u> PSOC-1: Know about Mechanics and Thermodynamics. <u>For CBCS-</u> PSOC-1: Understand the basic components of mechanics. PSOC-2: Understand the basic conservation laws by studying them in various mechanical systems. PSOC-3: Detailed analysis of simple harmonic oscillator. PSOC-4: Study planetary motions as a central force problem. PSOC-5: Understand the concept of frame of reference, importance of relative transformations and invariance of laws of physics. PSOC-6: Realize the consequences of non-inertial frame in our real physical world. PSOC-7: Know about the peculiar phenomena of special relativity which are not seen in Newtonian relativity and to understand the concept of space-time.
2nd Semester PHYG-201(Non CBCS) DSC-1B	At the completion of this course, a student will be able to: <u>For non CBCS-</u> PSOC-1: Acquire knowledge about Optics. <u>For CBCS-</u>

(CBCS)	PSOC-1: Understand basic knowledge of electricity and magnetism. PSOC-2: Understand basic knowledge of electrical and magnetic properties of matter in brief. PSOC-3: The basic knowledge of the effect of electric field on magnetic field and the effect of magnetic field on current. PSOC-4: Understand the basic principle of the electrical circuit (AC) circuit and electrical networking. PSOC-5: Develop the basic theoretical as well as experimental skill on electrical networking.
3rd Semester PHYG-301(Non CBCS) DSC-1C (CBCS)	At the completion of this course, a student will be able to: <u>For non CBCS-</u> PSOC-1: Acquire knowledge about Electricity, Magnetism & Electromagnetic Theory. <u>For CBCS-</u> PSOC-1: Develop the working knowledge of the laws and methods of thermodynamics and elementary statistical mechanics. PSOC-2: Provide insight to the postulates of Statistical Mechanics and statistical interpretation of thermodynamics. PSOC-3: Understand the laws of radiation and acquire knowledge for their applications in various disciplines in Physics, Chemistry, Biology, Earth and Atmospheric Sciences. PSOC-4: Develop application oriented knowledge on laws of statistical mechanics in selected problems. PSOC-5: Use the methodologies, conventions and tools of thermal and statistical physics to test and communicate ideas and explanation.
4th Semester PHYG-401(Non CBCS) DSC-1D (CBCS)	At the completion of this course, a student will be able to: <u>For non CBCS-</u> PSOC-1: Acquire knowledge about Quantum Mechanics & Mathematical Physics. <u>For CBCS-</u> PSOC-1: Develop basic idea of the behaviour of light on the principle of wave theory of light. PSOC-2: Develop the knowledge of the different phenomena due to the

	interaction of light among them and with mater. PSOC-3: Enhance knowledge about some fundamental principles of light which is used in different optical instrument which very essential for Physics student.
IV. General/ Generic Physics: [For student without Major/ Honours in any subject]	
5th Semester PHYG-501(Non CBCS) DSE-1A (CBCS)	At the completion of this course, a student will be able to : <u>For non CBCS-</u> PSOC-1: Acquire knowledge about Atomic& Nuclear Physics. <u>For CBCS-</u> PSOC-1: Learn about digital circuits, Boolean algebra, logic gates and binary numbers systems. PSOC-2: Learn about semiconductor devices like PN junction, bipolar junction transistor and its application to different circuits. PSOC-3: Gain knowledge of operational amplifier, its applications and analysis. PSOC-4: Use and handle different instruments like power supply, Oscilloscope etc. OR PSOC-1: Write a problem in elementary Physics in the language of Mathematics. PSOC-2: Identify a range of diverse mathematical techniques/ideas to formulate, simplify and solve some problems in Physics. PSOC-3: Analyse some of the useful mathematical ideas and techniques. PSOC-4: Learn computer programming and numerical analysis and know its role in solving problems in Physics PSOC-5: Construct a problem in Physics computationally. OR PSOC-1: Learn various concepts in nuclear physics. PSOC-2: Emphasize the existing connections with other domains of physics, in particular quantum mechanics, mathematical physics and particle physics. OR

	PSOC-1: Apply concepts of 20th century Modern Physics to deduce the structure of atoms. PSOC-2: Explain the wave-particle duality of the photon. PSOC-3: Analyse the structure of matter at its most fundamental. PSOC-4: Develop an insight into the key principles and applications of Nuclear Physics. OR PSOC-1: Learn the fundamentals of solid state physics. PSOC-2: Understand the structural, electronic and lattice vibration dependent behaviour of solids. PSOC-3: Learn the basic concepts in hands on mode through laboratory experiments associated to the course. OR PSOC-1: Know about the development of modern physics and the theoretical formulation of quantum mechanics. PSOC-2: Know the applications of quantum mechanics in solving physical problems.
6th Semester PHYG-601(Non CBCS) DSE-1B (CBCS)	At the completion of this course, a student will be able to : <u>For non CBCS-</u> PSOC-1: Acquire knowledge about Electromagnetic and solid state Physics. <u>For CBCS-</u> PSOC-1: Learn the fundamentals of solid state physics. PSOC-2: Understand the structural, electronic and lattice vibration dependent behaviour of solids. PSOC-3: Learn the basic concepts in hands on mode through laboratory experiments associated to the course.
V. SKILL ENHANCEMENT COURSES (SEC) [For Student without Major/ Honours in any subject in CBCS]	
3rd Semester SEC1	At the completion of this course, a student will be able to : PSOC-1: Design and trouble shoots the electrical circuits, networks and appliances through hands on mode. PSOC-2: Build the basic foundation for learning electrical wirings and repairing

