KALIABOR COLLEGE

(Affiliated to Gauhati University, UGC recognized)

P.O.- KUWARITOL -782137: NAGAON: ASSAM

Email: kaliaborcollege@gmail.com Tele-Fax: 03672-295517 website: www.kaliaborcollege.ac.in

KALIABOR COLLEGE

3rd CYCLE ASSESSMENT BY NAAC

Supporting Documents: Criterion 2

2.6.1- POs & COs of the Institute are stated & displayed

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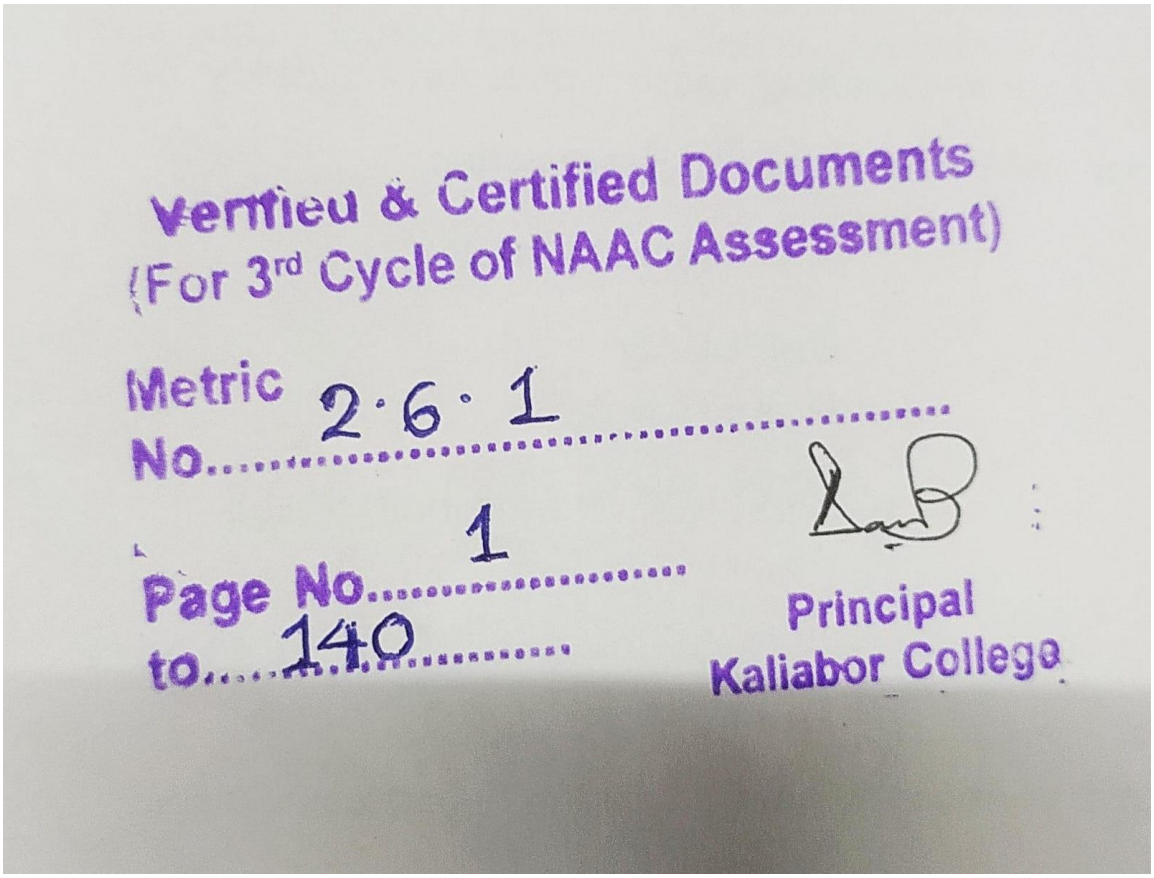

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POs & COs of Different programmes of Kaliabor College

Merged file Link:

https://kaliaborcollege.ac.in/upload/dvv/1703935513.pdf

POs & COs of different Departments stated in the official Website of the College:

POs & COs of Education Department

https://kaliaborcollege.ac.in/upload/dpt_course/1703143148.pdf

POs & COs of English Department

https://kaliaborcollege.ac.in/upload/dpt_course/1702981052.pdf

POs & COs of History Department

https://kaliaborcollege.ac.in/Academic-Departments.php

POs & COs of Political Science Department

https://kaliaborcollege.ac.in/Academic-Departments.php

POs & COs of Economics Department

https://kaliaborcollege.ac.in/upload/dpt_course/1703157040.pdf

POs & COs of Sociology Department

https://kaliaborcollege.ac.in/upload/dpt_course/1702359588.pdf

POs & COs of Biotechnology Department

https://kaliaborcollege.ac.in/upload/dpt_course/1703262431.pdf

POs & COs of Botany Department

https://kaliaborcollege.ac.in/Academic-Departments.php

POs & COs of Chemistry Department

https://kaliaborcollege.ac.in/Academic-Departments.php

POs & COs of Mathematics Department

https://kaliaborcollege.ac.in/Academic-Departments.php

POs & COs of Physics Department

https://kaliaborcollege.ac.in/Academic-Departments.php

POs & COs of Computer Science Department

https://kaliaborcollege.ac.in/upload/dpt_course/1703265375.pdf

POs & COs of B.Voc Department on Tourism & Service Industry

https://kaliaborcollege.ac.in/upload/dpt_course/1702489792.pdf

POs & COs of BBA Department

https://kaliaborcollege.ac.in/upload/dpt_course/1703225922.pdf

POs & COs of B.Voc Department of Small Tea Garden Management

https://kaliaborcollege.ac.in/upload/dpt_course/1702488935.pdf

The faculty members of the Institution engage themselves in several academic activities that in a way indirectly help them in realization of the POs & COs of different subjects. These academic experiences include membership in University Academic Council; Subject Experts in interviews & question paper setter etc.

Link provided: https://kaliaborcollege.ac.in/upload/dvv/1703947101.pdf

COURSE OUTCOME
BA in Assamese, Language & Literature (CBCS)
Department of Assamese

FIRST SEMESTER:

1. ASM -HC -1016 : Axamiya Sahityar Itihax (Hstory of Assamese literature) upto Charjapada) || * This paper has the objectives of enlightening the students regarding the progress of Assamese Literature since ancient to the Fourteenth century, as a part of History of Assamese Literature.

2. ASM -HC -1026 : Axamiya Sahityar Itihax (History of Assamese Literature) from Sankari-jug -1826 AD || *This paper has the objectives of enlightening the students regarding the progress of Assamese Literature from the beginning of the Fourteenth century to the early Nineteenth Century (1826 AD), as a part of History of Assamese Literature.

3. ASM -AE -1014 : Jogajogmulak Axamiya (Communicative Assamese for Arts stream) || * This paper is prepared for the Skill Enhancement Programne for the beginners Arts stream in Assamese Literature.

4. COM-AE -1014 : Byabaxayik Axamiya (Communicative Assamese for Commerce stream) || *This paper is prepared for the Skill Enhancement Programne for the beginners of Commerce stream in Assamese Literature.

5. ASM-RC -1016 : Axamiya Bhaxar Itihax || * This paper has the objective of enlightening the students regarding the progress of Assamese Language since the beginning to till now as a part of History of Assamese culture.

6. ASM-HG -1016 : Abriti Kala (Art of Recitation) || * This paper is prepared to acquire Communication skills in dialects and actions in Recitation and imparting this skills to students.

SECOND SEMESTER:

7. **ASM -HC -2016 : Bhaxa Bigyan Parichoy**

* This paper is prepared to highlight the phonological and morphological system of Assamese Language

8. **ASM -HC -2026 : Xahitya Xamalochana** (Literary Criticism)

* This paper is prepared to highlight the contemporary theory of literary criticism, in terms of Eastern (Indian) and Western criticism.

9. **ASM-RC-2016 : Axamiya Xahityar Itihax-1** (History of Assamese Literature-1)

* This paper has the objectives of enlightening the students regarding the progress of Assamese Literature since the Charjapada (9th century) to twentieth Century (1826 AD), as a part of History of Assamese Literature.

10. **ASM-HG-2016 : Axamiya Bhaxar Itihax-2** (History of Assamese Language-2)

* This paper has the objectives of enlightening the students regarding the progress of Assamese Language from the beginning till now as a part of History of Assamese culture.

THIRD SEMESTER:

11. ASM -HC -3016 : Axomiya Xahitya Prabesh. || * This paper is prepared to highlight the Contemporary Assamese creative literature with the objective of giving preliminary knowledge regarding Assamese modern Prose literature.

12. ASM -HC -3026 : Axomiya Kavitar Chaneki. || * This paper is prepared to highlight the Assamese Poetry from the fourteenth century to the twentieth century with the objective of giving preliminary knowledge regarding Assamese Poetry.

13. ASM -HC -3036 : Axamar Xanskriti. || * This paper is prepared with the objective of highlighting about Assamese culture in general and giving an in-depth idea regarding Assamese culture.

14. ASM -CC -3016 : Pracheen Axamiya Xahitya. || * This paper is prepared with the objective of highlighting the Encient and mediaeval Assamese literature i.e. Songs, verse, poetry, drama, tales & stories as well as different aspects of literature.

15. ASM -HG -3016 : Axamiya Natak aru Manchakala. || * This paper is prepared with the objective of highlighting the Assamese drama and Theatres with special ideal knowledge of Folk theatre, alternative theatre, proscenium theatre, stage, acting etc.

16. ASM -SE -3014 : Byabaharik Axomiya || * This paper is prepared as a Skill enhancement programme in Assamese literature for those students who like to introduce himself in publishing works and audio-visual media .

17. ASM- RC- 3016 : Bhaxa Bigyan Porichoy || * This paper is prepared to highlight the history of language study and its different groups and division of phonological systems.

FOURTH SEMESTER:

18. ASM -HC -4016 : Tulanamulak Bharatiya Xahitya. || *This paper will highlight topics in contemporary literature as well as relevance and methods of Comparative literature, in terms of both Indian Literature and Assamese Literature.

19. ASM -HC -4026 : Axamiya Bhaxar Xamaharan: **Arja Bhaxa and Arja-Vinna Bhaxa.** || * This paper is prepared in order to the importance of Aryan Language (i.e. Sanskrit, Prakrit, Bangla, Odiya) and Non-Aryaan language like Bodo, Karbi, Khasi, Rabha, Tai- Ahom etc. as well as relative contribution to established modern Assamese Language .

20. ASM -HC -4036 : Axamiya Gadya Xahitya (Aramvanir pora Ostadax Xatikaloi) || * This paper will highlight the Assamese Prose literature from 14th century to 18th century with relevance to Sankardeva's dramatic prose, Biographical prose, prose of Buranji letters, documents etc.

21. ASM -CC -4016 : Adhunik Axomiya Xahitya (Modern Assamese Literature) || * This paper will highlight Modern Assamese literature since 18th century as well as the development of Assamese Short-stories, Novels, Autobiography, Drama, Poetry and others.

22. ASM -HG -4016 : Adhunik Axamiya geeti Xahitya. || * This paper will highlight Assamese Songs and Lyrics in Assamese literature as well as Assamese Culture since ancient period to till now.

23. ASM-RC- 4016 : Xahitya Xamalochana. || * This paper will highlight topics in contemporary literature as wel as relevance and methods of literary Criticism in terms of both Indian Literature and Western Literature.

24. ASM -SE -4014 : Srijani Mulak Xahitya (Creative Literature) || * This paper is prepared to get an idea about to writing of story poems drama etc. in Assamese Language as well as how to impact the knowledge regarding various aspects Assamese Literature to students.

FIFTH SEMESTER:

25. ASM -HC -5016 : AXOMIYA NATAK ARU PARIBESHAN XAILI.

* This paper is prepared to get an idea about the Assamese Drama, Stage, Music, costume, art etc. and its theatrical process as well as how to impact the knowledge regarding various aspects Assamese culture to students.

26. ASM -HC -5026 : AXOMIYA BYAKARAN.

* This paper is prepared to get an idea about Assamese Grammar as a NIA language as well as grammatical information related to other languages of Assam to major Students.

27. ASM -HE -5016 : AXOMIYA LOKA-XAHITYA ADHYAYAN

* This paper is prepared with the objective of highlighting about Assamese culture as well as Folk-Culture to get an idea about Assamese folk literature and Culture to Students.

28. ASM -HE -5026 : AXOMIYA RAMANYAXIK SAHITYA.

* This paper will highlight Assamese Romantic poems and Lyrics in Assamese Language and literature as well as its History and background of modern Assamese poetry.

29. ASM -HE -5036 : SANKARDEVA.

* This paper will highlight the birth and development of Assamese Naat- Bhaona (Assamese drama/Theatre), Kavya., Satriya dance, Prose and other writing with special refference to selected examples of these of SriSri Sankardeva to contemporary times.

30. ASM -HE -5046 : AXAMIYA KALPABIGYAN XAHITYA.

* This paper will highlight Assamese Kalpa-Bigyan Xahitya in Assamese Language as well as its History and background of Assamese Kalpa-Bigyan Xahitya.

31. ASM -SE -5014 : Xampadana aru prakashan (Editing & Publication)

* This paper is prepared to get an idea about the editing and Publication and visualization of books, drama, Advertisements, short films or videos etc. in Assamese Language as well as how to impact the knowledge regarding various aspects Assamese Literature to students.

32. ASM -RE -5016 : Axomiya Loka-Xahitya Adhyayan

* This paper is prepared with the objective of highlighting about Assamese culture as well as Folk-Culture to get an idea about Assamese folk literature and Culture to Students..

33. ASM -RE -5026 : SANKARDEVA.

* This paper will highlight the birth and development of Assamese Naat-Bhaona(Assamese drama/Theatre), Kavya., Satriya dance, Prose and other writting with special refference to selected examples of these of SriSri Sankardeva to contemporary times.

34. ASM -RG -5016 : Abritti kala (Art of Recitation)

* This paper is prepared to acquire Communication skills in dialects and actions in Recitation and imparting these skills to students.

SIXTH SEMESTER:

35. ASM -HC -6016 : Axamiya Chutigalpa aru Upanyax (Assamese Short-Story and Novel. || * This paper is prepared to highlight the Contemporary Assamese short-stories and Novels with the objective of giving preliminary knowledge regarding Assamese short stories and Novels as well as modern Assamese literature.

36. **ASM -HC -6026 : Axamiya Lipir Itihax** (History of Assamese scripts) || * This paper will highlight the thousands years long history And background of Assamese scripts and its development and divisions since third century.

37. **ASM -HE -6016 : Lakshminath Bezboruah** || * This paper will highlight the life and contributions of Raxaraj Lakshminath Bezbaruah to Assamese Language and literature as well as Assamese Society

38. **ASM -HE -6026 : Banikanta Kakati** || * This paper will highlight the life and contributions of Dr. Banikanta Kakati to Assamese Language and literature as well as Assamese Society

39. **ASM -HE -6036 : Axamiya Shishu aru Kishore Xahitya** (Assamese children Literature) || * This paper is prepared to highlight the Contemporary Assamese children Literature as a creative literature with the objective of giving preliminary knowledge regarding Assamese modern Prose literature.

40. **ASM -HE -6046 : Axamiya Bhaxar Upabhaxa** (Dialects of Assamese Language) || * This paper is prepared for the study of different dialects of Assamese Language and Highlight as a literary aspects with the objective of giving preliminary knowledge regarding Assamese contemporary literature.

41. ASM -HE -6056 : Prakalpa (Projects) || * Every Student will submit a project report on a topic related with Assamese Language, Literature and culture or any subject related to the course syllabus done individually or in group under supervision of a faculty

42. ASM -SE -6014 : Axamiya Aakhar Jotani. || * This paper is prepared to highlight the Word making (Baanaan) and sentence making (Grammar) system in Assamese Language in writing process according to pronunciation with the objective of giving preliminary knowledge regarding Assamese Literary writings.

43. ASM -RE -6016 : Chanda aru Alongkar. || * This paper is prepared to highlight the 'Chanda' and 'Alongkar' in Assamese Literature, especially Assamese Poetry from the 8th century to till now with the objective of giving preliminary knowledge regarding Assamese Poetry and lyrical writings.

44. ASM -RE -6026 : Adhunik Axamiya Geeri Xahitya (Assamese Modern lyrical Litrature) || * This paper will highlight Assamese Songs and Lyrics in Assamese literature as well as Assamese Culture since ancient period to till now.

45. ASM -RG -6016 : Abriti Kala (Art of Recitation) || * This paper is prepared to acquire Communication skills in dialects and actions in Recitation and impart this skills to students.

# # # # #

Department of Economics
Kaliabor College

Course Outcomes:

Semester 1:

Course Name: ECO-HC-1016: Introductory Microeconomics:

- This course will provide the basic concepts of microeconomic theory.
- Student will able to understand the basic microeconomic theories and their application in real life situations.

Course Name: ECO-HC-1026: Mathematical Methods for Economics-I:

- From this core course the learners will understand the basic mathematics and application in Economics.
- It will help the students to analyze the basic economic models mathematically.

Course Name: ECO-HG-1016: Fundamentals of Microeconomics:

: ECO-RC-1016: Principles of Microeconomics-I:

- These papers intend to expose the students to the basic principles of microeconomic theory and illustrate with examples.
- Students will get basic ideas about demand, supply, consumer theory, theory of production and cost, different forms of market etc.

Semester-II Course Name: ECO-HC-2016: Introductory Macroeconomics:

- This course aims to introduce the students to the basic concepts of macroeconomics.
- This paper discusses the basic concepts of interrelated macroeconomic variables like national income, income, employment, money, inflation, balance of payment etc.

Course Name: ECO-HC-2026: Mathematical Methods in Economics-II:

- This is the second part of Mathematical Methods of Economics.
- The objective of the course is to transmit the body of basic mathematics that enables the study of economic theory at the undergraduate level.
- Students will get the ideas of linear algebra, different types of mathematical functions, differential equations etc.

Course Name: ECO-HG-2016: Microeconomic Theory:

: ECO-RC-2016: Principles of Microeconomics-II:

- This paper is a sequel of the paper, covered in the 1st semester.
- These papers will help the students to understand the different market structures, theories of factor pricing and the concepts of market failure.

Semester-III

Course Name: ECO-HC-3016: Intermediate Microeconomics-I

- This course will provide a sound understanding in microeconomic theory.
- The learners will get ideas to analyze the behavior of individual units.
- This course covers the behaviour of cosumer and producer and

the behaviour of a competitive firm.

Course Name: ECO-HC-3026: Intermediate macroeconomics-I

- This paper introduces the students to formal modeling of a macroeconomy in terms of analytical tool.
- This paper discusses the various alternative theories of income and employment.

Course Name: ECO-HC-3036: Statistical Methods for Economics:

- This is a course on statistical methods for economics.
- This paper introduces the basic concepts and terminology of statistical analysis and inference.
- The students will get the ideas of sampling and different sampling techniques.
- This paper will help the students to get the understanding of various probability distributions.

Course Name: ECO-HG-3016: Fundamentals of Macroeconomics:

: ECO-RC-3016: Principles of Macroeconomics-1:

- These courses introduce the students to the basic concepts of macroeconomics.
- In these courses students are introduced to the definitions and measurement of different macroeconomic variables like GDP, consumption, savings, investment etc.

Course Name: ECO-SE-3014: Data Collection and Presentation:

- The course is designed to help the students in understanding the use of data, presentation of data using computer softwares like MS Excel.
- Students will be asked to prepare a report on collected data and will be evaluated accordingly.

Semester-IV Course Name: ECO-HC-4016: Intermediate Microeconomics-II:

- This paper is sequel of Intermediate Microeconomics-I.
- It covers general equilibrium and welfare, imperfect markets and topics under information economics.

Course Name: ECO-HC-4026: Intermediate Macroeconomics-II:

- This paper is sequel of Intermediate Macroeconomics-I.
- It provides the micro foundations to the various aggregative concepts used in the previous course.

Course Name: ECO-HC-4036: Introductory Econometrics:

- This paper provides a comprehensive introduction to the basic econometrics concepts and techniques.
- This paper will help the students to acquire the knowledge about hypothesis testing, estimation and diagnostic testing of simple and multiple regression models.

Course Name: ECO-HG-4016: Macroeconomic Theory:

: ECO-RC-4016: Principles of Macroeconomics-II:

- These papers cover the theories of national income in detail.
- Students will also get the ideas of inflation, its relationship with unemployment and some basic concepts in open economy.

Course Name: ECO-SE-4014: Data Analysis:

- This course will help the students to summarize the collected data and to analyze the statistical inferences.
- The students will be trained to use the statistical softwares like SPSS to analyze data.

Semester-V

Course Name: ECO-HC-5016: Indian Economy-I:

- This course reviews major trends in economic indicators.
- From this paper students will able to gain depth knowledge about Indian economy.
- This paper covers economic development since independence, population studies, growth and distributions, international comparisons etc.

Course Name: ECO-HC-5026: Development Economics-I:

- This course covers the conceptions of development and justifications.
- Students will be able to learn the various growth models.
- This course ends by linking political institutions to growth and inequality.

Course Name: ECO-HE-5026: Money and Financial Markets:

- This course exposes students to the theory and functioning of monetary and financial sectors of the economy.
- This course covers the concepts of money, financial markets, interest rates, banking systems and monetary policy.
- The learners will acquire depth knowledge about the whole banking system.

Course Name: ECO-HE-5036: Public Finance:

- This course is designed for the students which will help in learning the public economics that covers taxations, public revenue, public expenditure and fiscal federalism.
- From this paper students get an idea about budget and its various types.

Course Name- ECO-RE/RG-5016: Economic Development and Policy in India-I:

- This paper reviews major trends in aggregate economic indicators in India and places these against the backdrop of major policy debates in India in the post-independence period.

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Department of Education, Kaiabor College

Programme Outcome:

B.A. Education programme has multipurpose objectives. While completing this subject the following qualities are expected to imbibe in their future life:

1. The students will know to modify their behavior and they will come to know the socialization process.
2. Various talents and hidden capabilities will come out in different areas.
3. The students will develop and acquire the life skill knowledge to apply in their day to day life.
4. Students can identify the strategies and skills in promoting the peace education.
5. Students will able to know to apply the educational technology in their teaching-learning process.
6. The students will understand and develop teacher's qualities, responsibilities and professional ethics.

Course Outcomes of Under Graduate CBCS Course (Honours)

1st Sem (HC) Paper - EDU-HC-1016 Principles of Education

Course Outcomes:
After completion of this course the learner will be able to-

- Acquaint the students with the sound principles of education.
- Acquaint the students with the concept of education, different aims of education, curriculum, and forms of Discipline.
- Familiarize the students with democratic idea of modern education.

Paper- EDU-HC-1026 Psychological Foundation of Education

Course Outcomes:

- Make the students understand the meaning and concept of psychology and educational psychology.
- Acquaint the students with the theories, laws, methods and motivation in learning.
- To understand the concept of memory, forgetting, attention and interest, concept of intelligence and emotional intelligence.
- Acquaint with different types of personality and adjustment mechanism.

2nd Sem(HC) Paper- EDU-HC-2026 Philosophical and Sociological Foundation of Education

Course Outcomes:

- To know the concept of philosophy and its relationship with education.
- To understand the educational implications of different philosophies of India and Western.
- To know the concept of sociology, educational sociology, social groups and process of socialization.

Paper- EDU-HC-2026 Development of Education in India-I
Course Outcomes:

- Recount the concept of Ancient Indian education System.
- To know about the ancient system of education. E.g- Vedic, Buddhist and Medieval India.
- To understand the education system during British period.

3rd Sem (HC) Paper- EDU-HC-3016 Development of Education in India-II
Course Outcomes:

- To understand the educational situation during the time of Independence.
- To know the recommendations of different education Commission and Committees in post - independent India.
- To analyze the National Policy of Education in different times and recent development of education in India.

Paper-EDU-HC-3026 Educational Technology and Teaching Methods
Course Outcomes:

- Make the students understand and the concept and objectives of educational technology in teaching learning process.
- Acquaint the students with innovation in the field of education through technology.
- To understand the students about various methods and devices of teaching.

Paper- EDU-HC-3036 Value and Peace Education
Course Outcomes:

- Students will understand about the concept of value.
- Student will become aware about the role of educational institutions in building a value based society.
- Students will understand need and importance of Peace education and its relevance in national and international level.
- Student will able to know about the strategies and skills to promoting peace education.

4th Sem(HC) Paper- EDU- HC-4016 Great Educational Thinkers
Course Outcomes:

- Students will know about the philosophy of life of different great educational thinkers and their contributions.
- Students will know about the views of great thinkers in educational context.
- Students will able to analysis the relevance of thoughts of great educational thinkers at present context.

Paper- EDU- HC-402 Educational Statistics and Practical
Course Outcomes:

- Students will able to understand some basic concept of statistics and its used in education.
- Students will develop ability to graphical representation of educational data.
- Students will understand the Normal Probability Curve (NPC) and its implications in education

Paper- EDU- HC-4036 Emerging Issues in Education
Course Outcomes:

- Students will able to know about major emerging issues of local, state and national etc.

- Students will able to analysis various emerging issues in education system.(All levels of education).
- Students will understand various problems and challenges of education in India at all levels.

