The University of Burdwan
Syllabus for B.A (Hons)
in Bengali Under Semester with Choice Based Credit System (w.e.f. 2017-2018)

Course Outcome

Semester – I

CC – 1: বাংলা সাহিত্যের ইতিহাস: প্রাচীন ও মধ্যযুগ

১. প্রাচীন বাংলা ভাষার নিদর্শন চর্যাপদ। বৌদ্ধ ধর্মের অবক্ষয়কালে গূঢ় তত্ত্বকথাগুলি ছন্দোবদ্ধ ভাষায় লিপিবদ্ধ করেন সহজিয়া সিদ্ধাচার্যরা; যার কাব্যিক গুণ ছাত্রছাত্রীদের ইতিহাসচেতনা বৃদ্ধি করে।

২. মধ্যযুগীয় সাহিত্য ইতিহাসের দলিল শ্রীকৃষ্ণকীর্তন, সমকালীন সমাজজীবনের ছবি তুলে ধরে যুগসচেতনতা বৃদ্ধি করে।

৩. অনুসারী সাহিত্য (ভাগবত, রামায়ণ, মহাভারত), চৈতন্যজীবনী সাহিত্য (বৃন্দাবনদাস, কৃষ্ণদাস কবিরাজ, জয়ানন্দ, লোচনদাস) বৈষ্ণব পদাবলী (বিদ্যাপতি, চণ্ডীদাস, গোবিন্দদাস, জ্ঞানদাস, বলরামদাস) মঙ্গলকাব্য (মনসামঙ্গল, চণ্ডীমঙ্গল, ধর্মমঙ্গল, অন্নদামঙ্গল) শিবায়নকাব্য, শাক্ত সাহিত্য (রামপ্রসাদ ও কমলাকান্ত) মধ্যযুগের ধর্মচারণ যুগবৈশিষ্ট্য রীতিনীতি তুলে ধরেছে কাব্যের আধারে। ধ্রুপদী ভারতীয় সাহিত্য মিশে গেছে বাঙালীয়ানার সহজসুরে।

৪. ময়মনসিংহ গীতিকা, ইসলামী সাহিত্য, বাউলগান তৎকালীন বঙ্গদেশের মানুষের কথা বলে। বাংলার সমাজ ও সংস্কৃতির ধারা সাহিত্যের ছাত্রছাত্রীদের মননশীলতা, সহনশীলতা ও মুক্তচেতনার বিকাশ ঘটায়।

CC – 2: ছন্দ, অলংকার

১. ছন্দশাস্ত্রের নিবিড় পাঠ ছাত্রছাত্রীদের কাব্যকবিতার বহিরাঙ্গের সৌন্দর্য অনুধাবনে সহায়তা করে।

২. অলঙ্কারের আস্বাদনে সংস্কৃত ও বাংলা সাহিত্যের উপাদানগত বিশেষত্ব আস্বাদন করে।

Interdisciplinary Generic Elective

GE 1: প্রবন্ধ সাহিত্য : বঙ্কিমচন্দ্র ও রবীন্দ্রনাথ

১. বঙ্কিমচন্দ্র চট্টোপাধ্যায়ের কমলাকান্তের দপ্তরের অন্তর্গত কয়েকটি প্রবন্ধ পাঠ করে শিক্ষার্থীরা হাস্যরসের অন্তরালে প্রাবন্ধিকের সমাজবীক্ষণের পরিচয় পাবে।

২. রবীন্দ্রনাথের সাহিত্য সমালোচনা মূলক প্রবন্ধ গুলি তাদের মননশীলতা বৃদ্ধিতে সাহায্য করবে।

Semester – II

CC – 3: পদাবলীসাহিত্য: বৈষ্ণব পদাবলী, শাক্তপদাবলী

বৈষ্ণব পদকর্তাদের বিভিন্ন পদ পাঠ করে বৈষ্ণব তত্ত্ব সম্পর্কে জানতে পারে।

শাক্তপদাবলী পাঠ করে ধর্মের সূক্ষ্ম তত্ত্বের সঙ্গে জীবাত্মা পরমাত্মার স্বরূপ সম্পর্কে জ্ঞানলাভ করে।

CC – 4: রামায়ণ অন্নদামঙ্গল (অন্নদার ভবানন্দ ভবনে যাত্রা পর্যন্ত)

১. রামায়ণের লঙ্কাকাণ্ড পাঠ করায় ছাত্রছাত্রীদের মধ্যে ধর্ম অধর্মের সংঘাতে ধর্মের বিজয়নীতি ঘোষণার পাশাপাশি তৎকালীন বাঙালী সমাজজীবন সম্পর্কে ধারণা জন্মায়।

২. অন্নদামঙ্গল কাব্য পাঠে যুগরুচির পরিচয় লাভ করে।

GE 2: গল্প : প্রভাতকুমার ও শরৎচন্দ্র

দুই ছোট গল্পকারের গল্পে তৎকালীন সমাজজীবন প্রতিফলিত হয়েছে শিক্ষার্থীরা এই গল্প পাঠ করে সমৃদ্ধ হবে।

AECC 2: ভাষা অংশ, সাহিত্য অংশ

ভাষা অংশ এবং সাহিত্য অংশ শিক্ষার্থীদের আনন্দদান করবে। সেই সঙ্গে তাদের জ্ঞানেরও বিকাশ ঘটবে।

Semester – III

CC – 5: বাংলা সাহিত্যের ইতিহাস (১৮০১ – ১৯৫০)

আধুনিক যুগের সাহিত্য সম্পর্কে জ্ঞানলাভ করবে।

সামাজিক-সাংস্কৃতিক-অর্থনৈতিক-ধর্মীয় অবস্থার প্রেক্ষাপটে রচিত কবিতা, কথাসাহিত্য, নাটক ও প্রবন্ধ রচয়িতাদের সাহিত্যকর্মের পরিচয় পাবে।

CC – 6: ভাষাতত্ত্ব

বাংলা ভাষার উৎসসহ প্রাচীন যুগের, মধ্যযুগের এবং সর্বোপরি বর্তমানে আধুনিক বাংলা ভাষার বৈশিষ্ট্য সম্পর্কে অবগত করা এই পাঠক্রমের উদ্দেশ্য। বাংলা শব্দভাণ্ডার এবং পাঁচটি উপভাষা সম্পর্কে সুস্পষ্ট ধারণা গড়ে উঠবে ছাত্রছাত্রীদের।

CC – 7: উনিশ শতকের কাব্য (বীরাঙ্গনা কাব্য, সারদামঙ্গল)

আধুনিক যুগের সাহিত্যক্ষেত্রে সেই সময়ের সৃষ্টিশীল রচনার আস্বাদনের প্রায়োগিক প্রেক্ষায় বীরাঙ্গনা কাব্যটি গুরুত্বপূর্ণ। ছাত্রছত্রীরা পৌরাণিক চরিত্রগুলি বিশ্লেষণ করার সামর্থ অর্জন করবে আধুনিক দৃষ্টিতে।

সারদামঙ্গল কাব্য পড়ে আধুনিক গীতিকবিতার বৈশিষ্ট্য বিষয়ে জানতে পারবে। উনিশ শতকের নারী জাগরণের ইতিবাচক প্রতিফলনে কাব্যগ্রন্থটি ছাত্রছাত্রীদের ভবিষ্যত দৃষ্টিভঙ্গি তৈরীতে উৎসাহব্যঞ্জক।

GE – 3: বাংলা সাহিত্যের ইতিহাস

প্রাচীন বাংলা ভাষার নিদর্শন চর্যাপদ। বৌদ্ধ ধর্মের অবক্ষয়কালে গূঢ় তত্ত্বকথাগুলি ছন্দোবদ্ধ ভাষায় লিপিবদ্ধ করেন সহজিয়া সিদ্ধাচার্যরা; যার কাব্যিক গুণ ছাত্রছাত্রীদের ইতিহাসচেতনা বৃদ্ধি করে। সার্বিকভাবে বাংলা সাহিত্য সম্পর্কে জানতে পারবে।

SEC – 1: বাংলা ব্যাকরণ

বাংলা ব্যাকরণ অংশ শিক্ষার্থীদের বাংলা শব্দ ও ভাষা সম্পর্কে ধারণা স্পষ্ট করবে।

Semester – IV

CC – 8: কবিতা (রবীন্দ্রনাথের কবিতা, আধুনিক বাংলা কবিতা)

রবীন্দ্রনাথের কবিতাপাঠ করে নান্দনিক বোধ জাগ্রত হবে। কবিতার রসাস্বাদনের মধ্য দিয়ে কাব্যসৌন্দর্য উপভোগ করবে।

আধুনিক কবিতা পাঠ করে রবীন্দ্রপরবর্তী কবিতার ভাষ্য, ছন্দ সম্পর্কে অবগত হবে।

CC – 9: উপন্যাস (চন্দ্রশেখর, গণদেবতা)

উনবিংশ এবং বিংশ শতাব্দীর দুই ঔপন্যাশিকের দৃষ্টিভঙ্গীর প্রভেদ বুঝতে পারবে।

যুগচেতনা, সামাজিক পরিবর্তন সম্পর্কে ধারণা লাভ করবে।

CC – 10: নাটক (নীলদর্পন, শারদোৎসব)

ভারতের ইতিহাসে নীলচাষের ভয়ঙ্কর কুফলের নাট্যরূপ দীনবন্ধু মিত্রর নীলদর্পন নাটকটি। প্রচলিত ধারার এই নাটক পাঠে ঔপনিবেশিক ভয়াবহতা সম্পর্কে জানতে পারবে।

সাংকেতিক তত্ত্বধর্মী নাটক শারদোৎসব পাঠে শিক্ষার্থীরা বিশেষ আনন্দ লাভের পাশাপাশি জ্ঞান লাভ করবে।

GE – 4: ভাষাতত্ত্ব

বাংলা ভাষার উৎসসহ প্রাচীন যুগের, মধ্যযুগের এবং সর্বোপরি বর্তমানে আধুনিক বাংলা ভাষার বৈশিষ্ট্য সম্পর্কে অবগত করা এই পাঠক্রমের উদ্দেশ্য। বাংলা শব্দভাণ্ডার এবং পাঁচটি উপভাষা সম্পর্কে সুস্পষ্ট ধারণা গড়ে উঠবে ছাত্রছাত্রীদের।

SEC – 2

রচনাশক্তির নৈপুণ্য

পত্রলিখন, প্রতিবেদন অনুচ্ছেদ রচনা, ভাবার্থ ও ভাবসম্প্রসারণ শিক্ষার্থীদের লেখনিশক্তির নৈপুণ্য বৃদ্ধি করবে।

Semester – V

CC – 11: গল্প (গল্পগুচ্ছ, একালের গল্প)

ছোটগল্পের আঙিনায় রবীন্দ্রনাথের গল্পগুলির আস্বাদন করে আনন্দ লাভ করবে।

একালের গল্পগুলির পাঠভ্যাসের মধ্য দিয়ে বিশ শতকের বিভিন্ন লেখকের গল্পের বিচিত্র ধরণ-গড়ন চলন সম্পর্কে অভিজ্ঞতা লাভ করবে।

CC – 12: প্রবন্ধ ও প্রাচ্য কাব্যতত্ত্ব (প্রবন্ধ সংকলন, কাব্য জিজ্ঞাসা)

বাংলা ভাষা বাংলার সমাজ, বাংলার ব্রত প্রভৃতি বিবিধ বিষয়ে বিভিন্ন প্রাবন্ধিকের সুচিন্তিত মতামত শিক্ষার্থীদের চিন্তা ভাবনার পরিসর বিস্তৃত করবে।

কাব্যতত্ত্ব, সাহিত্যের রূপরীতি, বাদানুবাদ পাঠ্যান্তর্ভুক্ত হওয়ার ফলে এই পত্রটি শিক্ষার্থীদের চিন্তাভাবনার পরিসর বিস্তৃত করবে।

কাব্যতত্ত্ব, সাহিত্যের রূপরীতি, বাদানুবাদ পাঠ্যান্তর্ভুক্ত হওয়ার ফলে এই পত্রটি শিক্ষার্থীদের মন-মনন ও মেধা উৎকর্ষসাধনে সহায়তা করবে।

DSE – 1: উনিশ শতকের বাংলা কাব্য ও প্রবন্ধ

উনিশ শতকের আখ্যানকাব্য ও গীতিকবিতা পাঠসূত্রে প্রতিনিধিস্থানীয় কবি ও তাঁদের কাব্যবৈশিষ্ট সম্পর্কে ধারণা লাভ করবে।

উনিশ শতকের বাংলা প্রবন্ধ সাহিত্যের উদ্ভব, বিকাশ ও বিবর্তন সম্পর্কে সম্যক ধারণা জ্ঞান লাভ করবে।

DSE – 2: উনিশ শতকের বাংলা নাটক ও কথাসাহিত্য

উনিশ শতকের বাংলা নাটক, উপন্যাস ও গল্পের উদ্ভব, ক্রমবিকাশ, আঙ্গিক প্রতিনিধিস্থানীয় সাহিত্যিকদের সাহিত্যকর্ম সম্পর্কে আলোচনা তাদের সমৃদ্ধ করবে।

Semester – VI

CC – 13: সংস্কৃত ও ইংরেজি সাহিত্যের ইতিহাস

রামায়ণ, মহাভারত থেকে শুরু করে সংস্কৃত সাহিত্যের নানা কবি ও তাঁদের কাব্য সম্পর্কে এবং চসার, শেক্সপীয়র সহ ইংরেজি সাহিত্যের সাহিত্যিকদের সাহিত্য সম্পর্কে বিদ্যার্থীরা অবগত হবে।

সাহিত্যের তুলনামূলক আলোচনায় এই পাঠ বিশেষ সহায়তা করবে।

CC – 14: **সাহিত্যের রূপরীতি ও সংরূপ**

সাহিত্যের বিভিন্ন ধরণ সম্পর্কে ধারণা স্পষ্ট হবে।

গল্প, উপন্যাস, কবিতা, নাটক ইত্যাদির স্বরূপ ও বিকাশ সম্পর্কে জানতে পারবে।

DSE – 4: সাহিত্য বিষয়ক প্রবন্ধ ও লোকসাহিত্য

লোকসংস্কৃতি ও লোকসাহিত্য সম্পর্কে প্রাথমিক ধারণা গড়ে উঠবে।

প্রবন্ধ রচনা করতে শিখবে।

GUSHKARA MAHAVIDYALAYA

DEPARTMENT OF ENGLISH

B.A. Honours in English(CBCS)

PROGRAMME OUTCOMES

The overall CBCS course scores a decisive progress over the traditional classical, humanist syllabus of English literature and language. It opens up several choices with a lot of flexibility in students' progress. By breaking up the monolithic model of the year-end summative assessments into several smaller semester chunks, a latest, scientific approach to teaching-learning and evaluation system is adopted. The current course adopts micro-tests of several types like internals etc. Final examinations in every semester ensure a continuous assessment of learner progress all through.

The content of the B.A. (Hons./General) programme under CBCS is far more comprehensive than what it was in the previous format. We do have specific courses on skill development which are aimed at increasing competency and soft skills of the students pursuing the course. Besides, there are Discipline Specific Courses that are intended to offer advance knowledge on specialized topics. Apart from Core Courses, a student studies elective courses from other disciplines on the basis of his/her choice- a course that offers the student an exposure to other disciplines and scope to have proficiency in areas of knowledge outside the components of the Core Courses.

PROGRAMME SPECIFIC OUTCOMES

B.A. Programme in English Honours contains a whole range of texts starting from classical literature of both East and the West down to that of the modern Indian diaspora. Students undertaking this course, are getting an overview of literature of the West and that of their own land. This syllabus presents a holistic approach to literature in English covering Indian Classical Literature, European Classical Literature, Indian Writing in English, British Poetry, Drama (16th – 17th Centuries), and Rhetoric &Prosody, American Literature, Popular Literature, British Poetry and Drama (17th – 18th Centuries), British Literature (18th Century), British Romantic Literature, British Literature (19th Century), Women's Writing, British Literature (Early 20th Century), Modern European Drama, and Postcolonial Literatures. Besides it offers such course components as Modern Indian Writing in English Translation, Partition Literature, Literary Theory, Literary Criticism and History of the English Language that acquaint the students with the vast field of English Literature across the world, and provide necessary theoretical perspectives to approach and understand the different kinds of English literary texts.

COURSE OUTCOMES

The Course outlines of the discipline of English are divergent and universally humanistic. After careful examination of the courses, the department of English has pointed out the following outcomes of the selected courses as sample.

CC-01: INDIAN CLASSICAL LITERATURE

The course content of CC-1 in the first semester of English Literature introduces the students to the Indian Classical Literature. This course is intended to expose the English students to the rich tradition of Indian classical literature which includes classical drama of Kalidasa, Banbhatta and Sudrak along with the most celebrated epic by Vyasa.

CO-1: By pursuing this course the students get acquainted with the major concerns and conventions of classical Indian literature. They get insight into the aesthetic principles, the dramaturgy, and the epic tradition that developed in ancient India. They also gather a fair idea about the society that produced them.

CO-2: Through the texts of ancient Indian literature students get acquainted with the traditional Indian culture and its moral values. Besides, the study of Indian classical literature alongside European classical literature lends a wider perspective to the students for understanding literature.

CC-02: EUROPEAN CLASSICAL LITERATURE

CO-1: The content introduces first semester students of English Literature to Western Classical Literature which has remained the source of many modern literary texts in English. The students get an idea of important genres like drama and the epic and get to read the cult texts as well.

CO-2: The course gears up the students to face the larger gamut of English Literature in the years to come.

CC-03: INDIAN WRITINGS IN ENGLISH

CO-1: In pursuing this course, the students get acquainted with Indian literature in English. A foreknowledge of the socio cultural reality of motherland enables the students to appreciate literature in English in a very personal and intimate way.

CO-2: They get exposed to a whole range of issues and topics that acquaint them with colonial past, regional culture and social condition prevailing in different parts of India, the condition of women in India and its reflection in literature.