	of other house hold equipments. OR PSOC-1: Understand measurement process, the design, and operation of the electronic circuit and systems that enable it. PSOC-2: Analyse the physics of the operation of sensors and their interfaces to analogue and digital electronic circuits.
4th Semester SEC2	At the completion of this course, a student will be able to: PSOC-1: Learn about various optical devices, components and systems. PSOC-2: Do experiments related to optoelectronic devices. PSOC-3: Learn about Fourier transform spectroscopy, holography and various aspects of fibre optics.
5th Semester SEC3	At the completion of this course, a student will be able to : PSOC-1: Learn computer programming and numerical analysis but to emphasize its role in solving problems in Physics and Science. PSOC-2: Have hands on training on the problem solving on computers applying FORTRAN language and computational methods to solve physical problems in LINUX operating system. PSOC-3: Acquire practical experience on scientific word processing with LaTeX, graphical analysis and visualization of computational data with Gnuplot. OR PSOC-1: Understand measurement process, the design, and operation of the electronic circuit and systems that enable it. PSOC-2: Analyse the physics of the operation of sensors and their interfaces to analogue and digital electronic circuits.
6th Semester SEC4	At the completion of this course, a student will be able to : PSOC-1: Learn about the viable, sustainable and renewable source of energy. PSOC-2: Understand the basics of renewable energy, its importance, utility and conversion into various forms. PSOC-3: Develop his/her knowledge about the important role that renewable energy has and will have. PSOC-4: Analyze various technologies involved in the energy harvesting processes, their applications, limitations and importance in the everyday world.

	OR PSOC-1: Use various mechanical and electrical tools through hands on work. PSOC-2: Enhance the mechanical, electrical and electronic skill.

Course outcomes (COC):

I. Major/ Honours in Physics:	
Course Outcomes B.Sc. Physics Semester-I	
Course	Outcomes: After completion of these courses students should be able to
PHYM-101: Mechanics & Properties of Matter (Non-CBCS)	COC-1: Solve problems relating to Mechanics & general properties of matters. (Non-CBCS)
Physics-C I: Mathematical Physics- I (CBCS)	At the completion of this course, a student will be able to: COC-1: Develop the requisite mathematical skills of a student to understand the fundamental topics in Physics. COC-2: Develop the ability of a student to critically analyze a topic. COC-3: Prepare a student for more advanced topics in Physics by providing a solid grip over the fundamental concepts in Physics. COC-4: Demonstrate the use and importance of computational methods in Physics and enable a student to construct a Physics problem computationally by gaining practical knowledge of C/C++. (CBCS)

Physics-C II: Mechanics (CBCS)	This course will: COC-1: Introduce the students to the basic concepts of mechanics. COC-2: Enable the students to understand conservation laws as they are the fundamental laws of nature and will help them in realizing a crucial phenomenon of nature-symmetry. COC-3: Enable the students to understand simple harmonic oscillator as it is a unique mechanical problem and will help them to understand the advanced treatment in quantum mechanics and modern Physics. COC-4: Develop knowledge of special relativity to understand relativistic formulation of modern theories. COC-5: Develop knowledge of mechanics which will help students in their everyday life. (CBCS).
Course Outcomes B.Sc. Physics Semester-II	
PHYM-201: Thermal Physics & Wave and Oscillations (Non-CBCS)	COC-1: Solve Problems & acquire some knowledge of thermodynamics and wave & oscillation. (Non-CBCS)
Physics-C III: Electricity and Magnetism (CBCS)	This course will : COC-1: Develop the basic theoretical knowledge as well as experimental skills of the students on electrical networking. COC-2: Train the students to handle and repair instruments based on electric and magnetic field effects. COC-3: Acquire knowledge about Electrical circuits & Network Theorems. (CBCS).
Physics-C IV: Wave and Optics (CBCS)	This course will COC-1: Enable the students to analyze different phenomena due to the interaction of light with light and matter. COC-2: Train the students to use different optical instruments. COC-3: Help the students to understand various natural phenomena using different apparatus in the laboratory. COC-4: Solve problems relating to superposition of Collinear Harmonics oscillations and superposition of Perpendicular Harmonics oscillations. COC-5: Solve the problems of wave optics viz. Interference & Diffraction and also knowledge of Holography.

	(CBCS).
Course Outcomes B.Sc. Physics Semester-III	
PHYM-301: Optics (Non-CBCS) Physics-C V: Mathematical Physics-II (CBCS)	This course will : COC-1: Know about aberration of light in geometrical Optics. COC-2: Acquire some knowledge about interference, diffraction & polarization in physical Optics. (Non-CBCS)
	This course will : COC-1: Develop the requisite mathematical skills to understand some of the fundamental topics (slightly more advanced than those in Mathematical Physics. COC-2: Develop the ability of a student to critically analyze a topic. COC-3: Prepare a student for more advanced topics in Physics by providing a solid grip over the fundamental concepts in Physics. COC-4: Enable a student to understand the use and importance of computational / numerical methods in Physics and enable a student to construct a Physics problem computationally. COC-5: Know about some special functions viz. Legender Polynomial, Bessel Functions, Rodrigues Formula etc.
PHYM-302: Electricity &Magnetism (Non-CBCS)	This course will : COC-1: Know about gradient, divergence and curl, Gauss' law, capacity of condensers in Electrostatics. COC-2: Acquire some knowledge about Kirchhoff's law, dc electrical bridges and applications, thermoelectric effects, LCR circuits. COC-3: Acquire some knowledge about Permeability, susceptibility, magnetization, magnetic intensity. COC-4: Acquire some knowledge about electromagnetic induction and their results & applications. (Non-CBCS)
Physics-C VI: Thermal Physics (CBCS)	This course will enable the students to: COC-1: Apply the laws of thermodynamics in real world problems. COC-2: Conduct scientific problems and experiments on thermodynamics and allied disciplines. COC-3: Demonstrate a working knowledge of the physical

	principles in Thermal Physics. COC-4: Know about real gases and their equations and effects. (CBCS)
Physics-C VII: Digital Systems and Applications (CBCS)	This course will enable a student to COC-1: Identify and understand digital electronic principles and systems. COC-2: Apply the knowledge to analyze and apply digital circuits in solving circuit level problems. COC-3: Build real life applications using digital systems. COC-4: Know about Cathode Ray Oscilloscope (CRO) and its uses. COC-5: Know about Assembly Language (Introductory idea). (CBCS)
Course Outcomes B.Sc. Physics Semester-IV	
PHYM-401: Mathematical Physics I (Non-CBCS)	At the completion of this course, a student will be able to: COC-1: Acquire some knowledge about vector calculus, Tensor Algebra & Matrices and their applications. COC-2: Know about Calculus of variation and their uses in Physics. (Non-CBCS)
Physics-C VIII: Mathematical Physics-III (CBCS)	This course will COC-1: Develop mathematical skills of a student to understand some of the fundamental topics (slightly more advanced than those in Mathematical Physics I and II). COC-2: Develop the ability of a student to critically analyze a topic. COC-3: Prepare a student for more advanced topics in Physics by providing a solid grip over the fundamental concepts in Physics. COC-4: Enable a student to understand the use and importance of computational/ numerical methods in Physics and to construct a problem computationally. COC-5: Help a student to pursue advanced studies in Physics. (CBCS)
PHYM-402: Quantum Mechanics (Non-CBCS)	At the completion of this course, a student will be able to: COC-1: Acquire some knowledge of Introductory ideas of Quantum Physics and about the experiments which established the Quantum Mechanical ideas.