4th sem (HC) Paper- EDU-HC-5016 Measurement and Evaluation in Education

Course Outcome:

- Student will know the concept of measurement and evaluation in education.
- Student will understand the general procedure of test construction.
- Student will understand different types of educational test and their uses

Paper- EDU-HC-5026 Guidance and Counselling

Course Outcomes

- Student will understand the concept, need and importance of guidance and counseling.
- Students will know about the different types and approaches to guidance and counseling.
- Students will able to learn the challenges faced by the teachers as guidance worker.

Paper- EDU-DSE-5026 Developmental Psychology

Course Outcome:

- Students will able to understand the basic concepts relating to development.
- Students will able to understand the different factors that affecting on childrens development at various stages of development.
- Students will know about the different problems and issues related with different stages.

Paper- EDU-DSE-5046 Teacher Education in India

Course Outcome:

- Student will understand the concept, aims and objectives and significance of teacher education.
- Students will know about the development of teacher education in India.
- Students will understand the innovative trends and recent issues in teacher education and be able to critically analyze the status of teacher education in India.
- Students will able to understand and conceived the qualities, responsibilities and professional ethics of teachers.

6th Sem(HC) Paper- EDU-HC-6016 Education and Development

Course Outcome:

- Students will able to understand the relation between education and development in the post globalization era.
- Students will able to learn the role of education in community development, education for human resource development.
- Student will able to understand economic and political awareness through education.

Paper-EDU-HC-6026 Project

Course Outcomes:

- Students will able to prepare a project report.

Paper-EDU-HC-6026 Special Education

Course Outcomes:

- Students will understand the meaning and its importance of special education.
- Students will know about the various policies and legislations of special education.
- Students will familiar with behavioral characteristics of different types of special children .

- Students will know about different issues related to special children.
- Students will know about various educational provisions and support system of special children's.

Paper- EDU-HC-6046 Women Education

Course Outcome:

- Students will know about the changing role of women in India.
- Students will understand gender discrimination in Indian society.
- Students will know about various constitutional provisions for women.
- Students will understand about the women empowerment.
- Students will develop awareness and sensitivity towards women.

COURSE OUTCOMES

Department of English

Course 1: Indian Classical Literature, Course Code: ENG-HC-1016

Course Objectives: The objective of this course is to acquaint the students to a selection of literatures of India in English translation, thereby, getting them familiar with the rich cultural heritage of ancient Indian literature, especially Sanskrit literature. The paper includes literary pieces of different genres like drama, poetry, the epic narratives as well as short fictional prose of the earliest Indian literature that took the form of canonical writings eventually. The immortal plays of Kalidasa, the Mahabharata, Sudraka's Mrcchakatika, along with the inclusion of classical Tamil epic Cilappatikaram among others provide a rare distinction of creative excellence and aesthetic recognition to the paper.

Expected Course Outcome: After completing this course, the students will be in a position to distinctly assess the merit of rich Indian classical tradition with that of its succeeding period. It would provide them with firm resources and evidences that will develop a holistic approach in their mindset to make a comparative assessment between the Indian and the Western classical tradition.

Course 2: European Classical Literature, Course Code: ENG-HC-1026

Course Objectives: The objective of this course is to make the students familiar with the representative texts belonging to the classical period of Europe and thereby instilling in them a greater consciousness for the rich gamut of classical tradition that grew in Europe, mainly in the hands of Greek, Roman, and Latin intellectuals. Starting with an Aristotelian concentration, it incorporates a wide range of writings by Homer, Sophocles, Plautus, Ovid to get the students in touch with a different cultural discourse. The significance of the course rests on the fact that English literature is highly indebted to the classical works of Greece and Rome.

Expected Course Outcome: After the completion of this course, the students will have an overall idea of Western literary paradigm and they will realize the influence of classical literature in the works of the English authors clearly in evidence. In essence, this paper will function to bring an Arnoldian touchstone to be applied for true comparative reliance and criticism.

Course 3: Indian Writing in English, Course Code: ENG-HC-2016

Course Objectives: Indian writing in English refers to the body of work by writers in India in English and whose native language can be one of the numerous languages of India. It introduces the students to the historical development of Indian writing i.e. the early phase and the challenges faced by early writers, experimentation in different forms and interpretation of individual and collective experiences in colonial and postcolonial India, experiences of Indian diaspora etc. among others. Recent Indian English writings give a collective voice to the Indian experience of the modern predicaments including partition, trauma, gender issues, social and cultural values, identity politics, diversity of Indian culture and tradition across spatiality.

Expected course outcome: After the culmination of this course, the learners will be in a position to better comprehend the zones of diversity and conflict in Indian literary tradition. They will be introduced to a wide range of issues from the colonial to the postcolonial period and also will know about the considerable contributions that Indian writers are making since pre-Independence era in the realm of world literature.

Course 4: British Poetry and Drama: 14th to 17th Centuries, Course Code: ENG-HC-2026

Course Objectives: The paper targets to familiarize the students with the two major literary forms of British literature from the 14th to the 17th centuries------ poetry and drama. It gives reflections on the larger socio-cultural contexts that generated such literatures. It includes a focus on the larger contexts of the Renaissance, the nature of the Elizabethan age, the implications of the emergence of new trends and so on. It will also highlight the seminal issues and preoccupations of the writers as well as the concerned age as explored through the texts.

Expected course outcome: the students after completing the paper will better understand the nature of canonical British literature in a broader spectrum. It will give them an enlarged picture of different genres like tragedy, comedy, chivalric and metaphysical poetry sprouting differently in various phases of literary history.

Course 5: History of English Literature and Forms, Course Code: ENG-HC-3016

Course Objectives: Literature mirrors the society. So, each form of major changes, socio-cultural transition, revolutionary political shift of the society have lot to do with literature. This

paper introduces the students to the history of English literature and the major literary forms. Based on a chronological approach, it shows the linear evolution of each literary form including poetry, drama, fiction and non-fictional prose over time and its expansion into global English writing. Prescribed readings centre on representative figures of each literary form and period, in other cases, especially in the 20th and 21st centuries, the highly expansive nature of literature can not claim any particular mentioning.

Expected Course Outcome: The learners after completing the paper, will be able to acquire a sense of historical development of each literary form. They will gain understanding of the contexts in which literary in which literary forms and individual texts emerge. It can be expected that this knowledge will equip them to analyze texts as representative of broad generic explorations.

Course 6: American Literature, Course Code: ENG-HC-3026

Course Objectives: American literature is literature written or produced in the United States of America and in the colonies that preceded it. The American literary tradition thus is part of the broader tradition of English-language literature, but also includes literature of other traditions produced in the United States and in other immigrant languages. This paper aims to acquaint the students with the main undercurrents of American literature in its larger social and cultural contexts. The texts incorporated in the paper are carefully selected so as to cater to the students a true reflection of the growth of American society and the parallel changes in literary imagination.

Expected Course Outcome: The learners on successful completion of the paper, will be in a position to understand the visible evolution of American literature at different stages from the beginnings of American dream to the present dimensions of post modernism. They will be able to analyze how American literature has developed to be a melting pot over the past few decades because of migration narratives, cultural diaspora and ethno-racial contexts.

Course 7: British Poetry and Drama: 17th and 18th Centuries, Course Code: ENG-HC-3036

Course Objectives: This paper aims to acquaint the students with the gamut of poetry and drama of British literature that flourished in the 17th and 18th centuries. This period saw a brilliant proliferation of greatly diverse kinds of writings. The prescribed texts aim at deciphering the broader socio-cultural and political changes marking the birth of Puritanism

till the Neoclassical period. The significance of the scientific revolution during this period may also be studied in relation to the literary productions.

Expected Course Outcome: the learners will be able to acquire a multi-dimensional knowledge on different genres like epic poem, mock-epic, satire, revenge tragedy, Comedy of Manners and so on. Based on the seminal texts of the period, they will come to know the factors responsible for the growth of religious and secular thought in the 17th century. They will understand the broad scenario of connection between the stage, the state, and the market. The students will get in terms with the larger contexts that generated such literatures as well as the possible impacts of the literature on society.

Course 8: British Literature: The 18th Century, Course Code: ENG-HC-4016

Course Objectives: this paper aims to familiarize the students with British literature in the 18th century. This phase has been a lively exploration of one of the most diverse and innovative periods in literary history. In spirit, the period reflects the intellectual and cultural shifts of the Age of Enlightenment. 18th century literature is characterized by reason, intellect, satirical spirit, strict adherence to decorum, among others. The texts in the course are representative of the age and to some extent representatives of the forms as well. In an age which is dominated by reason and rationality mainly, these texts can give the students an overview of the age and the writings that the age produced.

Expected Course Outcome: After the completion of the paper, the learners will be able to differentiate between the country and the city-centered literary productions. They will learn to grasp the spirit of enlightenment thinking on the writings and could recognize where the distinction rests from the earlier periods. Though it was not predominantly an age of drama yet one cannot but pay attention to the few plays of the century. The students will understand the revolutionary changes brought about by the periodical press and the subsequent growth in non-fictional prose.

Course 9: British Romantic Literature, Course Code: ENG-HC-4026

Course Objectives: The nineteenth century completely readdresses and refashions the earlier trends and tendencies of literature. With the germination of romantic imagination, it gets expressed most fervently in the poetry of Blake, Burns, Wordsworth, Coleridge, Shelley, and Keats. In revolt against the constrained neo-classical spirit of the earlier age, Romantic

literature redefines the relationship between human and nature. With a more humane synthesis of the two, it produces a new juncture in literary history. This paper includes selections from works of major Romantic poets which imbibe the romantic spirit in an overwhelming way.

Expected Course Outcome: The students after the successful completion of the paper, will be enabled to appreciate the true organic intellectual beauty of Romantic literature. They will nurture a clear vision of the romantic essence in literature. In addition, their readings of Frankenstein will be beneficial to reflect upon romanticism from an another angle.

Course 10: British Literature: The 19th Century, Course Code: ENG-HC-4036

Course Objectives: The nineteenth century canon of British literature was a blend of romantic as well as Victorian spirit. The cultural contexts include rapidly accelerating age of industrialization, nationalism, environmentalism, romanticism and realism. The texts selected here are among the ground-breaking efforts of the poets and fiction writers who consolidated and refined upon the achievements of the writers of the preceding age. In the middle and later part of the nineteenth century, the genre of novel flourished on its own into a more solid phenomenon.

Expected Course Outcome: As because the paper incorporates a remarkable literary development starting from Austen to Christina Rossetti, students will be able to track on very diverse array of social preoccupation. In the novels of Jnae Austen, students will find a deep exploration of the complexities of human world, with motives and conduct guided by worldly affairs. The fiction of this age explored a diverse range of themes including crime, guilt and innocence, insurrection of gender identity, social class, alienation, search of identity, victimization, utilitarian thinking, and all forms of materialistic issues. The students will learn to make an aesthetic appreciation of the novel and can enjoy them at multiple levels. It will be helpful for them to realize the ideological shift explored in the fictional world during this time.

Course 11: British Literature: The 20th Century, Course Code: ENG-HC-5016

Course Objectives: It is in the 20th century that the era of modernism in England finds its way into arts and literature. This age is characterized by an avant-garde proximity to break with conventional codes, experiment with new forms and structural shift in plotline, and marked by

an exposure to cosmopolitan cultural and literary stimuli. This paper makes a crucial selection of a couple of texts to let the students have an introduction to the spirit of modernism.

Expected Course Outcome: the students after successfully completing the paper, will get acquainted with the ethos of postmodernism through a reading of recent poetic and fictional works. They will get in terms with new forms and literary idioms in both European and non-European cultures. They will learn about different critical movements concerning the uses of myths, psychoanalysis and stream of consciousness, women's movement in the early 20th century, intertextuality and continental experimentation in literature and culture. They can demarcate the factors behind development of 20th century literary modernism due to a general sense of disillusionment with the Victorian era attitudes. Crushed by the holocaust of world war, the literature conveyed great absurdity in human world. Consequently, the students can have a better conceptual idea on art and literature smeared with fragmentation all over.

Course 12: Women's Writing, Course Code: ENG-HC-5026

Course Objectives: this paper aims to direct the students to situationally diverse experiences of women articulated through different genres-poetry, novel, short stories, essays and autobiography. The paper explores the themes of gender, sexual politics, body politics, identity, space and voice, marginalization, subaltern narratives and so on.

Expected Course Outcome: the students after successful completion of the paper, will be able to direct their attention to women centric experiences in different geographical and socio-cultural settings. The selections of Mary Wollstonecraft will acquaint the students with the ideas contained in one of the earliest feminist treatises of the western world. While selections of Rassundari Debi, Mahasweta Devi, Nirupama Borgohain will provide them distinctive specificities on women's experiences from a different locale. In spirit, they will recognize the confessional mode of women' writing in general, also will understand the interrelationship between race, caste, and gender and their interplay with sexual politics.

Course 13: Literature of the Indian Diaspora, Course Code: ENG-HE-5036 [Discipline Centric Elective]

Course Objectives: in the light of world literature today focusing extensively on ideas of transnationalism, exile, migration, displacement and so on, this paper intends to capture the diasporic experience with particular reference to Indian diasporic writers. The Indian diasporic phenomenon raises different issues and aspects of immigrant life. This will give the students

an idea on how Indian diasporic writers have been negotiating issues like inter/intra-community diasporic interactions and the transformation of the relationships between the host country and the Indian diasporic communities.

Expected Course Outcome: The diasporic writers have carved out a niche for themselves in the terrain of world literature. Students, after completing the paper, will be able to examine how far the representations of the host land and the homeland are mediated by certain factors relating to the production and consumption of Indian diasporic sensibility. It will let them know about the problems and possibilities engendered by the experience of migrancy and diasporic life. They will get to know about the significations attached with diaspora, explored through the quest for identity, uprooting and re-rooting, insider and outsider syndrome, nostalgia, memory etc.

Couse 14: Literary Criticism and Literary Theory, Course Code: ENG-HE-5056 [Discipline Centric Elective]

Course Objectives: Literary criticism is a reasoned consideration of qualitative statement of any literary work. This paper will familiarize the students with some important texts on literary criticism and literary theory. William Wordsworth's Preface to the *Lyrical Ballads*, the purpose will be to inform the students on the shifts in literary interpretations and critical approaches so as to equip them while reading texts across genres.

Expected Course Outcome: Students, after successful completion of the paper, will be in a position to critically assess any text as their theoretical backbone will be strengthened. They will practically understand the difference between reading and interpreting a text. They will develop understanding on 'media criticism', 'questions of alterity', 'power, language, and representation', 'point of view' and so on.

Course 15: Modern European Drama, Course Code: ENG-HC-6016

Course Objectives: Modern European drama is a strong outlet in the emergence of avant-garde movement. This paper aims to introduce the students to different works of modern playwrights whose dramas have initiated new modes of writing in terms of style, dramatic devices and techniques. Thereby, it has developed wide range of innovative theatrical practices that dispersed in other nations of the world at a later time. It also intends to form the base for the students to understand the trialetic relationship existing among politics, social change, and

the stage. Thus, it has brought radical changes in understanding the modules of text and performance in the modern context.

Expected Course Outcome: Students after successful completion of the paper, will be able to decipher the true nature of avant-garde movement, reflected through European drama, its subsequent focus on realism and beyond. The prescribed texts will introduce them to certain new concepts on tragedy and heroism in modern European drama. To reflect the absurdity of human world, modern drama has evolved through new trends and consequently, it helps the students to perceive the nature of modernism in literature.

Course 16: Postcolonial Literatures, Course Code: ENG-HC-6026

Course Objectives: Postcolonial literature is a broad term that encompasses literatures by people from the erstwhile colonial world, works that are about the practice and legacy of colonialism. This paper intends to address the problems and consequences of the decolonization of a country, especially questions relating to the political and cultural independence of formerly subjugated people, and themes such as racialism and impact of colonialism. Moreover, the paper includes major postcolonial literary texts to be examined through the lens of postcolonial theories. This paper aims to develop the students' capacity to think critically about postcolonialism in a comparative framework.

Expected Course Outcome: students after going through the paper will be in a position to analyze how different cultures have undergone the experiences of colonialism and are now making sense of the era of postcolonialism. They will get in terms with variety of crucial issues determining a strategical development of resistance to colonialism, the negotiation of national identities at the intersection of the local and the global. They will be able to look at the epistemological conditions of postcoloniality, continuing effects of neo-colonialism and imperialism on the affected countries.

Course 17: Literature and Cinema, Course Code: ENG-HE-6016 [Discipline Centric Paper]

Course Objectives: this paper, including as a discipline centric paper, aims to suggest the interaction of literature and cinema. It outlines the key approaches to study this interaction like, the study of the specifics of the participation of cinematographic interpretation in the formation of literary history and the definition of the degree of mutual influence of literature and cinematography.

Expected Course Outcome: Students, after successful completion of the paper, will be able to methodologically ground their understanding on visual performance-based study with that of written text. They will know about distinctive concepts like "Theories of Adaptation", "Transformation and transposition", "Hollywood and Bollywood", "the two ways of seeing", "Adaptation as interpretation" and so on.

Course 18: Partition Literature, Course Code: ENG-HE-6036 [Discipline Centric Elective]

Course Objectives: this paper is prescribed for the students to take it up as a discipline centric elective paper. It aims to introduce the students to the idea of partition along with its fragmented picture. It will let them know the interlinks between colonialism, nationalism, and the partition. They will feel the existential crisis issuing out of communalism and violence over a geopolitical Space. There are certain essays which focuses on the condition of women during partition, pain of exile and homelessness and the entire psychological repercussions of holocaust.

Expected Course Outcome: the students on successful completion of the paper, will get to know how this literature captures a nuanced depiction of the tragedy of partition. Ultimately, they can link with amalgamation of history with conflict studies, border studies, and politics. As a by-product of colonialism, students through this paper, will be able to draw a connection with postcolonialism also.

Course Outcome of B.A. 3-year Degree Programme in History (CBCS):

Semester I

HIS-HC-1016: History of India – I

After completion of this paper, the students will be able to explore and effectively use historical tools in reconstructing the remote past i.e., ancient/early India, while understand and differentiate pre and proto history. The course will also train the students to analyse the various stages of evolution of human cultures and the belief systems in the proto-history period.

HIS-HC-1026: Social Formations and Cultural Patterns of the Ancient World

After the completion of this paper, the students will be able to explain the processes and stages of the evolution of the variety of cultural pattern throughout antiquarian periods in history. They will be able to relate the connections between the various Stone and Bronze Age civilizations in the ancient world as well as development of slave and polis societies in ancient Greece.

Semester II

HIS-HC-2016: History of India – II

On successful completion of this course the students will be able to explain the economic and socio-cultural connections, transitions and stratifications during the ruling houses, empires and the politico-administrative nuances of early Indian History from 300 BCE to 300 CE.

HIS-HC-2026: Social Formations and Cultural Patterns of the Medieval World

After completion of this course the students will be able to analyse and explain the historical socio-political, administrative and economic patterns of the medieval world. They will be able to describe the emergence, growth and decline of various politico-administrative and economic patterns and the resultant changes therein.

Semester III

HIS-HC-3016: History of India – III (c. 750-1206)

The completion of this paper will enable the students to relate and explain the developments in India in its political and economic fields and its relation to the social and cultural patterns therein in the historical time period between c. 700 to 1206. They will also be able to analyse India's interaction with another wave of foreign influence and the changes brought in its wake in the period.

HIS-HC-3026: Rise of the Modern West – I

On completion of this course, the students will be able to explain the major trends and developments in the Western world between the 14th to the 16th century CE. They will be able to explore and analyse the significant historical shifts and events and the resultant effects on the civilizations of Europe in the period.

HIS-HC-3036: History of India – IV (c. 1206-1550)

After the completion of this course, students will be able to explain the political and administrative history of medieval period of India from 1206 to 1550 AD. They will also be able to analyse the sources of history, regional variations, social, cultural and economic set up of the period.

Semester IV

HIS-HC-4016: Rise of the Modern West -II

After completion of this course, students will be able to explain the political and intellectual currents in Europe in the Modern Age. They will also be able to relate the circumstances and casual factors of the intellectual and revolutionary currents of both Europe and America at the beginning of the Modern Age.

HIS-HC-4026: History of India – V (c. 1550-1605)

At the completion of this course, the students will be able to analyse the circumstances and historical shifts and foundations of a variety of administrative and political setup in India between c. 1550-1605. They will also be able to describe the inter-relationships between the economy, culture and religious practices of the period.

HIS-HC-4036: History of India – VI (c. 1605-1750)

After the completion of this course, the students will be able to explain and reconstruct the linkages of the history of India under the Mughal rule. As a whole, this course will enable them to relate to the socio-economic and religious orientation of the people of medieval period in India.

Semester V

HIS-HC-5016: History of Modern Europe – IV (c. 1780-1939)

After the completion of this course the students will be able to evaluate the historical evolution and political developments that occurred in Europe in the period between 1780 and 1939. They will be able to critically analyse the evolution of social classes, nation states, evolution of capitalism and nationalist sentiment in Europe. They will also be able to relate to the variety of causes that dragged the world into devastating wars in the intervening period.

HIS-HC-5026: History of India – VII (c. 1750-1857)

After the completion of this course, the students will be able to relate the circumstances leading to the consolidation of colonial rule over India and their consequences. They will also be able to explain the orientation of the indigenous population and the masses towards resistance to the colonial exploitation. The course will also enable the students to analyse popular uprisings among the tribal, peasant and common people against the British policies.

Semester VI

HIS-HC-6016: History of India – VII (c. 1857-1950)

On completion of this course, the learners will be able to analyse the course of British colonial exploitation, the social mobilization during the period between c.1857-1950 and also the techniques of Indian resistance to British policies. It will also enable the students to explain the circumstances leading to de-colonization and also the initial period of nation building in India.

HIS-HC-6026: History of Modern Europe – IV (c. 1780-1939)

After the completion of this course, the students will be able to analyse the historical developments in Europe between c. 1780 to 1939. As the course structure of this paper focuses on the democratic and socialist foundations of modern Europe, the students will be able to situate the historical development of working-class movements, socialist upsurge and the economic forces of the two wars and the other ideological shifts of Europe in the period.

Semester V

HIS-HE-5016: HISTORY OF ASSAM (UPTO c. 1228)

This paper will give a general outline of the history of Assam from the earliest times to the advent of the *Ahoms* in the 13th century. Upon completion, students will be acquainted with major stages of developments in the political, social and cultural history of Assam during the early times.

HIS-HE-5026: HISTORY OF ASSAM (c. 1228-1826)

On completion of this paper, students will be able to identify major stages of developments in the political, social and cultural history of Assam during the medieval times. The paper will enable the students to explain 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.

Semester VI

HIS-HE-6016: HISTORY OF ASSAM (c. 1826-1947)

Upon completion of this course, students will be able to describe the period of British rule in Assam after its annexation by the imperialist forces. They will also be able to situate the development of nationalism in Assam and its role in India's freedom struggle. The course

would enable the students to analyse the main currents of the political and socio-economic developments in Assam during the colonial period.

HIS-HE-6026: ASSAM SINCE INDEPENDENCE

Students will be able to assess the aftermath of partition and other socio-economic developments in post-independence Assam upon completion of this course. They will also be able to identify the main currents of political and socio-economic development in Assam after India's independence and the causes and impact of various struggles and movements in contemporary Assam.

GENERIC ELECTIVE COURSES (Both Honours with General and Regular)

HIS-HG/RC-1016: HISTORY OF INDIA (FROM THE EARLIEST TIMES UP TO c. 1206)

Upon completion of this course, students will be able to explain the emergence of state system in North India, development of imperial state structure and state formation in south India in the early period. They will be able to understand the changes and transformations in polity, economy and society in early India and the linkages developed through contacts with the outside world.

HIS-HG/RC-2016: HISTORY OF INDIA (c. 1206 to 1757)

Upon completion of this course, students will be able to analyse the political and social developments in India between 1206 and 1757. Students will be able to explain the formation of different states during this period along with their administrative apparatuses, and the society, economy and culture of India in the 13th to mid-18th century.

HIS-HG/RC-3016: HISTORY OF INDIA (c. 1757 to 1947)

Upon completion of this course, students will be able to understand the major factors that led to the establishment and consolidation of British rule in India. They will also be able to identify the process of growth of resistance against British colonial rule and the eventual growth of Indian nationalist movement, which ultimately led to the end of the British rule in the country.

HIS-HG/RC-4016: SOCIAL AND ECONOMIC HISTORY OF ASSAM

Upon completion of this course, students will be able to analyse and explain the socio-economic history of Assam including among others the development of caste system, religious beliefs, agriculture and land system, the social organization, trade and commerce, various agricultural regulations, plantation economy, development of modern industries, transport system, education, the emergence of middle class, development of literature and press, and the growth of public associations.

SKILL ENHANCEMENT ELECTIVE COURSES (ALL)

HIS-SE-3014: HISTORICAL TOURISM IN NORTH EAST INDIA

After completing this course, students will be able to explain Tourism in North East India with special reference to the historical monuments, cultural and ecological elements and places of the north east India as tourist and heritage site of the nation. They will be able to relate the growing vocation of tourism as an industry and the applicability of historical knowledge for its growth. Project work assigned in this paper enables the students to learn the methods and technicalities of field survey and recognise and highlight the tourism potential of any chosen historical place.