CO-3: Students also get introduced to the changing course of Indian English Literature from colonial times down to the present age of modernity.

CC- 04: BRITISH POETRY, DRAMA (16TH-17TH CENTURIES), RHETORIC & PROSODY

CO-1: Students are enriched with sonnets of William Shakespeare and metaphysical poetry of John Donne.

CO-2: Students learn the art of public speaking and creative writing simultaneously.

CO-3: Students are familiarized with plays of Christopher Marlowe and William Shakespeare.

CO-4: Students understand ideas like Renaissance Humanism, Elizabethan world picture and contemporary culture and politics.

CO-5: Students get knowledge about the role of contemporary writers during 16th-17th Centuries.

CC-05: AMERICAN LITERATURE

CO-1: The present course, comprising a large number of detailed and non-detailed texts, is supportive to inculcate a sound knowledge in American literature, starting from earliest to recent time. Texts with a balanced coverage of main literary aspects---poetry, prose, drama & novel, claim easily a reader's response on Transcendentalism, Psychoanalysis, quest for mystery and adventure.

CO-2: In congruity with traditional British literature, an undergraduate student may get flavour of additional issues like American Dream, race, class and gender.

CC-06: POPULAR LITERATURE

CO-1: Popular Literature is one of the most important genres taught in the universities globally in different disciplines of literature. *Alice in Wonderland* and *The Wonderful Wizard of OZ* make a student insightful of the incomparable contrasts the texts create between realism and the magical. The adventures of the inimitable Tintin and the spine chilling narrative of Agatha Christie instilling in young minds a sense of adventure and thrill which will remain with them for long.

CO-2: It also creates a lot of space for future research.

CC- 07: BRITISH POETRY & DRAMA (17TH-18TH CENTURIES)

CO-1: Students are introduced to the epic and mock epic respectively of John Milton and Alexander Pope.

CO-2: Students are informed with works of Thomas Dekker and Aphra Behn.

CO-3: Students understand ideas like Religion, Secularism, colonialism, and feminism.

CO-4: Students are made well aware of the role of contemporary writers during 17th- 18th Centuries.

CC- 08: BRITISH LITERATURE (18TH CENTURIES)

CO-1: This course acquaints the students with the literary tradition that prevailed in 18th century England, and the social and intellectual climate that produced it.

CO-2: They get exposed to the texts that carry the ideals of the Restoration society and that of Enlightenment and the principles of Neoclassicism that marked the Middleclass-centric urban literature of England in the early 18th century.

CO-3: The course, as it stands, provides access to traditional British literary texts of Congreve, Defoe, Swift and pre-romantic poets like Collins and Gray. Through these course components students get introduced to the amoral culture of the Restoration period and the literature of sense and sensibility that evolved in the late 18th century.

CC-09: BRITISH ROMANTIC LITERATURE

CO-1: This core course, chiefly based on noted pieces of Romantic poetry, is supposed to be the most popular one. Intense philosophical introspection, soul gratifying spirituality, conceptions of Nature & Imagination, Gothic sensation and so on are many of such learning outcomes of this paper.

CC- 10: BRITISH LITERATURE (19TH CENTURIES)

CO-1: Charles Dickens, had summed up in a succinct manner the thrust of nineteenth century British society, "It was the best of times, it was the worst of times." The present syllabus introduces the students to this most intriguing period of British Literature encompassing Alfred Tennyson, Robert Browning, Christina Rossetti, Charlotte Bronte, Thomas Hardy and of course Dickens.

CO-2: The Victorian ethos with its thrust on morality contradicted with scientific progress and the other parameters are laid bare to the undergraduates who get a varied understanding of contemporary society.

CC-11: WOMEN'S WRITING

CO-1: It is increasingly becoming more and more important to devote a paper to women's writing at the undergraduate level. There is an amazing variety in the offering starting from Emily Dickinson to Sylvia Plath and Eunice De Souza to the amazing adaptation of Jane Eyre by Jean Rhys.

CO-2: The students get a taste of women's writing. Even the list of short stories penned by Charlotte Perkins Gilman, Katherine Mansfield, and Mahashweta Devi offer an insight into women's thought and psyche alongside tribal realities.

CO-3: The entire paper introduces the students to the first dozes of feminism and motivates the students who could try to engage themselves in understanding feminist discourse.

CC-12: BRITISH LITERATURE (EARLY 20TH CENTURIES)

CO-1: The course encompasses a wise selection of early twentieth century literary texts which we broadly term as the modernist literature with its all new clarion call of 'make it new' and its problems with the insurmountable chaos surrounding. The underlying urge to overcome the chaos is so well represented in the syllabus comprising the texts of Virginia Woolf, W.B.Yeats, T.S.Eliot, Joyce and John Osborne. The modern psychological novels of Woolf and Joyce and some works by two great modern poets like Yeats and Eliot acquaint students with the ideals of modernity.

CO-2: The students get introduced to the modernist fervor with a specific focus on modern stylistic developments. The students get to look at the postmodernist culmination in accepting the chaos that would fast become a way of life.

CC-13: MODERN EUROPEAN DRAMA

CO-1: Students are introduced to the plays of Henrik Ibsen, Eugene Ionesco, Bertolt Brecht, and Samuel Beckett.

CO-2: Students are enlightened with ideas like Realism, Tragedy, Heroism, and Absurdity from dramatic perspective.

CO-3: Students understand the role of contemporary writers in depicting politics and social change on Stage.

CC-14: POSTCOLONIAL LITERATURE

CO-1: The content of this course offers students an exposure to the postcolonial literature and acquaints them with the writings from erstwhile European colonies that alongside portraying the life in post-colonial societies reveal some of the fundamental issues associated with postcolonial studies.

CO-2: Achebe's *Things Fall Ap*art puts forward the story of colonial encounter with the natives of Africa resulting in the gradual destruction of the native cultural tradition, while Rushdie's *Haroun and the Sea of Stories* presents a postcolonial political allegory in the garb of fantasy.

DSE-1A: MODERN INDIAN WRITING IN ENGLISH TRANSLATION

CO-1: Indian Writing in English translation is one of the emerging discourses in academia. The variety in offer in the present syllabus covers Premchand, Sharatchandra Chattopadhay, Mahasweta Devi and M.K.Gandhi.

CO-2: The inclusion of the Bengali authors in the list is only an advantage as it gives the students more space to identify with some canonical Bengali texts and culture. The students get the scope to learn the translated counterparts after having read the originals.

DSE–2A: PARTITION LITERATURE

CO-1: The course content introduces the students to a branch of literature dealing with themes of partition, particularly relevant in the Indian subcontinent.

CO-2: In studying the texts dealing with the post-partition realities in India and Pakistan- the two nations that came into being in 1947- the students get acquainted with the issues concerning colonialism, anti- colonial nationalism, the notion of identity, home and homelessness, communalism and the separatist politics born of the self-other binary perception. *The Shadow Lines* by Amitav Ghosh, Khushwant Singh's *Train to Pakistan,* Saadat Hasan Manto's *Toba Tek Singh*, Dibyendu Palit's *Alam's Own House* help students to develop a humanistic vision of truth that look beyond the shadow lines of separation.

DSE–3A: LITERARY THEORY

CO-1: If there was one issue which was conspicuous by its absence in the different syllabi of English Literature in India, it certainly was literary theory. It is imperative for a student choosing English Honours to be acquainted with some of the important theoretical premises. The choice of Marxism, Post-structuralism, Feminism, and Postcolonial Studies certainly is worthy of appreciation as it allows the students to be familiar with these theoretical precepts which will come in handy for their future research aspirations.

DSE–4A: LITERARY CRITICISM AND HISTORY OF ENGLISH LANGUAGE

CO-1: This course introduces the students to two different branches of the study of English literature. Literary criticism elucidates many critical, aesthetic concepts essential for good literary appreciation. The area of British literary criticism from Sidney to Eliot empowers the learners to encounter any literary text with a depth of understanding. Beginning from Sidney the students come across theorization on literature offered by literary artists turned critics of literature. These writings dealing with literary principles, functions of literature, and modes of appreciation of literature as put forward by critics like Dryden, Pope and Eliot. Romantics like Wordswoth and Coleridge endow the students with some of the fundamental ways of approaching and understanding literature.

CO-2: The second component of the course is traditional philology. The trajectory of historical growth of the English language equips them with linguistic understanding.

SEC-I: TRANSLATION STUDIES

CO-1: In a multi-lingual country like India, the Skill Enhancement Course like Translation Studies is beyond doubt the most relevant & effective one. It introduces the theory & fundamental tools of translation studies, which help shape the translations skills of the students.

CO-2: In the context of our rapid globalization and increasing recognition of social and cultural pluralities, the outcome of clear & effective translation is significantly a stepping stone to build a career.

SEC-II: FILM STUDIES & ELT

CO-1: Students pursuing this course develop a proficiency in appreciating a film on the basis of its content, form and structure.

CO-2: The course is intended to develop skills and have the ability to develop careers in the entertainment industry, broadcasting, journalism, art of filmmaking, advertising etc.

CO-3: Students pursuing this course learn about evolution of films starting from silent era to modern 3d films, about nature and form of adaptation, and develop critical responses to cinematic work based upon aesthetic and cultural values in a way radically

different from stereotypical attitude to film as a form of entertainment.

CO-4: English Language Teaching (ELT), yet another option offered to the students under this course, is a fast growing area of study in the English teaching-learning context today. It is a very useful subject for the making of efficient English teachers as well as good language learners. It makes learners acquainted with the technicalities developed in today's language learning context. The new insights it offers facilitate the learning process. Everyday experiences like teaching and learning, apparently so obvious, show a lot of things taking place both internally as well as outwardly. Students face little difficulty in displaying their understanding in handling some classroom problems offered to them. They sometimes come up with their fresh approaches to some lingering problems. The subject is open- ended, and has larger applications in different fields of life in the present-day globalized context.

B. A. General Programme in English (CBCS)

Programme Outcomes

The College offers degree in Bachelor of Arts (B.A) with different combinations. The students go through a well-defined study programme for their all-round development.

1. By developing the students' efficiency in English, this course prepares them for the professional opportunities in fields like banking, teachings, railway and other services. They can appear for almost every exam where science is not the basic eligibility. Study of Humanities makes students socially aware. Thus many choose to work in NGOs and some may set up their own.
2. After completion of this course students can go for M.A, M.Ed, or PhD and choose teaching as career.

PROGRAMME SPECIFIC OUTCOMES

The programme introduces the students to English literature and the socio-political and cultural realities that underscore it. The language component sensitizes the students to the formal aspects of English language. The objective of the course is to orient students with the study of significant texts and to introduce them to the critical reading of creative texts Furthermore, this programme aims to develop the skills related to the learning of English language and literature. The objectives of the following are as follow:

1. To equip students with knowledge of English as a world language.

2. To develop the soft skills of the students particularly the skills of communication.

3. To recognize and appreciate the importance of major literary genres, subgenres, and periods.

4. To train students for careers and advanced studies.

COURSE OUTCOMES

CC-1A : POETRY & SHORT STORY

Students are initiated to the different genres of literature like poetry, and short stories.

CC – 1B : ESSAY, DRAMA & NOVEL

Students are initiated to the different genres of literature like essay, drama and novel.

CC 1C: Contemporary India: Women and Empowerment

Students gain knowledge about women's writing, sexual politics, race, gender, social reforms, and women's rights.

CC – 1D : ACADEMIC WRITING AND COMPOSITION

Students develop skill in academic writing and composition, citing resources, editing, book and media review.

CORE COURSE : (L1---1) Language, Variety and Stylistics

Students gain knowledge about language and communication. They learn to speak and write in English formally and informally.

CORE COURSE: (L1---2) Language, Imagination & Creativity

Students learn about the various literary devices that enable them to understand the nuances of literary language.

DSE - 1: A. British Literature

This paper introduces the students to some of the representative texts of British literature.

(DSE)- 2: A: Indian Literature in Translation

Crossing the boundaries of traditional English Literature, the students are exposed to the emerging new disciplines of English studies. It includes Indian Writings in English Translation.

(GE)- 1 GENDER & HUMAN RIGHTS

The students are made aware about the crucial aspects of gender indiscrimination portrayed in literary texts in English.

(GE)- 2 ENVIRONMENT & LITERATURE

The paper introduces the students to nature in oriental and western thought, deep ecology, and third world environmentalism.

AECC – 2 Communicative English:

The paper focuses on acquiring the command of vocabulary, usage, collocation, register, difference between formal and informal speech, between standard and colloquial language, awareness about linguistic courtesy, different types of salutation, and letter-ending.

SEC - 1 A: Translation Studies/ Film Studies

Students develop skills in different fields like Translation Studies/ Film Studies. They are introduced to the basic concepts and terms used in Translation Studies through relevant tasks. The course enables the students to create a better academic and professional career for themselves. The course creates better job prospects for the students.

SEC - 2 A: English Language Teaching

The paper offers the students opportunity to know the structures of the English Language, methods of teaching English Language, assessing language skills , materials for language teaching.

SEC – 3 A: Technical Writing

This paper focuses on learning the language and communication, differences between speech and writing, distinct features of speech, distinct features of writing, skills pertaining to technical writing.

SEC- 4 A: Soft Skills

The paper provides the students with the scopes of developing soft skills – teamwork, emotional intelligence, adaptability, leadership, and problem solving.

3-Year B.A. Honours (1+1+1 Pattern) in English

Programme Outcomes

The curriculum of the UG English Course (Honours) has been designed with UGC regulations in mind. Minimal alterations have been made, where necessary, keeping in mind the region from where students generally hail and the infrastructure available in the colleges affiliated to the University of Burdwan. The curriculum highlights: a) basic philosophy of teaching English as an Honours subject b) the core objectives of English (Literary Studies and Language through Literature) by way of imparting subject knowledge, life skills, awareness of human values, respect for different locations and life forms, and professional skills c) translation of each skill into demonstrable outcomes in terms of basic and critical communication, social engagement, personal growth and ability enhancement d) application and use of domain knowledge as a bridge to society and the world at large e) demonstration of professional awareness and problem solving skills, f) ability to recognize the professional and social utility of the subject in the process .

PROGRAMME SPECIFIC OUTCOMES

The curriculum and the teaching-learning process involve methods to help students appreciate English literature by being able to develop the critical faculty, necessary to analyse and understand more than what is available in the printed text. Today, the study of English Literature has branched into various new areas which involve not only the growth and development of the English language but also the emergence and growth of creative writing in various ‗Englishes like the Indian Writing in English and the American English. The syllabus traces the beginnings of English literature to its present forms all around the globe. While establishing the relevance of its study in every corner of the world, it also empowers learners to face job interviews confidently and successfully and work in the present job market. Besides pursuing higher studies including research, students can work successfully in the world of technology, advertising as ‘Content Writers‘ or shouldering responsibilities as administrators. Poised at an interesting interface of tradition and

contemporaneity, the curriculum reflects a rich diversity and range with topics like Anglo Saxon Literature, Shakespeare, Victorian and Romantic literature as well as new and emerging areas like Postcolonial literatures, Popular Literature, Modern European drama. The syllabus/curriculum attempts to make students familiar with the extensive range of literary works of British, American, and World literature. It also endeavors to help students develop an acquaintance with the nature of the canon and of canon formation, including issues of culture, history, race, ethnicity, gender, and sexual orientation. Students learn to comprehend, analyse and interpret literary texts critically by the end of the course, besides learning to improve their creative writing skills in a digital world and their communicative skills. It seeks to foster a sense of linguistic-cultural awareness among its students by teaching Literatures in Translations.

The specific objectives of the BA programme in English Literature (Honours) are to develop in the student the ability to demonstrable the following outcomes:

1. Disciplinary Knowledge of English Literature and Literary Studies

2. Communication Skills

3. Critical Thinking

4. Analytical Reasoning

5. Self-Directing Learning

6. Multicultural Competence

7. Reflective Thinking:

8. Values: Moral and Ethical, Literary and Human

Disciplinary Knowledge:

a) ability to identify, speak and write about different literary genres, forms, periods and movements

b) ability to understand and engage with various literary and critical concepts and categories

c) ability to read texts closely, paying attention to themes, generic conventions, historical contexts, and linguistic and stylistic variations and innovations

d) ability to understand appreciate, analyze, and use different theoretical frameworks

e) ability to locate in and engage with relevant scholarly works in order to develop one‘s own critical position and present one‘s views coherently and persuasively

f) ability to situate one‘s own reading, to be aware of one‘s position in terms of society, religion, caste, region, gender, politics, and sexuality to be self-reflexive and selfquestioning

g) ability to understand the world, to think critically and clearly about the local and the global through a reading of literatures in translation and in the original, to be a located Indian citizen of the world

h) ability to see and respect difference and to transcend binaries

Communication Skills:

a) ability to speak and write clearly in standard, academic English

b) ability to listen to and read carefully various viewpoints and engage with them.

c) ability to use critical concepts and categories with clarity.

Critical Thinking:

a) ability to read and analyze extant scholarship

b) ability to substantiate critical readings of literary texts in order to persuade others

c) ability to place texts in historical contexts and also read them in terms of generic conventions and literary history

Analytical Reasoning:

a) ability to evaluate the strengths and weaknesses in scholarly texts spotting flaws in their arguments

b) ability to use critics and theorists to create a framework and to substantiate one‘s argument in one‘s reading of literary texts

Reflective Thinking:

a) ability to locate oneself and see the influence of location—regional, national, global—on critical thinking and reading

Self-Directing Learning:

a) ability to work independently in terms of reading literary and critical texts

b) ability to carry out personal research, postulate questions and search for answers

Multicultural Competence:

a) ability to engage with and understand literature from various nations and reasons and languages

b) ability to respect and transcend differences

Moral and Ethical Values:

a) ability to interrogate one‘s own ethical values, and to be aware of ethical issues

b) ability to read values inherited in literary texts and criticism vis a vis, the environment, religion and spirituality, as also structures of power

COURSE OUTCOMES

Paper I: The opening course of English Honours deals with British poetry and drama from Anglo-Saxon Age to Elizabethan. It is useful to students concerned with English literature in multifarious ways.