Physics-C IX: Elements of Modern Physics (CBCS)	COC-2: Acquire some knowledge about Quantum Mechanical wave equations, their importance and Applications. COC-3: Know about Quantum Mechanical Operators & their uses. (Non-CBCS)
	This course will enable the students to : COC-1: Understand and appreciate the theory of modern physics COC-2: Develop the ability to apply theory of modern physics in solving simple problems in Quantum Mechanics (QM), structure of atoms, Laser, and Nuclear Physics. (CBCS)
Physics-C X: Analog System & Applications (CBCS)	At the completion of this course, a student will be able to: COC-1: Acquire some knowledge about basics of PN junction, its various types and its applications to different circuits. COC-2: Know about bipolar junction transistor and its applications as amplifier and oscillators. COC-4: Familiar with operational amplifiers (OPAMP), its application and analysis. COC-5: Develop knowledge about analog to digital digital to analog conversion technique. (CBCS)
Course Outcomes B.Sc. Physics Semester-V	
PHYM-501: Mathematical Physics II (Non-CBCS) Physics-C XI: Quantum Mechanics & Applications (CBCS)	At the completion of this course, a student will be able to: COC-1: Acquire some knowledge about Differential Equations and Special Functions. COC-2: Acquire some knowledge about Complex variable. COC-3: Know about Fourier series. (Non CBCS)
	At the completion of this course, a student will be able to COC-1: Know about the development of modern Physics and the theoretical formulation of Quantum Mechanics. COC-2: Know the applications of quantum mechanics in solving physical problems. (CBCS)

PHYM-502: Electrodynamics & Special Relativity (Non-CBCS)	At the completion of this course, a student will be able to: COC-1: Acquire some knowledge about Electromagnetic Fields. COC-2: Acquire some knowledge about propagation of Electromagnetic waves. COC-3: Acquire some knowledge about Special Relativity. (Non CBCS)
Physics-C XII: Solid State Physics (CBCS)	At the completion of this course, a student will be able to COC-1: Equip a student with basic concepts of solid state Physics so that the knowledge can be applied for further development of the subject. COC-2: Enable a student to work in both theoretical and experimental aspects of solid state Physics. COC-3: Help the students in thorough learning of the concepts associated to the course through the laboratory experiments.
PHYM-503: Atomic & Molecular Physics (Non-CBCS)	At the completion of this course, a student will be able to: COC-1: Equip a student with Quantum Theory of atoms. COC-2: Enable a student to work in Fine structure of atoms. COC-3: Help the students in learning of the Molecular spectra and Lasers.
PHYM-504: Electronics (Non-CBCS)	At the completion of this course, a student will be able to: COC-1: Help the students in learning about semiconductors. COC-2: Enable a student to know about Transistor and Amplifiers. COC-3: Help the students in learning about Oscillators and Integrated Circuits (IC). COC-4: Help the students in learning about Digital Electronics.
Course Outcomes B.Sc. Physics Semester-VI	
PHYM-601: Statistical Mechanics (Non-CBCS) Physics-C XIII: Electromagnetic Theory (CBCS)	At the completion of this course, a student will be able to: COC-1: Help the students in learning about Classical statistical Physics. COC-2: Enable a student to know about Entropy and Partition functions. COC-3: Help the students in learning about Quantum statistical physics and its applications. (Non-CBCS)
	At the completion of this course, a student will be able to COC-1: Understand the physical and mathematical principles to

	provide in-depth analysis of the behavior of electricity and magnetism in matter. COC-2: Apply Maxwell's equations to explain the properties of the electromagnetic wave and its interaction with matter. COC-3: Analyze the principles and processes related to polarization, interference, and diffraction along with their applications to the development of wave-guide and optical fibers. COC-4: Solve problems relevant to interfaces between media with defined boundary conditions. COC-5: Use Maxwell's equations to describe the behaviour of electromagnetic waves in vacuum as well as medium COC-6: Describe states and methods of polarization and analyze the polarization state of a light source. (CBCS)
PHYM-602: Condensed Matter Physics (Non-CBCS)	At the completion of this course, a student will be able to: COC-1: Introduce the basic concepts crystal structure. COC-2: Know about properties of solids. COC-3: Develop the thinking ability about Semiconductor Materials and superconductivity. (Non-CBCS)
Physics-C XIV: Statistical Mechanics (CBCS)	At the completion of this course, a student will be able to: COC-1: Introduce the basic concepts of Statistical Mechanics so that students will be able to cope-up with higher level of such course in future. COC-2: Develop the critically thinking ability of students to understand the diverse physical phenomena. COC-3: Develop the interest and ability among students to solved challenging physical problems by the application of techniques of Statistical Mechanics in future. COC-4: Equip the students with basic knowledge of the Statistical Mechanics and hence will be able to look critically for analyzing any physical phenomena. COC-5: Create interest to the subject to pursue further higher study in future. COC-6: Enable the students to solve any challenging physical problem in statistical mechanics. (CBCS)
PHYM-603: Nuclear Physics (Non-CBCS)	After completion of this course, a student will be able to: At the completion of this course, a student will be able to:

	COC-1: Introduce the basic concepts and properties of Atomic Nuclei. COC-2: Introduce the basic concepts Nuclear modals. COC-3: Know about Nuclear reactions. COC-4: Introduce the basic concepts of Elementary particles.
PHYM-604(optional) (A) Astrophysics & particle Physics OR (B) Space & Atmospheric Physics OR (C) Laser & its Applications OR (D) Material Science & Nano Materials (Non-CBCS)	At the completion of this course, a student will be able to: COC-1: Introduce the basic concepts Astronomy. COC-2: Introduce the basic concepts Magnitude system and properties of stars. COC-3: Know about Nuclear Stellar structure and evolution.. COC-4: Introduce the basic concepts of Galaxies and cosmology. OR COC-1: Introduce the basic concepts Lower & Upper atmosphere. COC-2: Introduce the basic concepts Physics of the sun.. OR COC-1: Introduce the concepts of Lasers. COC-2: Introduce the basic concepts Lasers system. COC-3: Know about properties of Laser radiations and applications. COC-4: Introduce the basic concepts of Magneto-Optic & Electro-Optic effects. OR COC-1: Know about classification and selection of materials. COC-2: Introduce the basic concepts Nano materials and its preparation. COC-3: Know about Nano material characterization.
Course Outcomes B.Sc. Physics Semester-V &Smester-VI	
II. Electives: Discipline Specific Electives (DSE) [For students Major/Honours in Physics]	
5th Semester PHYSICS DSE -I Course title: CLASSICAL DYNAMICS	This course will enable the students to: COC-1: Prepare for the study of modern Physics. COC-2: Develop basic theoretical ingredients necessary to study advanced theoretical courses like quantum mechanics. COC-3: Learn a number of mathematical techniques applicable

	to Physics problems in different areas. COC-4: Develop knowledge of special relativity which is essential to understand the relativistic formulation of modern theories.
5th Semester PHYSICS DSE -2 Course title: PHYSICS OF DEVICES AND INSTRUMENTS OR PHYSICS DSE -2 Course title: ASTRONOMY AND ASTROPHYSICS OR PHYSICS DSE-2 course title: PHYSICS OF EARTH	This course will enable the students to : COC-1: Develop knowledge about various devices like UJT, FET etc. and to use these devices for different applications. COC-2: Design and analyse filter circuits, power supply FET amplifiers etc. COC-3: Develop the basic knowledge of IC fabrications, data communication standards and communication systems. OR This course will : COC-1: Equip the students with basic knowledge of the Astrophysics. COC-2: Create interest to the subjects of Astrophysics and to pursue further higher studies in the subject concerned in future. COC-3: Develop the critically analyzing ability, which may motivate the students to solve any challenging physical problem in future. OR This course will enable the students to : COC-1: Develop critical and quantitative thinking of scientific issues related to the study of cosmology and Earth Sciences. COC-2: Understand the basic principles of various processes of the Earth. COC-3: Apply the acquired knowledge on the study of the Universe. COC-4: Pursue career in Earth Sciences, Cosmology etc. COC-5: Understand the contemporary dilemmas on Earth and Environmental issues like climate change, air pollution,

	deforestation etc.
6th Semester PHYSICS DSE -3 Course title: NUCLEAR AND PARTICLE PHYSICS	This course will enable the students to: COC-1: Develop knowledge regarding nuclear and elementary particle as well as properties and phenomena related to them. COC-2: Successfully apply the same knowledge in solving problems in the field of nuclear and particle Physics.
6th Semester PHYSICS DSE -4 Course title: NANO MATERIALS AND APPLICATION OR PHYSICS DSE -4 Course title: EXPERIMENTAL TECHNIQUES	This course will enable the students to: COC-1: Gather sufficient knowledge about the fascinating behaviour of nano materials and tuning of such properties for different applications. COC-2: Obtain information on experimental methodologies with necessary theoretical background, which may be useful for pursuing further study on the areas of nano science and technology. OR This course will enable the students to: COC-1: Develop the theoretical as well as experimental knowledge on different instruments and instrumentation. COC-2: Develop the knowledge of some measurement techniques and data and error analysis technique, which is very essential for a Physics student. COC-3: Handle different electrical network based instruments.
Course Outcomes B.Sc. Physics Semester-I to Semester-VI	
IV. General/ Generic Physics: (For students honours in subject other than Physics or student without Major/ Honours in any subject):	
1st Semester PHYG-101: Magnetism & Thermodynamics (Non CBCS)	This course will enable the students to: <u>For Non CBCS-</u> COC-1: Understand the basic concepts of mechanics. COC-2: Understand the basic concepts classical mechanics. COC-3: Understand conservation laws of stress and strain.

PHYSICS-DSC-1A Course Title: MECHANICS (CBCS)	COC-4: Know the basic of Thermodynamics. COC-5: Know the laws of Heat Radiation. <u>For CBCS-</u> COC-1: Understand the basic concepts of mechanics. COC-2: Understand classical mechanics and quantum mechanics smoothly. COC-3: Understand conservation laws as they are the fundamental laws of nature and will help them in realizing a crucial phenomenon of nature- symmetry. COC-4: Understand simple harmonic oscillator as it is a unique mechanical problem and will help them to understand the advanced treatment in quantum mechanics and modern Physics. COC-5: Develop knowledge of special relativity to understand relativistic formulation of modern theories. COC-6: Develop knowledge of mechanics which will help students in their everyday life.
2nd Semester PHYG-201: Optics (Non CBCS) PHYSICS-DSC-2A Course Title : ELECTRICITY AND MAGNETISM	This course will enable the students to : <u>For Non CBCS-</u> COC-1: Understand the basic concepts Refraction of light and telescope and idea of physical optics. COC-2: Know the basic concepts diffraction & polarization of light. <u>For CBCS-</u> COC-1: Perform quantitative analyses of basic problems in Electrostatics and Magnetodynamics. COC-2: Apply Gauss's Law, Ampere's Law, and Biot-Savart Law to solving practical problems in electricity and magnetism. COC-3: Apply the fundamental laws of electromagnetism to solve problems of electrostatics, magnetostatics, and electromagnetic induction. COC-4: Explain and analyze the behaviour of alternating currents in LCR circuits. COC-5: Perform and interpret the results of simple experiments