HIS-SE-4014: ORAL CULTURE AND ORAL HISTORY

After this course the students will be able to explain complex interrelationships of structures or events in the context of broader social and cultural framework of societies through 'public memory' and use oral history to preserve oral culture and local history. The students will be able to espouse the relevance to the north-eastern region of India with its diverse culture and ethnic communities whose history is largely oral. The students will be able to use 'Public Memory' as a tool and a source not only to write public history but also to explore new knowledge in the field of humanities, social sciences and even in disciplines like architecture, communication studies, gender studies, language, history, philosophy, political science, religion, and sociology. Internal assessment in this paper is done on the basis of given project which is carried out by the students using oral history methods.

DISCIPLINE SPECIFIC ELECTIVE COURSES (Regular)

HIS-RE-5016: HISTORY OF ASSAM (From earliest times upto 1826 CE)

This paper gives a general outline of the history of Assam from the earliest times to the advent of the British. On completion of this paper, students will be able to identify major stages of developments in the political history of Assam from the earliest times to the occupation of Assam by the English East India Company in the first quarter of the 19th century.

HIS-RE-6016: HISTORY OF ASSAM (c. 1826-1947)

Upon completion of this course, students will be able to describe the period of British rule in Assam after its annexation by the imperialist forces. They will also be able to situate the development of nationalism in Assam and its role in India's freedom struggle. The course would enable the students to analyse the main currents of the political and socio-economic developments in Assam during the colonial period.

HIS-RG-5016: HISTORY OF EUROPE (c. 1648-1870)

After completing the course, the students will be able to explain the emergence of state system in Europe and the rise of modernity. They will also be able to analyse the revolutionary upheavals of Europe that finally shaped the world.

HIS-RG-6016: HISTORY OF EUROPE (c. 1870-1939)

After completing the course, the students will be able to explain the major political developments in Europe from 1870 to 1939. The students will be able to delineate how the rise of two unified nations of Germany and Italy gave rise to intense imperialist contests in the entire world. The course would also enable the students to analyse the causes and consequences of World War I and the developments that led to the World War II.

Programme Outcome and Course Outcome

Department of Political Science

Kaliabor College

Kaliabor College is permanently affiliated to the Guwahati University and it follows the curriculum designed by Guwahati University. The Department of Political Science, Kaliabor College offers BA both as Honors and Regular Programme. Department of Political Science, Kaliabor College provides Honors, Regular, Generic as well as Programs of Skill Enhancement Course.

Programme Outcomes:

1. Under this Course, the students will able to understand the basic concepts of Political Science.
2. The Programme will help the students to understand the historical background & development of several political institutions across the globe.
3. The Programme will help to apply the theories of Political Science in real life situations.
4. The course will develop critical thinking capability among students about Politics.

Course Outcomes of Honors Papers

Course Outcomes of 1st Semester

Course Name: POL HC 1016: Understanding Political Theory

- It will provide a basic idea of Political theory & its approaches to the students.
- The students will understand the concept of Democracy in theory and practice.
- This will enable the students to learn contemporary approaches & debates of Political Theory.

Course Name: POL HC 1026 Constitutional Government and Democracy in India

- This course will help the students to understand constitutional design, State structures & institutions of independent India.
- Students will able to understand the historical background of the development of Indian Constitution.
- It will help the students to critically understand the ground realities & implementations of Indian Constitution.

Course Outcomes of 2nd Semester

Course Name: POL HC 2016 Political Theory – Concepts & Debates

- This Course will help to critically understand the concepts of Political Theory
- This course will enable the students to learn the significance of political theory in exploring several political issues.

Course Name: POL HC 2026 Political Process in India

- This Course intends to develop the idea of the working of political institutions in India.
- This will help the students to critically understand the changing nature of Indian State.
- They will able to analyze the role of Caste, Gender & Religion in Indian Politics.

Course Outcomes of 3rd Semester:

Course Name: POL HC 3016 Introduction to Comparative Government and Politics

- The course will make the students understand the basic concepts of Comparative Politics
- They will able to understand the historical development of Modern Governments.
- This Course will make the students learn about comparative analysis of different political systems.

Course Name: POL HC 3026 Perspectives on Public Administration

- Students will learn the basic concepts of Public Administration and their significance.
- The course will help the students to develop ideas regarding the theories & approaches of Public Administration.
- It will enable the students learn about public policy formulation & major debates.

Course Name: POL HC 3036 Perspective on International Relations and World History

- The course will provide the students the basic theoretical concepts of International Relations.
- It will enable the students to learn the historical evolution of the present World Order
- The Course will also help to critically understand the present international crisis & issues.

4th Semester Course Outcomes:

Course Name: POL HC 4016 Political Processes and Institutions in a Comparative Perspective

- This course will help the students to develop a critical analysis of complex political systems & institutions.
- It will also develop critical thinking ability about different political forms & institutions.

Course Name: POL HC 4026 Public Policy and Administration in India

- This course intends to develop knowledge & awareness among students regarding Public Policy making in India.
- This course will also help the students to scrutinize the theoretical & practical realities of the concepts like Decentralization & Budgeting.

Course Name: POL HC 4036 Global Politics

- The course will help the students to understand the working of prime international organizations.
- It will also help them to understand the power dynamics & changing nature of world order.
- Students will able to develop their own opinions regarding global issues like environmentalism, migration, terrorism, nuclear proliferation.

5th Semester Course Outcomes:

Course Name: POL HC 5016 Classical Political Philosophy

- Through the course, students will able to trace the historical development of Political science as a discipline.
- The Paper will enable the students to understand the debates & arguments of the classical political thinkers
- It will also help to make them understand the significance of Classical Political Philosophy in present day Politics.

Course Name: POL HC 5026 Indian Political Thought I

- The course will make the students understand the themes and issues in political traditions of Pre-colonial India.
- Students will able to compare and contrast the Political traditions of Pre-colonial India.
- They will able to critically evaluate the relevance of the political thoughts of Pre-colonial India.

Course Name: POL HE 5016 Human Rights:

- It will help the students to understand the basic concepts & perspectives of Human Rights
- This paper will also create awareness among the students about Human Rights.
- It will also make the student realize the role of International Organizations such as UNO in protecting Human Rights across the globe.

Course Name: POL HE 5046 Select Constitutions I

- The students will able to understand the importance of Constitution.
- This paper will help the students in Public service examinations.
- Students will able to learn about various constitution of the world.

6th Semester Course Outcomes:

Course Name: POL HC 6016 Modern Political Philosophy

- The paper will help the students to understand critically the basics of Modern Political Philosophy.
- It will help the students to relate the contemporary political issues with the traditions of Modern Political Philosophy.

Course Name: POL HC 6026 Indian Political Thought II

- The Paper will help the students to learn the basic ideas and issues of Political thought of Modern India.
- Students will able to assess the significance of modern Indian political thought in issues and politics of India.
- The paper will also develop a critical mindset among the students regarding contemporary Indian Political thought.

Course Name: POL HE 6016 Human Rights in India

- It will help the students to understand the development of Human Rights in India.
- It will make the students to connect with emerging issues related to human rights in India.
- It will make the students to understand the measure to protect Human Rights.

Course Name: POL HE 6046 Select Constitutions II

- The course will help the students to understand the importance of Constitution.
- The course will make the students compare and contrast the constitutions of different countries of the world.

Course Outcomes of Regular Courses of Political Science (RC)

POL RC 1016/POL HG 1016: Introduction to Political Theory

- The students will able to understand the key concepts in Political theory.
- The paper will make the students to correlate political theories with practical realities.

POL RC 2016/POL HG 2016: Indian Government and Politics

- The paper will make the students understand the political system & institutions of India.
- The course will help the students to know and aware the role of Caste, Class & Gender in the political system of India.
- Students will able to learn the changing pattern of Indian Politics.
- This paper will also help the students in competitive examinations.

POL RC 3016/ POL HG 3016: Comparative Government and Politics

- The students will able to learn the basics of Comparative Political Analysis.
- The paper will make the students to compare and contrast different political systems across the world.
- The course will make the students understand the historical growth and changing pattern of Modern Nation-State.

POL RC 4016/POL HG 4016: Introduction to International relations

- The paper intends to improve students' knowledge in the field of International theories & Politics
- The students will able to learn the basic theoretical concept of International relations.
- The paper will improve the students' general knowledge regarding international politics.

- Through this paper, the students will able to develop their opinions regarding significant international issues.

POL RE 5026: Select Constitutions 1

- The students will able to understand the importance of Constitution.
- This paper will help the students in Public service examinations.
- Students will able to learn about various constitution of the world.

POL RG 5016: Public Administration I

- Students will learn the basic concepts of Public Administration and their significance.
- The course will help the students to develop ideas regarding the theories & approaches of Public Administration.
- It will enable the students learn about public policy formulation & major debates.

POL RE 6026: Select Constitutions II

- The course will help the students to understand the importance of Constitution.
- The course will make the students compare and contrast the constitutions of different countries of the world.

POL RG 6016: Public Administration II

- The course will help the students to develop a broader overview of Public Administration.
- The paper is also helpful for competitive examinations.
- It will also help the students to relate Public Administration theories with the realities.

Course Outcomes of Skill Enhancement Courses (SEC)

POL SE 3014: Parliamentary Procedures and Practices

- The paper will help the students to understand the practical approaches to legislative procedures.
- the course will aware the students about the working and significance of Indian Parliament.

POL SE 4014: Panchayati Raj in Practice

- The paper will help the students to understand the importance of grass root political institution in empowering people.
- The paper will also aware the students about the mechanisms and procedures of the Panchayati Raj system.
- The course will help the students to engage in reality check of the policies and practices of Indian rural political set up.

POL SE 5014: Public Opinion and Survey Research:

- The paper will help the students to understand the principles & practice of Public Opinion and Survey.
- This course will enable the students to practice sampling, interview & questionnaire.

POL SE 6014: Conflict and Peace Building

- The Course will help the students to understand the theoretical dynamics of Peace and Conflict.
- Students will able to learn the global history of conflict and development of the concept of Peace-Building.
- The paper will help the students to know about the present global mechanism of peace building & negotiations.

Department of Political Science

BA (Major) in Political Science

Programme outcome

Political Science under-graduate programme is one the popular course with increasing significance due to its interdisciplinary approach. It encompasses discipline like sociology, history, international relation and administration. This programme is designed to –

1. Acquire knowledge of theories, concepts and research methods in humanities and social sciences
2. Analyse and assess how global, national and regional developments that affects the society
3. Equipped students with multi-disciplinary approach in social sciences and prepares them for further academic pursuit and careers in the public and private sector
4. Enable students to understand the significance of debates in political theory in exploring multiple perspectives to concepts, ideas and issues
5. Acquaints students with the constitutional design of state structures and institutions, and their actual working overtime
6. Enable students to learn the basic concepts related to public administration and its importance
7. Learn about the key milestones in world history and equip them with the tools to understand and analyze the same from different perspectives, etc.

Course outcomes

Course	Course Title	Outcomes
UG-Politcal Science (1St Sem)	Political Theory-I	To introduce the idea of political theory and various approaches To enable the students to assess the contemporary trends of political theory To reconcile theory and practice in relation to democracy
	Politics in India-I	To acquaint students with constitutional design of state structures and institutions To understand the conflicts in constitutional provisions To make them comprehend the state institutions in relation to extra constitutional environment.
UG-Politcal Science	Political Theory-II	Understand the various concepts in political theory and appreciate how they can be helpful to analyse crucial political issues Understand the significance of debates in political theory in exploring multiple perspectives to concepts, ideas and issues. Appreciate how these concepts and debates enrich

(2nd Sem)		political life and issues surrounding it.
	Politics in India-II	Understand the working of major political institutions in India Understand the major debates in Indian politics along the axes of caste, gender, region and religion Understand the changing nature of the Indian state and the contradictory dynamics of modern state power
UG-Politcal Science (3rd Sem)	International Relations-I	To make students understand the basic concepts in comparative politics, To make students classify the different political systems and historical context of modern governments, To enable students to have a comparative analysis of countries related to their political institutions and behaviour
	Public Administration-I	To enable students to learn the basic concepts related to public administration and its importance, To make students learn the major theories of public administration, To enable students to have an understanding of public policy and its formulation, To familiarize students with the major approaches and recent debates related to field of public administration.
UG-Politcal Science (4th Sem)	International Relations-II	To make students understand the key theoretical approaches in International relations, To familiarize students with the evolution of International state systems and its importance. To make students aware of the key theoretical debates in International relations To enable students to have an overall understanding of International relations in relation to twentieth century IR history
	Public Administration-II	To understand, comprehend and analyse the complex nature and functioning of the political systems, political institutions and corresponding issues to these both in a country specific case of India and cross-country perspectives. To demonstrate critical thinking about key issues of political system of different forms, political process and public policy. To use the contents and sub-units of the course as yardsticks for comparing these political systems and processes
	Western Political Thinkers	Students will familiar with western political thinkers and their contribution to political thought To know the political ideologies originated and developed in the western world
	Select Constitutions-I	Students will be able to understand the importance of

		constitutions This paper is an integral part of public services examinations Students will be introduced to the various types of constitutions and the forms of governments from different parts of the world
UG-Politcal Science (5th Sem)	Politics in North-East India	To introduce the students with the region and nature of its politics To engage them with historical development of the region To understand the contemporary developments of the region
	Contemporary Political Issues	To understand the contemporary political issues in India and abroad To know the causes and factors of various socio-political issues and state's response
	Rural Local Governance	This paper will help students understand the importance of grass-root political institutions in empowering people. This paper will highlight the complex challenges faced by PRIs in India and mechanisms involved to make it more participatory and inclusive in nature.
	Human Rights	To describe the basic concepts of human rights To comprehend different approaches regarding human rights To familiarise the role of UNO in the growth and development of human rights To describe different measures taken for the protection of human rights
UG-Politcal Science (6th Sem)	Indian Political Thinkers	To underline themes and issues in political thought of modern India. To compare and contrast positions of leading political thinkers in India on issues those are constitutive of modern India. To assess the relevance of political thought of modern India in understanding contemporary politics.
	Select Constitutions-II	Students will be able to understand the importance of constitutions; This paper is an integral part of public services examinations. Students will be introduced to the various types of constitutions and the forms of governments from different parts of the world
	Politics in North-East India	To introduce the students with the region and nature of its politics To engage them with historical development of the

		region To understand the contemporary developments of the region
	Contemporary Political Ideologies	To interpret ideas underlying traditions in modern political philosophy To analyze the debates and arguments of leading political philosophers of different philosophical traditions To appraise the relevance of modern political philosophy in understanding contemporary politics
	Urban Local Governance	This paper will help students understand the importance of grass-root political institutions in empowering people in urban areas. This paper will highlight the complex challenges faced by PRIs, District plannings in India and mechanisms involved to make it more participatory and inclusive in nature.
	Human Rights in India	To describe origin and development of human rights in India To comprehend different measures adopted by India for the protection and development of human rights To familiarise the emerging issues related to human rights

B.A. - POLITICAL SCIENCE (PASS COURSE)

Programme outcome

Course outcomes

Course	Course Title	Outcomes
1st Sem.	Political Theory-I	To introduce the idea of political theory and various approaches To enable the students to assess the contemporary trends of political theory To reconcile theory and practice in relation to democracy To introduce the idea of rights, liberty, equality, justice etc. To understand different perspective on state
2nd Sem.	Political Theory -II	
3rd Sem.	Politics in India-I	To acquaint students with constitutional design of state structures and institutions To understand the conflicts in constitutional provisions To make them comprehend the state institutions in relation to extra constitutional environment. Understand the working of major political institutions in India Understand the major debates in Indian politics along
4th Sem.	Politics in India -II	

		the axes of caste, gender, region and religion Understand the changing nature of the Indian state and the contradictory dynamics of modern state power
5th Sem.	Select Constitutions-I	Students will be able to understand the importance of constitutions; This paper is an integral part of public services examinations. Students will be introduced to the various types of constitutions and the forms of governments from different parts of the world
6th Sem.	Select Constitutions-II	

Gauhati University

Tourism & Travel Management(TTM)

Three years' degree course (Regular subject as per CBSC, Minor subject as per NEP 2020)

Objectives of the course-

The objectives of the course are to ensure that the students gain a wide range of the essential concepts of tourism. They get an overall picture of tourism destination at the local and the national level. Further the inclusion of management and On Job training prepares the students for jobs in the travel and tourism related companies, government as well as other private sectors. In addition, the field study prepares the students with a better understanding of the topics included in the syllabus.

Learning Outcomes of the course-

1. To make students gear up to work in the different field of tourism both in the private and the government sector.
2. To train them to become entrepreneurs and to create their own identity.
3. To create awareness in the society about the significance of tourism and its positive effects in the development of a nation.
4. To work ethically to develop the local tourist destinations in a professional way.
5. To understand the culture of the state as well the nation so as to preserve their identity for the economic upliftment.

BA Regular

Tourism and Travel Management

Semester I

Paper name- Fundamentals of Tourism

Paper code- TTM-RC-1016

Learning outcomes:

After studying this unit learners will be able to-

1.Understand the conceptual framework of Tourism.

2.Know the Historical dimensions and Modern trends in Tourism Industry.

3.Know the positive influencing factors of Tourism.

4.Understand the basic concepts of Tourism resources.

Semester II

Paper name- Tourism resources of Assam

Paper code- TTM-RC-2016

Learning outcomes

After studying this unit learners will be able to-

1.Know the physical background of Assam.

2.Know the various Tourism resources of Assam.

3.Understand the significance of Tourism resources in Tourism Industry.

Semester III

Paper name- Tourism planning, policy and Development

Paper code- TTM-RC-3016

Learning outcomes

After studying this unit learners will be able to-

1.Understand the meaning, significance and steps of Tourism planning & policy.

2.Know the Tourism policies of India.

3.Understand the various forms of Tourism planning.

4.Know the coordination between Tourism planning and Tourism destination &further its effects on Tourism life cycle.

Semester III (Skill paper)

Paper name- Tour Guiding Skills

Paper code- TTM-SE-3014

Learning outcomes

After studying this unit learners will be able

To-

1.Know the meaning and significance of Tourist guide.

2.Understand the functions and income source of Tourist guide.

3.Acquire skills for Tour Guiding professions.

Semester IV

Paper name- Tourism Organisation, Travel agency/Tour operator and Transport

Paper code- TTM-RC-4016

Learning outcomes

After studying this unit learners will be able

To-

1.Understand the functions of Tourism organisations.

2.Know the meaning and significance of Travel agency and Tour operator.

3.Understand the various functions of Travel agency &Tour operator.

4.Know the role of Travel agency/Tour operator in Tourism Industry.

5.Understand the Tourism transportation system.

Semester IV (Skill paper)

Paper name- Tour packaging Management

Paper code- TTM-SE-4014

Learning outcomes

After studying this unit learners will be able

To-

1.Know the meaning and importance of Package Tour.

2.Understand the various perspectives associated with package tour planning.

3.Prepare various forms of itineraries.

Semester V

Paper name- Practical on Map work

Paper code- TTM-RE-5016

Learning outcomes

After studying this unit learners will be able

To-

1.Understand the meaning of Maps and Map reading.

2.Acquire skills to identify the locations of different Tourist places in Map.

3.Know the map drawing and map reading methods.

Semester V (Skill paper)

Paper name- Practical on Computer skills in Tourism

Paper code- TTM-SE-5014

Learning outcomes

After studying this unit learners will be able

To-

1.Understand the fundamentals of Computer application and MS Office.

2.Know the basics of Internet and email.

3 Identify segments of Tourism industry where computer application can be applied.

4. Use the internet for online booking, e-marketing, itinerary designing and brochure making.

Semester V (Generic paper)

Paper name- Tourism resources of North East India & India

Paper code- TTM-RG-5016

Learning outcomes

After studying this unit learners will be able

To- 1. Understand the meaning and significance of Tourism resources.

2. Know the various categories of Tourism resources of North East India and India.

3.Learn the role of Tourism resources for uplifting a destination.

Semester VI

Paper name- Field visit and On the job training

Paper code- TTM-RE-6016

Learning outcomes

After studying this unit learners will be able

To-

1. Understand the meaning and importance of Field trip and On job training.
2. Acquire skills for organising a Tour.
3. Gain practical knowledge on Tourist destination.
4. Gain best industry practical knowledge at job training centre.
5. Understand the methods of report making.

Semester VI (Skill paper)

Paper name- Hospitality management.

Paper code- TTM-SE-6014

Learning outcomes

After studying this unit learners will be able

To-

1.Understand the Historical perspective of Hospitality Industry.

2. Know the categories, types and grading of Hotels.

3.Understand the various functions of Hotels.

4.Know the Hotel chains in India.

Semester VI (Generic paper)

Paper name- Tourism Marketing and Event management

Paper code- TTM-RG-6016

Learning outcomes

After studying this unit learners will be able

To-

1. Understand the concept and functions of Management.
2. Understand the concept and functions of Marketing.
3. Know the Event Industry.
4. Acquire skills for Event planning.

Programme Outcome of Botany Department

The B.Sc. Program in Botany cultivates botanical expertise and proficiency in students, nurturing various attributes and qualifications:

1. Knowledge Acquisition: Students acquire an extensive understanding of both the fundamental and applied aspects of Botany, delving into the intricate details of plant anatomy, physiology, taxonomy, and ecology.

2. Laboratory Proficiency: They develop essential skills for the meticulous and precise handling, culturing, and storage of plant specimens, as well as the safe management of laboratory chemicals specific to botanical research.

3. Interdisciplinary Awareness: Students recognize the intricate web of botanical sciences with other life sciences, appreciating the interdisciplinary nature of botany and its practical significance in various research areas.

4. Environmental Literacy: They grasp the profound impact of botanical principles on the environment, comprehending the ecological implications of plant life and complying with stringent regulatory requirements in biotechnology and microbiological research, all while upholding the highest ethical standards in scientific endeavours.

5. Scientific Logic: Students foster scientific logic within the realm of botany, honing their critical thinking and analytical reasoning skills, which are vital for effective problem-solving in plant-related research.

6. Independence in Thought: They cultivate independent thinking and the ability to synthesize knowledge from diverse disciplines, seamlessly integrating this knowledge into the broader context of Life Sciences, particularly the botanical realm.

7. Teamwork: Understanding the strengths of collaborative efforts, students appreciate the significance of working cohesively with individuals from diverse backgrounds of Botany, fostering a multidisciplinary approach to botanical research.

8. Global Perspective: They become well-versed in international botanical practices and emerging technologies utilized in the comprehensive study of plants, encompassing their morphology, physiology, genetics, and ecological roles.

9. Communication Skills: Students refine their oral and written communication skills, becoming adept at presenting ongoing botanical developments and crafting comprehensive reports that elucidate intricate botanical phenomena.

10. Ethical Awareness: They internalize a profound sense of ethical conduct in botanical research, adhering to rigorous work ethics, meticulously addressing ethical considerations inherent in botanical investigations, and upholding strict adherence to plagiarism policies.

11. Self-Motivated Scholars: Developing self-discipline, effective planning, organizational acumen, and astute time management skills, students emerge as motivated and responsible contributors to the botanical sciences.