1. Poetry gives students a healthy outlet for surging emotions. The first unit enhances their knowledge on particular aspects of the literary history of British poetry, its socio-economic background and development from its Anglo-Saxon beginnings to the Elizabethan Era through milestones like Donne, Spenser, Sidney, Shakespeare, Ben Jonson.

2. This paper equally acquaints the students with related literary terms.

Paper II: 1.This paper traces the development of literary history from Jacobean to Restoration Period through important figures like Milton, Pope and Bacon.

2.Similarly the section on Rhetoric and Prosody would enable the students to identify the figures of speech and scan the stanzas of a poem

Paper III: Some of the course learning outcomes that students of this course are required to demonstrate run thus:

1.Explain and analyze the rise of the critical mind

2. Trace the development of Restoration Comedy and anti-sentimental drama

3. Examine and analyze the form and function of satire in the eighteenth century · appreciate and analyze the formal variations of Classicism

4· Map the relationship between the formal and the political in the literature of the neoclassical period

Paper IV:

1. Understand Romanticism as a concept in relation to ancillary concepts like Classicism

2. Understand the Romantic period in English literature in terms of its social, philosophical, ntellectual, literary backgrounds including German and French influences

3. Analyze and understand the main characteristics of Romanticism

4. Appreciate the canonical and representative poems and prose of the writers of the Romantic period.

5. Develop skills of critical analysis and interpretation of selected poems in order to understand the theme, language, style, and elements of prosody.

6. Appreciate and analyze the sensibility of the British Romantic period: common man, equality, freedom, sense of community and fraternity

7. Relate Romantic literary texts to other forms of expression such as painting, for instance.

Paper V:

1. Identify and analyze the socio-economic-political contexts that inform the literature of the period

2. Comment on the historical and political awareness of literary texts as reflected in the transition from nature to culture across various genres

3. Understand the conflict between self and society in different literary genres of the period

4. Link the rise of the novel to the expansion of Colonialism and Capitalism

5. Understand the transition from Romantic to Victorian in literature and culture

6. Link the Victorian temper to political contexts in English colonies

Paper VI:

1. Trace the history of modernism in the socio-cultural and intellectual contexts of late nineteenth century and early twentieth century Europe

2. Link and distinguish between modernity and modernism

3. Explain the links between developments in science and experiments in literature

4. Explain the history of early twentieth-century modernism in the light of stream of consciousness, Jungian and Freudian ideas, Psychoanalysis, Imagism, Cubism, Vorticism

5. Identify and analyze the use and modernist technique in different genres in early twentieth century British literature

6. Trace the history of the self and subjectivity in literature in the light of colonial consciousness

7. Explain and analyze the idea of form in modernist literary texts from across major genres

Paper VII:

1. This paper will impart the knowledge of some important works of writers like Dylan Thomas, W. H. Auden, Ted Hughes, Phillip Larkin, Seamus Heaney, Harold Pinter, Grahame Greene etc.

Paper VIII:

1. Critically engage with Indian literary texts written in English and translated from Indian languages into English in terms of colonialism/postcolonialism, regionalism, and nationalism

2. Approach Indian Literature from multiple positions based on historical and

social locations

3. Understand the depth and diversity of American literature, keeping in mind the history and culture of the United States of America from the colonial period to the present (17th century to 21st century)

4. understand the historical, religious and philosophical contexts of the American spirit in literature; social-cultural-ecological-political contexts may, for example, include the idea of democracy, Millennial Narratives, the Myth of Success, the American Adam, the Myth of the Old South, the Wild West, Melting pot, Multiculturalism, etc.

3-Year B.A. General Degree Course of Studies (1+1+1 Pattern) in English with effect from 2015-2016

Programme Outcomes

The College offers degree in Bachelor of Arts (B.A) with different combinations. The students go through a well-defined study programme for their all-round development.

1. By developing the students' efficiency in English, this course prepares them for the professional opportunities in fields like banking, teachings, railway and other services. They can appear for almost every exam where science is not the basic eligibility. Study of Humanities makes students socially aware. Thus many choose to work in NGOs and some may set up their own.
2. After completion of this course students can go for M.A, B.Ed and choose teaching as career.

PROGRAMME SPECIFIC OUTCOMES

Studying English literature will introduce the student to the literary of English literature and will provide the necessary background for the study of English literature. The language component will sensitize the student to the formal aspects of English language. The objective of the course is to orient students with the study of significant texts and will introduce to student the critical reading of creative texts as an essential part of reading and skills to interpret literary text which is a reward part of a life-long commitment to learning. Studying of poetry will provide a comprehensive guide to English poetry, its development, its form and movement throughout the ages. The objective of studying fiction and some non-fictional works is to acquaint students with important works of literature. Some representative novels of the period have been included so as to familiarize the students with the important trends and to impart students with the following objectives:-

1. Equip students with knowledge of English as a world language.

2. Recognize and appreciate the importance of major literary genres, subgenres, and periods.

4. Increasing in-depth Knowledge of the core areas of the subject.

5. Train students for careers and advanced studies in a wide range of English, Public Relations, or Communications fields.

COURSE OUTCOMES

Specific learning outcomes for English courses include;

Paper I: The course content of Paper-I introduces the students to the poems of Shakespeare, Milton, Wordsworth, Shelley, Keats, Tennyson, Browning, T.E. Hulme, Wilfred Owen, Rabindranath Tagore and Sorojini Naidu as originally prescribed. Similarly the section on Rhetoric and Prosody would enable the students to identify the figures of speech and scan the stanzas of a poem.

Paper II: The course content of Paper II introduces the students to the short stories of H.E. Bates, Katherine Mansfield, Joseph Conrad, Somerset Maugham. Similarly they are acquainted with some important essays like A.C. Benson's *The Art of the Essayist* , Charles Lamb's *Dream Children*, George Orwell's *Shooting an Elephant* and R.K. Narayan's *A Library without Books.*

Paper III: This paper will introduce the students to some important plays by some important playwrights like William Shakespeare, John Galsworthy and George Bernard Shaw.

Paper IV: This paper will acquaint the students with works of the novelists like Charles Dickens and Ernest Hemingway.

GUSHKARA MAHAVIDYALAYA

Department of Physics

B.Sc (Hons.) Programme Outcomes, Programme Specific Outcomes and Course Outcomes

Programme	Programme objective	Programme specific objective
B.Sc. Physics (Honours)	**PO-1**. Students will have the skills in Physics and its related areas of technology for formulating and tackling Physics-related mechanical problems in eery day life. They will apply appropriate physical principles and methodologies to solve a wide range of problems associated with Physics. **PO-2**. The students will be able to acquire thorough knowledge hidden in different natural phenomena. **PO-3**. They can develop within themselves a scientific temper. Laboratory work, included in the programme will enhance their demonstrative and problem solving skill which will help them in professional work in near	**Semester I** **PSO-1**. The students will acquire knowledge in vector analysis, special function like beta or gamma function, different polynomials which are used as tools in physics. **PSO-2.** They will be able to learn data ploting and curve fitting using gnuplot. **PSO-3.** They will have adequate knowledge in theoretical mechanics and special theory of relativity. **PSO-4.** They will be able to perform various experiments of mechanics.
		Semester II

	future. They will acquire personal skills such as the ability to work both independently and in a group. **PO-4**. They will be able to recognize the importance of mathematical modelling, simulation and computing, and the role of approximation and mathematical approaches to describe the physical world. **PO-5**. They will develop themselves the ability to listen carefully, to read texts and research papers analytically and to present complex information in a concise manner to different groups/audiences of technical or popular nature **PO-6**. They will acquire a fundamental/systematic or coherent understanding of the academic field of Physics, its different learning areas and applications in basic Physics like Astrophysics, Material science, Nuclear and Particle Physics, Condensed matter Physics, Atomic and	**Semester III** **Semester IV**

	Molecular Physics, Mathematical Physics, Analytical dynamics, Space science, and its linkages with related disciplinary areas/subjects like Chemistry, Mathematics, Life sciences, Environmental sciences, Atmospheric Physics, Computer science, Information Technology. **PO-6**- Students will be able to prepare themselves for the entrance examinations conducted by the different universities and research laboratories. **PO-7**- 'Special theory of relativity' and Advanced 'particle Physics' grows a special interest among the students to know about the universe and encourage them to doing research in the advanced field of astrophysics.	**Semester V** **PSO-1.** The students will learn about advanced quantum mechanics and atomic physics **PSO-1.** They will be able to perform experiment in quantum mechanics lab. **PSO-2.** They will learn about solid state physics. **PSO-3.** They will be able to perform experiment in solid physics lab. **PSO-4.** They will be able to gather knowledge in Classical dynamics-which includes classical mechanics, fluid mechanics and advanced part of Special theory of relativity.
		Semester VI **PSO-1.** The students will learn about electromagnetic theory. **PSO-2.** They will be able to perform experiment in electromagnetic theory lab. **PSO-3.** The students will learn about statistical mechanics. **PSO-4.** They will be able to perform computational study in statistical mechanics. **PSO-5.** They will have knowledge in nuclear & particle physics and some new discipline of Physics like Nano materials, Physics of earth, Biological physics or communication physics.

Semester	Course code	Course title	Course Outcome
I	CC1	Mathematical Physics	On completion of this course students will be able to i) Apply the knowledge of calculus, vectors, vector calculus, probability and probability distributions in solving various problems in many branches of Physics and engineering. ii) Understand the properties of curvilinear coordinates and solve problems with spherical and cylindrical symmetries. iii) Explain the properties of Dirac delta function

			and apply Dirac delta function in different fields of physics, especially quantum mechanics.
		Mathematical Physics Lab	Understand the basics of C and C++ programming languages. Solve simple physical problems related to differentiations, integrations, differential equations, roots of equations by applying C and C++ programming languages.
	CC2	Mechanics	On completion of this course students will have adequate knowledge in theoretical mechanics such as: Fundamental of Newtonian mechanics, Fluid motion, oscillations, central force field, Elasticity etc and special theory of relativity.
		Mechanics Lab	i)Students will be trained to handle different measuring instruments like Slide Callipers, screw gauge, Traveling Microscope etc. ii)They will be able to perform various experiments of mechanics. iii)They will acquire knowledge about random errors observed during experiment.
II	CC3	Electricity and Magnetism	At the end of the course the students, they should learn the following. i) Fundamental concepts of electrostatics which includes Gauss law and its applications, electric field, dielectrics and capacitance. ii) Magnetic fields due to currents, concepts of electromagnetic induction. They can solve problems using Biot-savart Law, Ampere law, Faraday's law and Lenz's law. iii) Analysis of electrical circuits applying various network theorems.
		Electricity and Magnetism Lab	In the laboratory course, they will study basic electric circuits such as RC circuit, series and parallel LCR circuit, perform experiments to measure low resistance, capacitance, self-inductance and verify the network theorems using simple electric circuits.
	CC4	Waves and optics	They will have basic concepts in waves and optics. Such as: i) super position of SHO, wave motions and velocities. ii) Electromagnetic nature of light and different properties of light like interference and diffraction iii) Holography

		Optics Lab	They will be trained to handle different optical instruments in dark room Such as: i) familiarization with Schuster's focusing of spectrometer which is the basic need to perform the optical experiments related to optical spectrometer. ii) Interference by Fresenl's Bi-prism, Newton's Ring experiment etc. iii) To investigation of motion of coupled oscillators and study of Lissajous figures. iv) and will be able to demonstrate different properties of light such as wave length of light, interference, diffraction etc.
III	CC5	Mathematical Physics II	On completion of this course students will be able to i) Recognise the Fourier analysis of periodic functions and apply the Fourier analysis in different physical problems like vibrating strings etc. ii) Comprehend various special functions, such as the Hermite polynomial, the Legendre polynomial, the Laguerre polynomial and Bessel functions and their differential equations and solve various physical problems in quantum mechanics and other fields of Physics. iii) Know about Beta and Gamma Functions and establish relation between them. iv) Understand the basic theory of errors, their analysis and estimate errors in some experiments in Physics. v) Comprehend various methods to solve partial differential equations in different branches of Physics.
		Mathematical Physics Lab	Know the basics of the Scilab software and various usefulness of Scilab. Apply the Scilab software in curve fittings, in solving system of linear equations, generating and plotting special functions such as Legendre polynomial and Bessel functions, solving first and second order ordinary and partial differential equations etc..

	CC6	THERMAL PHYSICS	On completion of this course student will be able to 1. Understand the concepts of thermodynamics, all the law of thermodynamics, the concept of entropy and the associated theorems, the thermodynamic potentials and their physical interpretations. 2. Heat Engines. Carnot's Cycle, Carnot engine & efficiency. 3. Learned Maxwell's thermodynamic relations. 4. Learned the basic idea of kinetic theory of gases, Maxwell-Boltzman distribution law, mean free path of molecular collisions, transport phenomenon 5. Learn about the Andrew's experiments, real gas equations, Van der Waal equation of state, the Joule Thompson effect.
		THERMAL PHYSICS LAB	In the laboratory course, students perform experiments and determine Stefan's constant, Coefficient of thermal conductivity, Boiling point of liquid, study the Thermo-emf of thermocouple.
	CC7	Digital Systems and applications	Acquire basic knowledge of digital electronics. They will be familiar with i)Working principle of CRO and its applications. ii) Number systems and Boolean algebra. iii) Combinational & sequential digital circuits. iv) Microprecessor architecture and assembly language programming .
		Digital Systems and applications Lab	In the laboratory, students are trained to design combinational and sequential circuits. Learn the skill of programming and execution of the program using microprocessor.
	SEC1	Renewable energy and energy harvesting	1. Students will learn about fossil fuels and its limitations. They will understand the present need for the development of alternate sources of renewable energy. 2. They will learn the importance of solar energy and the applications and constructions of solar pond, solar water heater, solar cooker , solar cell . 3. They will have knowledge of wind energy, ocean energy, tidal energy, geothermal energy and its applications. 4. They will also learn piezoelectricity energy harvesting and electromagnetic energy harvesting.

IV	CC8	Mathematics Physics III	On completion of this course students will be able to i) Know about the complex numbers and their properties, functions of complex numbers various properties such as analyticity, poles and residues. The students are also expected to learn the residue theorem and apply residue theorem in determining various definite integrals. ii) Recognise Fourier transform, the inverse Fourier transform, their properties and also able to apply them various in physical problems. iii) Comprehend the Laplace transform, the inverse Laplace transforms, their properties and apply them in solving different physical problems.
		Mathematics Physics III Lab	Solve first- and second- order ordinary differential equations with appropriate boundary conditions using C++/Scilab programming language. v) Evaluate of the Gaussian integrals using C++/Scilab programming language. (vi) Evaluate of the Fourier coefficients of a given periodic function, (vii) Plot the Legendre polynomials and the Bessel functions of different orders and interpretations of the results. (viii) Fit some given set of data to a graph using Least Square Method.
	CC9	**ELEMENTS OF MODERN PHYSICS**	On completion of this course student will be able to 1. Understand Photo-electric effect and Compton scattering. De Broglie wavelength and matter waves; Davisson-Germer experiment. 2. Understand gamma ray microscope thought experiment, Heisenberg uncertainty principle 3. Understand the concept of wave functions, momentum and energy operator, the Schrodinger equation, time dependent and time independent cases, probability density and the normalization techniques. 4. Skill development on problem solving e.g. one dimensional rigid box, tunneling through potential barrier, step potential, rectangular barrier. 5. Understanding the properties of nuclei like density, size, binding energy, nuclear forces and structure of atomic nucleus, liquid drop model

			and nuclear shell model and mass formula. 6. Ability to calculate the decay rates and lifetime of radioactive decays like alpha, beta, gamma decay. Neutrinos and its properties and role in theory of beta decay. 7. Understand fission and fusion well as nuclear processes to produce nuclear energy in nuclear reactor. 8. Understand the spontaneous and stimulated emission of radiation, optical pumping and population inversion. 9. Lasers: Ruby laser and He-Ne laser
		ELEMENTS OF MODERN PHYSICS LAB	In laboratory, student will measure Planck's constant, Work function of material, excitation potential of Argon, value of e/m, wave length of Laser, charge of an electron.
	CC10	Analog Systems & Applications	The students will have the basic knowledge of i) Semiconductor physics, ii) Electronic devices and their applications. Understand the operation of rectifiers, voltage regulators, amplifiers, oscillators and circuits using operational amplifiers.
		Analog Systems & Applications Lab	In laboratory, students will design and construct analog electronic circuits like amplifiers, oscillators, multivibrators. Demonstrate amplifiers, adders, integrators and differentiators using op-amp.
	SEC2	Electrical circuits and network skills	1. Students will understand the basic laws of electricity and will be able to design simple electric circuits. 2. They will be familiar with electrical drawings and the symbols used. 3. They will learn the principles of operation of electric generators, transformers, motors and solid state devices. 4. They will understand the fundamentals of electrical wiring and measures for electrical protection.

V	CC11	**QUANTUM MECHANICS AND APPLICATIONS**	At the end of this course the students will able to 1. Understand the time dependent and time independent Schrodinger equation, properties of wave function, momentum and energy operators and expectation values of position and momentum. 2. Understand the bound state, square well potential, quantum mechanics of SHO, zero point energy. 3. Through understanding the behaviour of quantum particle encountering non-relativistic hydrogen atom, for its spectrum and eigenfunctions. 4. Understand the Electron Spin and Spin Angular Momentum. Larmor's theorem, Gyromagnetic Ratio and Bohr Magneton. 5. Study the Stark effect and Zeeman Effect of electric and magnetic. 6. Understand Pauli's Exclusion Principle. Symmetric & Antisymmetric Wave Functions. Fine structure. Spin orbit coupling. Total angular momentum. Vector Model. Spin-orbit coupling in atoms- L-S and J-J couplings. Hund's Rule.
		QUANTUM MECHANICS AND APPLICATIONS LAB	In the computer lab, the student solve Schrodinger equation for ground state and first excited by using C/C++/Scilab In the laboratory, students will study Electron spin resonance, Zeeman effect, Tunneling effect.
	CC12	Solid State Physics	Acquire knowledge about the following: i) Lattice, crystal structure ii) Lattice vibrations and phonons iii) Origin and types of magnetism iv) Dielectric and ferroelectric properties of materials v) Band theory of solids, semiconductor physics and basic ideas about superconductors.