	and demonstrations of physical principles. COC-6: Solve problems relevant to interfaces between media with defined boundary conditions.
3rd Semester PHYG-301: Electricity & Magnetism & Electromagnetic Theory (Non CBCS) PHYSICS-DSC-3A Course Title : THERMAL PHYSICS AND STATISTICAL MECHANICS	This course will enable the students to : <u>For Non CBCS-</u> COC-1: Understand the Gauss' law and its application and ac in LCR circuits.. COC-2: Understand the magnetic potential and magnetic intensity. COC-3: Understand the equation of motion of longitudinal & transverse wave and is velocity effect. <u>For CBCS-</u> COC-1: Apply laws of thermodynamics and statistical mechanics to a range of situations in real world. COC-2: Conduct scientific problems and experiments on thermodynamics and allied disciplines. COC-3: Demonstrate a working knowledge of the physical principles describing the thermal physics. COC-4: Explain thermal physics as logical consequences of the postulates of statistical mechanics.
4th Semester PHYG-401: Quantum Mechanics & Mathematical Physics (Non CBCS) PHYSICS-DSC-4A Course Title : WAVE AND OPTICS	This course will enable the students to : <u>For Non CBCS-</u> COC-1: Understand the basic concepts of Quantum Mechanics.. COC-2: Understand the about matter wave. COC-3: Know about scalar and vector field its physical interpretations. COC-4: Understand the basic concepts of differential equations. <u>For CBCS-</u> COC-1: Justify different phenomena due to light and the interaction of light among them and with matter. COC-2: Use different optical instruments.

	COC-3: Produce different natural phenomena using different apparatus in the laboratory.
Course Outcomes B.Sc. Physics Semester-V & Semester VI	
IV. General/ Generic Physics : DISCIPLINE SPECIFIC ELECTIVES (DSE): [Student without Major/ Honours in any subject]	
5th Semester PHYG-501: Atomic and Nuclear Physics (Non CBCS) PHYSICS-DSE-1A Course Title : DIGITAL AND ANALOG CIRCUITS AND INSTRUMENTATION OR PHYSICS-DSE-1A Course Title: MATHEMATICAL PHYSICS OR PHYSICS-DSE-1A Course Title: NUCLEAR AND PARTICLE	This course will enable the students to: <u>For Non CBCS-</u> COC-1: Acquire the knowledge about some experiments in Atomic Physics. COC-2: Acquire the knowledge about some most important experiments in Nuclear Physics. COC-3: Know the nature and laws of nuclear forces, fission & fusion, Accelerators & Potential difference generator. <u>For CBCS-</u> COC-1: Have the knowledge about different digital circuits, Boolean algebra, binary number system, logic gates etc. COC-2: Be able to design logic gates, adder and subtractor circuit etc. And verify them. COC-3: Be able to develop the knowledge of semiconductor device like PN junction, solar cell photodiode, bipolar junction transistor etc. The students will also be able to analyse various electronic circuits containing transistors and operational amplifiers. COC-4: Use and apply CRO for various measurement purposes. OR COC-1: Develop requisite mathematical skills to understand some of the fundamental concepts in physics. COC-2: Develop the ability to critically analyse a topic. COC-3: Understand the use and importance of computational/numerical methods in physics and to construct a physics problem computationally. OR COC-1: Develop knowledge regarding nuclear and elementary

PHYSICS	particle as well as properties and phenomena related to them. COC-2: Successfully apply the same knowledge in solving problems in the field of nuclear and particle physics.
6th Semester PHYG-601: Electronics & Solid state Physics (Non CBCS) PHYSICS-DSE-1B Course Title: ELEMENTS OF MODERN PHYSICS OR PHYSICS-DSE-1B Course Title : SOLID STATE PHYSICS OR PHYSICS-DSE-1B Course Title: QUANTUM MECHANICS	This course will enable the students to : <u>For Non CBCS-</u> COC-1: Understand the basic of semiconductors. COC-2: Acquire the knowledge of transistor & its uses. COC-3: Understand structure of solid materials and related theories. <u>For CBCS-</u> COC-1: Have a good understanding and appreciation of the theory. COC-21: Apply it in solving simple problems in Quantum Mechanics (QM), structure of atoms, and Nuclear Physics. OR COC-1: Equip a student with basic concepts of solid state physics so that the knowledge can be applied for further development of the subject. COC-2: Enable a student to work in both theoretical and experimental aspects of solid state physics. COC-3: Help the students in thorough learning of the concepts associated to the course through the laboratory experiments. OR COC-1: Equip a student with basic concepts of solid state physics so that the knowledge can be applied for further development of the subject. COC-2: Enable a student to work in both theoretical and experimental aspects of solid state physics. COC-3: Help the students in thorough learning of the concepts associated to the course through the laboratory experiments OR

	COC-1: Learn how to apply quantum mechanics to solve physical systems in different areas of science. COC-2: Know about the physical behaviour of materials. COC-3: Learn how the scientific behaviour of materials can be used for human applications.
Course Outcomes B.Sc. Physics Semester-III to Semester-VI	
V. SKILL ENHANCEMENT COURSES (SEC) [For Student without Major/ Honours in any subject]	
3rd Semester PHYSICS-SEC-1 Course Title: ELECTRICAL CIRCUITS AND NETWORK SKILLS	This course will enable the students to: COC-1: Design and troubleshoot certain electrical circuits and domestic appliances along with the understanding of the working of those appliances. COC-2: Do electrical wiring and repairing. COC-3: Develop the skill for various electrical repairing and servicing purposes.
4th Semester PHYSICS-SEC-2 Course Title: APPLIED OPTICS	This course will enable the students : COC-1: Acquire knowledge about various optoelectronic devices and their applications. COC-2: Understand the basics of Laser and their uses. COC-3: Understand about Fourier transform spectroscopy and will learn to use this technique for various purposes. COC-4: Learn the use of optical fibres and related information.
5th Semester PHYSICS-SEC-3 Course Title: COMPUTATIONAL PHYSICS SKILLS OR PHYSICS-SEC-3 Course Title: BASIC INSTRUMENTATION SKILLS	This course will enable the students to : COC-1: Apply their knowledge on computer programming and numerical analysis in solving real physical problems. COC-2: Develop basic knowledge of FORTRAN programming language and LINUX operating system will make them enabled dealing scientific computing in different areas of Physics. OR COC-1: Design and analyse electronic instrumentation system to interface with standard industrial sensors/transducers. COC-2: Effectively design instrumentation systems that conform to industrial regulations. COC-3: Analyse and specify component and system