Course Outcome: Choice Based Credit System

B. Sc. Botany (Honours)

Semester	Paper Code	Paper Title	Course Outcome
TDC 1st Semester (Honours)	BOT-HC-1016	Phycology and Microbiology	Upon completing "Phycology and Microbiology" (BOT-HC-1016), students will achieve a comprehensive understanding of microbial life forms and algae. They will grasp the scope of microorganisms in industry and the environment, along with microbial nutrition, growth, and metabolism. Additionally, students will explore the classification and characteristics of viruses, including replication processes, economic significance, and their role in plant diseases. In the realm of bacteria, students will learn about their discovery, general characteristics, various types, cell structure, nutritional modes, and modes of reproduction. They will also appreciate the economic impact of bacteria, particularly in agriculture and the production of alcohol and antibiotics. The course will delve into algae, covering their general characteristics, ecology, thallus organization, cell structure, reproduction, classification, and evolutionary significance. Students will recognize the vital role of algae in the environment, agriculture, biotechnology, industry, and the economic importance of diatoms. The knowledge gained in this course will empower students to comprehend, analyze, and contribute to research and conservation efforts related to microorganisms and algae.
TDC 1st Semester (Honours)	BOT-HC-1026	Biomolecules and Cell Biology	Upon completion of "Biomolecules and Cell Biology," students will gain a profound understanding of essential biochemistry and cell biology concepts. They will comprehend chemical bonds, water properties, pH, and biomolecule classification. Grasp thermodynamics laws, free energy, and ATP's role as an energy currency. Recognize enzyme structures, classifications, active sites, and factors affecting activity. Differentiate prokaryotic and eukaryotic cells, learn about endosymbiotic theory, and understand organelles' structures and functions. Understand cell cycle phases, mitosis, meiosis, and regulatory mechanisms. Practical skills include qualitative tests for biomolecules, cell structure

			studies, protoplasmic streaming observation, cell counting, cytochemical staining, and mitosis/meiosis examination. This course provides a strong foundation for comprehending vital biological processes and performing practical experiments effectively.
TDC 2nd Semester (Honours)	BOT-HC-2016	Mycology and Phytopathology	Upon completing the "Mycology and Phytopathology" course, students will gain a comprehensive understanding of general fungal characteristics, classification, and cell structure. Differentiating major fungal groups, recognizing characteristic features, life cycles, and practical examples of the groups, understanding characteristics and thallus organization, understanding lichen and mycorrhiza occurrences, characteristics, and significance. Exploring fungi's roles in biotechnology, food, pharmaceuticals, agriculture, mycotoxins, and biological control. Gaining knowledge of disease terms, symptoms, etiology, and control strategies. Identifying examples of bacterial, viral, and fungal plant diseases. Practical components will develop hands-on skills in studying fungal specimens, their life stages, and associated diseases, preparing students for careers in research, agriculture, biotechnology, and environmental sciences.
TDC 2nd Semester (Honours)	BOT-HC-2026	Archegoniate	Upon completing the Archegoniate course (BOT-HC-2026), students understand the common features of archegoniates and their role in the transition to terrestrial life, as well as the concept of alternation of generations. Comprehend bryophytes, including their general characteristics, adaptations to land, classification, and diverse thallus structures. Conduct detailed type studies of key bryophytes like Riccia, Marchantia, Anthoceros, Sphagnum, and Polytrichum, focusing on morphology, anatomy, reproduction, and evolutionary trends. Recognize the ecological and economic significance of bryophytes. Gain knowledge of pteridophytes, their general characteristics, classification, and early land plants (Cooksonia and Rhynia). Conduct in-depth type studies of pteridophytes such as Psilotum, Lycopodium, Selaginella, Equisetum, Pteris, and Marsilea, emphasizing classification, morphology, anatomy, reproduction, and important concepts like apogamy, apospory, heterospory, and telome

			theory. Understand their ecological and economic relevance. Explore gymnosperms, including their general characteristics, family-level classification, and detailed studies of Cycas, Pinus, Ginkgo, and Gnetum, with a focus on morphology, anatomy, and reproduction. Recognize their ecological and economic importance. Develop practical skills to analyze the morphology of archegoniate plants, prepare slides, and identify key features. Apply theoretical knowledge to real-world scenarios, including the ecological and economic roles of archegoniates. This course provides students with a comprehensive understanding of archegoniates, encompassing bryophytes, pteridophytes, and gymnosperms, enabling them to appreciate these plants' significance in terrestrial ecosystems and human activities.
TDC 3rd Semester (Honours)	BOT-HC-3016	Morphology and Anatomy of Angiosperm	Upon completing the Morphology and Anatomy of Angiosperms course (BOT-HC-3016), students will understand the morphological characteristics of angiosperms, including inflorescence, stamens, carpels, and fruits, and appreciate their role in plant classification, along with concepts like telome theory and phyllode theory. Grasp the scope and practical applications of plant anatomy, including its relevance in systematics, forensics, and pharmacognosy. Gain insight into the internal organization of the plant body, including the three tissue systems and cell types, and understand embryogenic development, polarity, cytodifferentiation, and organogenesis. Comprehend plant tissues, their classification, and specialized features like tracheary elements, sieve elements, pits, plasmodesmata, and various cellular structures. Master concepts related to apical meristems and their evolution theories, as well as the structure of stems, leaves, and roots in dicots and monocots. Develop a comprehensive understanding of vascular cambium, wood, periderm, and protective systems in plants, including their structure, functions, and ecological adaptations. Acquire practical skills for studying various plant structures, from inflorescences and fruits to anatomical details through slides and specimens. This course equips students with in-depth knowledge of angiosperm morphology and anatomy, enabling them to analyze and appreciate the intricate structures

			and functions of plants in both theoretical and practical contexts.
TDC 3rd Semester (Honours)	BOT-HC-3026	Economic Botany	Upon completing the Economic Botany course (BOT-HC-3026), students will understand the origins of cultivated plants, centers of origin, and the importance of crop genetic diversity, as highlighted in Vavilov's work. Comprehend cereals like wheat and rice, including their origins, morphology, processing, and uses, along with a brief overview of millets. Recognize legumes such as chickpea, pigeon pea, and fodder legumes, understanding their origins, morphology, and diverse uses, and appreciating their significance in both human and ecosystem contexts. Familiarize themselves with sources of sugars and starches, such as sugarcane and potatoes, including their morphology, propagation, and uses. Explore the world of spices, with an emphasis on important spices, their families, and economic importance, especially fennel, saffron, clove, and black pepper. Acquire knowledge about beverages, including tea and coffee, their plant morphology, processing methods, and uses. Understand sources of oils and fats, including extraction methods, classifications, uses, and health implications of groundnut, coconut, linseed, soybean, mustard, and coconut. Gain insights into essential oils and their uses. Comprehend natural rubber, specifically Para-rubber, covering tapping methods, processing, and uses. Explore drug-yielding plants, with a focus on therapeutic and habit-forming drugs, including Cinchona, Digitalis, Papaver, Cannabis, and tobacco. Understand their morphology, processing, uses, and health hazards. Gain insights into timber plants, with a general overview and specific reference to teak and pine. Learn about fibers, their classification based on origin, and study cotton, coir, and jute, including their morphology, extraction, and uses. In the practical component, students will develop hands-on skills for identifying and studying economic plants, enabling them to apply their knowledge practically and make informed assessments of these valuable botanical resources.
TDC 3rd Semester (Honours)	BOT-HC-3036	Genetics	Upon completing the Genetics course (BOT-HC-3036), students will acquire a comprehensive understanding of Mendelian genetics, including its historical context and principles of

			inheritance. They will be proficient in applying the chromosome theory of inheritance, probability, and pedigree analysis. Students will grasp concepts like incomplete dominance, codominance, multiple alleles, lethal alleles, epistasis, pleiotropy, recessive and dominant traits, penetrance, expressivity, and polygenic inheritance. Comprehend extrachromosomal inheritance, illustrated by examples like chloroplast inheritance, mitochondrial inheritance, and maternal effects. Master the concepts of linkage, crossing over, and chromosome mapping, enabling them to calculate recombination frequencies and conduct genetic mapping experiments. Explore variations in chromosome number and structure, including deletion, duplication, inversion, translocation, and their implications. Understand gene mutations, their types, molecular basis, and the role of mutagens, with an emphasis on practical mutation detection techniques and DNA repair mechanisms. Differentiate between classical and molecular gene concepts, including relevant terminology. Develop a grasp of population and evolutionary genetics, including the Hardy-Weinberg Law, factors influencing genetic variation, and their implications for speciation. In the practical component, students will gain hands-on experience in meiosis, Mendelian genetics, chromosome mapping, gene interaction, and the study of chromosomal aberrations, enhancing their ability to apply genetic principles in practical settings.
TDC 4th Semester (Honours)	BOT-HC-4016	Molecular Biology	Upon completing the Molecular Biology course (BOT-HC-4016), students will understand the historical context of nucleic acids as genetic information carriers, including seminal experiments like Griffith's transformation and Hershey & Chase's viral replication study. Comprehend the structures of DNA and RNA, tracing the historical journey from Miescher to Watson and Crick. Learn about the salient features of the DNA double helix, denaturation, and renaturation. Explore DNA organization in various biological entities, including prokaryotes, viruses, eukaryotes, and organelles like mitochondria and chloroplasts. Understand chromatin structure, encompassing euchromatin and heterochromatin. Master the intricacies of DNA replication, covering the chemistry of DNA

			synthesis, bidirectional, semi-conservative, and semi-discontinuous replication, RNA priming, and key enzymes involved. Grasp the central dogma of molecular biology and genetic code deciphering experiments. Explore transcription in prokaryotes and eukaryotes, with a focus on transcriptional regulation and practical examples. Understand gene silencing mechanisms. Comprehend RNA processing, modification, and transport, including intron-exon concepts, spliceosome machinery, alternative splicing, and mRNA processing. Master translation, including ribosome structure, tRNA charging, protein synthesis steps, fidelity, inhibitors, and post-translational modifications. In practical sessions, students will gain hands-on experience in DNA isolation, estimation, and visual understanding of replication, RNA polymerase structures, spliceosome assembly, splicing mechanisms, and ribozyme functions, enhancing their molecular biology research skills.
TDC 4th Semester (Honours)	BOT-HC-4026	Plant Ecology and Phytogeography	Upon completing the Plant Ecology and Phytogeography course (BOT-HC-4026), students will develop a strong foundation in fundamental ecology concepts, understanding the interplay between organisms and their environment. Acquire comprehensive knowledge of soil, including its formation, composition, and the role of climate in shaping it. Comprehend the importance of water in various forms, from atmospheric moisture to precipitation and the hydrological cycle. Explore how plants adapt to environmental factors like light, temperature, wind, and fire. Understand biotic interactions, including trophic relationships, symbiosis, and ecological pyramids. Master population ecology, including growth dynamics and regulatory mechanisms. Gain insights into plant communities, eco-tones, and succession dynamics. Grasp ecosystem structure, function, and energy flow, along with biogeochemical cycles. Learn about phytogeography principles, continental drift, and vegetation types, with a focus on Northeast India. Develop practical skills in environmental measurement, soil and water analysis, plant adaptation assessment, and vegetation analysis through hands-on activities and field visits.

TDC 4th Semester (Honours)	BOT-HC-4036	Plant Systematics	Upon completing the Plant Systematics course (BOT-HC-4036), students will recognize the significance of plant systematics in plant identification, classification, and nomenclature. Understand the principles and rules of botanical nomenclature, including ranks, author citation, typification, and the principle of priority. Explore the historical development of systems of classification, from Theophrastus to modern contributions like the APG classification. Gain proficiency in numerical taxonomy and cladistics, including character weighting, coding, and the construction of phenograms and cladograms. Comprehend the terms and concepts related to angiosperm phylogeny, such as monophyly, paraphyly, and polyphyly, and learn to illustrate evolutionary relationships using phylogenetic trees and cladograms. Develop in-depth knowledge of selected angiospermic families, including their vegetative and floral characteristics, floral diagrams, and systematic positions. Acquire practical skills in plant specimen preparation, including mounting dried and pressed plant specimens with herbarium labels. Enhance their fieldwork capabilities through visits to natural habitats and academic or research institutions, gaining practical experience in plant identification and vegetation assessment.
TDC 5th Semester (Honours)	BOT-HC-5016	Reproductive Biology of Angiosperms	Upon completing the Reproductive Biology of Angiosperms course (BOT-HC-5016), students will gain an understanding of the historical contributions of scientists in reproductive biology. Explore the development of reproductive structures in plants, from flower induction to genetic and molecular aspects. Learn about anther and pollen biology, including microsporogenesis, pollen wall structure, viability, and abnormalities. Comprehend the structure and types of ovules, including special structures and the development of female gametophytes. Understand pollination types, stigma and style structure, pollen tube growth, and double fertilization. Explore self-incompatibility and methods to overcome it, including in vitro pollination. Study embryo, endosperm, and seed development, including types of embryos and seed dispersal. Gain knowledge about polyembryony and apomixis. Practical skills will include studying anther development, pollen morphology, ovule types,

			female gametophyte structure, embryo development, pollen viability, and germination. Students will also learn pollination techniques and seed dissection.
TDC 5th Semester (Honours)	BOT-HC-5026	Plant Physiology	Upon completing the Plant Physiology course (BOT-HC-5026), students will understand plant-water relations, including water potential components, absorption, and transpiration mechanisms, and analyze factors affecting transpiration. Gain knowledge of mineral nutrition, essential and beneficial elements, nutrient deficiency symptoms, and ion uptake mechanisms. Explore sugar translocation in the phloem, the Pressure-Flow Model, phloem loading/unloading, and source-sink relationships. Learn about plant growth regulators (auxins, gibberellins, cytokinins, abscisic acid, ethylene, brassinosteroids, jasmonic acid), their chemical nature, bioassay methods, and roles. Understand flowering physiology, including photoperiodism, florigen, vernalization, and seed dormancy. Gain insights into photoreceptors (phytochrome, cryptochromes, phototropins) and their roles in photomorphogenesis. Practical skills include determining osmotic potential, water potential, studying transpiration, calculating stomatal indices, conducting IAA bioassays, and demonstrating physiological processes like transpiration and fruit ripening/rooting.
TDC 5th Semester (Honours)	BOT-HE-5016	Natural Resource Management	Completing the Natural Resource Management course (BOT-HE-5016) will equip students with a comprehensive understanding of resource conservation and sustainable utilization. They will learn about various natural resources, including land, water, biological resources, forests, and energy sources. The course emphasizes the concept of sustainable resource management, considering economic, ecological, and socio-cultural approaches. Students will explore land utilization practices like agriculture, pastoralism, horticulture, and silviculture, along with strategies to combat soil degradation. They will delve into water resources, covering freshwater, marine, estuarine, and wetland ecosystems, and study threats and management strategies. The course includes topics on biodiversity, bioprospecting, intellectual property rights, and conservation efforts. Forest conservation, energy resource classification, and contemporary management practices like

			Environmental Impact Assessment, GIS, and Ecological Footprint analysis are also part of the curriculum. Students will gain insights into national and international resource conservation initiatives. Practical sessions involve waste estimation, forest cover analysis, ecological footprint calculation, and GPS/GIS utilization for mapping. This knowledge prepares students for roles in environmental conservation and sustainable resource management.
TDC 5th Semester (Honours)	BOT-HE-5026	Horticultural Practices and Post-Harvest Technology	The Horticultural Practices and Post-Harvest Technology course (BOT-HE-5026) is designed to provide students with a comprehensive understanding of horticulture. This six-credit course consists of both theoretical and practical components. In the theoretical part, students are introduced to the concept of horticulture and its significance in rural economies, employment generation, and food security. They learn about various types of ornamental plants, fruit and vegetable crops, and their production, management, and marketing. The course covers essential horticultural techniques such as fertilization, weed control, irrigation methods, and propagation. Landscaping and garden design are explored, along with floriculture, post-harvest technology, disease control, and integrated pest management. Students also gain insights into germplasm conservation, micropropagation, and intellectual property rights in horticulture. The practical component includes field visits to gardens, crop sites, nurseries, and horticultural fields, providing hands-on experience. Upon completing this course, students will be well-equipped to pursue careers in horticulture, landscaping, and post-harvest management, contributing to sustainable food production and urban beautification.
TDC 6th Semester (Honours)	BOT-HC-6016	Plant Metabolism	Upon completing the Plant Metabolism course (BOT-HC-6016), students will develop a strong foundation in metabolic concepts, including anabolic and catabolic pathways, enzyme regulation, and coenzyme functions. Acquire in-depth knowledge of carbon assimilation processes, including photosynthetic pigments, electron transport, and various photosynthetic pathways, enabling them to understand how plants convert light energy into chemical energy. Comprehend carbohydrate metabolism, focusing on the synthesis and breakdown of sucrose and

			starch, essential for understanding energy storage and utilization in plants. Explore carbon oxidation pathways, such as glycolysis and the TCA cycle, and grasp their regulation and roles in energy production. Gain insights into ATP synthesis mechanisms, emphasizing chemiosmotic processes and the role of ATP in cellular energy transfer. Understand lipid metabolism, including triglyceride synthesis and breakdown, essential for comprehending energy reserves and utilization. Study nitrogen metabolism, covering nitrate assimilation, biological nitrogen fixation, and ammonia assimilation, critical for plant growth and development. Learn about signal transduction mechanisms, providing insights into how plants respond to external cues and regulate metabolic processes. In practical sessions, students will perform experiments related to photosynthetic pigment analysis, sugar and protein estimation, and chromatography techniques to reinforce theoretical knowledge and develop laboratory skills.
TDC 6th Semester (Honours)	BOT-HC-6026	Plant Biotechnology	Upon completing the Plant Biotechnology course (BOT-HC-6026), students will to develop a deep understanding of plant tissue culture techniques, including nutrient and hormone requirements, totipotency, organogenesis, and applications like micropropagation, virus elimination, and germplasm conservation. Learn about crucial aspects such as restriction endonucleases, cloning vectors, and gene cloning techniques, enabling them to manipulate DNA for various purposes. Explore methods of gene transfer like Agrobacterium-mediated transformation, electroporation, microinjection, and microprojectile bombardment, along with their applications. Understand how biotechnology transforms agriculture, including genetically engineered pest-resistant and herbicide-resistant crops, improved horticultural varieties, and the production of vital products like human growth hormone and insulin. Gain insights into the ethical and safety considerations associated with biotechnology. Through practical sessions, students will gain hands-on experience in plant tissue culture, genetic engineering, and molecular biology techniques. This knowledge and practical exposure will prepare them for careers in biotechnology, research, and agriculture,

			where they can contribute to advancements in crop improvement and biotechnological innovations.
TDC 6th Semester (Honours)	BOT-HE-6016	Industrial and Environmental Microbiology	The course "Industrial and Environmental Microbiology" (BOT-HE-6016) is a comprehensive six-credit program encompassing theory and practical components. In the theoretical section, students explore the diverse applications of microorganisms in industry and the environment. They delve into bioreactors, fermentation processes, and various types of fermentations, including solid-state and liquid-state. The course covers bioreactor components and types, from laboratory-scale to production-scale fermenters. Students also gain practical exposure by visiting educational institutes or industries with industrial-scale fermenters. Microbial production of industrial products is a core focus, including microorganisms involved, fermentation conditions, downstream processing, and applications. Hands-on experience is provided in microbial fermentations for enzyme, organic acid, alcohol, and antibiotic production. The course also covers industrial enzymes, enzyme immobilization, and their applications. The role of microbes in maintaining environmental quality is explored, especially in water and wastewater treatment. Additionally, the course addresses microbial impacts on agriculture and soil remediation, including biological fixation and bioremediation. In the practical component, students learn essential microbiological techniques such as sterilization, media preparation, and pure culture methods. This course equips students with knowledge and skills to apply microbiology principles in industrial processes and environmental management.
TDC 6th Semester (Honours)	BOT-HE-6036	Project work/Dissertation	The "Project Work/Dissertation" course (BOT-HE-6036) is a vital component of the academic curriculum, providing students with a platform to conduct independent research in the field of botany. During this course, students select a specific research topic within botany, review relevant literature, design and execute experiments or data collection, analyze findings, and document their research in a comprehensive report. The key objectives include fostering

			research skills, critical thinking, and problem-solving abilities in students. They learn to apply theoretical knowledge to practical scenarios and contribute to the advancement of botanical science. Presentation and communication skills are honed as students often present their findings to peers or faculty. Ultimately, this course empowers students to engage in original research, make meaningful contributions to the field, and prepare for future careers in academia, research institutions, or industries related to botany and environmental science. Successful completion of a dissertation demonstrates a student's proficiency in scientific research and is a significant component of their academic evaluation.

Course Outcome: Choice Based Credit System

B. Sc. Botany (Regular)

Semester	Paper Code	Paper Title	Course Outcome
TDC 1st Semester	BOT-RC-1016	Biodiversity (Microbes, Algae, Fungi and Archegoniate)	The "Biodiversity (Microbes, Algae, Fungi, and Archegoniate)" course (BOT-RC-1016) is a comprehensive study of various aspects of biodiversity within the microbial, algal, fungal, and archegoniate realms. This course comprises both theory and practical components. In the theoretical section, students will be able to explore the fascinating world of microorganisms, including viruses and bacteria, learning about their structure, replication, economic importance, and ecological roles. Algae, ranging from simple unicellular forms to complex multicellular species, are studied, emphasizing their classification, morphology, and ecological significance. The course also delves into the diverse world of fungi, including their classification, reproduction, and ecological roles. Additionally, students are introduced to archegoniates, emphasizing their transition to land and alternation of generations. The practical component of the course provides hands-on experience with microscopy and laboratory techniques. Students examine a variety of specimens, conduct Gram staining, and study the morphology and anatomy of microorganisms,

			algae, fungi, and archegoniate plants. This practical exposure helps students develop essential skills in specimen analysis and microscopy. Overall, this course will equip the students with a thorough understanding of biodiversity among these biological groups, laying a strong foundation for further studies in botany and related fields.
TDC 2nd Semester	BOT-RC-2016	Plant Ecology and Taxonomy	The "Plant Ecology and Taxonomy" course (BOT-RC-2016) offers students a comprehensive understanding of plant ecology and taxonomy. This course consists of both theoretical and practical components. In the theoretical section, students are introduced to the fundamentals of plant ecology, covering ecological factors such as soil, water, light, and temperature. They learn about plant communities, ecotones, succession processes, and ecosystem structure, including energy flow, trophic organization, and biogeochemical cycling. The course also explores phytogeography, focusing on biogeographical zones and endemism. Furthermore, students gain insights into plant taxonomy, starting with the basics of identification, classification, and nomenclature. They explore the role of herbaria and botanical gardens, documentation methods, and keys for plant identification. Taxonomic evidence from palynology, cytology, phytochemistry, and molecular data is discussed. Students learn about the taxonomic hierarchy, botanical nomenclature principles and rules, and classification types, including artificial, natural, and phylogenetic systems.In the practical component, students engage in hands-on activities related to plant ecology and taxonomy. They study instruments for measuring microclimatic variables, explore adaptations of hydrophytes and xerophytes, and conduct quantitative analyses of herbaceous vegetation. Additionally, students practice mounting dried and pressed plant specimens, gaining valuable experience in herbarium techniques. Overall, this course equips students with the knowledge and practical skills needed to understand plant ecology, taxonomy, and the relationships between plants and their environment.
TDC 3rd Semester	BOT-RC-3016	Plant Anatomy and Embryology	The "Plant Anatomy and Embryology" course (BOT-RC-3016) provides students with an in-depth understanding of plant tissues, organs, and

			reproductive structures. This course consists of both theoretical and practical components. In the theoretical section, students learn about meristematic and permanent tissues, including root and shoot apical meristems, as well as simple and complex tissues. They will be able to explore the structure of dicot and monocot roots, stems, and leaves. The course covers secondary growth, focusing on the vascular cambium, its structure, and seasonal activity, along with the formation of heartwood and sapwood. Students gain insights into adaptive and protective systems, including the epidermis, cuticle, and stomata, with a general account of adaptations in xerophytes and hydrophytes. The structural organization of flowers, anthers, pollen, ovules, and embryo sacs is discussed, along with the mechanisms of pollination, double fertilization, seed structure, appendages, and dispersal mechanisms. The course also covers embryo and endosperm types, structure, and functions, as well as apomixis and polyembryony. In the practical component, students engage in hands-on activities related to plant anatomy and embryology. They will study meristems, tissues (parenchyma, collenchyma, and sclerenchyma), stem and root anatomy in monocots and dicots, leaf structure, adaptive anatomy in xerophytes and hydrophytes, and the structure of anthers, tapetum, ovules, female gametophytes, and embryo/endosperm. Students will also be able to explore pollination types and seed dispersal mechanisms, including various appendages. Overall, this course will equip the students with the knowledge and practical skills needed to understand plant anatomy, reproductive structures, and their adaptations.
TDC 4th Semester	BOT-RC-4016	Plant Physiology and Metabolism	"Plant Physiology and Metabolism" (BOT-RC-4016) is a comprehensive course that explores key plant physiological processes. Students learn about plant-water relations, mineral nutrition, phloem translocation, photosynthesis, respiration, enzymes, nitrogen metabolism, and plant growth regulators. Additionally, the course covers plant responses to light and temperature. The practical component involves hands-on experiments such as osmotic potential determination, transpiration studies, stomatal index calculations, enzyme activity investigations, and photosynthesis experiments. Demonstrations cover topics like bolting and

			auxin-induced rooting. This course provides students with a deep understanding of how plants function and adapt to their environment, serving as a strong foundation for advanced studies in plant biology and ecology.
Discipline Specific Elective Papers			
TDC 5th Semester	BOT-RE-5016	Cell and Molecular Biology	"Cell and Molecular Biology" (BOT-RE-5016) is a comprehensive course covering cellular and molecular processes. The theory component encompasses biology techniques, cell fundamentals, organelles, membranes, cell cycles, genetic material, transcription, and gene expression regulation. The practical component involves hands-on experiments and microscopy studies, including cell size measurement, mitosis and meiosis, plasmolysis, DNA packaging, and karyotyping. This course equips students with a strong foundation in cell and molecular biology, preparing them for advanced studies and research.
TDC 5th Semester	BOT-RE-5026	Economic Botany and Biotechnology	It is a comprehensive course that delves into economically vital plants, exploring their origins, characteristics, and practical uses. It also introduces biotechnology fundamentals. Key topics include crop origins, morphology, and applications, spanning cereals like wheat, legumes like gram and soybean, and spices like clove and black pepper. The course covers beverages like tea, oil-yielding plants with a focus on groundnut, fiber-yielding plants such as cotton, and plant tissue culture techniques. Additionally, it delves into advanced biotechnological tools, including DNA fingerprinting, PCR, and molecular diagnosis. Practical components involve hands-on activities, providing students with essential skills for careers in plant science and biotechnology.
TDC 5th Semester	BOT-RE-5036	Genetics and Plant Breeding	In the course "Genetics and Plant Breeding" (BOT-RE-5036), students will embark on a comprehensive journey through the fascinating world of genetics and its pivotal role in plant biology. Over 60 lectures, they will delve into the historical origins of genetics, learning about Gregor Mendel's groundbreaking work. Students will gain a profound understanding of essential genetic terminologies, Mendelian laws, and how they apply to various inheritance patterns. Through extensive coursework, they will become