		Solid State Physics Lab	In laboratory, students will measure dielectric constant, electrical resistivity, hall coefficient. Hysteresis loop of ferromagnetic and ferroelectric materials determined. They are trained to handle sophisticated experimental set ups.
	DSE-1	Advanced Mathematics I	On completion of this course students will be able to i) Know about basic properties of the linear vector space such as linear dependence and independence, how to change basis, meaning of isomorphism and homomorphism, linear transformations and their representation by matrices. ii) Comprehend the basic properties of matrices their types such as Hermitian, skew Hermitian, orthogonal and unitary matrices. Students will also able to apply in quantum mechanics. They should also know how to find the eigenvalues and eigenvectors of matrices. iii) Know about some basic properties tensors, their symmetric and antisymmetric nature, the Cartesian tensors, the general tensors, contravariant, covariant and mixed tensors and their transformation properties under coordinate transformations etc. Students will also recognise various physical examples of tensors such as moment of inertia tensor, energy momentum tensor, stress tensor, strain tensor etc.
		Advanced Mathematics I Lab	Multiply two 3×3 matrices by using Scilab/C++ computer language. (v) Comprehend the process of Diagonalization a matrix by using Scilab/C++ computer language, (vi) Find Inverse of a matrix. (vii) Solve various differential equations satisfied by different orthogonal polynomials and special function. (viii) Determine the wave functions for stationary states as eigenfunctions of Hermitian differential operators and also the energy eigenvalues.
	DSE-2	Classical Dynamics	On completion of this course students will be able to gather knowledge in Classical dynamics and its applications -which includes i) classical mechanics ii) Small amplitude oscillations ii) Fluid dynamics iii) advanced part of Special theory of relativity.

VI	CC13	Electromagnetic theory	i) Understand Maxwell's electromagnetic equations and how to apply it to solve various problems of electromagnetic theory. ii) Learn wave equations, wave propagation in different media, reflection transmission at an interface iii) Polarization and optical activity iv) Learn the features of planar optical waveguide and wave propagation through optical fiber.
		Electromagnetic theory Lab	In the laboratory course, students perform experiments demonstrating interference, diffraction, polarization of light.
	CC14	Statistical Mechanics	Acquire basic knowledge of statistical mechanics. 1. Learned about microstate, macrostate, ensemble, phase space, thermodynamic probability and partition function. 2. Understand the Maxwell-Boltzman Distribution Law, Gibbs paradox, Sackur Tetrode equation, Negative temperature 3. Understand the classical and quantum theory of radiation 4. Learn to derive Wiens law, Rayleigh Jeans law, ultraviolet catastrophe. Saha ionization formula. 5. Learned Planck's law, deduction of Wien's, Rayleigh-Jeans, Stefan-Boltzman law from Planck's law. 6. Learned Bose-Einstein distribution, properties of liquid helium, photon gas. 7. Learned and understand the F-D distribution law, Fermi gas, electron gas in metals and their properties. Learned the idea about Chandrasekhar mass limit and white dwarfs stars.
		Statistical Mechanics Lab	In the computer lab, using C/C++/scilab simulations to study Statistical Mechanics based problems 1. Plot Planck's law for Black Body radiation 2. Plot Specific Heat of Solids (a) Dulong-Petit law, (b) Einstein distribution function, (c) Debye distribution function 3. Plot the a) M-B distribution b) F-D distribution c) B-E distribution

			4. Study the Partition function
	DSE-3	Nuclear & Particle physics	On completion of this course students will acquire knowledge about the following: i)General properties of Nuclei ii)Nuclear models iii)Radioactive decay v) Nuclear reactions vi) Interaction of Nuclear radiation with matter vii) Nuclear detectors and particle accelerators viii) Particle physics
	DSE-4	Astronomy & Astrophysics	On completion of this course students will be able to i)Identify the object in the sky through their knowledge of various co-ordinate system and understand their various feature by using suitable telescope. ii)Understand the structure of sun, thermochemical reaction responsible for creation of energy in shining objects and basic features of galaxies and universe.

GUSHKARA MAHAVIDYALAYA

DEPARTMENT OF CHEMISTRY

B.Sc (HONOURS AND GENERAL)

Programme Outcomes, Programme Specific Outcomes and Course Outcomes

Programme outcome

Gushkara Mahavidyalaya is affiliated to the University of Burdwan and follows the curricula prescribed by the university.

The objective of B.Sc syllabus as prescribed by UGC and adopted by Department of Chemistry, BU, our affiliating university is to prepare the students to learn various courses/subjects into the domain of science and technology leading to a graduate degree.

PO-1: B.Sc. Chemistry syllabus is so planned to offer the students a general understanding about the basics of chemistry covering all the principles and perspectives.

PO-2: The branches of Chemistry such as Organic Chemistry, Inorganic Chemistry, Physical Chemistry, Analytical Chemistry, Pharmaceutical Chemistry, Green Chemistry, Polymer Chemistry and Industrial Chemistry depict the different aspects of chemistry where the students train their minds towards a broader aspect of the subject.

PO-3: The syllabi of the B.Sc. Chemistry course are discretely classified to give systematic advancement of the subject knowledge exactly through the three years degree course.

PO-4: The practical workout in different facets done in the laboratories convey the students the knowledge about various chemical reagents, techniques and reactions. Thus, sharpen 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 necessary precautions related to them.

PROGRAMME SPECIFIC OUTCOMES

PSO-1: The students will understand the basics of Organic Chemistry like Bonding and Physical properties and elementary idea of stereochemistry of organic compounds. The students will also able to gather knowledge of the fundamentals of Physical Chemistry.

PSO-2: Students will learn the basics of Inorganic Chemistry, deep idea of stereochemistry and Substitution and Elimination reactions of organic compounds.

PSO-3: Students will grasp the knowledge the foundations of Quantum Mechanics.

PSO-4: Students will learn the different types bonding and intermolecular forces of inorganic compounds and the fundamentals of Radioactivity.

PSO-5: Students will learn the IT skill in Chemistry and will grasp the knowledge of Analytical Chemistry.

PSO-6: Students will learn the Applications of Thermodynamics and Quantum Chemistry in Physical Chemistry. Students also learn the General Principles of Metallurgy and Inorganic Polymers.

PSO-7: Students will learn the basics of Pharmaceutical Chemistry, Coordination Chemistry, Instrumental methods of chemical analysis, elementary idea of Bioinorganic Chemistry, Organometallic Chemistry and Green Chemistry.

PSO-8: Students will learn the fundamentals of Spectroscopy and its application to explain simple organic and inorganic compounds

Gathering thorough theoretical knowledge of different aspects of Chemistry and the practical knowledge of related topics in both systematic qualitative and quantitative ways are accumulated which helps building of learners scientific temperament and facilitate to make one a successful personality in the home and abroad.

GUSHKARA MAHAVIDYALAYA

DEPARTMENT OF BOTANY

B.Sc. BOTANY (HONOURS AND GENERAL)

Programme outcome

In student-centric education system learning outcomes-based curriculum framework is based on the premise that every student is unique in terms of his previous learning levels and experiences, life experiences, learning styles and approaches to future career-related actions. So teaching learning process must be in consonance with his distinctiveness. The quality, depth and breadth of the learning experiences made available to the students while at the higher education institutions help develop their characteristic attributes. Besides disciplinary knowledge and understanding, generic skills, global competitiveness in different academic fields of study should acquire/attain and demonstrate. Higher educational institution must build up the following attributes among the graduates through its curriculum.

- Competence of demonstrating comprehensive knowledge and understanding of one or more disciplines that form a part of an undergraduate programme of study.
- Ability to express thoughts and ideas effectively in writing and orally; Communicate with others using appropriate media; confidently share one's views and express herself/himself and present complex information in a clear and concise manner to different groups.
- Capability to apply analytic thought to a body of knowledge; analyse and evaluate evidence, formulate coherent arguments; critically evaluate practices, policies and theories by following scientific approach to knowledge development.
- Capacity to extrapolate from what one has learned and apply their competencies to solve different kinds of non-familiar problems and apply one's learning to real life situations.
- Ability to evaluate the reliability and relevance of evidence; analyse and synthesise data from a variety of sources; draw valid conclusions and support them with evidence and examples, and addressing opposing viewpoints.
- A sense of inquiry and capability for asking relevant/appropriate questions, Ability to recognise cause-and-effect relationships, define problems, formulate hypotheses, test hypotheses, analyse, interpret and draw conclusions from data, ability to plan, execute and report the results of an experiment or investigation.

- Ability to work effectively and respectfully with diverse teams; act together as a group or a team in the interests of a common cause and work efficiently as a member of a team.

Gushkara Mahavidyalaya is affiliated to the University of Burdwan and follows the curricula prescribed by the university.

The objective of B.Sc. syllabus as prescribed by UGC and adopted by Department of Science, BU, our affiliating university is to prepare the students to learn various courses/subjects into the domain of Science leading to a graduate degree.

The programme outcome of Science syllabus is to develop the following attributes among the science graduate

- He must have the ability to analyse, interpret and draw conclusions from quantitative/qualitative data; and critically evaluate ideas, evidence and experiences from an open-minded and reasoned perspective.
- Capability to use ICT in a variety of learning situations, demonstrate ability to access, evaluate, and use a variety of relevant information sources.
- Ability to work independently, identifies appropriate resources required for a project, and manages a project through to completion.
- Can perform experiment, correlate it with the theoretical knowledge, interpret the deviations, and capable of formulating new hypothesis.
- Can realize the social demand for scientific and technological developments and act in consonance with the directions of that demand.
- Possess knowledge of the values and beliefs of multiple cultures and a global perspective; and capability to effectively engage in a multicultural society and interact respectfully with diverse groups.
- Ethical, moral and social values to meet the expectations of both science and society at large.
- Capability for mapping out the tasks of a team or an organization, and setting direction, formulating an inspiring vision, building a team who can help achieve the vision, motivating and inspiring team members to engage with that vision, and using management skills to guide people to the right destination, in a smooth and efficient way.

The programme specific learning outcomes of B.Sc. Botany Honours Science syllabus may include the following:

- Demonstrate (i) in-depth knowledge and understanding about the fundamental concepts, principles and processes, which are common to the plants life from microorganism to angiosperms. In addition, about the same life process differs only in their grade of complexity, running through them. Acquire knowledge in its different subfields (plant ecology, biotechnology, economic botany, phytogeography), and its linkages with related disciplinary areas/subjects.

  (ii) The procedural knowledge that creates different types of professionals in the field of botany and related fields such as agriculture, natural resource management, microbiology, bioinformatics, biostatistics, teaching, research, environmental monitoring, agricultural food products, etc;

  (iii) Practical skills related on specialisation area(s) within botany as well within the subfields of botany and other related fields of study, including broader interdisciplinary subfields (biochemistry, biotechnology, microbiology, bioinformatics etc.);
- Skill regarding sterilisation, dissection, microscopic operation, staining methods, chemical separation, and isolation of plant metabolites in the laboratory field will be achieved.

- Acquire skills in the operation of scientific apparatus such as laminar airflow, autoclave, hot air oven, compound microscope, sohxlet apparatus, shaker, centrifuge machine, incubator etc.

- Recognize and appreciate the importance of the plant sciences and its application in academic, economic, environmental and social contexts.

B.Sc. Botany Hons. Course learning outcomes may include the following:

Curriculum and Syllabus For 3-Year B. Sc. (Honours) in Botany

Under Choice Based Credit System (CBCS)

(w.e.f. Academic Year 2017-2018)

*SESSION-2020-*21

SEMESTER	COURSE	COURSE NAME	COURSE OUTCOME
SEMESTER-1	CORE COURSE-1	Microbiology and Phycology	• Acquire the skill of microscope operation. • Can draw with the help camera lucida sketch of microorganism. • Can prepare slide for microscopic study. • Identify the lower cryptogames • Classify microorganism, and algae. • Gain better level of understanding about the process of life in simple living creatures • Can exploit the economical role of lower group of plants
	CORE COURSE-2	Archegoniatae	• Acquire elaborate knowledge regarding higher cryptogams • Can classify the members on the basis of their property.. • Can understand the same life process in its simple form is running with same weightage in diploid and haploid generation. • Can describe and compare flowering and non flowering plants.

			• Can identify and compare bryophytes ,pterdophytes, and gymnosperm plants. • Can dissect and prepare the specimen for microscopic study. • Can exploit the economic benefits of archegoniates .
	GE-1 (CHEMISTRY)		
	AECC-1(ENVS)		
SEMESTER-2	CORE COURSE-3	Mycology and Phytopathology	• Identify fungus, with the help of slide preparation. • Can classify fungus based on their features. • Describe the host parasite relationship. • Can identify plant diseases based on symptoms. • Understand the role of fungus in ecosystem. • Apply the fungus in agriculture. • Can understand the role of fungus in biotechnology.
	CORE COURSE-4	Morphology & Anatomy	• Elaborate knowledge regarding variation of plant parts. • Identify the unknown plants • Classify plants in different groups. • Verify quality of timbers. • Knowledge about heart wood and soft wood, • Realise the interdependence between environmental factors with the plant habit. • Understand phyllotaxy.
	GE-2(ZOOLOGY)		
	AECC-2(MIL)		
SEMESTER-3	CORE COURSE-5	Plant Ecology & Phytogeography	• Understand the role of plant in environment. • Realise the importance of

			environmental factors. • Measure the nutrients present, ph level and the presence flora in soil. • Can describe intraspecific and interspecific interactions among plants in community. • Can identify hotspot, endemic plants. • Can correlate nature of plant communities with the environment in Indian climatic conditions.
	CORE COURSE-6	Plant Systematics	• Acquire elaborate knowledge about plant classification. • Compare different taxonomic groups of plants. • Application of pollen science in forensic science. • Can manipulate the data collected from plant specimens collected from field and arrange them in proper order. • Can Prepare herbarium sheet, preservatives for plant materials • Can demonstrate the plant features from floral formula and floral diagram.
	CORE COURSE-7	Economic Botany	• Identify the plants with economic benefits. • Point out the active principles of medicinal plants. • Acquire the skill of extraction of plant product. • Arrange the plants with their economical role. • Prepare herbarium sheet.
	SEC-1	Medicinal Botany	• state the role of different traditional system of alternative medicine

			• Prepare list of medicinal plants and their uses. • Use the extraction of active principles in curing ailments. • Awareness will develop regarding low cost medicine with list side effects.
	GE-3		
SEMESTER-4	CORE COURSE-8	Palaeobotany & Paleonology	• knowledge about fossil and fossilization process. • Infer the type of fossil by observation. • Correlate the change of environment with time and its impact on plant world. • Predict past environment with index fossil • Describe fossil of pollen. • Use paleonology in forensic science. • Infer the evolution process in plant world.
	CORE COURSE-9	Biomolecules & Cell Biology	• Draw and demonstrate the components of cell. • Compare different cellular organelles. • Demonstrate the spatial relationship with gene chromosome, nucleus and cell. • Differentiate prokaryotic mesokaryotic and eukaryotic organisms. • Draw and describe different models of chromosome packaging. • Describe the nature of protein, lipid and carbohydrate. • Identify the biomolecules through laboratory test. • Correlates the structure and functions of plasma membrane.
	CORE COURSE-10	Molecular Biology	• Describe the central dogma. • Demonstrate the structural

			models of DNA RNA & protein. • Enumerate the process of DNA replication & transcription. • Demonstrate the structure and functions of polymerase and other enzymes. • Describe translation process and post translation process along with protein sorting. • Compare among the different operon models. • Demonstrate the protocol of DNA isolation process.
	SEC-2	Floriculture	• Describe the pattern of gardening in India through the ages of history. • Compare the gardening methods of different country. • Skill will develop in different types of Grafting method. • Skill will develop in nursery management • Enumerate the market demand for particular flower or floral products. • Skill will develop in farming procedure.
	GE-4		
SEMESTER-5	CORE COURSE-11	Plant physiology	• Demonstrate water potential of plant cell. • Calculate osmotic pressure and relate it with water absorption • Demonstrate the reasons of guard cell movement and use it to transpiration and ascent of sap. • Describe the process of photosynthesis and other ways of food synthesis. • Enumerate the role of light .co2 in food production. • Describe the process of

			food translocation. • Correlate food degradation and energy synthesis. • Explain the process fruit ripening, vernalization, along with the process of flowering • Enumerate the role different phytohormones.
	CORE COURSE-12	Plant Metabolism	• Distinguish between anabolic and catabolic metabolism. • Illustrate the process of ATP synthesis. • Explain the law of thermodynamics, enthalpy entropy & Gibbs free energy. • Outline the cycles of protein, lipid, and carbohydrate metabolism. • Identify chemically protein, lipid, carbohydrate & organic acid. • State the process of nucleotide synthesis and degradation.
	DSE-1	Reproductive Biology of Angiosperms	• Describe the reproductive parts of the higher plants. • Demonstrate the techniques of pollination used by the plants. • State the development process of embryo of monocot and dicot plants. • Identify and classify plants based on their pollen morphology. • Enumerate the role of pollinators.
	DSE-2	Natural Resource Management	• Identify the natural resources. • Describe the causes of treating them resources. • Enumerate the causes of their degradation. • Demonstrate the interrelations exist

			between natural resources and human society. • Enumerate the processes of sustainable development of natural resources. • Describe the economic, social, and ethical values of natural resources.
SEMESTER-6	CORE COURSE-13	Genetics & Plant Breeding	• Demonstrate Mendelian's law of inheritance. • State the deviations from Mendelian principles. • Concept will build up on the nature and functions of genes. • Calculate the rate of recombinations from crossing over. Distinguish linkage from crossing over. • Compute the distance and arrangement of gene on chromosome. • Correlate the phenotypes with the genotypes. • Solve the problem of genetic interactions.
	CORE COURSE-14	Biotechnology	• State the process of gene isolation. • Manipulate the desired gene. • Transfer the desired gene from one organism to another organism. • Describe vectors. • Compare different vectors on their manipulative capacity. • Separate genes on their size through gel electrophoresis. • Apply genetic probe and marker to identify desired gene. • Demonstrate the process of gene cloning. • Describe the process of

			PCR. • Define GM crop. • Give examples of GM crops. • Outline the role of biotechnology in social development. • Enumerate the role biotechnology in food , medicine, industry etc.
	DSE-3	Plant Evolution & Biodiversity	• Conceptualise about evolution. • Describe the process of plant evolution. • Correlate the environmental change through the time with that of complexity of life forms. • Concept about fossil and relate it with stratigraphy. • Compare different systems of evolutionary theory. • State the different form of life process. •
	DSE-4	Horticulture Practices & Post-Harvest Technology	• Demonstrate the method of maintaining quality of agricultural food. • Describe the processes of maintaining food safety. • Use different methods to reduce the cost of agriculture product in the market • Demonstrate the processes of low cost packaging methods. • Describe pest control methods in the post harvest period. • Use the way to reduce transport cost of agricultural product. • Skill will develop in maintaining low input and large output and thereby extort profit from the product.