	requirements for installation of instrumentation systems. COC-4: Calculate electrical noises in measurement systems. COC-5: Implement techniques to reduce electrical noises in measurement circuits. COC-6: Select sensors for applications to specific measurement tasks. COC-7: Explain the precision and accuracy of a measure as it pertains to international standards. COC-8: Design AC and DC Null circuits for application to a wide range of measurements.
6th Semester PHYSICS-SEC-4 Course Title: RENEWABLE ENERGY AND ENERGY HARVESTING OR PHYSICS-SEC-4 Course Title : PHYSICS WORKSHOP SKILL	This course will enable the students to : COC-1: Learn in depth the application of heat transfer processes and thermodynamic cycles to various energy harvesting systems. COC-2: Pull together the background knowledge in real life examples and equip them to design and evaluate various energy based models with efficient applications. COC-3: Pursue a career in energy technology. OR COC-1: Develop the theoretical as well as experimental knowledge on different instruments and instrumentation. COC-2: Develop the knowledge of some measurement techniques and data and error analysis technique, which is very essential for physics student. COC-3: Handle different electrical network based instruments.

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1. Programme Specific Outcome (BA in Political Science)

After completion of this BA Programme in Political Science students will be able:

a. to understand different Political Philosophies and ideologies and its relevance in contemporary Politics.
b. to the know India's role in International politics and its position.
c. to learn about government machineries and its programmes and policy formulations and its implementation.
d. to understand their rights and duties.

2. Course Specific Outcome

Course Code	Course Specific Outcome(CBCS)
C-1.1	a) Students will develop an idea about political theory, its history and approaches and thereby able to access its critical and contemporary trends. b) Students will be able to reconcile political theory and practice through reflection on the ideas and practices related to state, citizenship and democracy.
C-1.2	a) Students will understand the Constitutional design of states structure and institutions and their actual working over time. b) The Constitution accommodates conflicting impulses within itself. Students will be able to understand the embodiments of some of these conflicts in Constitutional provisions and understand how these have played out in political practice.
C-2.1	a) Students will become familiar with the basic normative concepts of political theory. On the basis of it they will be able to analyze and interpret the present social practices. b) Students will be able to know different important debates of the subject. They will understand that there is no settled way of understanding concepts and in the lights of new insights and challenges,how political thinkers inaugurates new modes of political debates.
C-2.2	a) Students will understand the actual working of modern government institutions, premise on the existence of individual society, in a context marked by communitarian solidarities and their mutual transformation thereby.

	b) Students will become familiar with the working of Indian state and contradictory dynamics of modern state power.
C-3.1	a) Students will become familiar with basic concepts and approaches of comparative politics. b) They will understand the historical framework of various themes of comparative analysis in developed and developing countries.
C-3.2	a) The students will understand classical and contemporary administrative Theories and its historical context. b) They will have a comprehensive understanding on contemporary administrative trends
C-3.3	a) Students will understand different theoretical approaches for studding international relations. b) The students will learn about the Key milestones in world history and will be able to analyze the same from different perspective.
C-4.1	a) Students will understand the application of comparative methods to the study of politics. b) They will understand some of the range of issues, literature and methods that cover comparative political process.
C-4.2	a) Students will be able to understand the interface between public policy and administration in India. b) They will understand the issues of decentralization, financial management, citizens and administration and social welfare from a non western perspective.
C-4.3	a) Students will understand the concepts of globalization from different perspectives. b) They will understand the working of different global economic organizations in globalized world. c) They will understand the contemporary global issues such as nuclear proliferation, environmental issues, terrorism, global governance etc.

C-5.1	a) The students will become familiar with the classical political philosophy particularly with the manner in which the political questions were post. b) They will know how Machiavelli inaugurates modern politics followed by Hobbes and Locke.
C-5.2	a) The student will be able to know the elements of Indian political thought spanning over two millennia. b) They will understand the views of some individual thinkers particularly Manu, Kautilya, Budha, Barani ,AbulFazal, Kabiretc whose ideas are frame by specific themes.
C-6.1	a)Students will understand that philosophy and politics are interlinked. b) They will know the relationship between philosophy and politics in the light of five major debates of political philosophy such as Modernism, Romentacism, Liberal Socialism, Radicalism and Ecologism.
C-6.2	a) Students will become familiar with the modern Indian political thought. b) They will understand modern Indian political Philosophy in the light of vies of Rammohan Roy, PanditaRamabai, Gandhi, Nehru, Tagore, Ambedkar, Lohia, Vivekananda, Iqbal and Savarkar.
GE-1A	After completion of this course students will be able to know the struggle of Indian people against colonialism from different theoretical perspective.
GE-1B	After completion of this course students will become familiar with different theoretical approach about the evolution of modern capitalist world. They will understand the important contemporary problems, issues and debates of political economic system.
GE-2A	After completion of the course the students will be able to know about the contemporary debates on feminism and the history of feminist struggles in the west, socialist societies and in the colonial countries.
GE-2B	After completion of this course students will be able to understand Gandhian philosophy and its practical implementations in the contemporary world and enable to critically evaluate his legacy.
GE-3A	After completion of this course students will be able to make a clear idea about Ambedkar and his philosophy and their relevance in contemporary India. Along with this they can make a critical idea about the existing social concers, state and economic structures and other institutional mechanism.
GE-3B	After completion of the course students will be able to understand different dimensions of governance and major debates of governance in contemporary time. They can make a clear idea about the concept of governance in the context of a globalizing world, environment, administration and development and different good governance initiatives introduced in India.