			proficient in calculating modified Mendelian ratios, employing chi-square analysis, and conducting pedigree evaluations. They will explore diverse topics, from cytoplasmic inheritance to the chromosome theory of inheritance. Additionally, they will unravel the mysteries of sex determination, sex-linked inheritance, linkage, and crossing over. The course will not only cover the theoretical aspects of genetics but also delve into its practical applications in plant breeding. Students will grasp the objectives and methodologies of crop improvement, including the role of mutations, polyploidy, and biotechnology. Practical skills will be honed through hands-on exercises in Mendelian genetics, chromosome mapping, and the analysis of aneuploidy. By course completion, students will be well-equipped to apply their genetic knowledge to real-world scenarios, making informed decisions in plant breeding and research.
TDC 6th Semester	BOT-RE-6016	Analytical Techniques in Plant Sciences	Upon successful completion of the BOT-RE-6016 course on Analytical Techniques in Plant Sciences, the students will have a basic understanding of Microscopy, where the students will be able to comprehend the principles and applications of microscopy techniques, including light microscopy, fluorescence microscopy, confocal microscopy, and electron microscopy. They will be able to utilize fluorochromes for various applications, such as chromosome banding and FISH. The students will get clear understanding of cell fractionation techniques, including centrifugation, sucrose density gradient, CsCl2 gradient, analytical centrifugation, and ultracentrifugation. They will effectively identify and use marker enzymes. They will be able to grasp the use of radioisotopes in biological research and apply this knowledge in auto-radiography and pulse-chase experiments, spectrophotometry principles to analyze biological samples in research effectively. The students will also be able to understand the principles of chromatography and proficiently apply various chromatographic techniques, including paper chromatography, column chromatography, TLC, GLC, HPLC, ion-exchange chromatography, molecular sieve chromatography, and affinity chromatography, mass spectrometry, X-ray diffraction, and X-ray

			crystallography techniques for characterizing proteins and nucleic acids. They will perform electrophoresis methods, including AGE, PAGE, and SDS-PAGE, statistical methods to analyze and interpret biological data. They will understand data representation, measures of central tendency, measures of dispersion, and perform chi-square tests for goodness of fit, demonstrate proficiency in various practical techniques, including blotting techniques (Southern, Northern, and Western), DNA fingerprinting, DNA sequencing, PCR, ELISA, thin-layer chromatography, chloroplast isolation, pigment separation, protein concentration estimation, and separation of DNA and proteins using PAGE and AGE. This will enable the students to apply the learned analytical techniques to address real-world problems and challenges in plant sciences, including plant genetics, physiology, and biotechnology. By the course's conclusion, students will possess a strong foundation in analytical techniques relevant to plant sciences, equipping them to contribute effectively to research and development in this field.
TDC 6th Semester	BOT-RE-6026	Dissertation	The "Project Work/Dissertation" course (BOT-RE-6026) is a vital component of the academic curriculum, providing students with a platform to conduct independent research in the field of botany. During this course, students select a specific research topic within botany, review relevant literature, design and execute experiments or data collection, analyze findings, and document their research in a comprehensive report. The key objectives include fostering research skills, critical thinking, and problem-solving abilities in students. They learn to apply theoretical knowledge to practical scenarios and contribute to the advancement of botanical science. Presentation and communication skills are honed as students often present their findings to peers or faculty. Ultimately, this course empowers students to engage in original research, make meaningful contributions to the field, and prepare for future careers in academia, research institutions, or industries related to botany and environmental science. Successful completion of a dissertation demonstrates a student's proficiency in scientific research and is

			a significant component of their academic evaluation.
Skill Enhancement Papers			
TDC 3rd Semester	BOT-SE-3014	Biofertilizers	Upon successful completion of the Biofertilizers course, students will gain comprehensive knowledge of various microorganisms used as biofertilizers, including *Rhizobium*, *Azospirillum*, *Azotobacter*, cyanobacteria (blue-green algae), and mycorrhizal associations. They will understand the isolation, identification, and mass multiplication techniques for these biofertilizers. Students will analyze crop responses to biofertilizer inoculation, with a specific focus on *Azotobacter's* impact on agricultural productivity. They will appreciate the role of biofertilizers in sustainable agriculture, particularly in nitrogen fixation, phosphorus nutrition, and enhancing crop growth and yield through cyanobacteria, *Azolla*, and mycorrhizal associations. Furthermore, the learners will grasp organic farming techniques, such as green manuring, organic fertilizers, biocompost making, and vermicomposting, for environmentally friendly agriculture. And at last, they will be prepared for practical field applications, promoting soil health and sustainable crop production. This course will empower students to contribute to sustainable agricultural practices and environmentally conscious farming.
TDC 4th Semester	BOT-SE-4014	Nursery and Gardening	Upon completing the Nursery and Gardening course, students will achieve a comprehensive set of skills and knowledge in horticultural practices. They will first understand the fundamentals of nursery management, including its objectives and the infrastructure needed for successful operations. Students will gain insights into seed science, learning about seed structures, dormancy, and storage techniques, as well as the importance of seed testing and certification in quality assurance. The course will also provide students with expertise in vegetative propagation methods such as air-layering and cutting, along with the crucial aspects of hardening and the role of specialized structures like greenhouses. They will be able to explore the art of gardening and landscaping, covering everything from design principles to practical operations like soil preparation, fertilization, irrigation, and pest management. Moreover, the course will offer

			hands-on experience in cultivating various vegetables and guide students through seed selection, sowing, transplanting, and harvesting. It will also address the essential aspects of storage and marketing procedures for vegetable produce. Overall, this course will equip the students with the practical skills and theoretical knowledge needed for successful nursery and gardening practices, making them well-prepared for careers in horticulture, agriculture, landscaping, and related fields. They will contribute to creating sustainable and aesthetically pleasing environments.
TDC 5th Semester	BOT-SE-5024	Plant Diversity and Human Welfare	The course in Plant Diversity and Human Welfare, designated as BOT-SE-5024, offers students a comprehensive understanding of the critical relationship between plant diversity and human well-being. By the end of this course, students will achieve several key outcomes. They will acquire an in-depth comprehension of the various dimensions of plant diversity, including genetic, species, and ecosystem diversity. Additionally, students will grasp the multifaceted values of biodiversity, such as ethical and aesthetic considerations, as well as the precautionary principle. They will become proficient in methodologies for evaluating biodiversity and comprehending the diverse uses of plants and microbes. Furthermore, the students will be able to analyze the detrimental factors leading to biodiversity loss, including genetic and species diversity. They will also gain insights into conservation strategies, both in situ and ex situ, and recognize the societal aspects associated with conservation efforts. Lastly, the course will equip students with a profound appreciation of forestry, plant utilization, and sustainable practices, encompassing avenue trees, ornamental plants, alcoholic beverages, fruits, nuts, and wood. This knowledge will enable students to contribute effectively to biodiversity preservation and sustainable human development.
TDC 6th Semester	BOT-SE-6024	Mushroom Culture Techniques	The BOT-SE-6024 course on Mushroom Culture Technology is designed to impart a comprehensive understanding of mushroom cultivation and its applications. Upon completing this course, students will achieve several significant learning outcomes. Firstly, students

			will grasp the historical context and nutritional significance of edible mushrooms, including the ability to distinguish between edible and poisonous varieties. The course delves into the cultivation techniques for key edible mushrooms like *Pleurotus sajor-caju*, *P. ostreatus* etc., prevalent in India. The students will gain practical expertise in mushroom cultivation technology, covering infrastructure setup, substrate selection, sterilization, spawn preparation, and bed formation. The curriculum emphasizes sustainable and cost-effective methods for mushroom production, including composting technology. Furthermore, students will learn about mushroom storage methods, nutritional value, and food preparation. They will also gain insights into research centers and understand the economic aspects, such as cost-benefit analysis, marketing, and export potential, associated with mushroom cultivation. In summary, this course will equip the students with the knowledge and skills to engage in edible mushroom cultivation, preservation, and utilization, contributing to both personal consumption and commercial ventures in agriculture and nutrition.

DEPARTMENT OF CHEMISTRY
Kaliabor College

PROGRAMME OUTCOME:

The expected outcome of the course is to equip students with the concepts, principles, theories and practical applications of Chemistry to facilitate the students in pursuing their higher studies in chemistry, to boost their career and employment options and to apply chemistry in their everyday life.

The programme encourages the students towards logical thinking and also to think outside of the box so as to enable them to make correct decisions when encountered with different challenges in life. Some of programme outcomes are highlighted below-

PO-1: The syllabi of the B.Sc. Chemistry course are discretely classified to give stepwise advancement of the subject knowledge right through the three years of undergraduate course. The branches of Chemistry such as Organic Chemistry, Inorganic Chemistry, Physical

Chemistry and Analytical Chemistry expose the diversified aspects of chemistry where the

students experience a broader outlook of the subject.

PO-2: Students will learn to estimate inorganic salt mixtures and organic compounds both qualitatively and quantitatively using the classical methods of analysis in practical classes. Students also learn physical properties of some compounds viz. PH, conductivity, colorimetry, optical activity measurements.

PO-3: Students will grasp the mechanisms of different types of reactions both organic and inorganic and will try to predict the products of unknown reactions.

PO-4: The practical exercises done in the laboratories impart the students about the Knowledge of various chemical reagents and reactions. Thereby, done their skills of handling the corrosive, poisonous, explosive and carcinogenic chemicals making themselves employable in any kind of chemical industries. They are also trained about the adverse effects of the obnoxious chemicals and the first aid treatment.

PO-5: Global level research opportunities to pursue Ph.D. Programme targeted approach of CSIR-NET, GATE etc.

PO-6: Enormous job opportunities at all level of chemical, pharmaceutical, food products, Oil and Cosmetic industries.

PO-7: There is a scope of placements in Research & Development and synthetic division of polymer industries & Allied Division.

LEARNING OUTCOMES OF THE CBCS COURSE OF CHEMISTRY (HONS.)
Department of chemistry, Kaliabor College

Learning outcomes are measurable statements of about what students know be able to do as a result of taking a course.

The learning outcomes of the honours course are described bellow-

SEMESTER – (I)

Paper:- Inorganic Chemistry

In inorganic chemistry students would have clear understanding in-

(i) Atomic and molecular structure
(ii) Chemical Bonding
(iii) Periodic Properties
(iv) Redox behaviour of chemical species.

Moreover students will also have hand on experience of standard solution, preparation of different concentration units and learn volumetric estimation through acid base and redox reaction.

Paper:- Physical Chemistry

In physical chemistry students will have clear understanding in-

(i) Kinetic theory of gases (Ideal gases, Real gases)
(ii) Qualitative treatment of structure of liquid along with properties like, vapour pressure, surface tension and viscosity.
(iii) In Solid state unit students will be introduced to elementary idea of symmetry and they also learn the application of X-ray crystallography to determine simple crystal structure.
(iv) Ionic equilibrium.

Moreover students will have hands on experience of how to determine surface tension, viscocity and also learn about P^H meter.

SEMESTER –(II)

Paper:- Organic Chemistry

In organic chemistry students will have clear understanding in –

(i) How to identify different classes of organic compounds and their reactivity.
(ii) Chemical and stereo chemical aspects of different organic compounds.

Moreover students will have hands on experience to identify organic compounds by crystallisation using different solvents to determine melting points boiling points of liquid. They will be able to do Chromatographic separation of organic compounds.

Paper:- Physical Chemistry

In physical chemistry students are expected to learn –

(i) Laws of Thermodynemics, Themochemistry, Thermodynemic functions,relation between Thermodynemic properties, Gibbs Hemholtz equation etc.
(ii) Partial molar quantities , Chemical equilibrium, Solutions and Colligative properties.

These will help students to understand the chemical system thermodynamic point of view. Moreover in laboratory students will acquire experience on determining heat capacity of a calorimeter and enthalpy of neutralisation acid with base, solubility etc.

SEMESTER – (III)

Paper:- Inorganic Chemistry

In inorganic chemistry students would have clear understanding in-

(i) Theoritical principles of redox chemistry
(ii) Metallurgical processes
(iii) To identify the variety of S and P block compounds.

Experiments in this course will boost their quantative estimation skills and indtroduce the students to preparative methods in inorganic chemistry.

Paper:- Organic chemistry

In organic chemistry students will have clear understanding in classification of organic compounds in terms of their functional groups and reactivity.

More over from laboratory experiments students will be able to learn the tests for functional groups, preparative methods for preparation of different organic compounds.

Paper:- Physical chemistry

In physical chemistry students will have clear understanding in-

(i) Phase rule and its application in some specific systems

(ii) Rate laws of chemical transformation, experimental methods of rate law determination, steady state approximation in chemical kinetics

(iii) Different types of surface adsorption processes, basics of catalysis including enzyme catalysis acid base catalysis and particle size effect on catalysis.

Experiments will give experience on determination of critical solution tempreture' construction of phase diagrams by using different methods, to study kinetics of some reactions, verify frundlich and Langmuir adsorption isotherms of different adsorbents.

SEMESTER –(IV)

Paper:- Inorganic chemistry-

In inorganic chemistry students would have clear understanding in-

(i) Co-ordination compounds, IUPAC nomencleature of co-ordination compounds, Werner's theory, magnetic properties, crystal field theories etc

(ii) Detail knowledge about transition elements

Moreover through experiments students will be able to prepare, estimate or separate metal complexes.

Paper:- Organic Chemistry

In organic chemistry students will get the ability to

(i) Identify and classify different types of N- based derivatives, alkaloids ,hetero cyclic compounds with their structure, reactivity, reaction mechanism etc.

Laboratory works help students to experience about detection of elements and qualitative analysis of organic compounds containing simple functional groups.

Paper:- Physical chemistry

In this course students will learn about-

(i) Theories of conductance and electrochemistry

(ii) Solubility and solubility products

(iii) Ionic products of water and conductometric titration

(iv) Various part of electro chemical cell and faradays laws of electrolysis.

(v) Basic theoretical idea of electrical and magnetic properties of atoms and molecules.

Moreover students will have hands on experience how to determine equivalent conductance how to perform conductometric titration and potentiometric titration of different types of acid vs base mixture.

SEMESTER –(V)

Paper :- Organic chemistry

In Organic chemistry students will be able to explain the important features of Neuclic acid, amino acid, enzyme ctc nd develop their ability to examine their properties and applications.

Moreover laboratory works help students to estimate glysin, protein, saponification values of oil, fat determination of iodine number etc.

Paper:- Physical chemistry

In physical chemistry after completion of these course students are expected to understand –

(i) The application of quantum mechanics in some simple chemical systems such as Hydrogen atom or Hydrogen like ions.
(ii) Chemical bonding in some simple molecular systems
(iii) Basics of various kinds of spectroscopic techniques and photochemistry.

Moreover in the laboratory students will be able to learn the use of U.V Visible spectroscopy to determine the absorbance, colourimetric verification of Beer- Lambert law etc.

Paper:-Analytical methods in chemistry (DSE)

In analytical methods in chemistry students will gain knowledge about analytical techniques used for qualitative and quantitative characterization of samples.

At the same time through experiments students will gain hands on experiment of the discussed techniques. This will enable students to take judicious decision while analysing different samples.

Paper:-Polymer chemistry

After completion of this course the students will learn-

(i) The definition and classification of polymers
(ii) Kinetics of polymerization
(iii) Molecular weight of polymers
(iv) Some indurially important and technologically promising polymers.

In the laboratory students will learn to synthesise characterise and analyse polymers.

SEMESTER – (VI)

Paper:- Inorganic chemistry

In inorganic chemistry students will learn about-

(i) Liquid substitution and redox reactions take place in coordination complexes
(ii) Organometallic compounds comprehend their bonding, stability, reactivity and uses
(iii) Variety of catalysts based on transition metals and their application in industry.
(iv) The use of concepts of solubility product, PH, common ion effect etc in analysis of ions

Experiences in the laboratory helps the students to synthesise and characterise coordination compounds.

Paper:- Organic chemistry

In organic chemistry students are able to-

(i) Explain the basic principles of spectroscopic techniques and their importance in analysis of chemicals/ organic compounds
(ii) Classify/identify/critically examine carbohydrates, polymers and dye metarials.

In the laboratory students will gain experiences on preparation and qualitative analysis of organic compounds.

Paper:-Industrial chemicals and environment

In industrial chemistry students will able to learn about-

(i) Manufacture, application and storage of different industrial chemicals.
(ii) Industrial metallurgy and energy generation
(iii) Environmental pollution by various gaseous, liquid waste, industrial wastes etc and their effects on living beings.
(iv) Industrial waste management and their safe disposal in environment

(v) The importance of Green chemistry in chemical industry.

In laboratory students will be given hands on training on determination of different parameters of wastes and common bio indicators of pollutions.

Programme Name: Mathematics Honours under CBCS

Program Learning Outcomes: The completion of the BMATH(H) Program shall enable a student to: i) Communicate mathematics effectively by oral, written, computational and graphic means. ii) Create mathematical ideas from basic axioms. iii) Gauge the hypothesis, theories, techniques and proofs provisionally. iv) Utilize mathematics to solve theoretical and applied problems by critical understanding, analysis and synthesis. v) Identify applications of mathematics in other disciplines and in the real world, leading to enhancement of career prospects in a plethora of fields. vi) Appreciate the requirement of lifelong learning through continued education and research

1		Paper name	Paper code	Course Outcome
2	Mathematics	Calculus (including practical)	MAT-HC-1016	On completion of this course, the student will be able to understand hyperbolic function, successive differentiation, Leibnitzis theorem and its application, tracing of curves, reduction formulae, computation of surface area volume of solid using integration, Understand the calculus of vector functions and its use to develop the basic principles of planetary motion.
3	Mathematics	Algebra	MAT-HC-1026	On completion of this course, the student will be able to Employ De Moivre's theorem in a number of applications to solve numerical problems, learn about different types relation and functions, learn about the solution sets of linear systems of equations using matrix method and Cramer's rule.
4	Mathematics	Real Analysis	MAT-HC-2016	1. This course will enable the students to: i. Understand many properties of the real line including completeness

				and Archimedean properties. ii. Have a rigorous understanding of the concept of limit of a function. iii. Learn about continuity and uniform continuity of functions defined on an interval. iv. Learn extensively about the concept of differentiability using limits, leading to a better understanding for applications. v. Know about Taylor's theorem. vi. Recognize bounded, convergent, divergent, Cauchy and monotonic sequences and to calculate their limit superior,limit inferior, and the limit of a bounded sequence. vii. Apply the ratio, root, alternating series, and limit comparison tests for convergence and absolute convergence of an infinite series of real numbers. viii. Know about improper integrals including Beta and Gamma functions.
5	Mathematics	Differential Equations (including practical)	MAT-HC-2026	2. On completion of this course, the student will be able to: i. Learn basics of differential equations and their interpretations. ii. Formulate differential equations for various

				mathematical models such as population growth model, Lake pollution model, exponential decay model etc. iii. Solve first and second order differential equations using various techniques and apply them to solve and analyse mathematical models.
6	Mathematics	Theory of Real Functions	MAT-HC-3016	This course will enable the students to: i) Have a rigorous understanding of the concept of limit of a function. ii) Learn about continuity and uniform continuity of functions defined on intervals. iii) Understand geometrical properties of continuous functions on closed and bounded intervals. iv) Learn extensively about the concept of differentiability using limits, leading to a better understanding for applications. v) Know about applications of mean value theorems and Taylor's theorem
7	Mathematics	Group Theory-I	MAT-HC-3026	
8	Mathematics	Analytical Geometry	MAT-HC-3036	3. The students who take this course will be able to: i. Understand the Cartesian, polar and spherical coordinate system for locating objects in space. ii. Have rigorous understanding of the three-dimensional coordinate systems iii. Learn polar equation of a sphere, conic, tangent, normal and related properties. iv. Understand geometrical properties of dot product

				and cross product of vectors.
9	Mathematics	Multivariate Calculus	MAT-HC-4016	i. Learn about conceptual variations when advancing in calculus from one variable to multivariable discussion. ii. Learn about inter relationship amongst, the line integral, double and triple integral formulations. iii. Familiarize with Green's, Stokes' and Gauss divergence theorems.
1	Mathematics	Numerical Methods (including practical)	MAT-HC-4026	The course will enable the students to: i) Learn some numerical methods to find the zeroes of nonlinear functions of a single variable and solution of a system of linear equations, up to a certain given level of precision. ii) Know about methods to solve system of linear equations, such as False position method, Fixed point iteration method, Newton's method, Secant method, LU decomposition. iii) Interpolation techniques to compute the values for a tabulated function at points not in the table. iv) Applications of numerical differentiation and integration to convert differential equations into difference equations for numerical solutions.
1	Mathematics	Ring Theory	MAT-HC-4036	i. Recognize the mathematical structures like groups, rings, vector spaces and classify them. ii. Link the fundamental concepts of rings and symmetric figures. iii. Know about

				homomorphism and isomorphism among rings. iv. Get ideas about the Boolean algebra, switching circuits and applications of switching circuits.Learn about the application of group theory to data security and electric circuits.
1	Mathematics	Complex Analysis	MAT-HC-5016	4. On completion of this course, the student will be able to: i. Learn the significance of differentiability of complex functions leading to the understanding to the Cauchy-Riemann equations. ii. Learn some elementary functions and can evaluate the contour integrals. iii. Understand the role of Cauchy-Goursat theorem and the Cauchy integral formula. iv. Know how to expand some simple functions as their Taylor and Lourent series, classify the nature of singularity, find residues and apply Cauchy Residue theorem to evaluate integrals.
1	Mathematics	Linear Algebra	MAT-HC-5026	i. Know the linear independence of vectors over a field and the dimension of a vector space. ii. Know the basic concepts of linear

				transformations, dimension theorem, matrix representation of a linear transformation and know how to compute characteristics polynomial, eigenvalues, eigen vectors and eigen spaces of a linear transformation.
1	Mathematics	Riemann Integration and Matric Space	MAT-HC-6016	The course will enable the students to: i) Learn about some of the classes and properties of Riemann integrable functions, and the applications of the Fundamental theorems of integration. ii) Know about improper integrals including, beta and gamma functions. iii) Learn various natural and abstract formulations of distance on the sets of usual or unusual entities. Become aware one such formulations leading to metric spaces. iv) Analyse how a theory advances from a particular frame to a general frame. v) Appreciate the mathematical understanding of various geometrical concepts, viz. Balls or connected sets etc. in an abstract setting. vi) Know about Banach fixed point theorem, whose far-reaching consequences have resulted into an independent branch of study in analysis, known as fixed point theory. vii) Learn about the two important topological properties, namely connectedness and compactness of metric spaces
1	Mathematics	Partial Differential Equations (including practical)	MAT-HC-6026	: The course will enable the students to: i) Formulate, classify and transform first order PDEs into canonical form. ii) Learn about method of characteristics and separation of variables to solve first order PDE's. iii) Classify and solve second order linear PDEs. iv) Learn about Cauchy problem for second order PDE and homogeneous and

				non-homogeneous wave equations. v) Apply the method of separation of variables for solving many well-known second order PDEs.
1	DSE	Number Theory	MAT-HE-5016	This course will enable the students to: i) Learn about some fascinating discoveries related to the properties of prime numbers, and some of the open problems in number theory, viz., Goldbach conjecture etc. ii) Know about number theoretic functions and modular arithmetic. iii) Solve linear, quadratic and system of linear congruence equations
1	DSE	Spherical Trigonometry and Astronomy	MAT-HE-5056	5. This course will enable the students to: i. Learn about the properties of spherical and polar triangle. ii. Know about fundamental formulae of celestial triangles. iii. Learn about the celestial sphere, circumpolar star, rate of change of zenith distance and azimuth. iv. Learn about Kepler's laws of planetary motion and Cassini's hypothesis.
1	DSE	Rigid Dynamics	MAT-HE-6056	The course will enable the students to: i) Know about find the moments and products of inertia. ii) learn about the motion of the center of inertia. iii) learn about the D'Alembert's principle and Lagrange's equations. iv) learn about motion of a body in 2-dimension
1	DSE	Project	In lieu of DSE4	
2	GE	Calculus	MAT-HG-1016/MAT-RC-1016	The students who take this course will be able to: i) Understand continuity and differentiability in terms of limits. ii) Describe asymptotic behavior in terms of limits involving infinity. iii) Use

				derivatives to explore the behavior of a given function, locating and classifying its extrema, and graphing the function. iv) Understand the importance of mean value theorems.
2	GE	Analytical Geometry	MAT-HG-1026	This course will enable the students to: i) Transform coordinate systems, conic sections ii) Learn polar equation of a conic, tangent, normal and related properties iii) Have a rigorous understanding of the concept of three-dimensional coordinate systems iv) Understand geometrical properties of dot product, cross product of vectors
2	GE	Algebra	MAT-HG-2016/MAT-RC-2016	This course will enable the students to: i) Learn how to solve the cubic and biquadratic equations, also learn about symmetric functions of the roots for cubic and biquadratic ii) Employ De Moivre's theorem in a number of applications to solve numerical problems. iii) Recognize consistent and inconsistent systems of linear equations by the row echelon form of the augmented matrix. Finding inverse of a matrix. iv) Recognize the mathematical objects that are groups, and classify them as abelian, cyclic and permutation groups, ring etc.
2	GE	Discrete Mathematics	MAT-HG-2026	After the course, the student will be able to: i) Understand the notion of ordered sets and maps between ordered sets. ii) Learn about lattices, modular and distributive lattices, sub lattices and homomorphisms between lattices. iii) Become familiar with Boolean algebra, Boolean homomorphism, Karnaugh diagrams, switching circuits and their applications.
2	GE	Differential Equations	MAT-HG-3016/MAT-RC-3016	The course will enable the students to: i) Learn basics of differential equations and mathematical modelling. ii) Solve first order non-linear differential equations and linear differential equations of higher order using various

				techniques.
2	GE	Linear Programming	MAT-HG-3026	This course will enable the students to: i) Learn about the graphical solution of linear programming problem with two variables. ii) Learn about the relation between basic feasible solutions and extreme points. iii) Understand the theory of the simplex method used to solve linear programming problems. iv) Learn about two-phase and big-M methods to deal with problems involving artificial variables. v) Learn about the relationships between the primal and dual problems. vi) Solve transportation and assignment problems. vii) Apply linear programming method to solve two-person zero-sum game problems
2	GE	Real Analysis	MAT-HG-4016/MAT-RC-4016	: This course will enable the students to: i) Understand many properties of the real line R, including completeness and Archimedean properties. ii) Learn to define sequences in terms of functions from R to a subset of R. iii) Recognize bounded, convergent, divergent, Cauchy and monotonic sequences and to calculate their limit superior, limit inferior, and the limit of a bounded sequence. iv) Apply the ratio, root and limit comparison tests for convergence and absolute convergence of an infinite series of real numbers.
2	GE	Numerical Analysis	MAT-HG-4026	: The course will enable the students to: i) Learn some numerical methods to find the zeroes of nonlinear functions of a single variable and solution of a system of linear equations, up to a certain given level of precision. ii) Know about methods to solve system of linear equations, such as Gauss−Jacobi, Gauss−Seidel and SOR methods. iii) Interpolation techniques to compute the values for a tabulated function at points not in the table. iv) Applications of

				numerical differentiation and integration to convert differential equations into difference equations for numerical solutions.
2	SEC	Combinatorics and Graph Theory	MAT-SE-3024	This course will enable the students to: i) Learn about the counting principles, permutations and combinations, Pigeon hole principle ii) Understand the basics of graph theory and learn about social networks, Eulerian and Hamiltonian graphs, diagram tracing puzzles and Knight's tour problem.
2	SEC	R-Programming	MAT-SE-4014	This course will enable the students to: i) Be familiar with R syntax and use R as a calculator. ii) Understand the concepts of objects, vectors and data types. iii) Know about summary commands and summary table in R. iv) Visualize distribution of data in R and learn about normality test. v) Plot various graphs and charts using R.