B.Sc. Botany General Course learning outcomes may include the following:

Curriculum and Syllabus for 3-Year B. Sc. (General)

In Botany

Under Choice Based Credit System (CBCS)

(*w.e.f.* Academic Year 2017-2018)

SEMESTER	COURSE	COURSE NAME	COURSE OUTCOME
SEMESTER-1	DISCIPLINE - 1 (BOTANY)	CC- 1A: Biodiversity (Microbes, Algae, Fungi and Archegoniate)	• Acquire the skill of microscope operation. • Can draw with the help camera lucida sketch of microorganism. • Can prepare slide for microscopic study. • Measure the length breadth and volume of microscopic organism. • Identify the lower cryptogams • Classify microorganism, and algae fungi, lichen and higher cryptogams. • Gain better level of understanding about the process of life in simple living creatures • Can exploit the economical role of lower group of plants • Identify fungus, with the help of slide preparation. • Can classify fungus based on their features. • Describe the host parasite relationship. • Can identify plant diseases based on symptoms. • Understand the role of fungus in ecosystem. • Apply the fungus in agriculture • Can describe and

			compare flowering and non flowering plants. • Can identify and compare bryophytes ,pterdophytes, and gymnosperm plants. • Can dissect and prepare the specimen for microscopic study. • Can exploit the economic benefits of archegoniates
	Other discipline		
	Other discipline		
	AECC-1(ENVS)		
SEMESTER-2	Discipline- 1 (BOT)	CC- 1B:Plant Ecology and Taxonomy	• Understand the role of plant in environment. • Realise the importance of environmental factors. • Measure the nutrients present, ph level and the presence flora in soil. • Can describe intraspecific and interspecific interactions among plants in community. • Can identify hotspot, endemic plants. • Can correlate nature of plant communities with the environment in Indian climatic conditions.
	Other discipline		
	Other discipline		
	AECC-2(MIL)		
SEMESTER-3	Discipline- 1 (BOT)	CC- 1C:Plant Anatomy and Embryology	• Elaborate knowledge regarding variation of plant parts. • Identify the unknown plants • Classify plants in different groups. • Verify quality of timbers. • Knowledge about heart wood and soft wood, • Realise the

			interdependence between environmental factors with the plant habit. • Describe the reproductive parts of the higher plants. • Demonstrate the techniques of pollination used by the plants. • State the development process of embryo of monocot and dicot plants. • Application of pollen science in forensic science. • Can manipulate the data collected from plant specimens collected from field and arrange them in proper order. • Can Prepare herbarium sheet, preservatives for plant materials • Can demonstrate the plant features from floral formula and floral diagram.
	Other discipline		
	Other discipline		
	SEC-1		•
SEMESTER-4	Discipline- 1 (BOT)	CC- 1D: Plant Physiology and Metabolism	• Demonstrate water potential of plant cell. • Calculate osmotic pressure and relate it with water absorption • Demonstrate the reasons of guard cell movement and use it to transpiration and ascent of sap. • Describe the process of photosynthesis and other ways of food synthesis. • Enumerate the role of light .co2 in food production. • Describe the process of food translocation. • Correlate food degradation and energy

			synthesis. • Explain the process fruit ripening, vernalization, along with the process of flowering • Enumerate the role different phytohormones. • Differentiate between anabolic and catabolic metabolism. • Demonstrate the enzyme ‘s action mechanism. • Explain the law of thermodynamics, enthalpy entropy & Gibbs free energy. • Outline the cycles of protein, lipid, and carbohydrate metabolism.
	Other discipline		
	Other discipline		
	SEC-2	Floriculture	• Describe the pattern of gardening in India through the ages of history. • Compare the gardening methods of different country. • Skill will develop in different types of Grafting method. • Skill will develop in nursery management • Enumerate the market demand for particular flower or floral products. • Skill will develop in farming procedure.
SEMESTER-5	DSE – 1A(BOT) :	Economic Botany and Biotechnology	• Identify the plants with economic benefits. • Point out the active principles of medicinal plants. • Acquire the skill of extraction of plant product.

			• Arrange the plants with their economical role. • Prepare herbarium sheet. • State the process of gene isolation. • Manipulate the desired gene. • Describe the procedure of transfer of the desired gene from one organism to another organism. • Describe vectors. • Compare different vectors on their manipulative capacity. • Separate genes on their size through gel electrophoresis. • Apply genetic probe and marker to identify desired gene. • Demonstrate the process of gene cloning. • Describe the process of PCR. • Define GM crop. • Give examples of GM crops.
	Other discipline		
	Other discipline		
	SEC-3		
SEMESTER-6	DSE – 1B (BOT) :	Cell and Molecular Biology	• Describe the central dogma. • Demonstrate the structural models of DNA RNA & protein. • Enumerate the process of DNA replication & transcription. • Demonstrate the structure and functions of polymerase and other enzymes. • Describe translation process and post translation process along with protein sorting. • Compare among the different operon models.

			• Demonstrate the protocol of DNA isolation process. • Demonstrate Mendelian's law of inheritance. • State the deviations from Mendelian principles. • Concept will build up on the nature and functions of genes. • Calculate the rate of recombinations from crossing over. Distinguish linkage from crossing over. • Compute the distance and arrangement of gene on chromosome. • Correlate the phenotypes with the genotypes. • Solve the problem of genetic interactions.
	Other discipline		
	Other discipline		
	SEC-4	Mushroom cultivation Technology	• Identify edible Mushroom. • Acquire the skill to cultivate mushroom in small area with indigenous tools. • Identify the hazards appear at the cultivation process. • Use the skill to reduce the production cost of marketable mushrooms. • Describe the methods of harvesting mushrooms. • Demonstrate the nutritional values of mushrooms. • Describe the method of mushroom preservation.

Department of Zoology

Gushkara Mahavidyalaya

(For the academic Year: 2017-18, 2018-19, 2019-20, 2020-21)

Programme outcome:

The syllabus for Zoology at undergraduate level using the Choice Based Credit system has been framed incompliance with model syllabus given by UGC.

The main objective of framing this new syllabus is to give the students a holistic understanding of the subject giving substantial weightage to both the core content and techniques used in Zoology.

Keeping in mind and in tune with the changing nature of the subject, adequate emphasis has been given on new techniques and understanding of the subject.

The syllabus has also been framed in such a way that the basic skills of subject are taught to the students, and everyone might not need to go for higher studies and the scope of securing a job after graduation will increase.

There is wide deviation in the infrastructure, be it physical or in human resource, in the form of teachers' expertise and ability and aspiration of the students. Hence, University is free to choose the Electives as per their infrastructural strengths and offeratleast6 to7 electives. While the syllabus is in compliance with UGC model curriculum, it is necessary that Zoology students should learn "Immunology" as one of the core courses rather than as elective. Also, an important discipline specific elective on "Microbiology" has been added.

Project Work may be introduced instead of the 4th Elective with a credit of 6 split into 2+4, where 2credits will be for continuous evaluation and 4 credits reserved for the merit of the dissertation.

Programme Specific Outcome:

Zoologists not only run zoos, but they also study animals in the wild, practice conservation biology, and much more. They study the entire natural world, all the complicated interactions and systems in the environment, and how they can best be managed for the health of the entire planet. ‹

While most of the time the public sees a zoo as an entertaining and educational way to spend a Saturday afternoon and it is an average accredited zoo is also a vital part of research and conservation activities going on across the world. ‹

Conservation biologists study the Earth's biodiversity and figure out ways to protect and preserve it in a way that benefits the individual animals and all life on the planet. They evaluate how animals interact with their habitats and with humans, and they also evaluate the health of those habitats. Our environments are healthier and more resilient if they can keep their historical compliment of diversity.

Students pursuing a B.Sc. (Hons.) degree in Zoology will study and gain comprehensive knowledge of both disciplinary and allied biological sciences. After graduation, they are likely to have expertise that will give them a competitive advantage in pursuing higher education in India or abroad, as well as jobs in academia, research, or industry.

Students will be able to define and explain major biological concepts. They understand how to use biological instruments and laboratory techniques correctly. Students will be able to communicate their biological knowledge both orally and in writing.

Students will be able to recognise the relationship or synchronisation between structure and function at all levels, including molecular, cellular, and organismal. Based on their morphological, anatomical, and systemic organisation, students should be able to identify, classify, and differentiate various chordates and nonchordates.

They will also be able to describe economic, ecological and medical significance of various animals in human life. This will create a curiosity and awareness among them to explore the animal diversity and take up wild life photography or wild life exploration as a career option. The procedural knowledge about identifying and classifying animals will provide students professional advantages in teaching, research and taxonomist jobs in various government organizations; including Zoological Survey of India and National Parks/Sanctuaries. Students will be able to apply the scientific method to questions in biology by formulating testable hypotheses, gathering data that address these hypotheses, and analyzing those data to assess the degree to which their scientific work supports their hypotheses. Students will be able to present scientific hypotheses and data both orally and in writing in the formats that are used by practicing scientists.

Understudies will be able to get to the essential writing, recognize important works for a specific subject, and assess the logical substance of these works. Procured commonsense aptitudes in biotechnology, biostatistics, bioinformatics and atomic science can be utilized to seek after career as a researcher in medicate advancement industry in India or overseas. The understudies will be obtaining essential exploratory abilities in different methods within the areas of hereditary qualities; atomic science; biotechnology; subjective and quantitative microscopy; enzymology and expository natural chemistry. These strategies will give an additional edge to our understudies, who wish to embrace higher thinks about. Understudies will be able to utilize the prove of comparative science to clarify how the hypothesis of advancement offers the as it were logical clarification for the solidarity and differences of life on soil.

They will be able to use specific examples to explicate how descent with modification has shaped animal morphology, physiology, life history, and behavior. Students will be able to explain how organisms function at the level of the gene, genome, cell, tissue, organ and organ-system. Drawing upon this knowledge, they will be able to give specific examples of the physiological adaptations, development, reproduction and behavior of different forms of life. Students will be able to explicate the ecological

interconnectedness of life on earth by tracing energy and nutrient flows through the environment. They will be able to relate the physical features of the environment to the structure of populations, communities, and ecosystems.

Students undertaking skill enhancement courses like aquaculture, sericulture and apiculture will inculcate skills involved in rearing fish, bees and silk moth which would help them in starting their own ventures and generating self employment making them successful entrepreneurs. Acquired skills in diagnostic testing, hematology, histopathology, staining procedures etc. used in clinical and research laboratories will provide them opportunity to work in diagnostic or research laboratory. Candidates find opportunities in government departments, environmental agencies, universities, colleges, biotechnological, pharmaceutical, environmental/ecological fields. There are numerous career opportunities for candidates completing their B.Sc, M.Sc and Ph.D. in Zoology in public and private sector. Candidates may find jobs as Animal Behaviorist, Conservationist, Wildlife Biologist, Zoo Curator, Wildlife Educator, Zoology faculty, Forensic experts, Lab technicians, Veterinarians etc.

Scheme for CBCS Curriculum:

Semester	Course Name	Course Detail	Credits
I (Hons.)	CC1	Non-chordates I	4
	CC1 PRACTICAL	Non-chordates I Lab	2
	CC2	Ecology	4
	CC2 PRACTICAL	Ecology Lab	2
I (General)	CC- Zoology 1 A/2A/3A	Animal Diversity	4
	CC- Zoology 1 A/2A/3A PRACTICAL	Animal Diversity Lab	2
II (Hons)	CC3	Non- chordates II	4
	CC3 PRACTICAL	Non- chordates II Lab	2
	CC4	Cell Biology	4
	CC4 PRACTICAL	Cell Biology Lab	2
	CC- Zoology 1B/2B/3B & Generic Elective–2*	Comparative Anatomy & Developmental Biology of Vertebrates	4

II (General/ Generic elective)	CC- Zoology 1B/2B/3B Practical & Generic Elective–2* Practical	Comparative Anatomy & Developmental Biology of Vertebrates Lab	2
III (Hons.)	CC5	Chordates	4
	CC5 PRACTICAL	Chordates Lab	2
	CC6	Animal Physiology: Controlling and Coordinating Systems	4
	CC6 PRACTICAL	Animal Physiology: Controlling and Coordinating Systems Lab	2
	CC7	Fundamentals of Biochemistry	4
	CC7 PRACTICAL	Fundamentals of Biochemistry Lab	2
	Skill Enhancement Course–1	Apiculture	2
III General	CC- Zoology 1C/2C/3C	Physiology and Biochemistry	4
	CC- Zoology 1C/2C/3C Practical	Physiology and Biochemistry Lab	2
	Skill Enhancement Course–1	Apiculture	2
IV Hons.	CC8	Comparative Anatomy of Vertebrates	4
	CC8 PRACTICAL	Comparative Anatomy of Vertebrates Lab	2
	CC9	Animal Physiology: Life Sustaining Systems	4
	CC9 PRACTICAL	Animal Physiology: Life Sustaining Systems Lab	2
	CC10	Immunology	4
	CC10 PRACTICAL	Immunology Lab	2
	Skill Enhancement Course–2	Aquarium Fish Keeping	2
IV General/ Generic elective	CC- Zoology 1D/2D/3D & Generic Elective–4*	Genetics and Evolutionary Biology	4
	CC- Zoology 1D/2D/3D Practical & Generic Elective–4*	Genetics and Evolutionary Biology Lab	2

	Practical		
V Hons.	CC11	Molecular Biology	4
	CC11 PRACTICAL	Molecular Biology Lab	2
	CC12	Genetics	4
	CC12 PRACTICAL	Genetics Lab	2
	Discipline Specific Elective–1	Animal Biotechnology	4
	Discipline Specific Elective–1 PRACTICAL	Animal Biotechnology Lab	2
	Discipline Specific Elective–2	Parasitology	4
	Discipline Specific Elective–2 PRACTICAL	Parasitology Lab	2
V General	DSE-1A/2A/3A	Applied Zoology	4
	DSE-1A/2A/3A PRACTICAL	Applied Zoology Lab	2
	SEC-III	Sericulture	2
VI Hons.	CC13	Developmental Biology	4
	CC13 PRACTICAL	Developmental Biology Lab	2
	CC14	Evolutionary Biology	4
	CC14 PRACTICAL	Evolutionary Biology Lab	2
	Discipline Specific Elective–3	Animal Behaviour	4
	Discipline Specific Elective–3 PRACTICAL	Animal Behaviour Lab	2
	Discipline Specific Elective–4	Endocrinology	4
	Discipline Specific Elective–4 PRACTICAL	Endocrinology Lab	2

VI General	DSE-1B/2B/3B	Immunology	4
	DSE-1B/2B/3B PRACTICAL	Immunology Lab	2

Course Outcomes for Honours:

		Theory (Credit-4)
		Today, there are an estimated 2,007,702 described and named living species. About 58,000 of these are vertebrates and 1,324,402 are invertebrates. In addition, about 200,000 protists have been described and 15,000 to 20,000 new species are described every year. It seems likely that a significant portion of Earth's biodiversity, at the level of both genes and species, resides in the "invisible" prokaryotic world, and we have come to realize how little we know about this hidden world. Our main goal is to find out-"How can we possibly keep track of all these species names and information about each of them, and how do we organize them in a meaningful way? We do so with classifications. Classifications are lists of species, ranked in a subordinated fashion that reflects their evolutionary relationships and phylogenetic history. Classifications summarize the overarching aspects of the tree of life. In this course, students will discover the amazing diversity of animal life and how it evolves to be. They will learn about how animals act and interact with their environments and with each other all over the world. They will also learn about the basic of animal classification. Due to detailed learning of basics of animal the whole animal classification is divided into many core courses. In this course, the students learn about the first animal of the earth i.e Protozoa to the pseudocoelomate animal i.e nematodes with special emphasis on some important type study of various animals like Locomotion in *Euglena*, *Paramoecium* and *Amoeba* , Life cycle and pathogenicity of *Plasmodium vivax*, Metagenesis in *Obelia*, Lifecycle and pathogenicity and control measures of *Fasciola hepatica* and *Taenia solium*, Life cycle, and pathogenicity and control measures of *Ascaris lumbricoides* and