GE-4A	After completion of the course students will be able to make a clear idea about the issues and process of globalization based on critical analysis of the various anchors and dimensions of globalization. Even students from diverse background can easily understand the process of globalization from a political perspective.
GE-4B	After completion of the course students will be able to know about different important multilateral international organization and their role in international politics. They can make a clear critical understanding of the UN's performance till now and the imperative as well as process of reforming the organization in the context of the contemporary global system.
AEEC-3A	After completion of the course students will be able to know the structure and the manner of functioning of the legal system in India.
AEEC-3B	After completion the course students will be able to understand the debates, principles and practices of public opinion polling in the context of democracies, with special reference to India. They become familiar how to conceptualize and measure public opinion using quantitative methods and can develop basic skills pertaining to the collection, analysis and utilization of quantitative data.
AEEC-4A	The course will be able to make a clear understanding among the students about the legislative process in India at various levels, the requirements of people's representatives, the legislative support team and also about the real life legislative work.
AEEC-4B	The course will help the students to know in-depth knowledge of conflict analysis, conflict resolution, conflict prevention as well as the historical and cultural context of organized violence. They will be also able to know about the current research and development within the field of peace and conflict studies and perspective of the environment, gender, migration and ethnicity.

Course Code	Course Specific Outcome (Non CBCS)
PSCM-101	The student will be able to understand the contribution of the main traditions of Western Political Thinkers to political thought.
PSCM-201	The student will be able to know the basic structure of the Government of India, composition, powers and functions of different organs of the government.
PSCM-301	The student will be able to understand the basic concept, principle and dynamics of public administration.
PSCM-302	The student will be able to understand some important theoretical approaches for studying of International Relations. They will learn about the key milestones in world history and will be able to analyze the same from different perspectives.

PSCM-401	The student will become familiar with basic concepts and approaches of comparative politics. They will understand the historical framework of various themes of comparative analysis in four major countries of the world- USA, UK , China , Switzerland.
PSCM-402	The student can acquire a brief knowledge about the region North East India, its geographical condition, culture and tradition of different ethnic groups and the different separatist movements of the region.
PSCM-501	The student will be able to know the basic concepts and ideological orientations of the subject political science. They will also be able to know the evolution of the subject.
PSCM-502	The student will be able to understand the contribution of the main traditions of the Indian Political Thinkers to Indian Political Thought.
PSCM-503	The student will be able to understand the evolution, development and trends of Indian's Foreign Policy.
PSCM-504	The student will be able to know the basic concepts of International Law and the new trends in the realm of international law.
PSCM-601	The student will be able to understand the basic concepts and theories of the subject Human Rights and how different international organizations are working for the protection of human rights of vulnerable section of the different societies of the world.
PSCM-602	The student will be familiar with the basic concepts and theories of the subject Women's Studies. They will be able to know about different women activist in India and the West.
PSCM-603	The student will be familiar with the basic concepts, principles and dynamics of the subject Rural Development. They will be able to know the administrative setup and working of different machineries of rural development in India.
PSCM-604	The student will be able to understand the how socio-economic, political, cultural and constitutional environment influence the workings of public administration system in India.
PSCG-101	The student will be able to know the basic concepts and ideological orientations of the subject political science. They will also be able to know the evolution of the subject.
PSCG-201	The student will be able to know the basic structure of the Government of India, composition, powers and functions of different organs of the government.
PSCG-301	The student will be able to understand the basic concept, principle and dynamics of public administration.
PSCG-401	The student will be able to understand some important theoretical approaches for studying of International Relations. They will learn about the key milestones in world history and will be able to analyze the same from different perspectives.

PSCG-501	The student will be familiar with the basic concepts, principles and dynamics of the subject Rural Development. They will be able to know the administrative setup and working of different machineries of rural development in India.
PSCG-601	The student will be able to understand the basic concepts and theories of the subject Human Rights and how different international organizations are working for the protection of human rights of vulnerable section of the different societies of the world.

Dhakuakhana College
Department of Sociology
Programme Specific Outcomes and Course Outcomes

CO 1. Acquaintance with social transactions, social relations, social formations, social control, social values and culture.

CO 2. Knowing the significance of social institution, caste system, religion, nationalism, integrity, equality and justice.

CO 3. Getting the knowledge of the works of social reformers all over the nation.

CO 4. Ability to follow new stream of thoughts and theories of social thinkers.

CO 5. Getting the deep knowledge about various social groups like tribal community, women bulk etc.

CO 6. Ability to deal with research in sociology.

Dhakuakhana College
Department of Zoology
Programme Specific Outcomes and Course Outcomes

Program outcomes, program specific outcomes and course outcomes for all programs offered by the department.

Program Outcomes

1. This program is one of the most fundamental unit of basic sciences studied undergraduate level. this program helps to develop scientific tempers and attitudes, which in turn can prove to be beneficial to the society.
2. Students gain knowledge and skill in the fundamentals of animal sciences, understands the complex interactions among various living organisms.

3. They analyze complex interactions among various Invertebrates and Vertebrates (animals) of different phyla, their distribution and their relationship with the environment.
4. They understands the complex evolutionary process and behaviour of animals.
5. Apply the knowledge of internal structure of cell, its functions in control of various metabolic (anabolic and catabolic) functions of organism.
6. Understanding the environmental conservation process and its importance like pollution control and biodiversity and protection of endangered species.
7. They understands about various concepts of genetics and its importance in human health.
8. They can apply ethical principles and commit to professional ethics and responsibilities in delivering his duties.
9. Gain knowledge of Agro based small scale industrieslike, pig farming, fish farming (pisciculture) sericulture Bee farming, butterfly farming and vermicompost preparation.
10. Apply their knowledge and understanding of zoology to one's own life and work.
11. After completion of this course, they have the option to go for higher studies like M.Sc / Integrated M.Sc., PhD and then do research work for the welfare of mankind.
12. Develops empathy and love towards animals.

Program Specific Outcomes

1. Studentsenroled in B.Sc. (Hons) degree programme in zoology will study and acquire complete knowledge of disciplinary as well as allied biological sciences.
2. They understands the nature and basic concepts of Cell biology, genetics, taxonomy, physiology, ecology, evolution biostatistics, animal behaviour, biochemistry and applied zoology.
3. They analyze the relationship between animals, plants and microbes.
4. They perform procedures as per laboratory standards in the area of ecology, genetics, cell biology, taxonomy, physiology, applied zoology, clinical science, tools and techniques of zoology, nenotology, sericulture, biochemistry, pisciculture etc.
5. Understand the applications of biological sciences in apiculture, aquaculture, agriculture and medicine.
6. Gains knowledge about research methodologies, effective communications and skills of problem solving methods.
7. these are numerous career opportunities for students completing their B.Sc. in Zoology in Public and Private sector. they may find jobs as Animal behaviorist, wildlife priologist, zoo curator, wildlife educator, zoology faculty, forensic experts, lab technicians etc.
8. they contribute the knowledge for nation building.