1.	Mathematics (M)	**Algebra and Trigonometry**	**M 104**	On completion of this course, the student will be able to Employ De Moivre's theorem in a number of applications to solve numerical problems, learn about different types relation and functions, learn about the solution sets of linear systems of equations using matrix method and Cramer's rule.
		Calculus	**M 105**	On completion of this course, the student will be able to understand hyperbolic function, successive differentiation, Leibnitzis theorem and its application, tracing of curves, reduction formulae, computation of surface area volume of solid using integration, Understand the calculus of vector functions and its use to develop the basic principles of planetary motion.
2.	Mathematics (M)	**Co-ordinate Geometry**	M 204	This course will enable the students to: i) Transform coordinate systems, conic sections ii) Learn polar equation of a conic, tangent, normal and related properties iii) Have a rigorous understanding of the concept of three-dimensional coordinate systems
		Differential equation –I	M 205	The course will enable the students to: i) Learn basics of differential equations and mathematical modelling. ii) Solve first order non-linear differential equations and linear differential equations of higher order using various techniques.
3.	Mathematics (M)	**Abstract Algebra**	**M 304**	i. Recognize the mathematical structures like groups, rings, vector spaces and classify them. ii. Link the fundamental

				concepts of groups and symmetric figures. iii. Know about homomorphism and isomorphism among groups and rings. iv. Get ideas about the Boolean algebra, switching circuits and applications of switching circuits. v. Learn about automorphisms for constructing new groups from the given group. vi. Learn about the application of group theory to data security and electric circuits.
		Linear Algebra and vector	**M-305**	i. Know the linear independence of vectors over a field and the dimension of a vector space. ii. Know the basic concepts of linear transformations, dimension theorem, matrix representation of a linear transformation and know how to compute characteristics polynomial, eigenvalues, eigen vectors and eigen spaces of a linear transformation. geometrical properties of dot product and cross product of vectors.
4.	Mathematics (M)	**Real Analysis**	**M 404**	: This course will enable the students to: i) Understand many properties of the real line R, including completeness and

				Archimedean properties. ii) Learn to define sequences in terms of functions from R to a subset of R. iii) Recognize bounded, convergent, divergent, Cauchy and monotonic sequences and to calculate their limit superior, limit inferior, and the limit of a bounded sequence. iv) Apply the ratio, root and limit comparison tests for convergence and absolute convergence of an infinite series of real numbers.
		Mechanics	**M 405**	6. The students who take this course will be able to: i. Know about the concepts in statics such as moments, couples, equilibrium in both two and three dimensions. ii. Understand the theory behind friction and centre of gravity. iii. Know about conservation of mechanical energy and work-energy equations. iv. Learn about translational and rotational motion of rigid bodies.
5.	Mathematics (M)	**Real and Complex Analysis**	M 501	7. This course will enable the students to: ix. Understand many properties of the real line including completeness and Archimedean properties. x. Have a rigorous understanding of the concept of limit of a function. xi. Learn about continuity and uniform continuity of functions defined on

				an interval. xii. Learn extensively about the concept of differentiability using limits, leading to a better understanding for applications. xiii. Know about Taylor's theorem. xiv. Recognize bounded, convergent, divergent, Cauchy and monotonic sequences and to calculate their limit superior,limit inferior, and the limit of a bounded sequence. xv. Apply the ratio, root, alternating series, and limit comparison tests for convergence and absolute convergence of an infinite series of real numbers. v. understanding to the Cauchy-Riemann equations. vi. Learn some elementary functions and can evaluate the contour integrals. vii. Understand the role of Cauchy-Goursat theorem and the Cauchy integral formula. viii. Know how to expand some simple functions as their Taylor and Lourent series, classify the nature of singularity, find residues and apply Cauchy Residue theorem to evaluate integrals.

		Topology	M 502	Understanding elementary properties of topological spaces and structures defined on them • Construct maps between topological spaces • Ability to handle abstract ideas of Mathematics and Mathematical proofs • Demonstrate an understanding of the concepts of metric spaces and topological spaces, and their role in mathematics. • Demonstrate familiarity with a range of examples of these structures. • Prove basic results about completeness, compactness, connectedness and convergence within these structures.
		Spherical Trigonometry and Astronomy	M 503	8. This course will enable the students to: v. Learn about the properties of spherical and polar triangle. vi. Know about fundamental formulae of celestial triangles. vii. Learn about the celestial sphere, circumpolar star, rate of change of zenith distance and azimuth. viii. Learn about Kepler's laws of planetary motion and Cassini's hypothesis.
		Rigid Dynamics	M 504	The course will enable the students to: i) Know about find the moments and products of inertia. ii) learn about the motion of the center of inertia. iii) learn about the D'Alembert's principle and

				Lagrange's equations. iv) learn about motion of a body in 2-dimension
		Probability	M 505	This course will enable the students to: i) Learn about probability density and moment generating functions. ii) Know about various univariate distributions such as Bernoulli, Binomial, Poisson, gamma and exponential distributions. iii) Learn about distributions to study the joint behavior of two random variables.
		Optimization Theory	M 506	This course will enable the students to: i) Learn about the graphical solution of linear programming problem with two variables. ii) Learn about the relation between basic feasible solutions and extreme points. iii) Understand the theory of the simplex method used to solve linear programming problems. iv) Learn about two-phase and big-M methods to deal with problems involving artificial variables. v) Learn about the relationships between the primal and dual problems. vi) Solve transportation and assignment problems. vii) Apply linear programming method to solve two-person zero-sum game problems
6.	Mathematics (M)	**Hydrostatics**	**M 601**	The course will enable the students to: i) Know about Pressure equation, rotating fluids. ii) learn about Fluid pressure on plane surfaces, resultant pressure on curved surfaces, Gas law, mixture of gases iii) learn about the Eulerian and Lagrangian method.
		Numerical Analysis	**M 602**	The course will enable the students to: i) Learn some numerical methods to find the zeroes of nonlinear functions of a single variable and solution of a system of linear equations, up to a certain given level of precision. ii) Know

				about methods to solve system of linear equations, such as Gauss−Jacobi, Gauss−Seidel and SOR methods. iii) Interpolation techniques to compute the values for a tabulated function at points not in the table. iv) Applications of numerical differentiation and integration to convert differential equations into difference equations for numerical solutions.
		Computer Programming in C	**M 603**	After completion of this paper, student will be able to: i) Understand and apply the programming concepts of C which is important to mathematical investigation and problem solving. ii) Learn about structured data-types in C and learn about applications in factorization of an integer and understanding Cartesian geometry and Pythagorean triples. iii) Use of containers and templates in various applications in algebra. iv) Use mathematical libraries for computational objectives. v) Represent the outputs of programs visually in terms of well formatted text and plots. vi) In practical students learn about the roots of a quadratic equation, solution of an equation using N-R algorithm, sin(x), cos(x) with the help of functions
		Discrete Mathematics	**M 604**	After the course, the student will be able to: i) Understand the notion of ordered sets and maps between ordered sets. ii) Learn about lattices, modular and distributive lattices, sub lattices and homomorphisms between lattices. iii) Become familiar with Boolean algebra, Boolean homomorphism, Karnaugh diagrams, switching circuits and their applications
		Graph and Combinatorics	**M 605**	This course will enable the students to: i) Learn about the counting principles, permutations and combinations, Pigeon hole

				principle ii) Understand the basics of graph theory and learn about social networks, Eulerian and Hamiltonian graphs, diagram tracing puzzles and Knight's tour problem.
		Project	**M 606**	

Core Papers

1. PHY-HC-1016 : Mathematical Physics I

Course Outcome: Successful students should be able to understand vector and its applications in various fields, differential equations and its applications, different coordinate systems, concept of probability and error.

2. PHY-HC-1026 : Mechanics

Course Outcome: On successful completion of the course students should be able understand Inertial and non-inertial reference frames, Newtonian motion, Galilean transformations, projectile motion, work and energy, Elastic and inelastic collisions, motion under central force, simple harmonic oscillations, special theory of relativity.

3. PHY-HC-2016: Electricity & Magnetism

Course Outcome: After successful completion of this course, students will be able to Understand electric and magnetic fields in matter, Dielectric properties of matter magnetic properties of matter, electromagnetic induction, applications of Kirchhoff's law in different circuits, applications of network theorem in circuits.

4. PHY-HC-2026: Waves & Optics

Course Outcome: After successful completion of this course, students will be able to Understand superposition of harmonic oscillations, different types of wave motions, superposition of harmonic waves, interference and interferometer, diffraction, holography.

5. PHY-HC-3016 : Mathematical Physics II

Course Outcome: After successful completion of the course, students will be able to solve differential equation using power series solution method, solve differential equation using separation of variables method, special integrals, different properties of matrix, Fourier series.

6. PHY-HC-3026 : Thermal Physics

Course Outcome: Upon successful completion, students will have the knowledge and skills to identify and describe the statistical nature of concepts and laws in thermodynamics, in particular: entropy, temperature, Thermodynamics potentials, Free energies, Maxwell's relations in thermodynamics, behaviour of real gases.

7. PHY-HC-3036 : Digital Systems & Applications

Course Outcome: After successful completion of the course student will be able to understand the working principle of CRO, develop a digital logic and apply it to solve real life problems, Analyse, design and implement combinational logic circuits, Classify different semiconductor memories, Analyse, design and implement sequential logic circuits, Analyse digital system design using PLD, Simulate and implement combinational and sequential circuits.

8. PHY-HC-4016 : Mathematical Physics III

Course Outcome: On successful completion of the course students will able to solve complex integrals using residue theorem, apply Fourier and Laplace transforms in solving differential equations, understand properties of Tensor like Transformation of coordinates,

contravariant and co-variant tensors, indices rules for combining tensors.

9. PHY-HC-4026 : Elements of Modern Physics

Course Outcome: On completion of the course students will be able to understand modern development in Physics, Starting from Planck's law, it development of the idea of probability interpretation and the formulation of Schrodinger equation. Students will also get preliminary idea of structure of nucleus, radioactivity Fission and Fusion and Laser

10. PHY-HC-4036 : Analog Systems & Applications

Course Outcome: On successful completion of the course students will be able to understand about the physics of semiconductor p-n junction and devices such as rectifier diodes, Zener diode, photodiode etc. and bipolar junction transistors, transistor biasing and stabilization circuits, the concept of feedback in amplifiers and the oscillator circuits, students will also have an understanding of operational amplifiers and their applications.

11. PHY-HC-5016 : Quantum Mechanics & Applications

Course Outcome: On successful completion of the course students will be able to understand the principles in quantum mechanics, such as the Schrödinger equation, the wave function, the uncertainty principle, stationary and non-stationary states, time evolution of solutions, as well as the relation between quantum mechanics and linear algebra. Students will be able to solve the Schrödinger equation for hydrogen atom. Students will have the concepts of angular momentum and spin, as well as the rules for quantization and addition of these, spin-orbit coupling and Zeeman Effect.

12. PHY-HC-5026 : Solid State Physics

Course Outcome: On successful completion of the course students should be able to explain the main features of crystal lattices and phonons, understand the elementary lattice dynamics and its influence on the properties of materials, describe the main features of the physics of electrons in solids; explain the dielectric ferroelectric and magnetic properties of solids and understand the basic concept in superconductivity.

13. PHY-HC-6016 : Electromagnetic Theory

Course Outcome: On successful completion of the course students will acquire the concepts of Maxwell's equations, propagation of electromagnetic (EM) waves in different homogeneous-isotropic as well as anisotropic unbounded and bounded media, production and detection of different types of polarized EM waves, general information as waveguides and fibre optics.

14. PHY-HC-6026 : Statistical Mechanics

Course outcome: On successful completion of the course students will be learn the techniques of Statistical Mechanics to apply in various fields including Astrophysics, Semiconductors, Plasma Physics, Bio-Physics, Chemistry and in many other directions.

Discipline Specific Elective (DSE) Papers

1. PHY-HE-5016 : Experimental Techniques (PHY-RE-5016)

Course Outcome: Upon completion of this course, students will be able to describe the errors in measurement an statistical analysis of data required while performing an experiment. Also, students will learn the working, principle, efficiency and applications of transducers & industrial instruments like digital multimeter, RTD Thermistor, Thermocouples and Semiconductor type temperature sensors.

2. PHY-HE-5026 : Embedded System: Introduction to Microcontrollers (PHY-RE-5026)

Course Outcome: Upon completion of this course, students will be able to understand microprocessor and microcontroller 8051. Students will also learn about the 8051 1/0 port programming, various addressing modes, Timer and counter programming, Serial port programming with and without interrupt and interfacing 8051 microcontroller to peripherals.

3. PHY-HE-5036 : Advanced Mathematical Physics I (PHY-RE-5036)

Course Outcome: Upon completion of this course, students will be able to solve problems in Physics related to Linear Vector space, Matrix algebra, Tensor.

4. PHY-HE-5046 : Physics of Devices and Instruments (PHY-RE-5046)

Course Outcome: Upon completion of this course, students will be able to gain knowledge on advanced electronics devices such as UT, JFET, MOSFET, CMOS etc., detailed process of IC fabrication, Digital Data serial and parallel Communication Standards along with the understanding of communication systems.

5. PHY-HE-6016 : Communication Electronics (PHY-RE-6016)

Course Outcome: Upon completion of this course, students will have the concepts of electronics in communication, details of communication techniques based on Analog Modulation, Analog and digital Pulse Modulation including PAM, PWM, PPM, ASK, PSK, FSK, overview of communication and Navigation systems such as GPS and mobile telephony system.

6. PHY-HE-6026 : Digital Signal Processing (PHY-RE-6026)

Course Outcome: Upon completion of this course, students will be able This paper describes the discrete-time signals and systems, Fourier Transform Representation of Aperiodic Discrete-Time Signals. This paper also highlights the concept of filters and realization of Digital Filters. At the end of the syllabus, students will develop the understanding of Discrete and fast Fourier Transform.

7. PHY-HE-6036 : Advanced Mathematical Physics II (PHY-RE-6036)

Course Outcome: Upon completion of this course, students will be able to apply the concepts of Calculus of Variations, Group Theory and Probability Theory to solve numerical problems in Physics.

8. PHY-HE-6046 : Biophysics (PHY-RE-6046)

Course Outcome: Upon completion of this course, students will be able to understanding the origin and evolution of the Universe. The course will give a comprehensive introduction on the measurement of basic astronomical parameters such as astronomical scales, luminosity and astronomical quantities. It will give an overview on key developments in observational astrophysics. Students will have the idea of the instruments implemented for astronomical observation, the formation of planetary system and its evolution with time, the physical properties of Sun and the components of the solar system; and stellar and interstellar components of our Milky Way galaxy. Students will have the understanding of the origin and evolution of galaxies, presence of dark matter and large scale structures of the Universe.

9. PHY-HE-6056 : Astrophysics (PHY-RE-6056)

Course Outcome: Upon completion of this course, students will have the overview of Newton's Laws of Motion, Special Theory of Relativity by 4-vectoer approach and fluids. Students will also have the understanding of the Lagrangian and Hamiltonian of a system.. By the end of this course, students will be able to solve the seen or unseen problems/numericals in classical mechanics.

Generic Elective (GE) Papers

1. PHY-HG-1016 : Mechanics (PHY-RC-1016)

Course outcome: Upon completion of this course, students are expected to understand the role of vectors and coordinate systems in Physics, solve Ordinary Differential Equations, laws of motion and their application to various dynamical situations, Inertial reference frames their transformations, concept of conservation of energy,

momentum, angular momentum and apply them to basic problems, phenomenon of simple harmonic motion, motion under central force, concept of time dilation, Length contraction using special theory of relativity. In the laboratory course, after acquiring knowledge of how to handle measuring instruments (like screw gauge, Vernier callipers, travelling microscope) student shall embark on verifying various principles and associated measurable parameters.

2. PHY-HG-2016 : Electricity & Magnetism (PHY-RC-2016)

Course outcome: Upon completion of this course, students are expected to apply Gauss's law of electrostatics to solve a variety of problems, calculate the magnetic forces that act on moving charges and the magnetic fields due to currents, have brief idea of magnetic materials, understand the concepts of induction, and apply them to solve variety of problems. In the Lab course, students will be able to measure resistance (high and low), Voltage, Current, self and mutual inductance, capacitor, strength of magnetic field and its variation, study different circuits RC, LCR etc.

3. PHY-HG-3016 : Thermal Physics & Statistical Mechanics (PHY-RC-3016)

Course outcome: Upon completion of this course, students are expected learn the basic concepts of thermodynamics, the first and the second law of thermodynamics, the concept of entropy and the associated theorems, the thermodynamic potentials and their physical interpretations, Maxwell's thermodynamic relations, fundamentals of the kinetic theory of gases, Maxwell-Boltzmann distribution law, equipartition of energies, mean free path of molecular collisions, viscosity, thermal conductivity, diffusion and Brownian motion, black body radiations, Stefan- Boltzmann's law, Rayleigh-Jean's law and Planck's law and their significances, quantum statistical distributions, viz, the Bose-Einstein statistics and the Fermi-Dirac statistics. In the

laboratory course, the students will be able to Measure of Planck's constant using black body radiation, determine Stefan's Constant, coefficient of thermal conductivity of a bad conductor and a good conductor, determine the temperature coefficient of resistance, study variation of thermo emf across two junctions of a thermocouple with temperature etc.

4. PHY-HG-4016: Waves & Optics (PHY-RC-4016)

Course outcome: Upon completion of this course, students are expected to understand Simple harmonic oscillation and superposition principle, importance of classical wave equation in transverse and longitudinal waves and solving a range of physical systems on its basis, concept of normal modes in transverse and longitudinal waves: their frequencies and configurations, interference as superposition of waves from coherent sources derived from same parent source, Demonstrate understanding of Interference and diffraction experiments, Polarization. In the laboratory course, student will gain hands-on experience of using various optical instruments and making finer measurements of wavelength of light using Newton Rings experiment, Fresnel Biprism etc. Resolving power of optical equipment, the motion of coupled oscillators, study of Lissajous figures and behaviour of transverse, longitudinal waves.

Skill Based (SEC) Papers

1. PHY-SE-3014 : Renewable energy and Energy Harvesting

Course outcome: The aim of this course is to enable the students to familiar and experience with various mechanical and electrical tools through hands-on mode

2. PHY-SE-4014 : Basic Instrument Skill

Course outcome: This course is to get exposure with various aspects of instruments and their usage through hands-on mode.

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COURSE OUTCOMES OF STATISTICS
KALIABOR COLLEGE

Learning Goals for the program in STATISTICS

1.Students can summarize data visually and numerically
2.Students can build and assess data based models.
3.Students will learn and apply the tools of formal inference.
4.Students will learn the mathematical and probabilistic foundations of statistical inference.

B.Sc. –STA-HC-1016/HG 1016/BCA/BBA/ B. COM. (DESCRIPTIVE STATISTICS)
Descriptive Statistics helps all the students to facilitate data visualization. It allows for data to be presented in a meaningful and understandable way.
STA-HC-1026 (CALCULUS)
Calculus is essential for students intending to study engineering or physics. It provides them with the mathematical foundation they need to understand and apply the principles of these subjects.

STA-HC-2016 /BCA/BBA/B.COM (PROBABILITY AND PROBABILITY DISTRIBUTION)
Probability distribution help to model our world, enabling us to obtain estimates of the probability that a certain event may occure or estimate the variability of occurrence. Probability distributions help to forecast power failure and network outages

STA-HC-2026 (ALGEBRA)
Algebra teaches students to follow a logical path to solve a problem. It stimulates the brain, helping students how to learn and how to think in new ways .

STA-HC 3016 /M.COM (SAMPLING DISTRIBUTION)
Since population are large in size, it is important to use a sampling distribution so that students can randomly select a subset of the entire population.

STA-HC-3026 /B.COM /BCA/ M .COM (SURVEY SAMPLING)
It helps to gather data on a representative portion of a targeted population. Usually the survey is some type of questionnaire so it is easier for the student or person to make proper questionnaire. Sampling avoid repetition of query for each and every individual.

STA-HC-3036 (MATHEMATICAL ANALYSIS)
Reading and writing activities can help students analyse, interpret and communicate mathematical ideas.

STA-HC- 4016 /HG-4016/M.COM (STATISTICAL INFERENCE)
By using statistical inference students can practice of forming judgements about the parameters of a population and the reliability of statistical relationships, typically on the basis of random sampling.

STA-HC-4026 (LINEAR MODELS)

Linear Models help students to understand and predict the behaviour of complex system or analyse experimental, financial and biological data.

STA-HC- 4036 (STATISTICAL QUALITY CONTROL)

Statistical Quality Control develop skills of the students to analyse quality related data using advanced statistical methods.

STA-HC-5016 (STOCHASTIC PROCESSES AND QUEUING PROCESS)

Stochastic processes can help to eliminate some of the uncertainty associated with achieving various goals, because they take randomness into consideration.

STA-HC-5026 (C/ C++ PROGRAMMING)

C is a procedural orientated language whereas C++ is an object oriented programming language used in developing browsers, photo and video editing apps, browsers on the internet, database management and many more .

STA –HE-5026 /B, COM./BBA (TIME SERIES ANALYSIS)

By studying time series, students should be able to understand the determining factors and structure behind the observed data by choosing a model, they should be able to forecast the trend, which leads to better decision making.

STA-HE -5016 (OPERATION RESEARCH)

Operation research is important because it creates implementable solutions to complex business challenges.

STA-HC-6016 / M.COM (DESIGN OF EXPERIMENT)

Design of experiment enables the researchers to evaluate the variables /factors that affect the system by using statistical analysis.

STA-HC-6026 /M.COM (MULIVARIATE ANALYSIS AND NON PARAMETRIC METHODS)

The non-parametric method helps in modelling appropriate statistical method as a model building tool in time series.

STA-HC-6026 (DEMOGRAPHY AND VITAL STATISTICS)

By studying vital statistics, students should able to investigating the population trends at any instant of time and try to bridge the gap amid two census, therefore they are very useful for the nation .

STA-HE-6046 (PROJECT WORK)

Project work will provide hands on training to the students to deal with data emanating from some real life situation and propel them to dwell on some theory or relate it to some theoretical concepts.

PROGRAMME OUTCOME

PROGRAMME OUTCOME:

Students will acquire and pursue proficiency in good laboratory (both wet and dry) practices in biological sciences and will achieve the theoretical basis and practical skills of the tools/technologies commonly used in the field. Including all the fascinating specializations Taxonomy, Ecology, Parasitology, Toxicology, Fishery, Entomology, Bioinformatics etc. students will come to understand and evaluate the impact of new research discoveries in the life sciences and will be able to stimulate to think on wide range of careers, including biological and medical research in higher education institutions as well as careers in public and global health in environmental organizations, in food technology, pharmaceuticals and biotechnological industries.

PROGRAMME SPECIFIC OUTCOME:

• Students will develop proficiency in the quantitative skills necessary to analyze biological problems viz. statistical methods as applied to biology.

• Students will gain Knowledge of various biotechnology applications of plants and animals and will learn of industrially important natural products produced by them.

• Students will become familiar with scientific methodology, hypothesis generation and testing, design and execution of experiments.

• Students will develop the ability to think critically and to read and analyze scientific literature.

• Students will develop strong oral and written communication skills through effective presentation of experimental results through seminars.

Teaching –Learning and Evaluation/Criterion-II
Department of Zoology
Kaliabor College

The choice based credit system is naturally the next logical step in a credit based semester system. This makes the system the more learner- centric. A CBCS offers the student a diversity of courses to choose from and the autonomy to decide on the place, pace and the time of learning. The Gauhati University has decided to introduce the CBCS system at the under graduate level from the session 2019-20. The CBCS syllabus for the B.Sc. (Honours) is prepared in the model of syllabus prepared by the UGC.