Semester-I	Core course–I (Non-chordates I)	*Wuchereria bancrofti.*
		Practical (credit-2)
		Classification of organism is rather difficult job to simply because authorities rarely agree while classifying organism. Accurate identification and naming of organisms raise serious practical problems. Taxonomic judgment, when it is finally made, is based on a large number of factors. Recognizing all these ground realities and stringent confines of curricula, we have presented here a scheme of classification that is primarily based on anatomical and physiological characteristics. To make students aware of the limitations of such parameter we have maintained the concluding statements as-'Hence the specimen seems to be……' rather than 'Hence the specimen is……'. Such an approach , we believe, shall enable students to understand that the science of Taxonomy can only be learned properly if one can equip himself/herself in areas such as anatomy, physiology, cell biology, molecular biology, behavioral biology, ecology and of course, evolutionary biology. We also preferred hands of training about the identification method, staining and as well as technical handling of the equipments like microscope.
	Core course–II Ecology	**Theory (Credit-4)**
		Ecology has the distinction of being peculiarly confronted with uniqueness: millions of different species, countless billions of genetically distinct individuals, all living and interacting in a varied and ever-changing world. The challenge of ecology is to develop an understanding of very basic and apparent problems, in a way that recognizes this uniqueness and complexity, but seeks patterns and predictions within this complexity rather than being swamped by it. As L. C. Birch has pointed out, Whitehead's recipe for science is never more apposite than when applied to ecology: seek simplicity, but distrust it. We would be poor ecologists indeed if we did not believe that the principles of ecology apply to all facets of the world around us and all aspects of human endeavor. So: to summarize and, to a degree, reiterate we focuses some key features for our beloved students-

		these are: • marginal notes throughout the text • summaries of all chapters in the syllabus • around 800 newly-incorporated studies • an up-dating and drawing of all artwork in the syllabus, which is also available to students for easy understanding into lecture materials. As far as the subject matter of ecology is concerned, 'the distribution and abundance of organisms' is pleasantly succinct. But we believe it need to expand a broad perspective. The living world can be viewed as a biological hierarchy that starts with sub cellular particles, and continues up through cells, tissues and organs. Ecology deals with the next three levels: the individual organism, the population (consisting of individuals of the same species) and the community (consisting of a greater or lesser number of species populations). Ecologists also focus on the pathways followed by energy and matter as these move among living and nonliving elements of a further category of organization: the ecosystem, comprising the community together with its physical environment.
		Practical (credit-2)
		For practical point of view we focus on the organism, ecology deals with how individuals are affected by (and how they affect) their environment like Study of an aquatic ecosystem: Phytoplankton and zooplankton, Measurement of area, temperature, determination of pH and free CO_2 etc. At the level of the population, ecology is concerned with the presence or absence of particular species, their abundance or rarity, and with the trends and fluctuations in their numbers like Study of life tables and plotting of survivorship curves of different types from the hypothetical/real data provided. Community ecology then deals with the composition and organization of ecological communities like Determination of population density in a natural/hypothetical community by quadrate method and calculation of Shannon-Weiner diversity index for the same community. Also we focus on the various methods of field survey study by a visit to National Park/Biodiversity Park/Wild life sanctuary/ Biodiversity

		Centre/ Any Museum/Sea shore in every year for the students.
Semester-II	Core course–III Non-chordates II	**Theory (Credit-4)**
		The main feature of this core course is to cover the remaining invertebrates from annelids to Hemichordates. It contains seven units with special type study of various key animals with some astonishing facts and figures. It starts with the secondary body cavity of animals with context of evolution and ends with relationship with non-chordates and chordates. In this course, students will discover the amazing diversity of animal life and how it evolves to be. They will learn about how animals act and interact with their environments and with each other all over the world. They will also learn about the basic of animal classification according to Rupert & Bernes, 1994, 6th edition. . In this course, the students learn about on some important type study like Respiration in Arthropoda (Gills in prawn and trachea in cockroach), Metamorphosis in Lepidopteran Insects, Feeding and respiration in *Pila* sp, Water-vascular system in Asteroidea and many more.
		Practical (credit-2)
		Classification of organism is rather difficult job to simply because authorities rarely agree while classifying organism. Accurate identification and naming of organisms raise serious practical problems. Taxonomic judgment, when it is finally made, is based on a large number of factors. Recognizing all these ground realities and stringent confines of curricula, we have presented here a scheme of classification that is primarily based on anatomical and physiological characteristics. To make students aware of the limitations of such parameter we have maintained the concluding statements as-'Hence the specimen seems to be……' rather than 'Hence the specimen is……'. In this course a key feature of understanding subject by hand to hand method is introduce in the form of dissecting animals. We believe "Students get a memorable experience of the three-dimensional (3D) anatomy of the animals. They are able to compare organisms across phyla to other things they have dissected." The animals that are dissected in the

		curriculum are earthworms, *Periplaneta.* We fell Dissection is an effective way of teach students about the anatomy of animals, and could even be called the most effective way of teaching students about the anatomy of animals. Sometime "two dimensional diagrams do not give a total picture. Apps and virtual reality give students the misconception that organs are colorful inside. Actually removing parts helps kinesthetic learners retain information,"
	Core course–IV Cell Biology	**Theory (Credit-4)**
		Cells are the fundamental building blocks of life on this planet. Despite their tiny size, they are wonders of intricacy. Moment by moment, the cells of our bodies are engaged in a dazzling repertoire of biochemical events, including signaling processes, transmission of genetic information, cell death pathway and delicately choreographed movements. Helping our students to appreciate the complexities of this amazing cellular world lies at the heart of our goals. The amazing success of modern cell biology creates both exciting opportunities and central challenges in our teaching. How can we capture the core elements of modern cell biology in a way that draws our students in without overwhelming them? The enormous profusion of information challenges us to keep up to date while ensuring that it remains both manageable in length and readily comprehensible to students studying cell biology for the first time. First, our primary goal is to introduce students to the fundamental principles that guide cellular organization and function. Second, we want students to understand some of the key scientific evidence that has helped us formulate these central concepts. And third, we have sought to accomplish these goals in a material related to syllabus of manageable length that is easily read and understood by beginning cell biology students—and that still fits in their backpacks! We have therefore been necessarily selective both in the examples chosen toillustrate key concepts and in the quantity of scientific evidence.
		Practical (credit-2)
		The discipline of cell biology began as a mostly academic endeavor,

		driven by the curiosity of biologists to understand what cells look like and how they work. But many basic cell biological insights have turned out to have real-world implications and applications. In this course we specially focus on the basic structures of cell by hand to hand method like Preparation of temporary stained study various stages of mitotic and meiotic cell stages, preparation of permanent slide to show the presence of Barr body and to study of cell viability by Trypan Blue staining. The amazing success of modern cell biology creates both exciting opportunities and central challenges in our teaching.
Semester-III	Core course–V Chordates	**Theory (Credit-4)**
		The phylum Chordata includes many familiar animals. Indeed, most of the animals on exhibit at any zoo are chordates. So are most of the animals featured on nature programs on television. Major subgroups of chordates include "fishes" (a paraphyletic grouping; see below), amphibians (frogs, toads, and salmanders), "reptiles" (another paraphyletic group), birds, and mammals. If you have a pet at home other than a scorpion, tarantula, or snail, it is likely a chordate. All farmed livestock are chordates. We also see a chordate every time we look in the mirror (we are primates, a group of mammals that also includes apes and monkeys). Chordates also include a great variety of bizarre lineages of fish-like forms that went extinct early in the history of the phylum. So in this course we specially focus on to the general classifications of chordate in much organized manner. We follow the classifications for Protochordata, Agnatha, Reptilia, Aves and Mammalia to be followed from Young (1981), for Pisces to be followed from Romer (1959), for Amphibia to be followed from Duellman and Trueb (1986). Students will also comprehend the structure, function and biology of chordates of different taxonomic classes. They will also learn some special topics like Metamorphosis, retrogressive metamorphosis, Poison apparatus and Biting mechanism in Snake Zoogeographical realms, Plate tectonic and Continental drift theory, Principles and aerodynamics off flight & many more. Many of us feel all snake bites are fatal, tigers are ferocious murderers, killer whales kill people, sharks are mindless hunters, etc. We truly

		believe that the ignominious darkness people live in can only be removed with knowledge, and zoology provides us with the necessary knowledge regarding these myths. Dismissing such stupid notions cause awareness amongst people that help our beloved students act more responsibly in future.
		Practical (credit-2)
		The study of vertebrate within the lab is an interesting and valid field of study for gaining insight into the structure and function of vertebrates. It provides our students with knowledge of the structures of different organisms and the great variety of form among vertebrates. It allows them to examine how the form of these structures is related to their function and thus how morphology is suited to a particular mode of life. We strongly feel the characteristics or features of vertebrates preserve information on their ancestry: The features are modified and passed on through the course of generations, and we may use such knowledge to discover the genealogical relationships among vertebrates. Mounting of Pecten from Fowl and dissection of brain and pituitary of any major carp is added in the syllabus. We are completed the course by adding Power point presentation on study of any two animals from two different classes by students and & demonstrate in front of the external examiner. We unequivocally feel that this method moreover increment their information and they feel the genuine taste & the excellence of the subject.
	Core course–VI Animal Physiology: Controlling and Coordinating Systems	**Theory (Credit-4)**
		This course is one of the most fascinating course possible—our own body. Such a study is not only highly personal, but timely as well. We get news of some medical advance almost daily. To appreciate emerging discoveries to understand new techniques for detecting and treating disease, and to make use of published facts on how to stay healthy, we shall find it helps to learn about the workings of your body. If we are preparing for a career in the health sciences, the study of physiology has added rewards because it provides the foundation needed to support our clinical experiences. In this course we define and contrast anatomy and physiology and discuss how the human body is

		organized. Then we review needs and functional processes common to all living organisms. Three essential concepts—the complementarity of structure and function, the hierarchy of structural organization, and homeostasis—will unify and form the bedrock for your study of the human body. Like physiology has many subdivisions. Most of them consider the operation of specific organ systems. For example Structure of neurons, Histology of different types of muscle, Mechanism of Hormone actions, Synaptic transmission and Neuro-muscular junction etc. The simplest living creatures are single cells, but in complex organisms such as human beings, the hierarchy continues on to the tissue level. Tissues are groups of similar cells that have a common function. The four basic tissue types in the human body are epithelium, muscle, connective tissue, and nervous tissue. We discuss these tissue levels both structurally and functionally to the students.
		Practical (credit-2)
		The laboratory has been given a central role in animal physiology learning, and teachers report that it is motivating for students to undertake experimental work on live animals or measuring physiological responses on the students themselves. Since motivation is a critical variable for academic learning and achievement, then we must concern ourselves with questions that examine how students engage in laboratory work and persist at such activities. Our main purpose of the present study was to investigate how laboratory work influences student motivation in physiology. We administered the Lab Motivation Scale to assess our students' levels of interest, willingness to engage (effort), and confidence in understanding (self-efficacy). We also asked students about the role of laboratory work for their own learning and their experience in the physiology laboratory. Our results documented high levels of interest, effort, and self-efficacy among the students. We believe that laboratory work was very important for learning difficult concepts and physiological processes (e.g., demonstration of knee jerk reflex, preparation of temporary mounts: Squamous epithelium, Striated muscle fibres, identification of permanent slides of Mammalian tissues and Microtomy techniques as the hands-on experiences gave a more

		concrete idea of the learning content and made the content easier to remember. These results have implications for classroom practice as zoology students find laboratory exercises.
	Core course–VII Fundamentals of Biochemistry	**Theory (Credit-4)**
		Biochemistry is a field of enormous fascination and utility, arising, no doubt, from our own self-interest. Human welfare, particularly its medical and nutritional aspects, has been vastly improved by our rapidly growing understanding of biochemistry. Indeed, scarcely a day passes without the report of a biomedical discovery that benefits a significant portion of humanity. Further advances in this rapidly expanding field of knowledge will no doubt lead to even more spectacular gains in our ability to understand nature and to control our destinies. It is therefore essential that individuals embarking on a career in biomedical sciences be well versed in biochemistry. In this course special attention is emphasized on several themes. First, biochemistry is a body of knowledge compiled by people through experimentation. The course is organized under six major unites, including a brief history of biochemistry and emphasizes the interrelationships between biochemistry and our body. We believe that topic like various orders of proteins structure, the kinetics, mechanism of action, and metabolic regulation of enzymes, the oxidation–reduction reactions involved in biologic oxidation, and metabolic details of energy capture via the respiratory chain and oxidative phosphorylation, the metabolism of carbohydrates via glycolysis, the citric acid cycle, the pentose phosphate pathway, glycogen metabolism, gluconeogenesis etc. not only understand the basics of fundamental biochemistry but to got a incredible intrigued around the subject.
		Practical (credit-2)
		Biochemistry, sometimes called biological chemistry, is the study of chemical processes within and relating to living organisms. Biochemical processes give rise to the complexity of life. A sub-discipline of both biology and chemistry, biochemistry can be divided in three fields; structural biology, enzymology and metabolism. Over the last decades of the 20th century, biochemistry has through these three disciplines

		become successful at explaining living processes. Almost all areas of the life sciences are being uncovered and developed by biochemical methodology and research. Biochemistry focuses on understanding the chemical basis which allows biological molecules to give rise to the processes that occur within living cells and between cells, which in turn relates greatly to the study and understanding of tissues, organs, and organism structure and function. Biochemistry is closely related to molecular biology, the study of the molecular mechanisms of biological phenomena. Much of biochemistry deals with the structures, functions and interactions of biological macromolecules, such as proteins, nucleic acids, carbohydrates and lipids, which provide the structure of cells and perform many of the functions associated with life. Metabolism is the mechanisms by which cells harness energy via chemical reactions.
	Skill Enhancement Course–1 Apiculture or Sericulture	SEC courses are value-based and/or skill-based and are aimed at providing hands-on-training, competencies, skills, etc. This courses may be chosen from a pool of courses designed to provide value-based and/or skill-based knowledge. In this semester students will choice any of the two courses viz., apiculture and sericulture as suggested in the syllabus for skill development. Bees are one of the many insects in the world that can produce something that is beneficial to all of us. We obtain honey from these bees and as we all know, honey is an important food for human beings. Since ancient times, honey is used for treating several diseases, and it is an antioxidant, therefore beekeeping is an important activity. Sericulture plays a major role in rural employment, poverty alleviation and earning foreign exchange. A lot of entrepreneurial opportunities are available in various fields of sericulture. It is practiced in various states viz., Karnataka, Andhra Pradesh, Jammu & Kashmir, West Bengal and states like Madhya Pradesh and Maharashtra have also started practicing Sericulture. The non-mulberry (also called Vanya silk) sericulture is practiced in Assam, Jharkhand, Orissa and Madhya Pradesh. More than 6 million people are involved in sericulture activities. It is necessary to upgrade the skills of the sericulturists to use the full potentialities of sericulture to produce ualitatively superior cocoons and to earn profitable income. The course divided into five units with special emphasis on biology and rearing of silk worm. Also students will be wear with the pest and disease of silk worm and the

		modern scope of sericulture.
Semester-IV	Core course–VIII Comparative Anatomy of Vertebrates	**Theory (Credit-4)**
		Comparative anatomy is an important tool that helps determine evutionary relationship between organisms and whether or not they share common ancestors. it is an important evidence for evolution. This core course actually helps to understand the many other courses of this entire curriculum including animal physiology, molecular biology and evolution. It provides answer of many unanswered question of biological area, when the traditional blackboard teaching method was the only way to teach then projector based teaching comes in rescue. Visualization of anatomical structures is the key to understand the entire subject. Understanding the minute detail is now possible thorough audio and video. Ultimately it enriches students.
		Practical (credit-2)
		Students are able to identify various skeletal parts of various organisms and their structural components. It helps determine evutionary relationship between organisms and whether or not they share common ancestors and their proper origin.
	Core course–IX Animal Physiology: Life Sustaining Systems	**Theory (Credit-4)**
		Physiology is an experimental scientific discipline, which provides a thorough understanding of normal body function, enabling more effective treatment of abnormal or diseased States, but, a zoologist must have acquired the knowledge of physiology not only of human but entire animal kingdom & their physiology is in concern. This core course -IX is so perfectly designed that we the teachers find that students use to get very comfortable during reading this course. Use of projector for show casing different pathways underlying any biological process(like respiration, excretion, circulation ,), animations, videos had made the process of learning so very easy and Palatable. We here encourage the students to study a behavior of an animal of their choice by their own. We enthusiastically provides tha atmosphere where every student can learn something from Hands-on-traing in laboratory.