Course Outcomes	
Course	Outcomes
NON-CHORDATES I: PROTISTS TO PSEUDOCOELOMATES	Students will have learning about the basic taxonomy and systematics and classification of Protozoa, Porifera, Cnidaria and Helminth groups. They also will acquire knowledge about the biology of these taxonomic categories as well as about some acoelomate plus pseudocoelomate parasites for their life cycles, epidemiology, pathology, diagnosis, symptoms and treatments. They will also have knowledge about the basics of parasitology such as origin and evolution of parasitism, role of

	vectors, parasitoids, host-parasite interactions etc.
PRINCIPALES OF ECOLOGY	Students will understand the various features and aspects of population ecology, community ecology and ecosystem ecology. They might have the knowledge about environmental biology in details. They will acquire knowledge about various tools and techniques of field ecology.
NON-CHORDATES II: COELOMATES	Students will be learning about classification of coelomate invertebrates and the structure, function plus biology of these taxonomic categories as well. They will understand about different vector born diseases and the related life cycles, epidemiology, pathology, ,diagnosis, symptoms and treatments. They will also know the basics of sericulture, apiculture and lac culture
CELL BIOLOGY	Students will understand the structures, positions and functions of plasma membrane and all cellular organelles in details. They will acquire knowledge about chromosomes and cell divisions, both mitosis and meiosis. They will also know about cell signalling and cancers. They will know how to measure and stain different cell types.
DIVERSITY CHORDATES	Students will understand the classification, structure, function and biology of chordates of different taxonomic classes. They will also learn some special topics like zoogeography, metamorphosis, snake bites, migration of birds, parental care of amphibian, echolocation of mammals, poultry managements and different breeds of domestic animals.
PHYSIOLOGY: CONTROLLING AND COORDINATING SYSTEMS	Students will learn about basics of histology and tissue staining. They will also understand the physiology of muscles, nerves, reproductive systems and bone. They will learn details of endocrinology with classification of hormones, their biosynthesis, receptors, mode of molecular actions, physiological function, feedback controls and related disorders.
FUNDAMENTALS OF BIOCHEMISTRY	Students will understand the basic and fundamental carbohydrates, proteins, lipids and nucleic acids. They will understand the nature, mechanism, and kinetics of enzyme action. Some instrumentation such as microscopy chromatograph electrophoresis, centrifugation, spectrophotometry etc will also be learnt.
COMPARATIVE ANATOMY OF VERTEBRATES	Students will have understood the structures of different systems as, integumentary skeletal digestive, respiratory circulatory, urinogenital, nervous and sensory organs in comparative way among the vertebrate groups.
PHYSIOLOGY: LIFE SUSTAINING	Students will know the physiology of digestion, respiration, circulation, excretion and adaptation.
BIOCHEMISTRY OF METABOLIC PROCESS	Students will understand the metabolism of carbohydrates, proteins in details. They will also learn about oxidative and redox reactions.
MOLECULAR BIOLOGY	Students will acquire knowledge about replication, transcription, translation, post transcriptional and post translational modifications, gene regulation, DNA repair mechanisms and various molecular tools and techniques like PCR, southern, northern and western blotting, recombinant DNA technology etc. They will also know the various tools

	and techniques related to bacterial microbiology. Some aspects of applied microbiology and diseases related to microbiology will also be learnt by the students.
PRINCIPLES OF GENETICS	Students will learn the fundamental genetics like Mendelian and Non Mendelian inheritances, linkages, mutations, sex determination of various animals, extrachromosomal inheritances, transposable genetic elements etc. They will also understand the various aspects of biostatistics such as central tendency, t-test, chi-square, ANOVA, correlations and regression.
DEVELOPMENTAL BIOLOGY	Students will learn the different aspects of early, late and post embryonic developments. They will have the knowledge about implications of developmental biology in various fields, such as in teratogenesis, stem cell biology, in vitro fertilization, cryopreservation, cord blood transfusion etc.
EVOLUTIONARY BIOLOGY	Students will know about population genetics, human evolution, various concepts about origin of species, extinctions, phylogenetic tree making. They will also understand few basic of bioinformatics.
ANIMAL BEHAVIOUR AND CHRONOBIOLOGY	Students will know in details about patterns of behaviours, survival strategies, social and cooperative behaviours, design of signals and chronobiology. They will also know to construct ethograms.
IMMUNOLOGY	Students will develope knowledge about structures and function of immune cells, immunoglobulins, antigens and their interactions with antibodies. They will know about MHC molecules, cytokines, hyper sensitivity reactions and cellular mode of immunity development. They will know the immune diffusion technique and ELISA.
FISH AND FISHERIES	Students will learn details about taxonomy and biology of fishes as well as various aquaculture techniques in details.
BIOLOGY OF INSECTS	Students imparts knowledge beneficial and non beneficial insects & knowledge of how they interact with their environment, other species and humans. They know about classification of insects and role of insects in spread of disease.
PARASITOLOGY	They imparts knowledge about parasite, vectors of the diseases and their relationship. how parasite completed their life cycle and parasite adaptations developed in different types of parasite.
ANIMAL DIVERSITY	Describe general texonomic rules or classifications. They impart conceptual knowledge of investments and vertebrates, their adoptations and associations in relation to their environment.
INSECT VECTORS AND DISEASES	Students imparts knowledge beneficial and non beneficial insects & knowledge of how they interact with their environment, other species and humans. They know about classification of insects and role of insects in spread of disease.
ENVIRONMENT AND PUBLIC HEALTH	Impart knowledge to the students regarding environment and conservation of it, all types of ecosystem, climate change. They impart knowledge about waste management technologies, pollution and diseases.