A student opting for honors course in ZOOLOGY must have and passed the BIOLOGY as a subject in the Senior Secondary level examination.

Students will acquire and demonstrate proficiency in good laboratory practices in biological sciences and be able to explain the theoretical basis and practical skills of the tools/technologies commonly used to study this field. •Students will develop proficiency in the quantitative skills necessary to analyze biological problems (e.g., arithmetic, algebra, and statistical methods as applied to biology) Students will gain knowledge of various biotechnological applications of plants and animals and will learn of industrially important natural products produced by them. •Students will become familiar with scientific methodology, hypothesis generation and testing, design and execution of experiments. Students will develop the ability to think critically and to read and analyze scientific literature. • •Students will develop strong oral and written communication skills through the effective Presentation of experimental results as well as through seminars. •Graduates of the B.Sc. programme in Life Sciences will make the students to understand and evaluate the impact of new research discoveries in the life sciences, and will be able to stimulate to think on wide range of careers, including biological and medical research in higher education institutions as well as careers in public and global health, scientific writing, environmental organizations, and food, pharmaceuticals and biotechnology industries.

Course Outcome

Department of Zoology

1st semester

A student will learn about the Animal Diversity upto Pseudo-coelomates and its characteristics in phylogenetically. They will also learn about composition and different aspects of ecosystem.

There will be a Field trip to a National Park and writing of dissertation.

2nd Semester

The student will get the opportunity to acquaint with the kingdom Animalia from Pseudocoelomates to Echinodermata with their Classification. They will also find in details about the structural and functional unit of life "The Cell".

3rd Semester

The students will learn about Chordate diversity along with Zoogeography i.e., the distribution of Animalia in different parts of the world.

The student will also learn about the life processes and controlling and coordinating systems of animal.

Biomoleules of life and their significances with their related laboratory aspects will develop a concept in Biodhemistry.

There will be a skill based paper on Ornamental Fish.

4th Semester

The students will learn about comparative anatomy of vertebrate series to develop a concept about structural organization of Animalia

Study of Physiology and life sustaining system will make them convenient about the functional aspect of life itself.

Practical part of this paper will be helpful to get an understanding of many physiological parameters of human along with blood groups

The will be a skill paper on Nursery and Gardening.

5th Semester

A student will learn about the molecular basis of biological activity, principles of genetics, information and technology related to biological science through computational biology, biostatistics knowledge will help to use proper method to collect data, employ correct analyses and efficiently present the results, about animal biotechnology, about physiology and medicine concerned with endocrine glands and hormones, parasitology will helps us to study about the parasites their hosts and their relationship between them.

6th Semester

A student will learn about the process through which animal and plant grow and develop, evolutionary biology studies the evolutionary processes that produced the diversity of life on earth, biology of insects, about various aspects of fish and fisheries, reproductive biology and about the wildlife conservation and management.

There will be a field trip to visit any Fish rearing farm/lab and project work and writing of dissertation.

FACULTY OF COMMERCE

TEACHING LEARNING OUTCOME

SEMESTER - I

- BUSINESS COMMUNICATION: To equip students effectively to acquire skills in reading, writing, comprehension and communication, as also to use electronic media for business communication.
- FINANCIAL ACCOUNTING: To help students to acquire conceptual knowledge of the Financial Accounting and to impart skills for recording various kinds of business transactions.
- BUSINESS LAWS: To impart basic knowledge of the important business legislation along with relevant case law.
- MICRO ECONOMICS: To acquaint the students with the concepts of micro economics dealing with consumer behavior and understand the supply side of the market through the production and cost behavior of firms.

SEMESTER - II

- CORPORATE ACCOUNTING: To help the students to acquire the conceptual knowledge of the corporate accounting and to learn the techniques of preparing the financial statements.
- CORPORATE LAWS: To impart basic knowledge of the provisions of the Companies Act 2013 and the Depositories Act, 1996.
- MACRO ECONOMICS: To provide knowledge of basic concepts of the macro economics, where the modern tools of macro-economic analysis are discussed and the policy framework is elaborated, including the open economy.

SEMESTER - III

- COMPUTER APPLICATIONS IN BUSINESS: To provide computer skills and knowledge for students and to enhance the student understands of usefulness of information technology tools for business operations.
- INCOME TAX LAW AND PRACTICE: To provide basic knowledge and equip students with application of principles and provisions of Income-tax Act, 1961 and the relevant Rules.
- MANAGEMENT PRINCIPLES AND APPLICATION: To provide the student with an understanding of basic management concepts, principles and practices.
- BUSINESS STATISTICS: To familiarize students with the basic statistical tools used for managerial decision-making.
- ENTREPRENEURSHIP: To orient the learner toward entrepreneurship as a career option and creative thinking and behavior.

SEMESTER - IV

- COST ACCOUNTING: To acquaint the students with basic concepts used in cost accounting, various methods involved in cost ascertainment and cost accounting book keeping systems.
- BUSINESS MATHEMATICS: To familiarize the students with the basic Financial mathematics tools, with an emphasis on applications to business and economic situations.
- HUMAN RESOURCE MANAGEMENT: To acquaint students with the techniques and principles to manage human resource of an organization.
- INDIAN ECONOMY: To enable the student to grasp the major economic problems in India and their solution.
- E-COMMERCE: To enable the student to become familiar with the mechanism for conducting business transactions through electronic means.

SEMESTER - V

- PRINCIPLES OF MARKETING: To provide basic knowledge of concepts, principles, tools and techniques of marketing.
- FUNDAMENTALS OF FINANCIAL MANAGEMENT: To familiarize the students with the principles and practices of financial management.
- MANAGEMENT ACCOUNTING: To impart the students, knowledge about the use of financial, cost and other data for the purpose of managerial planning, control and decision making.
- INDIAN FINANCIAL SYSTEM: To provide students the basic knowledge of Indian Financial System and its components, institutions and their functions.

SEMESTER - VI

- AUDITING AND CORPORATE GOVERNANCE: To provide knowledge of auditing principles, procedures and techniques in accordance with current legal requirements and professional standards and to give an overview of the principles of Corporate Governance and Corporate Social Responsibility.
- INDIRECT TAX LAWS: To provide basic knowledge and equip students with application of principles and provisions of Service Tax, VAT, Central Excise, and Customs Laws.
- INDUSTRIAL RELATIONS AND LABOUR LAWS: To enable the students to learn the concepts of industrial relations including trade unions, collective bargaining, discipline and various labour enactments.
- BUSINESS RESEARCH METHODS AND PROJECT WORK: To provide the general understanding of business research and the methods of business research. Also impart the learning about how to collect, analyze, present and interpret data.

KALIABOR COLLEGE
PG DEPARTMENT OF COMMERCE (M.COM.)
TEACHING LEARNING OUTCOME

M.Com. First Semester	
Business Policy Analysis **Paper Code: COM 1016**	**Objectives:** (a) The objective of the course is to apprise the students about the relevance of welfare and the inevitability of government control over Business environment. (b) To enlighten the students of the various structural initiative on the part of the government to boost economic development in the country. **Course Outcome**: Ability to analyse the various structural initiatives undertaken by the Government to boost economic development in the country.
Financial Reporting and Analysis **Paper Code: COM 1026**	**Objectives:** (a)The primary objective of the paper is to strengthen the theoretical, analytical and applied knowledge base in analysing and reporting financial statements. (b) (b) The other objectives of the paper are to familiarise the student with (i) the IFRS, (ii) the conceptual framework of accounting and (iii) the regulatory framework for the preparation of the financial statements. **Course Outcome:** Ability to interpret – (a) The IFRS (b) The conceptual framework of accounting and regulatory framework for the preparation of the financial statements.
Marketing Policy Analysis **Paper Code: COM 1036**	**Objectives:** (a) To familiarize the students with the basic concepts and principles of marketing. (b) To develop their conceptual and analytical skills to be able to manage marketing operations of a business firm. **Course Outcome:** Ability to implement the conceptual and analytical skills required to manage marketing operations of a business firm.
Business Statistics **Paper Code: COM 1046**	**Objectives:** The objective of this paper is to acquaint the students with the knowledge of basic statistics required for business data analysis in quantitative terms. **Course Outcome:** Ability to implement various statistical techniques and tools in research and business decision making process.
Financial Markets and Institutions **Paper Code: COM 1056**	**Objectives:** This course intends to help the students in understanding the role of financial institutions and markets in the business environment. The course is designed to learn various applications of principles from finance and economics that explore the connection between financial markets, financial institutions and the economy. **Course Outcome:** Ability to apply various principles from finance and economics that explore the connection between financial markets, financial institutions and the economy.

M.Com. Second Semester	
Economic Legislation **Paper Code: COM 2016**	**Objectives:** The course aims (a) To enable the students to earn professional skill in business; (b) To make them conscious against the unscrupulous forces working against the financial growth of the country; (c) To make the students socially conscious and responsible citizen. **Course Outcome:** Ability to identify and recognise unscrupulous forces working against the financial growth of the country and also the various consequences of violations of the legal bindings.
Organisational Behaviour **Paper Code: COM 2026**	**Objectives:** To provide an overview of theories and practices in organizational behaviour in individual, group and organizational level. Students will have a better understanding of human behaviour in organization. They will know the framework for managing individual and group performance. **Course Outcome:** (a) Ability to comprehend complex human behaviour in organization. Ability to identify the framework for managing individual and group performances in an organisational structure.
Operations Research & Computer in Business **Paper Code: COM 2036**	**Objectives:** The objective of the course is to equip students with the knowledge of higher statistics as applied in commerce as well as business study and with elementary ideas relating to computer in business. **Course Outcome:** Ability to enumerate complex business issues and research related activities with the aid of Statistical Models
Group - A **Advanced Financial Management** **Paper Code: COM 1046**	**Objectives:** To make students understand various issues involved in financial management of a firm and equip them with advanced analytical tools and techniques that are used for making sound financial decisions and policies. **Course Outcome:** Ability to analyse and interpret advanced analytical tools and techniques that are used for making sound financial decisions and policies.
Group - B **Strategic Human Resource Management** **Paper Code: COM 2066**	**Objectives:** To impart knowledge about the strategic aspect of human resource management. This paper also intends to make the students understand the linkage between human resource strategies and corporate strategies. **Course Outcome:** Ability to compare and contrast the existing correlation between strategies, policies and principles of human resource management.

Group - A **Security Analysis & Portfolio Management** **Paper Code: COM 2056**	**Objectives:** The objective of this course is to provide a broad overview of investment management, focusing on the application of finance theory to the issue faced by portfolio managers and investors in general. **Course Outcome:** Ability to examine the various investment related decisions in the corporate world.
Group - B **Marketing Research & Consumer Behaviour** **Paper Code: COM 2076**	**Objectives:** The course aims at exposing the students to the concept, tools and techniques of marketing research and to provide an in-depth understanding of the consumer buying processes and their determinants as relevant for marketing decision making. **Course Outcome:** Ability to illustrate the consumer buying processes and their determinants relevant for marketing decision making

M.Com. Third Semester	
Research Methodology **Paper Code: COM 3016**	**Objectives:** The objective of the course is to enlighten the students in respect of the methodology to be pursued in any research topic relating to commerce and business study. **Course Outcome:** Ability to carry out a research work with an understanding of the procedures, techniques as well as challenges involved in research activities.
Project Management **Paper Code: COM 3026**	**Objectives:** The aim of the course is to enable the student to have the basic idea of the preparation, appraisal, monitoring and control and hedge risk of industrial project including the issues involved in Project implementation. **Course Outcome:** Ability to illustrate and trace time, schedule and cost related issues in various phases of project life cycle.
Dissertation **Code: COM 3036**	**Objectives:** To familiarise student with field exposure and how to prepare project report. Report Writing: 75 Marks Viva-voce: 25 marks **Course Outcome:** Ability to link across different areas of knowledge and to generate, develop and evaluate ideas and information so as to apply these skills in their research enquiry.
Group - A **International Financial Management** **Paper Code: COM 3046**	**Objectives:** The course objective is to provide a clear, conceptual framework for analysing key financial decisions in multinational firms through an extension of the principles learned in the introductory financial management course. The learners are expected to apply critical thinking skills in identifying and evaluating international financial issues and information. **Course Outcome:** Ability to apply critical thinking skills in identifying and evaluating international financial issues and information.
Group - A **Advanced Cost and Management Accounting** **Paper Code: COM 3056**	**Objectives:** The objective of the course is to enable students to acquire knowledge on (i) various cost concepts useful for managerial decision making; (ii) methods and technique of management accounting; (iii) Cost accounting rules as per Companies Act and (iv) to make the students to develop competence with their usage in managerial decision making and control. **Course Outcome:** Ability to use accounting techniques in managerial decision making and control.

Industrial Relations & Labour Laws **Paper Code: COM 3066**	**Objectives:** The objective of the course is to make student apprised of the various issues of labour in India and to ameliorate the conditions of labour in India. -to equate the Indian Labour Standards with that of recognised standard of ILO. - to bring about peace and healthy working environment in industrial work life. **Course Outcome:** Ability to comprehend the need for maintaining peace and harmony in the industrial work life.
International Marketing **Paper Code: COM 3076**	**Objectives:** To familiarize the students with the concept and issues of international marketing and enable them to be able to analyse the foreign market environment. **Course Outcome:** Ability to interpret and analyse the various challenges related to international marketing.

M.Com. Fourth Semester	
Strategic Management **Paper Code: COM 4016**	**Objectives:** To help students understand strategy making process that is informed integrative and responsive to rapid changes. It also familiarise the learner about the organization's mission, vision and objectives, developing policies and plan to understand the analysis and implementation of strategic management in strategic business units. **Course Outcome:** Ability to interpret and illustrate the organization's mission, vision and objectives and can also analyse the implementations of strategic decisions in strategic business units.
Entrepreneurship Management **Paper Code: COM 4026**	**Objectives:** This Course aims at imparting Entrepreneurial education to the students by giving an overview of who the entrepreneurs are and what competences are needed to become an entrepreneur. **Course Outcome:** Ability to initiate, manage and carry out small business enterprises.
Tax Planning **Paper Code: COM 4036**	**Objectives:** To familiarize the student with latest provisions of the Indian Income tax laws and related judicial pronouncements having implications for tax planning. **Course Outcome:** Ability to compute, interpret and analyse regulations, laws and statements of Income Tax.
Management of Financial Services **Paper Code: COM 4046**	**Objectives:** The course is an extension of the course on financial services learned at graduate level and designed to enable students to acquire theoretical knowledge as well as enhance their ability to apply those in the work place in the financial services industry. The course focus is on management of the various financial services in the modern times. **Course Outcome:** (a) Ability to explain the broad dimension of financial services market. (b) Ability to apply those theoretical knowledge in the work place of the financial services industry.
Strategic Services Marketing **Paper Code: COM 4056**	**Objectives:** To develop students' understanding of marketing strategies that meets the unique challenges and opportunities of the services sector. **Course Outcome:** Ability to interpret the variations in the strategies applied in products and services marketing.
International Business **Paper Code: COM 4076**	**Objectives:** The purpose of this course is to acquaint the students with nature, scope, structure and operations of international business and familiarize them with trends and developments in International Business Environment and policy framework. **Course Outcome:** Ability to illustrate and interpret the trends and developments in International Business Environment and policy framework.

Course Outcome and Programme Outcome of Department of BBA

Overall Outcomes

- It helps students to educate and prepare students with the needed knowledge and skills, analytical ability as well as a managerial perspective that is needed in the highly competitive business environment.
- It allows students to get out of their comfort zone and explore various business trends as well as they will be able to challenge themselves, acquire business skills, team work and communication skills.
- It allows students to adapt to the ever-changing business environment and to gain flexible management skills.
- It allows students to gain knowledge and skills that are needed in the business environment as well as the decision-making skills that may qualify students for various positions and new career opportunities.
- It will able to advance students career or either start a career in the business industry.
- It challenged students to be intellectually and professionally become a business expert one day.

Course Specific Outcomes			
Course	Course Code	Course Title	Outcomes
UG-BBA	ENG-AE-1014	Business Communication	The students will get to learn communication skills required in a corporate job. This paper will also enable the students in drafting a business letter, a project report etc.
	BBA-HC-1026	Principles of Management	This paper will help in developing basic managerial skills.This paper will also help in developing theoretical knowledge of probable management concepts.
	BBA-HC-1036	Managerial Economics	This paper will help in learning the basic concepts of economics in business. This paper will enable the students to develop knowledge relating to economic trends in the market.
	BBA-HG-1046	Mathematical Techniques in Business	This paper will help the students in learning various concepts of mathematics such as LPP, Matrix, Determinants, Calculus which will be helpful in various operations activities in an organization. This paper will help the students in developing their analytical skills which will help them in getting selected in an organization.
	ENV-AE-2014	Environmental Science	This paper indicates the rules and regulations for setting up an industry in a particular area by taking into consideration the environmental prospects.
	BBA-HC-2026	Financial accounting	This paper results in developing basic concepts of accounting. This paper will help in preparing various books of accounts, financial statements etc. which are integral parts of an organisation's operations.

	BBA-HC-2036	Statistics for Business Decisions	This paper results in developing basic concepts of statistics and how to use them in practical field
	BBA-HC-2046	Indian Economic Scenario	This paper will help in developing knowledge about economic scenario of pre and post-independence period, government budget, LPG concept etc. This paper will help in learning various stages of a business cycle and the consequences of each stage.
	BBA-HG-2056	Computer Fundamentals	This paper will help in developing basic computer knowledge. The students will get to learn the use of various concepts related to MS Access, Advance Excel, MS Powerpoint, MS Word, Business Mail etc
	BBA-HC-3016	Cost & Management Accounting	This paper results in developing basic concepts of cost & management accounting such as budgets & budgetary control, standard costing etc. The students will get to learn the practical implications of these accounting concepts from an organisation's point of view.
	BBA-HC-3026	Human Resource Management	This paper will help the students in developing basic concepts relating to management of the human resources in an organization. The students will get to learn various skills required to perform an HR job.
	BBA-HC-3036	Personality & Personal Skill Development	This paper will enable the students in adapting required business etiquettes in an organization. This paper will help in developing knowledge regarding how to develop one's overall personality.
	BBA-HG-3046	Operations & Management Control	This paper gives an overall understanding about the various production techniques which are

			helpful for an industry. This paper gives an idea how to simplify various production activities in an industry which is vital for an organization.
	BBA-SE-3054	Computer Applications	This paper gives an overview of various concepts such as DBMS, Tally, DML etc. which are broadly used in corporate sectors.
	BBA-HC-4016	Organizational Behaviour & Industrial Psychology	This paper gives an overview of various concepts relating to the study of human behavior and psychology in the work place. This paper helps the students in understanding about organizational politics, power, leadership, which are very much prevailing in an organization.
	BBA-HC-4026	Financial Management	This paper gives an overview of various concepts relating to working capital management, accumulation of capital structure, dividend policy etc. which are crucial parts of an organization.
	BBA-HC-4036	Principles of Marketing	This paper gives an overview of the marketing environment of an organization. This paper provides information related to marketing ethics.
	BBA-HG-4046	Business Research	This paper helps the students in developing knowledge about how to conduct a research and prepare various projects which are an integral part of an R&D department of an organization.
	BBA-HC-5016	Legal Aspects of Business	This paper gives an overview of legal aspects in establishing an organization.
	BBA-SE-5024	Summer Project	With the help of this paper the students will get to learn how an industry works in an practical environment. With the help of this paper the students will get the opportunity to work in a real

			life situation inside an organization which will be beneficial for them in the future.
	BBA-HE-5036 & BBA-HE-5046	Specialization: (any two papers from any one of the following three): • HR • Marketing • Finance	Based on the specialization chosen by the students, they will get to learn more critical & in-depth concepts relating to HR/Marketing/Finance.
	BBA-HC-6016	Business Policy and Strategy	From this paper the students will get to learn about stategy formulation and implementation, policy making of a company which are pivotal in an industrial scenario.
	BBA-HC-6026	Taxation Laws	This paper gives an overview of laws relating to calculation of various taxes.It also provides basic concepts related to GST formulation.
	BBA-HE-6036 & BBA-HE-6046	Specialization: (any two papers from any one of the following three): • HR • Marketing • Finance	Based on the specialization chosen by the students, they will get to learn more critical & in-depth concepts relating to HR/Marketing/Finance.

Department: Computer Science

Course: BCA (Bachelor in Computer Applications)

Papers: All papers are given here

Sem.	Sl. No.	Course	Subject Outcome
SEM-I	1	BCA-HC-1016 Introduction to C programming	• To give a practical exposure to problem solving in C programming. • To study the algorithms and flowcharts • To learn the programs and to solve problems through logical thinking using C
	2	BCA-HC-1026 Computer Fundamentals & ICT Hardware	• Acquire confidence in using computers for general and official purposes. • Identify the basic components of computers and terminology. • Familiarize with different types of software, hardware, Operating System etc.
	3	ENG-AE-1014 Communicative English	• Identifying the key terms in a text • Guessing meaning of the text in particular contexts • reading for overall idea of the text and for specific information • Knowing the context of the text • Comprehending a text meaningfully
	4	BCA-HG-1026: Office Automation	• Familiarize with the commonly used MS-Office Package such as MS-Word, MS-Excel & MS-PowerPoint. • Use Word Processing Software viz. MS-Word to create, edit, format, open, save, print a document, insert header, footer, page number, images, shapes etc in a document and many more. • Use Spreadsheet Software viz. MS-Excel to create, edit, format, open, save, print a spreadsheet, apply several functions and formulae on the data, create graph and insert rows and columns and many more. • Use Presentation Software viz. MS-PowerPoint to create, edit, format, open, save and present a slide or presentation and many more.
SEM-II	5	BCA-HC-2016 Mathematics –I	
	6	BCA-HC-2026 Digital Logic Fundamentals	• A thorough understanding of the fundamental concepts and techniques used in digital Logic circuits • Good hold over Boolean algebra and its application in combinational digital logic circuits. • Understanding of digital sequential circuits and classification of state machines • Ability to design, analyse and synthesize functional level digital logic circuits (combinational & sequential) • Ability to diagnose and resolve various hazards and timing problems in a digital circuit
		ENV-AE-2014 Environmental Studies	
	7	BCA-HG-2016:Basic Electronics	
	8	BCA-HC-2026 Digital Logic Fundamentals	• To introduces the introductory concepts on computer hardware, software. • To learn additional concepts which help us to understand upcoming technologies, number systems and its applications, Boolean algebra and different types of gate, networks.

SEM-III	9	BCA-HC-3016 Software Engineering	• Clear understanding of the software life cycle models and the process of project planning and management techniques • Good understanding of the various software design methodologies. • Ability to carry out software requirements analysis for a given project. • Ability to convert software requirements to a design model. • Good understanding of the various testing and maintenance requirements and the ability to develop appropriate testing procedures for a given project.
	10	BCA-HC-3026 Data Structure and Algorithms	• Apply knowledge of data structures for abstraction of the data to systematically design efficient computational solutions. • Explain how basic data structures including: arrays, records, linked structures, stacks, queues, trees, and graphs are represented in memory and used by algorithms. • Ability to analyze/characterize computational problems and choose appropriate data structures for solving them efficiently. • Demonstrate understanding of the various sorting and searching techniques and their efficiency. • Ability to analyze efficiency of various data structures in terms of space and time
		BCA-HC-3036 Database Management System	• Clear understanding of the concepts of database systems, their advantages, and applications. • Ability to carry out the conceptual modelling of the data for a given application. • Ability to evaluate functional dependencies in the data and model the data in a suitable normal form for a relational database. • Ability to carry out the database design using appropriate database model and to write optimized queries. • Familiarity with the database modelling techniques for emerging application areas
		BCA-SE-3014: Web Technology	• Understand key Internet technologies supporting the Internet applications. • Implement interactive web page(s) using HTML, CSS and JavaScript.
		BCA-HG-3026:Positive Psychology	
SEM-IV		BCA-HC-4016 Computer Organization and Architecture	• A good understanding of the architectural and organizational aspects of computer systems at the machine level. • Understanding of the basic principles used for achieving the devices and the various functional modules. • Knowledge of the various design options and their tradeoffs for the functional units as well as the machine. • Understanding of the quantitative performance evaluation of the modules and the machine. • Understanding of the mechanisms built into the machine to provide for the advance digital systems, operating system etc. and a perspective of the architectures used in high performance computers
		BCA-HC-4026 Mathematics-II	
		BCA-HC-4036	• Understand different styles of programming and their

		Object Oriented Programming in C++	differences. • Understand the principles of object-oriented problem solving and programming. • Outline the essential features and elements of the C++ programming language. • Apply the concepts of class, method, constructor, instance, data abstraction, function abstraction, inheritance, overriding, overloading, and polymorphism. • Analyze problems and implement C++ applications using an object-oriented approach.
		BCA-SE-4034: Advanced Web Technology	• Implement dynamic web page(s) using AJAX, jQuery, JavaScript, PHP etc. and database connectivity. • Describe and differentiate different Web Extensions and Web Services. • Implement at least one web security mechanism using PHP, JavaScript, or Python
		BCA-HG-4026:Information Security and Cyber Laws	• Identify, conceptualize, and rigorously formalize the concept of secure communication • Design and analyse security protocols including asymptotic efficiency and provable security • Recognize and explain aspects of number theory which are relevant to cryptography • Identify, explain, and apply cryptographic techniques like key management, digital signatures, digital certificates, and a Public-Key Infrastructure (PKI) to various disciplines in information science.
SEM-V		BCA-HC-5016 Java Programming	• Understand the basic concepts and principles of object oriented programming. • Produce sample use-cases, pseudo-code, and an incremental coding plan for a given problem specification. • Design, write, and test a Java program to implement a solution to a given problem specification. • Understand the operation of common data structures and algorithms.
		BCA-HC-5026 Operating System	• Clear understanding of the operating system policies and algorithms for the management of computer system resources. • Good knowledge of the of Operating system module functionalities, their working and the design issues • Ability to write programs with OS system calls for IPC, resource utilization etc. • Ability work with OS kernel
		BCA-HE-5016: Project Work / Dissertation (Credit: 6)	To train the student to independently search, identify and study real-life important topics in CS/IT; to develop skills among students in a particular field of CS/IT; and to expose students to the world of technology, innovation, and research
		BCA-HE-5046: Programming in Python	• Understand basic principles of computers • Understand basics of binary computation • Understand the programming basics (operations, control structures, data types, etc.) • Readily use the Python programming language • Apply various data types and control structure • Understand class inheritance and polymorphism • Understand the object-oriented program design and development • Understand and begin to implement code
SEM-IV		BCA-HC-6016 System Administration	• To understand the basic principles of Linux OS and also help them understand its utilities.

		using Linux	• To learn shell programming, a control section, and general coding. • Performing System administration using Linux.
		C14: BCA-HC-6026 Computer Networks	• Clear understanding of the principle and the design of layered the Computer Network Architecture. • Knowledge of the key functions performed by different widely known mechanisms and protocols at Network, Transport and Application Layers and the functionalities and use of the different networking devices. • Understanding the basic working behaviour of TCP, UDP and other Internetworking protocols. • Understanding of the needs of network security and the of different network security and authentication mechanisms. • Knowledge of the needs and protocols used in different network applications and the basic mechanisms used in data compression
		BCA-HE-6016: Automata Theory and Languages	• Introduce students to the basic concepts in theoretical computer science, and the formal relationships among machines, languages and grammars and computational problems. • Clarifies the practical view towards the applications of these ideas in engineering.
		BCA-HE-6066: Artificial Intelligence	• Getting students to appreciate the foundations of Artificial Intelligence and its future trends • Understanding of the basic elements constituting problems in an intelligent system and various approaches of solving them • Understanding the notions of uncertainty and decision making in real world problems • Introduction to learning mechanisms by which an intelligent system can improve its behaviour

Criterion-II (Teaching Learning and Evaluation)
Department of Biotechnology

Course objectives

- To impart an ability to apply biotechnology skills (including molecular & microbiology, immunology & genetic engineering, bioprocess & fermentation, enzyme & food technology and bioinformatics) and its applications in core and allied fields.
- To provide students with the concepts and research approaches for their higher career in the field of biotechnology and develop their scientific interest.
- To impart in-depth practical oriented knowledge to students in various thrust areas of biotechnology, so as to meet the demands of industry and academia.