		Practical (credit-2)
		The laboratory has been given a central role in animal physiology learning, and teachers report that it is motivating for students to undertake experimental work on live animals or measuring physiological responses on the students themselves. Since motivation is a critical variable for academic learning and achievement, then we must concern ourselves with questions that examine how students engage in laboratory work and persist at such activities. Our main purpose of the present study was to investigate how laboratory work influences student motivation in physiology. We administered the Lab Motivation Scale to assess our students' levels of interest, willingness to engage (effort), and confidence in understanding (self-efficacy). We also asked students about the role of laboratory work for their own learning and their experience in the physiology laboratory. Our results documented high levels of interest, effort, and self-efficacy among the students. We believe that laboratory work was very important for learning difficult concepts and physiological processes like determination of ABO Blood group, enumeration of red blood cells and white blood cells using haemocytometer, estimation of haemoglobin using Sahli's haemoglobinometer, preparation of haem in crystals, recording of blood pressure using a sphygmomanometer.
	Core course–X Immunology	**Theory (Credit-4)**
		Immunology is critical to human, animal health and survival. It is at the cutting edge of life science and has led to some key healthcare advances of recent times, including immunotherapy, cancer, vaccination etc. According to the course our primary goal here is to help the students in building themselves confident regarding the subject they are reading and making them more subject-oriented. We realise that understanding the concept of development of immune system or how body reacts against an infection or disease and what happen if it all goes wrong , can not be possible only by theory or plane lectures, so the teachers of our department follow an audio-visual method of learning besides using traditional blackboard. We believe that students can make a bond with the subject only when they are able to visualize the topic in their own mind, Valuing this thought we have incorporated Animations, videos,

		Colorful pictures along with discussing the theory, Exampling by case-studies for a better visualization and advanced online material , e-books and test -book is a regular thing we provide here.
		Practical (credit-2)
		Immunology is the study of the immune system and is a very important branch of the medical and biological sciences. It is also now becoming clear that immune responses contribute to the development of many common disorders not traditionally viewed as immunologic, including metabolic, cardiovascular, and neurodegenerative conditions such as Alzheimer's. The immune system is the ultimate personalised army, protecting us from any bacterial or viral invaders, but also in recognising and destroying potentially cancerous cells. Like any system though, the immune system can malfunction and incorrectly identify our own bodies, or harmless food or every-day substances as targets, leading to autoimmune diseases and allergy respectively. Immune cells also have less appreciated roles in maintaining health, such as controlling weight gain in obesity, or influencing the outcome of heart disease. It is a fascinatingly complex machine composed of dozens of cell types, communicating through hundreds of different messenger molecules, all intimately affected by a myriad of external factors including, stress, diet, gender, age, time of day, hours of sunlight, and even psychology[1]. Researchers all over the world dedicate their careers to understanding these interactions, with much success. For such an diversivied course we are trying to get motivated about that course by doing such an important laboratory work like demonstration of lymphoid organs in human through model/ photograph, histological study of spleen, thymus and lymph nodes through slides/photographs, preparation of stained blood film to study various types of blood cells, total count (TC) & Differential count (DC) of WBC, demonstration of ELISA by available teaching kit
	Skill Enhancement Course-2 Aquarium Fish Keeping	
		Theory (Credit-4)
		The course has been organized magnificently to cover all the essential aspects of the Molecular Biology field. The course will provide a brief

Semester V	Core course -11 Molecular Biology	overview of the Nucleic acid background comprising salient features and models of DNA and RNA. The course will mainly focus on the study of principal molecular events of a cell incorporating DNA Replication, Transcription and Translation in prokaryotic as well as eukaryotic organisms. The course will also emphasize Post Transcriptional Modifications and Processing of Eukaryotic RNA covering the concepts of Split genes, Introns, Exons, Splicing Mechanisms and RNA Editing. The course will also impart a detailed explanation of Prokaryotic and Eukaryotic Transcriptional Regulation along with the mechanism of Gene Silencing. During this course, the students will be imparted a comprehensive understanding ofthe vital concept of DNA Repair Mechanisms. In addition, the course will provide a glimpse of Ribo-switches, RNA Interference, miRNA and siRNA as a part of different types of regulatory RNAs.
		Practical (credit-2)
		The course has been organized admirably to cover all the indispensable aspects of the Mol. Biology field. We are trying to motivate students by doing laboratory works like Preparation of polytene chromosome from Diptera (Chironomus/ Drosophila/ Mosquito larva), Identification of polytene and lampbrush chromosome from photograph, Isolation and quantification of genomic DNA using spectrophotometer (A260 measurement) (demonstration only), Demonstration of agarose gel electrophoresis for DNA. We also try to teach the interpretation of electron micrographs/ photographs showing a) DNA replication; b) Transcription; c) Split genes. We also carry out the Preparation of liquid and solid bacterial culture media, slant and stab and Demonstration of antibiotic sensitivity/ resistance of bacteria to antibiotic discs in our fighting fit organized laboratory.
		Theory (Credit-4)
		The focus of this course is to familiarize students with basic principles of genetics and its application in understanding real-life hereditary conditions. Students would be able to understand the fundamentals of Mendelian inheritance and its exceptions. They would be able to appreciate various other gene interactions like co-dominance,

	Core course -12 Genetics	incomplete dominance, lethal alleles and pleiotropy. Further, students would be able to describe the concepts of linkage and crossing over and their usage in constructing gene maps. The students are able to understand the basic principles of pedigree analysis and will be able to construct and analyse pedigree-related problems for inherited traits. They would learn about chromosomal and genetic mutation, the chromosomal sex-determination mechanisms and dosage compensation.
		Practical (credit-2)
		The focus of this course is to familiarize students with basic principles of genetics and its application in understanding real-life hereditary conditions. Students would be able to understand the fundamentals of Mendelian inheritance and its exceptions. They would be able to appreciate various other gene interactions like co-dominance, incomplete dominance, lethal alleles and pleiotropy. Further, students would be able to describe the concepts of linkage and crossing over and their usage in constructing gene maps , Chi sqare test etc.
	Discipline Specific Elective–1 Animal Biotechnology	**Theory (Credit-4)**
		Biotechnology is the advanced branch of biological sciences that mostly deals with technologies that use living organisms or their components to produce products for specific use. The present paper attempts to give a wholesome idea of biotechnology at a basic level. It provides a tool kit in the form of a number of various techniques and processes developed over time to solve problems involving primarily human welfare with a focus on health and medicine. It makes one aware of the scope of this field which encompasses almost every area of science like engineering, research, commercialization, and academics. It equips students with basic techniques of biotechnology which are a must for everyone interested in pursuing a career in biotechnology. This paper also attempts to illustrate the role of biotechnology by giving widespread examples as to how to use these tools to solve a specific problem in either medicine, agriculture or food technology. Upon completion of the course, students will be able to use or demonstrate the basic techniques of biotechnology; like DNA isolation, PCR, transformation, restriction, digestion etc. and devise a strategy to manipulate the genetic structure

		of an organism for the improvement in any trait or its well-being based on the techniques. However, they also understand the ethical and social issues raised regarding GMOs and apply the knowledge for designing a proposal for the research project.
		Practical (credit-2)
		This course also attempts to illustrate the role of biotechnology by giving widespread examples as to how to use these tools to solve a specific problem in either medicine, agriculture or food technology. Upon completion of the course, students will be able to use or demonstrate the basic techniques of biotechnology; like DNA isolation, PCR, transformation, restriction, digestion etc. and devise a strategy to manipulate the genetic structure of an organism for the improvement in any trait or its well-being based on the techniques.
	Discipline Specific Elective–2 Parasitology	**Theory (Credit-4)**
		This course presents general concepts of parasitology, knowledge of some parasitic diseases that could be transmitted between animals and man (zoonotic diseases), learning about how to protect man and domestic animals from parasites, and their treatment in case of infection. Basic knowledge of parasitism, the different biological inter-relationships and the host-parasite relationships. The students would be able to understand the Knowledge of different parasitic examples from all phyla (Protozoa & Metazoa), their morphology, biology, life cycles, diagnosis, treatment & control. They are also able to disseminate health awareness of these parasitic diseases.
		Practical (credit-2)
		Basic knowledge of parasitism, the different biological inter-relationships and the host-parasite relationships. The students would be able to understand the Knowledge of different parasitic examples viz., Identification of life stages of Giardia lamblia and Leishmania donovani, Schistosoma haematobium,Taenia solium, Ancylostoma duodenale, Wuchereria bancrofti, Trichinella spiralis, Pediculus humanus, Xenopsyll acheopis, Cimex lectularius through permanent slides/microphotographs. We also try to isolate and fixing of

		nematode/cestode parasites from the intestine of hen [Intestine can be procured from poultry/market as a by-product]. Students also submit of a project report on any parasite of vertebrates in the supervision of all the faculties of the departments.
Semester VI	Core course–XIII Developmental Biology	**Theory (Credit-4)**
		The course will also provide a glimpse of the scope and historical background of developmental biology to the students, impart knowledge regarding basic concepts of differentiation, morphogenesis, and pattern formation and insight into IVF, stem cells and cloning. Detailed understanding of essential events of developmental biology will be imparted through proper explanation of gametogenesis, and stages of embryonic development and fetal formation. Upon completion of this course, students should be able to know the evolution of different concepts in developmental biology and understand the process of gamete formation from stem cell population to mature ova and sperm. They also are able to comprehend the sequence of steps leading to the formation of gametes and the development of an embryo and learn the mechanisms underpinning cellular diversity and specificity in animals. However, the study of the methods and tools related to developmental biology will help to understand different processes of embryogenesis.
		Practical (credit-2)
		We are trying to comprehend the sequence of steps leading to the formation of gametes and the development of an embryo and learn the mechanisms underpinning cellular diversity and specificity in animals. However, the study of the methods and tools related to developmental biology will help to understand different processes of embryogenesis. Identification of whole mounts of developmental stages of chick through permanent slides to observe te Primitive streak (13 to 18 hours), 21-33h, 36-48h and 72-96 hours of incubation (Hamilton and Hamburger stages). Students also try to learn the various developmental stages and lifecycle of Drosophila from stock culture And identify the different sections of placenta (through photo micrograph/slides). Students must submit of a project report on

		Drosophila culture/chick embryo development in the supervision of the expert choose by the Departmental committee.
	Core course–XIV Evolutionary Biology	**Theory (Credit-4)**
		The course aims at imparting a fundamental understanding of evolutionary processes and how it works in the context of populations. By completing this course, students would be able to understand the significant events in the history of life and major theories of evolution. They would be able to appreciate the contribution of fossil studies in evolution and the phylogeny of horses and be able to calculate the gene and allele frequency using Hardy-Weinberg law and analyse population genetics problems. However, Students would understand the fundamental concepts of natural selection, speciation, mass extinction, and macro-evolution.
		Practical (credit-2)
		Study of fossils from models/pictures to identify the evolutionary relationship; we also study the homology and analogy from suitable specimens. Study and verification of Hardy-Weinberg Law by chi-square analysis to learn the population genetics. Also symmerize the relationship among individual by Graphical representation and interpretation of data of height /weight of a sample of 100 humans in relation to the age and sex.
	Discipline Specific Elective–3 Animal Behaviour	**Theory (Credit-4)**
		The course includes fundamental concepts in animal behaviour and its adaptive significance. By completing this course, students will be expected to gain a comprehensive understanding of the behavior of animals. They will understand the proximate controls of behavior, including the role of hormones, the animal's genotype, and the animal's environment in developing behavior. Much of our work will take an evolutionary approach; consequently, students will have a comprehensive understanding of the adaptive significance of behaviour, emphasizing animal communication, social behavior, territoriality, sexual selection and mating systems, patterns of behaviours, survival strategies, social and cooperative behaviours, design of signals and chronobiology. We want this class to be exciting and challenging for each of you and hope that it stimulates your curiosity about the living

		world around you. The purpose of the practical section is for students to have hands-on experiences designing and implementing experiments that concern a variety of behaviors. They will also know to construct ethograms.
		Practical (credit-2)
		The course incorporates principal concepts in creature conduct and its versatile noteworthiness. By completing this course, understudies will be anticipated to pick up a comprehensive understanding of the behavior of creatures. They will get it the proximate controls of behavior, counting the part of hormones, the animal's genotype, and the animal's environment in creating behavior. Much of our work will take an developmental approach; subsequently, understudies will have a comprehensive understanding of the versatile centrality of conduct, emphasizing creature communication, social behavior, territoriality, sexual choice and mating frameworks, designs of practices, survival procedures, social and agreeable practices, plan of signals and chronobiology.
	Discipline Specific Elective–4 Endocrinology	**Theory (Credit-4)**
		The course is specially designed to improve the understanding of students about different dimensions of endocrinology starting from glands of the body, hormones secreted by endocrine glands, the structure of glands and their different functions, signal transduction, different types of pathways of hormonal regulation and hormones in homeostasis. Endocrinology is an important course in Zoology as any disturbance in hormonal balance results in disease in humans or other animals. This course will give students an insight into the Endocrine system and teach them about various syndromes and diseases associated with it. It will be a mass awareness educational module for the benefit of society.
		Practical (credit-2)
		The course is uncommonly planned to progress the understanding of understudies almost distinctive measurements of endocrinology beginning from organs of the body, hormones discharged by endocrine organs, the structure of organs and their diverse capacities, flag transduction, diverse sorts of pathways of hormonal direction and

		hormones in homeostasis. So we dissect and display of Endocrine glands in laboratory bred rat. Study of the permanent slides of all the endocrine glands (Thyroid, Adrenal, Pancreas, Testis and Ovary) for a preliminary idea about those endocrine gland. For understanding the histological structure tissue fixation, embedding in paraffin, microtomy and slide preparation of any endocrine gland are performed in the laboratory.

Course Outcomes for General:

		Theory (Credit-4)
	CC-Zoology 1A/2A/3A (Animal Diversity)	Today, there are an estimated 2,007,702 described and named living species. About 58,000 of these are vertebrates and 1,324,402 are invertebrates. In addition, about 200,000 protists have been described and 15,000 to 20,000 new species are described every year. It seems likely that a significant portion of Earth's biodiversity, at the level of both genes and species, resides in the "invisible" prokaryotic world, and we have come to realize how little we know about this hidden world. Our main goal is to find out-"How can we possibly keep track of all these species names and information about each of them, and how do we organize them in a meaningful way? We do so with classifications. Classifications are lists of species, ranked in a subordinated fashion that reflects their evolutionary relationships and phylogenetic history. Classifications summarize the overarching aspects of the tree of life. In this course, students will discover the amazing diversity of animal life and how it evolves to be. They will learn about how animals act and interact with their environments and with each other all over the world. They will also learn about the basic of animal classification according to Ruppert and Barnes (1994). Due to detailed learning of basics of animal the whole animal classification is divided into Invertebrates (Non-chordates) and Vertebrates (Chordates). In this course, the students do learn from the first Animal Phylum of the earth i.e Protozoa to the highest Animal

Semester-I **(General)**		Class i.e Mammals with special emphasis on some important type study of various invertebrate animals like Locomotion in Protozoa, Canal System in *Sycon*, Polymorphism in Cnidaria, Lifecycle and pathogenicity and control measures of *Taenia solium*, *Ascaris lumbricoides*, Nephridia in Annelida, Vision and Metamorphosis in Arthropoda, Respiration in *Pila*, Water Vascular System in *Asterias* and many more. . The phylum Chordata includes many familiar animals. Major subgroups of chordates include "fishes" (a paraphyletic grouping; see below), amphibians (frogs, toads, and salmanders), "reptiles" (another paraphyletic group), birds, and mammals. In this course, we specially focus on to the general classifications of chordate in much organized manner. We follow the classifications for Protochordata, Agnatha, Reptilia, Aves and Mammalia to be followed from Young (1981), for Pisces to be followed from Romer (1959), for Amphibia to be followed from Duellman and Trueb (1986). Students will also comprehend the structure, function and biology of chordates of different taxonomic classes. They will also learn some special topics like Osmoregulation, Metamorphosis, retrogressive metamorphosis, Poison apparatus and Biting mechanism in Snake Principles and aerodynamics off flight & many more.
		Practical (credit-2)
		Classification of organism is rather difficult job to simply because authorities rarely agree while classifying organism. Accurate identification and naming of organisms raise serious practical problems. Taxonomic judgment, when it is finally made, is based on a large number of factors. Recognizing all these ground realities and stringent confines of curricula, we have presented here a scheme of classification that is primarily based on anatomical and physiological characteristics. To make students aware of the limitations of such parameter we have maintained the concluding statements as-'Hence the specimen seems to be……' rather than 'Hence the specimen is……'. Such an approach , we believe, shall enable students to understand that the science of Taxonomy can only be learned properly if one can equip himself/herself in areas such as anatomy, physiology, cell biology,

		molecular biology, behavioral biology, ecology and of course, evolutionary biology. We also preferred hands of training about the identification method, staining and as well as technical handling of the equipments like microscope. Many of us feel all snake bites are fatal, We truly believe that the ignominious darkness people live in can only be removed with knowledge, and zoology provides us with the necessary knowledge regarding these myths. Thus, identification of poisonous and non-poisonous snakes eradicates such stupid notions as well as spread awareness amongst people that help our beloved students act more responsibly in future.
Semester-	CC-Zoology 1B/2B/3B (Comparative Anatomy & Development Biology of Vertebrates)	**Theory (Credit-4)** Comparative anatomy is an important tool that helps determine evolutionary relationship between organisms and whether or not they share common ancestors. It is an important evidence for evolution. This core course actually helps to understand the many other courses of this entire curriculum including animal physiology, molecular biology and evolution. It provides answer of many unanswered question of biological area, when the traditional blackboard teaching method was the only way to teach then projector based teaching comes in rescue. Visualization of anatomical structures is the key to understand the entire subject. Understanding the minute detail is now possible thorough audio and video. Ultimately it enriches students to understand different types of systems within body i.e. Integumentary, Skeletal, Digestive, Respiratory, Circulatory, Urinogenital, Nervous etc systems. The Development Biology will provide a glimpse of the scope and historical background of developmental biology to the students, impart knowledge regarding basic concepts of differentiation, morphogenesis, and pattern formation as well as several Early and Late developmental process of Vertebrates. Detailed understanding of essential events of developmental biology will be imparted through proper explanation of gametogenesis and stages of embryonic development as well as fetal formation. Upon completion of this course, students should be able to

II **(General)**		know the evolution of different concepts in developmental biology and understand the process of gamete formation from stem cell population to mature ova and sperm. They also are able to comprehend the sequence of steps leading to the formation of gametes and the development of an embryo and learn the mechanisms underpinning cellular diversity and specificity in animals. However, the study of the methods and tools related to developmental biology will help to understand different processes of embryogenesis.
		Practical (credit-2)
		Students are able to identify various skeletal parts of various organisms and their structural components. Different types of mammalian skull, bones and girdles of *Columba* and *Cavia* help to determine evutionary relationship between organisms and whether or not they share common ancestors and their proper origin. We are trying to comprehend the sequence of steps leading to the formation of gametes and the development of an embryo and learn the mechanisms underpinning cellular diversity and specificity in animals. However, the study of the methods and tools related to developmental biology will help to understand different processes of embryogenesis. Identification of whole mounts of differently developmental stages of frog through permanent slides to observe the sperm, ova, cleavage stage, blastula, gastrula, neurula, tail bud stage, tadpole etc. Students also have to identify the different sections of placenta (through photo micrograph/slides).
		Theory (Credit-4)
		Physiology is an experimental scientific discipline, which provides a thorough understanding of normal body function, enabling more effective treatment of abnormal or diseased States, but, a zoologist must have acquired the knowledge of physiology specifically of human being.. This core course is so perfectly designed that we the teachers find that students use to get very comfortable during reading this course. Use of projector for show casing different pathways underlying any biological process (like respiration, excretion, circulation, digestion), animations,