Overall Course/Programme outcome

BSc Biotechnology is an undergraduate course that delves into various concepts of Biotechnology, through the curriculum and subjects of the program. The program is designed so that after completing the course, students will receive in-depth practical-oriented knowledge in various thrust areas of biotechnology as well as develop the temperament that will help in meeting the demands of industry and academia.

Learning outcomes of BSc Biotechnology (Hon)

Semester I

BIT-HC-1016 Biochemistry & Metabolism

1. Introduction to Biochemistry
2. Structures and functions of Proteins, Carbohydrates, Lipids and nucleic acids
3. Carbohydrate metabolism
4. Bioenergetics and thermodynamics
5. Practical experiments for better understanding of the theory part

BIT-HC-1026 Cell Biology

1. Organization and functions of cell and its organelles.
2. Signal transduction and apoptosis
3. Practical experiments on cell structures, membrane functions, cell divisions; study of tissues and cell fractions.

ENG-AE-1014 English

1. Communicative English.

BIT-HG-1036 Biotechnology & Human Welfare

1. Protein engineering for different industries.

2. Plant-microbe interaction and stress response in plants, qualitative improvement of livestock.
3. Inorganic and organic pollutants, biodegradation, bioremediation, bioplastics, biopolymers and bio-surfactants
4. Biotechnology in forensic science and criminology
5. Biotechnology in modern medicine

Semester II

BIT-HC-2016 Mammalian Physiology

In this paper students will have a clear understanding on,

1. Digestion and Respiration
2. Circulation
3. Muscle physiology and osmoregulation
4. Nervous and endocrine coordination

BIT-HC-2026 Plant Physiology

In this paper students will have a clear understanding on

1. Anatomy of Plants
2. Plant water relations and micro & macro nutrients
3. Carbon and nitrogen metabolism
4. Growth and development
5. Practical experiments on plant anatomy and physiology

ENV-AE-1014 EVS

In this paper students will have a clear understanding on

Basics of environmental studies and different issues related to it.

BIT-HG-2046 Developmental Biology

In this paper students will get a clear understanding on,

1**.** Gametogenesis and Fertilization
2. Early embryonic development
3. Embryonic Differentiation
4. Organogenesis

Semester III

BIT-HC-3016 Genetics

In this paper students will get a clear understanding on,

1. History and Mendelian genetics
2. Non allelic interactions, Chromosome and genomic organization
3. Chromosome and gene mutations
4. Sex determination and sex linkage
5. Sex determination and sex linkage; Extra-chromosomal inheritance

6. Practical experiments for better understanding of the theories.

BIT-HC-3026 General Microbiology

In this paper students will get a clear understanding on,

1**.** An introduction to microbiology and its underlying principles
2. Functional morphology of the microbial cell
3. Microbial nutrition, nutritional categories, methods of isolation and preservation
4. Microbial growth, generation, metabolism
5. Control of microorganisms and microbes in different environments; water and food microbiology, fermentation, food preservation.
6. Experiments on sterilization; isolation and characterization m, staining and enumeration of microbes.

BIT-HC-3036 Chemistry-I

In this paper students will get a clear understanding on,

1. Atomic structure, bonding and molecular structure, general organic chemistry and aliphatic hydrocarbons.
2. Practical experiments for better understanding of the theory part

BIT-SE-3014 Enzymology

In this paper students will get to know about,

1. Enzyme and enzyme specificity
2. Isolation, crystallization, purification and analysis of enzymes; Enzyme classification; Enzyme substrate complex; Kinetics
3. Enzyme inhibition and mechanism of enzyme actions; enzyme regulation
4. Special enzymes and enzyme technology
5. Experiments on purification, assay and characterization of enzyme; quantification of protein.

BIT-HG-3016 Bioethics and Biosafety

This paper will clear all doubts on

1. Indian Patent Law and IPR
2. Bioethics and Biosafety measures
3. Proxy filing of patents, planning of establishing industries, case studies on health and environmental hygiene.

Semester IV

BIT-HC-4016 Molecular Biology

After studying this paper students will clearly understand

1. DNA structure and replication
2. DNA damage, repair and homologous recombination
3. Transcription and RNA processing
4. Regulation of gene expression and translation

5. Experiments on Preparation of solutions for Molecular Biology experiments; Isolation of DNA from different sources and their study.

BIT-HC-4026 Immunology

This paper will clearly explain about

1. Immune Response
2. Regulation of immunoglobulin gene expression
3. Major Histocompatibility complexes and other components of immunity.
4. Immunity to infection; vaccines.
5. Experimental exposure to blood cell counts, haemagglutination and haemagglutination inhibition assay; study on blood serum, microbial antigen and ELISA.

BIT-HC-4036 Chemistry-II

In this paper students will have a clear understanding on

1. s- and p- block elements, transition elements, coordination chemistry, state of matter and chemical kinetics.
2. Practical experiments for better understanding of the theory part

BIT-SE-4014 Industrial Fermentations

In Industrial fermentation paper students will have a clear understanding on,

1. Production of industrial chemicals, biochemical and chemotherapeutic products.
2. Microbial products useful in different fields.
3. Upstream and downstream processing in Purification & characterization of products. Fermentation
4. Enzyme kinetics
5. Comparative analysis of design of a batch and continuous fermenter; growth kinetics; Solvent extraction & analysis of a metabolite from a bacterial culture; Enzyme assay.
6. Experimental exposure to isolation of industrially important microbes, enzyme production by submerged and solid state fermentation, microbial growth kinetics, alcohol production, untrasonication, extraction of metabolites by soxhlet extraction.

BIT-HG-4016 Entrepreneurship Development

In this paper student will get to know about,

1. Basics of Entrepreneurship
2. Forms of Business Organization, Project Identification, Selection of the product, Project formulation, Assessment of project feasibility
3. Financing the enterprise
4. Marketing management
5. Entrepreneurship and international business

Semester V

BIT-HC-5016 Bioprocess Technology

In this paper students will have a clear understanding on

1. Introduction to bioprocess technology.
2. Design of bioprocess vessels and preparation of inocula.
3. Different factors affecting the bioprocess technology
4. Introduction to downstream processing, product recovery and purification. Effluent treatment.
5. Microbial production of ethanol, amylase, lactic acid and Single Cell Proteins.
6. Practical experiments on bacterial growth, thermal death point, production and analysis of different valuable products from microbes and isolation of industrially important microorganism.

BIT-HC-5026 Recombinant DNA Technology

In this paper, students will get a clear understanding on,

1. Molecular tools and applications;
2. Restriction and modification system; hybridization techniques, Genomic and cDNA library; DNA fingerprinting; Applications of Genetic Engineering in animals.
3. Mutagenesis, protein engineering
4. Genetic engineering in plants
5. Experimental exposure on isolation of chromosomal DNA from plant and bacteria; plamid isolation; Qualitative and quantitative analysis of DNA; Restriction digestion of DNA, Making competent cells; PCR

BIT-HE-5016 Bioinformatics

In this paper students will have a clear understanding on

1. Basic computer applications; History of Bioinformatics; Sequence Information Sources.
2. Protein Information Sources; Introduction of Data Generating Techniques and Bioinformatics problem posed by them- Restriction Digestion, Chromatograms, Blots, PCR.
3. Sequence and Phylogeny analysis
4. Searching Databases; Genome Annotation.
5. Practical exposure on sequence information resource; various web resources; BLAST; Retrieval of information from nucleotide databases; Sequence alignment; Multiple sequence .

BIT-HE-5026 Ecology & Environmental Management

In this paper students will have a clear understanding on

1. Scope of ecology; Principles and concepts of ecosystem.
2. Energy transfer in an Ecosystem.
3. Pollution and environmental Health; different communities
4. Environmental Biotechnology.
5. Experimental exposure on different components of ecosystem; study of population density; GPS; life table and fecundity table, study of soil and endangered/ threatened species.

Semester VI

BIT-HC-6016 Bio-Analytical Tools

In this paper students will be acquainted with,

1. Microscopy, photomicrography, spectroscopy
2. Spectroscopy, Centrifugation

3. Different chromatographic techniques
4. Electrophoresis, isoelectric focusing, Western blotting.
5. Molecular Techniques like PCR, RT-PCR, Gradient PCR, Real Time PCR, DNA Sequencer, DNA Synthesizer; Introduction to Biosensors and Nanotechnology
6. Experimental exposure to native gel electrophoresis SDS-PAGE, sub-cellular fractions of rat liver cells; preparation of protoplasts from leaves; paper chromatography; TLC; to verify the validity of Beer's law and determine the molar extinction coefficient of NADH; Gradient PCR.

BIT-HC-6026 Genomics & Proteomics

In this paper students will get acquaintance on

1. Genomics; DNA sequencing methods
2. Managing and Distributing Genome Data
3. Characterization of protein
4. Proteomics
5. Practical experiments on SNP databases at NCBI and other sites; OMIM database; Open Reading Frames ; Proteomics 2D PAGE database ; Softwares for Protein localization; Hydropathy plots; SDS-PAGE.

BIT-HE-6016 Biostatistics

In this paper students will have a clear knowledge on

1. Types, collection and representation of Data; Measures of central tendency and Dispersion. Measures of Skewness and Kurtosis.

2.Probability classical & axiomatic definition of probability, Theorems on total and compound probability), Elementary ideas of Binomial, Poisson and Normal distributions.

3. Methods of sampling, confidence level, critical region, testing of hypothesis and standard error, large sample test and small sample test. Problems on test of significance, t-test, chi-square test for goodness of fit and analysis of variance (ANOVA)
4. Correlation and Regression.
6. Practical experiments based on graphical Representation; measures of Central Tendency & Dispersion; Distributions Binomial Poisson Normal; Based on t, f, z and Chi-square

BIT-HE-6026 Dissertation/ Project

Students will get to perform a research work on a given topic and has to submit the findings as a dissertation and has to present his or her work.

B.VOC DEPARTMENT
TOURISM AND SERVICE INDUSTRY
PAPER WISE COURSE OUTCOME

SEMESTER	PAPER CODE	PAPER NAME	PAPER OUTCOME
I	TSI-VC-1016	Travel Consultant	This paper helps students to know about the basics of tourism industry including Travel Agency, Customer feedback. And helps clients to identify their ideal travel package based on their requirement's.
	TSI-VC-1026	Travel Formalities	This paper makes students able to gain knowledge about all the necessary documentation required while travelling to abroad such as passport, Visa, Travel Insurance, Health Regulation, along with permits such as ILP, RAP.
	TSI-VC-1036	OJT	This paper is fully practical so, students were engaged as interns in various sectors of tourism industry Hotel and travel agency (both govt. and pvt.) After completing the OJT students have to prepare PPT and have to provide Hard copies to external on various topics
II	TSI-VC-2016	Meeting, Conference and Event Planner	This paper aimed at introducing the basics of meeting, conference and event planner along with how to conduct and manage a meeting, conference, risk management, management plan and emergency plan.
	TSI-VC-2026	Etiquette required in tourism Industry	This paper aimed to make the students aware of various etiquettes, customer centric services, ethics, communicating skills with colleagues and superiors, health and hygiene required to deal with customers in tourism industry.
	TSI-VC-2036	OJT	This paper is fully practical and to understand the above papers in depth students were engaged in internship in various Govt. and Pvt. sectors , and have to submit PPT and Hard copies to External.
III	TSI-VC-3016	Tour Manager	This paper helps students to gain knowledge about the skills required to become a tour manager, handling the staff, to understand the importance of IPR in tourism industry.
	TSI-VC-3026	Tourism Marketing	This paper makes students to know about basics of tourism marketing along with marketing of tourism services such as

			airlines, hotels, resorts, travel agencies, marketing skills such as creativity, communication, self-motivation, team building etc required in tourism Industry
	TSI-VC-3036	OJT	This paper is fully practical and to understand the above papers in depth students were engaged in internship in various Govt. and Pvt. sectors, and have to submit PPT and Hard copies to External.
IV	TSI-VC-4016	Tourism Resources of Assam	This paper helps students in gaining knowledge to various tourism resources of Assam such as natural, socio-cultural, religious, historical, man-made resources and popular tourist festivals and their tourism significances.
	TSI-VC-4026	Hospitality and Accommodation Service	This paper helps students to know about different sectors, functions, concepts of hospitality and accommodation along with their linkage with transport operator and travel agency, booking procedure of hotel.
	TSI-VC-4036	OJT	This paper is fully practical and to understand the above papers in depth students were engaged in internship in various Govt. and Pvt. sectors, and have to submit PPT and Hard copies to External.
V	TSI-VE-5016	Transport Duty Manager	This paper helps students to understand, how to do planning, monitoring various customer requirements and also learned about the importance of performance appraisal required to be a transport duty manager.
	TSI-VE-5026	Transportation and Travel Organization	This paper helps students to know about various types of transportation and their importance in tourism industry and travel organizations.
	TSI-VE-5036	OJT	This paper is fully practical. Students were taken to field visit and students have to prepare and submit PPT and Hard copies to External on various topics.
VI	TSI-VE-6016	Tourism Policy, Planning & Development	This paper helps students in understanding the importance of implementing tourism policy, planning of tourism policy, and how these policies plays a vital role in economic development through tourism.
	TSI-VE-6026	Business Laws in Travel And Tourism	This paper helps students in understanding various laws and regulations required in tourism such as laws required in setting up travel agency, tour operation, passport act,

			foreign exchange management, wildlife and forest conservation act.
	TSI-VE-6036	OJT	This paper is fully practical and to understand the above papers in depth students were engaged in internship in various Govt. and Pvt. sectors, and have to submit PPT and Hard copies to External.

AECC and SEC paper for both TSI and STG

SEMESTER	PAPER CODE	PAPER NAME	PAPER OUTCOME
I	ENG-AE-1014	Communicative English	This paper aimed at developing communication skills required in cooperate sector, and make the students learn how to write application, formal letters, using correct grammars.
II	ENV-AE-2014	Environmental Studies	This paper focus on environmental justice, students develop critical- thinking skills, analyze real-world problems, and understand the power of narrative to create sustainable solutions for local and global communities.
III	INT-SE-3014	Basics of Computer & Office Automation	This paper helps those students who are new to computer or having few knowledge of computer. The main objective is to expert the students in daily office work requirements such as writing letters, generate tables, print document, to get information from internet, e-mail documents etc.
IV	CAP-SE-4014	Computer Hardware	This paper helps students to identify the hardware Components of a computer, peripheral devices outside computer and the software running on a computer.
V	COM-SE-RC-5014	Entrepreneurship	This paper teaches essential life skills such as innovative approach to solve a problem, resolve real world problems, also develops problem solving and identification capability, boosts leadership quality, and prepare the students for an uncertain future.
VI	COM-SEC-RC-6034(A)/ TTM-SE-6014	Retail Management/ Hospitality Management	These papers gives in depth knowledge of the Specific areas of retail and hospitality management.

B.VOC DEPARTMENT
SMALL TEA GARDEN MANAGEMENT
PAPER WISE COURSE OUTCOME

SEMESTER	PAPER CODE	PAPER NAME	OUTCOME
I	STG-VC-1016	Introduction to tea with reference to STG	This paper unit component of first semester will help the student to know in details about the introduction of Tea in India and also worldwide emergence of tea, especially invention history of tea in Assam, other North East & Eastern States & also the emergence of the Small Tea Grower (STG) in Assam & other parts of India. It will also help the student's to know the "Role of tea in Indian Economy".
	STG-VC-1026	Agro practices of tea plantation	After going through the units of this skill paper, the student will be able to learn different types of planting materials like different clones & biclonal seed varieties, able to choose the planting materials by narrating criteria, establishment of clonal nucleus plot, Procedure of seed collection & packaging. Further, these unit helps in establishment of tea plant nursery, young tea management practices & also get the information on different Developmental schemes under TBI (Five Year Plan) for STG's & commercial garden.
	STG-VC-1036	Soil Nutrient Management	After studying this paper unit of 1st semester the student will be able to perform different range of soil quality & adoptability in regards to plantation of tea, nutrients contains in wide range of soils like sandy, sandy loam, silt & clay soil. Soil and climate requirement for growing tea in different parts of India & other countries, how application of nutrients in soil absorb by tea plant, etc.
II	STG-VC-2016	Plantation Management	The component units under this paper help the students to know how to pluck leaves from young tea as well as matured tea bushes, able to learn how

			plucking to be done under various situation, able to determine the plucking standard, caring in green leaves handling, help in understanding the tipping as well as determine the height of tipping for different types of prune & skiff tea bushes, further, the students develop the skill of supervising plucking. Again in regards to pruning & skiffing this paper help in skill up the students how pruning operation is carry out, before pruning what are the criteria to be follow, what are the safety measures one should take before pruning /skiffing of a tea bushes, also it helps in identify recommended height of different types of prune/skiff.
	STG-VC-2026	Integrated disease, pest and weed management	After going through this paper component the students will acquire the meaning of IPM (minimum ETL), which ultimately reduced the affect in the ecology, it also help in develop the skill in identification of major pests, diseases and different species of weeds attack on tea bushes along with their control measures by means of using inorganic chemical, organic and biological methods of controls, the students will also able to know about PPA; as well as the TBI recommended chemicals, which have a very low residual effect on made tea & ultimately does not affect in the health of tea consumed peoples of the world
	STG-VC-2036	Application technique used for IPM	Basically this paper emphasize on various spraying tools along with different size of the nozzles used for pests, diseases and weed controls in tea plants as well as in shade trees, the student will develop the skill how to operate various types of spraying machines and which nozzle use for pests/diseases/weeds control practices. Above this it will also help in develop the skills of different

			characteristics of better performance factors of the nozzle like temperature, rate of discharge, surface tension and also the effective time of spraying for Better result of IPM practices.
III	STG-VC-3016	Organic tea plantation Management	In this paper the importance is given on tea plantation & processing practices using the organic methods, as the revolution of organic cultivation able to bring high demand in the market. Only natural inputs were apply in organic cultivation instead of inorganic or synthetic chemical. In organic cultivation vermi-compost plays a significant role, hence in this paper the student will learn about vermi-compost as well as acquire the skill how the vermi-compost units are made by seeing the unit set up in the college land itself. Again this paper help the students to know the HRM practices followed in a tea estate, role of different employees top to bottom involved in the tea plantation, able to develop organizational chart of a tea estate, also acquire skill of health & safety measures involve in tea plantation.
	STG-VC-3026	Small Tea Garden Management	The objective of this paper is to give more focus on STGs, prospect & problems of STG's use to face. Here the student's able to develop the skill on how SHG/cooperative/company/ federation can be form among the STG's group in an organized and systematic way, which will help in minimizing input cost of STG's and maximize the earnings through common marketing, minimize the leaf wastage, etc.. In this chapter the student's develop skill on how an individual can be a entrepreneur or self-employment through STG, also focus will be remain on the policies for STG's develop by TBI as well as State Government.

	STG-VC-3036	Major Thrust area of STG	This units study will help the students in unfolding the major constrain & issues of the STG's were facing or experiencing, so it will be useful for the students to develop the skill of planning & execution the same for the smooth running of the gardens, irrespective of doing job in commercial garden or become self-employment as an entrepreneur, the students also able to identify the soil condition, whether it's suitable for tea plantation or need to rejuvenate the soil condition by planting Guatemala grass for 24 to 36 month
IV	STG-VC-4016	Tea Processing in Details	This paper is one of the most important for the students to develop skill in manufacturing process of three different types of made tea- Black Tea (CTC & Orthodox); Green Tea & Olong Tea, this chapter will help in determining the students which types of leaves used for best quality tea making of above mentioned made tea, the students also able to know in details the processes involved in making a made tea from the harvested green leaves, role of each & every machineries used in processing like , withering trough, rolling table, CTC machine with the shape of roller, fermenting, dryer, shivers of different size used for different grade, sorting, packaging and how the tea is tested to know the quality of made tea.
	STG-VC-4026	Management of Made Tea	In this paper component emphasis given on how the quality made tea is made up & from which type of leaves, what plucking cycles need to follow to attain different quality of made tea, handling of made tea in order to retain quality, what are the risk involved & how to mitigate the risk in made up of green tea, also how the STG's played an important role in generating

			income to the educated /uneducated unemployed and unemployable person by deploying in this profession.
	STG-VC-4036	Statutory Compliance in Tea Management	This paper unit's component basically helps in understanding as well as skill up the students in development of plantation acts & the rules applicable in plantation industry. In commercial garden all the statutory compliance under plantation act have to adhere as per the the norms TBI, otherwise TBI may cancel the registration.
V	STG-VE-5016	Estate Management	After going through this paper unit's the students will be able to develop the knowledge & skill on Garden management, which includes how /when extension planting, replanting planting, similarly factory management works & any others administrative functions of the estate is to be done/ maintain to run the estate smoothly and organize manner.
	STG-VE-5026	Tea Board Development and Plantation Scheme on Tea	In this units all the development & plantation schemes (under five year plan) will be elaborately discuss, so that the students after passing out with a various skill's & join in a job or become an entrepreneur, they will be able to materialized the schemes and able to make the required information to get qualify & avail the benefits from the schemes. The samecondition is though applicable for STGs but there are various grants in aid schemes for theSTG's, which are also discuss in details in this paper, so that the STG's also able to get the grant from TBI.
	STG-VE-5036	Practical Paper	In this paper, students will get different sections to maintain the garden from planting to harvesting. Each student will know practically overall package and practices followed in the

			tea garden.
VI	STG-VE-6016	Exercise on Operation followed in Tea Estate	The main objective of this paper is that after going through the unit's exercise, the students will skill up with the nursery estimation of a given area, cost incurred in setting up of vermi-compost unit, cost of irrigation of a given land and also able to well acquaint with different field management implements.
	STG-VE-6026	Skill up with Cultivation Practices	This units is made up to learn the various practices followed in a tea estate fields through internship itself by staying in a commercial garden, where they can explore their expertise knowledge & skill developed from the subjects they studied in the earlier course component of tea garden field management operation, from the land preparation to pruning including, nursery practices, vegetative propagation, different types of planting materials as per TBI recommended, planting, INM, IPM practices, irrigation & drainage, plucking & tipping, the students will do the practices in the college own land, after that move for internship, here also students able to know the report writing & also the contents need in a report writing or practical note submitting.
	STG-VE-6036	Internship	This paper is design to learn the various practices followed in a tea estate factory through internship itself by staying in a commercial garden, where they can explore their expertise knowledge & skill developed from the subjects they studied in the earlier course component of tea manufacturing process, from the tea leaves to made tea, sorting, grading and packaging & marketing operation. Here the students able to understand about a good report writing & also the contents need in a report writing or

			practical note submitting.