	CC-Zoology 1C/2C/3C (Physiology and Biochemistry)	videos had made the process of learning so very easy and Palatable. We here encourage the students to study a behavior of an animal of their choice by their own. We enthusiastically provide the atmosphere where every student can learn something from Hands-on-training in laboratory. Biochemistry is a field of enormous fascination and utility, arising, no doubt, from our own self-interest. Human welfare, particularly its medical and nutritional aspects, has been vastly improved by our rapidly growing understanding of biochemistry. Indeed, scarcely a day passes without the report of a biomedical discovery that benefits a significant portion of humanity. Further advances in this rapidly expanding field of knowledge will no doubt lead to even more spectacular gains in our ability to understand nature and to control our destinies. It is therefore essential that individuals embarking on a career in biomedical sciences be well versed in biochemistry. This part of the course is organized under four major unites, i.e. Carbohydrates, Proteins, Lipids and Enzymes including interrelationships between biochemistry and our body. We believe that topic like various orders of proteins structure, the kinetics, mechanism of action, and metabolic regulation of enzymes, the oxidation–reduction reactions involved in biologic oxidation, and metabolic details of energy capture via the respiratory chain and oxidative phosphorylation, the metabolism of carbohydrates via glycolysis, the citric acid cycle, the pentose phosphate pathway, glycogen metabolism, gluconeogenesis etc. not only understand the basics of fundamental biochemistry but to got a incredible intrigued around the subject.
Semester-III **(General)**		**Practical (credit-2)**
		The laboratory has been given a central role in physiology learning, and teachers report that it is motivating for students to undertake experimental work on live animals or measuring physiological responses on the students themselves. Since motivation is a critical variable for academic learning and achievement, then we must concern ourselves with questions that examine how students engage in laboratory work and persist at such activities. Our main purpose of the

		present study was to investigate how laboratory work influences student motivation in physiology. We administered the Lab Motivation Scale to assess our students' levels of interest, willingness to engage (effort), and confidence in understanding (self-efficacy). We also asked students about the role of laboratory work for their own learning and their experience in the physiology laboratory. Our results documented high levels of interest, effort, and self-efficacy among the students. We believe that laboratory work was very important for learning difficult concepts and physiological processes like preparation of haem in crystals as well as identification of different permanent histological sections of mammalian pituitary, thyroid, pancreas, adrenal gland, small intestine, liver, lung, kidney to enrich knowledge and better understanding of our students. Biochemistry, sometimes called biological chemistry, is the study of chemical processes within and relating to living organisms. Biochemical processes give rise to the complexity of life. A sub-discipline of both biology and chemistry, biochemistry can be divided in three fields; structural biology, enzymology and metabolism. Over the last decades of the 20th century, biochemistry has through these three disciplines become successful at explaining living processes. Almost all areas of the life sciences are being uncovered and developed by biochemical methodology and research. Biochemistry focuses on understanding the chemical basis which allows biological molecules to give rise to the processes that occur within living cells and between cells, which in turn relates greatly to the study and understanding of tissues, organs, and organism structure and function. Biochemistry is closely related to molecular biology, the study of the molecular mechanisms of biological phenomena. Much of biochemistry deals with the structures, functions and interactions of biological macromolecules, such as proteins, nucleic acids, carbohydrates and lipids, which provide the structure of cells and perform many of the functions associated with life. Metabolism is the mechanisms by which cells harness energy via chemical reactions. This part includes Qualitative estimation of Carbohydrate (Glucose, Sucrose) as well as Quantitative estimation of Protein (Lowry's method), Enzymatic salivary amylase activity to enrich knowledge and better understanding regarding biochemistry.

	Skill Enhancement Course–1 Apiculture	**Theory (Credit-2)**
		SEC courses are value-based and/or skill-based and are aimed at providing hands-on-training, competencies, skills, etc. These courses integrate in syllabus from a pool of courses designed to provide value-based and/or skill-based knowledge. In this semester students have to study apiculture as suggested in the syllabus for skill development. Bees are one of the many insects in the world that can produce something that is beneficial to all of us. We obtain honey from these bees and as we all know, honey is an important food for human beings. Since ancient times, honey is used for treating several diseases, and it is an antioxidant, therefore beekeeping is an important activity.
Semester-IV **(General)**	CC-Zoology 1D/2D/3D (Genetics and Evolutionary Biology)	**Theory (Credit-4)**
		The focus of this part of the course is to familiarize students with basic principles of genetics and its application in understanding real-life hereditary conditions. Students would be able to understand the fundamentals of Mendelian inheritance and its exceptions. They would be able to appreciate various other gene interactions like co-dominance, incomplete dominance, lethal alleles and pleiotropy. Further, students would be able to describe the concepts of linkage and crossing over and their usage in constructing gene maps. The students are able to understand the basic principles of pedigree analysis and will be able to construct and analyse pedigree-related problems for inherited traits. They would learn about chromosomal and genetic mutation, the chromosomal sex-determination mechanisms and dosage compensation. This part of the course aims at imparting a fundamental understanding of evolutionary processes and how it works in the context of populations. By completing this course, students would be able to understand the significant events in the history of life and major theories of evolution. They would be able to appreciate the contribution of fossil studies in evolution and the phylogeny of horses and be able to calculate the gene and allele frequency using Hardy-Weinberg law and analyse population genetics problems. However, Students would

		understand the fundamental concepts of natural selection, speciation, mass extinction, and macro-evolution.
		Practical (credit-2)
		The focus of this course is to familiarize students with basic principles of genetics and its application in understanding real-life hereditary conditions. Students would be able to understand the fundamentals of Mendelian inheritance and its exceptions. They would be able to appreciate various other gene interactions like co-dominance, incomplete dominance, lethal alleles and pleiotropy. Further, students would be able to describe the concepts of linkage and crossing over and their usage in constructing gene maps, Chi square test, Human Karyotypes etc. Study of fossils from models/pictures to identify the evolutionary relationship; we also study the homology and analogy from suitable specimens. Phylogeny studies of horses as well as beaks of different species of Darwin's Finches enhance the diverse knowledge in the area of evolution. For the practical Hands on Training, submission of a report after teacher guided visit to any zoological museum is compulsory for every student
	DSE-Zoology 1A/2A/3A (Applied Zoology)	**Theory (Credit-4)**
		This course aims to acquire general concepts regarding how Zoology could be utilized for human welfare. It has diversified fields with their enormous self application. All the fields are somewhat associated to human health or economy related to animals (Zoology). The total course is divided in ten units including Host parasitic relation, different epidemic diseases (Tuberculosis, Typhoid), Rickettsia and Spirochetes, Parasitic Protozoans (*Entamoeba histolytica*, *Plasmodium vivax*, *Trypanosoma gambiense*), Parasitic Helminthes (*Ancylostoma duodenale*, *Wuchereria bancrofti*), different types of economically and medically important insects (Mosquitoes, Fleas, Lice, insect pests etc) as well as economically important animals (Fish, Cattle, Poultry etc) and many more.

Semester V **(General)**		Parasitology, knowledge of some parasitic diseases that could be transmitted between animals and man (zoonotic diseases), learning about how to protect man and domestic animals from parasites, and their treatment in case of infection. Basic knowledge of parasitism, the different biological inter-relationships and the host-parasite relationships. The students would be able to understand the Knowledge of different parasitic examples from all phyla (Protozoa & Metazoa), their morphology, biology, life cycles, diagnosis, treatment & control. They are also able to disseminate health awareness of these parasitic diseases.
		Practical (credit-2)
		Basic knowledge of parasitism, the different biological inter-relationships and the host-parasite relationships. The students would be able to understand the Knowledge of different parasitic examples viz., Identification of *Plasmoedium vivax*, *Entamoeba histolytica*, *Ancylostoma duodenale*, *Wuchereria bancrofti*, *Pediculus humanus*, *Xenopsylla cheopis* and different mosquitoes through permanent slides/microphotographs. Spot identification of different economically important insects *Nilaparvata*, *Apion*, *Scirpophaga*, *Callosobruchus*, *Sitophila and Tribolium* enhance the practical knowledge of students. We also try to collect and display different plant parts/store grains damaged by insect. Students also have to submit of two project reports on freshwater aquarium and any field visit report (any poultry farm/ animal breeding centre/ vector biology/ parasitology centre) under the supervision of all the faculties of the departments. This will definitely enhance the practical knowledge of the graduate level students.
	Skill Enhancement Course-3	**Theory (Credit-2)**
		SEC courses are value-based and/or skill-based and are aimed at providing hands-on-training, competencies, skills, etc. These courses have been incorporated in syllabus from a pool of courses designed to provide value-based and/or skill-based knowledge. In this semester students have to study sericulture as suggested in the syllabus for skill development.

	(Sericulture)	Sericulture plays a major role in rural employment, poverty alleviation and earning foreign exchange. A lot of entrepreneurial opportunities are available in various fields of sericulture. It is practiced in various states viz., Karnataka, Andhra Pradesh, Jammu & Kashmir, West Bengal and states like Madhya Pradesh and Maharashtra have also started practicing Sericulture. The non-mulberry (also called Vanya silk) sericulture is practiced in Assam, Jharkhand, Orissa and Madhya Pradesh. More than 6 million people are involved in sericulture activities. It is necessary to upgrade the skills of the sericulturists to use the full potentialities of sericulture to produce qualitatively superior cocoons and to earn profitable income. The course divided into five units with special emphasis on biology and rearing of silk worm. Also students will be aware with the pest and disease of silk worm and the modern scope of sericulture.
	DSE – 1B/2B/3B (Immunology)	**Theory (Credit-4)** Immunology is critical to human, animal health and survival. It is at the cutting edge of life science and has led to some key healthcare advances of recent times, including immunotherapy, cancer, vaccination etc. According to the course our primary goal here is to help the students in building themselves confident regarding the subject they are reading and making them more subject-oriented. We realize that understanding the concept of development of immune system or how body reacts against an infection or disease and what happen if it all goes wrong , cannot be possible only by theory or plane lectures, so the teachers of our department follow an audio-visual method of learning besides using traditional blackboard. We believe that students can make a bond with the subject only when they are able to visualize the topic in their own mind, Valuing this thought we have incorporated Animations, videos, Colorful pictures along with discussing the theory, Exampling by case-studies for a better visualization and advanced online material, e-books and test -book is a regular thing we provide here. The entire course provides a conception or overview of total immune system of our body. Students can come to know the entire immune system from cellular level (different cells of immune system) to organ level (organs related to immune system). Antigen, Antibody and their

Semester VI **(General)**		interaction as well as the working mechanism of immune system (Cytokines, Complement system, MHC etc) are key attraction for health and disease of our body. Immunization is one of the chief outcomes from the study of Immunology for human welfare.
		Practical (credit-2)
		Immunology is the study of the immune system and is a very important branch of the medical and biological sciences. It is also now becoming clear that immune responses contribute to the development of many common disorders not traditionally viewed as immunologic, including metabolic, cardiovascular, and neurodegenerative conditions such as Alzheimer's. The immune system is the ultimate personalised army, protecting us from any bacterial or viral invaders, but also in recognising and destroying potentially cancerous cells. Like any system though, the immune system can malfunction and incorrectly identify our own bodies, or harmless food or every-day substances as targets, leading to autoimmune diseases and allergy respectively. For such an diversified course we are trying to get motivated about that course by doing such an important laboratory work like demonstration of lymphoid organs in human through model/ photograph, histological study of spleen, thymus and lymph nodes through slides/photographs, preparation of stained blood film to study various types of blood cells as well as ABO blood group determination.

Dept. of Physical Education

Programme Outcomes (PO)

Introduction:

Physical Education develops student's competence and confidence to take part in a range of physical activities that become a central part of their lives, both in and out of school. A high quality Physical Education curriculum enables all students to enjoy and succeed in any kinds of physical activity. Students will develop practical, theoretical skills in Physical Education. Students will be prepared to acquire a range of general skills, to specific skills to communicate with society effectively and learn independently.

Outcomes of Physical Education

a. The vision in for all students to be physically educated and have fun while moving.
b. A variety of motor skills and abilities related to lifetime leisure activities.
c. Improved understanding of the importance of maintaining a healthy lifestyle.
d. Improved understanding of movement and the human body.

Physical Education is the development or maintenance of skills related to strength, agility, flexibility, movement and stamina, including dance, the development of knowledge and skills regarding teamwork and fare play, the development of knowledge and skills regarding nutrition and physical fitness as part of a healthy life style.

Impact of Physical Education on students

Quality Physical Education can be associated with improved mental health, since increased activity provides psychological benefits including reduced stress, anxiety and depression. It also helps students develop strategies to manage their emotions and increases their self-esteem. The priority outcomes of Physical Education are (i) recognizes physical activity is important of good physical, emotional and mental health, (ii) Identifies ways that physical activity improves physical, emotional and mental health, (iii) Discuss the relationship between physical activity and good health.

Goals of Teaching Physical Education

(i) Teaching essential body management skills.
(ii) Promoting physical fitness and fun.
(iii) Developing teamwork, sportsmanship and cooperation.

Conclusion:

Regular participation in physical activity and higher levels of physical have been linked to improved academic performance and brain functions, such as attention and memory. These brain functions are the foundation for learning.

Programme Specific Outcomes

Students will achieve and maintain a health enhancing level of physical fitness, students will demonstrate responsible social behavior while participation in movement activities. Students will understand the importance of respect for others.

Program specific outcomes are statements that defines outcomes of a program which make students realize the fact that the knowledge and techniques learnt in this course has direct implication for the betterment of society and its sustainability.

Program level student learning outcomes (PLSOs) are defined as the knowledge, skills, abilities or attitudes that students have at the completion of a degree or certificate.

Good learning outcomes focus on the application and integration of the knowledge and skills acquired in a particular unit of instruction (e.g. activity course program etc.) and emerge from a process of reflection on the essential contents of a course.

Physical Education

	COURSE	**OUTCOMES**
1	Foundation and History of Physical Education and field practical	a.To acquire knowledge about foundation and History of Physical Education and field practical b.To develop the Physical Education from ancient to modern age of Physical Education and sports c.To gain knowledge about growth and development;stages characteristics,physical activities during the period of childhood,pre-adolescence and adolescence

		d.To gain knowledge of Olympic games,Asian games and commonwealth games e.To acquire knowledge of different sports award. f.To acquire vast knowledge of Yoga and its history g.To gain the benefit of Suryanamaskar,callisthenics and aerobics activity.
2	Management of Physical Education and Sports and field practical	a.To learn about sports management,its importance,purposes and principles which are very much effective for Physical Education b.To gain knowledge about tournaments, fixtures,how to organize Athletic meet, playday, intramural and extramural competition c.To acquire knowledge of standard track marking, how to make time table in Physical Education, care and maintenance of playground, gymnasium and sports equipments d.To develop leadership quality through games and sports e.To develop practical knowledge of track and field and different types of team games
3	Anatomy ,Physiology and Exercise Physiology and Lab practical	a.To gain knowledge about the importance of anatomy , physiology and exercise physiology, structure and function of human cell and types and fucction of tissue b.To acquire knowledge about Musculo skeletal system,circulatory system and respiratory system c.To develop practical knowledge of BMI,WHR,assessment of Heart rate,Blood Pressure,Respiratory rate,Pick Flow rate etc
4	Track and Field	a.To acquire vast knowledge of starting technique,finishing technique and different procedure of Relay race in Track and Field b.To develop practical knowledge ofLong jump,High jump,Shot put,Discus,Javelin.
5	Health Education ,Physical Fitness and Wellness and Lab	a.To learn about different type of health organization(WHO, UNESCO) and related health

	practical	programmes, communicable deseases and its preventive measures of management b.To acquire knowledge about fitness,wellness and physical activities of different ages c.To learn about nutrition, balanced diet,daily energy requirements,health disorders due to deficiencyof vitamins and minerals d. To acquire knowledge about causes and corrective exercises of postural deformaties e. To learn about basic concept of first aid, massage and therapy f.To gain practical knowledge of first aid, hydrotherapy and thermotherapy.
6	Gymnastics and Yoga	a.To learn about basic concept of gymnastics,asanas and pranayama
7	Test, Measurements and Evaluation in Physical Education	a.To knowledge about test, measurement and evaluation in physical education b.To learn about the measurement of body composition and somatotype assessment c.To acquire knowledge about fitness test andsports skill test d.To develop practical knowledge of body fat measurement and assessment of AAHPER youth fitness test and Harvard step test
8	Sports Training	a.To gain knowledge about sports training, principles of sports training and importance of sports training b.To acquire knowledge about warming up conditioning, different types of training, periodization and load c.To gain knowledge about different types of training technique To develop practical experience of weight training and circuit training
9	Modern Trends and Practices in Physical Education Exercise Sciences	a.To learn about the knowledge about types of fitness in sports and their utility in physical education b.To gain knowledge of biological, psychological and sociological foundation of sports
10	Indian Games and Racket Games	a.To gain knowledge to Indian games like Kho-kho and

		Kabaddi b.To learn about different racket games and participated different sports competition
11	Psychology in Physical Education and Sports	a. To gain knowledge about psychology, sports psychology in the field of physical education b. To acquire knowledge of Laws of learning, transfer of learning, motivation, emotion and personality c. To learn about the management of stress and anxiety through physical activity and sports d. To develop practical knowledge of the assessment of anxiety and stress and measurement of reaction time and mirror drawing
12	Ball Games	a.To gain knowledge of the different ball games b.To learn different skill ball games c.Learning of skills they will participate sports competiton like inter-departmental and inter-college,district as well as state level competition. learn about

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DEPARTMENT OF POLITICAL SCIENCE
GUSHKARA MAHAVIDYALAYA

PROGRAMME OUT COMES, PROGRAMME SPECIFIC OUTCOMES AND COURSE OUTCOMES

From the Academic Session 2017-18, CBCS was introduced by the University of Burdwan. Our institution is affiliated under the University of Burdwan in 1965.The first batch of student under the newly introduced semester system completed graduation in the year 2020. It is very difficult to quantify programme specific outcomes. Until now, the University has not provided concrete details of outcomes to its affiliated Colleges. However, our Department has explored carefully some specific outcomes of B.A. three year, six semesters Programme. These may be listed as follows –

PROGRAMME OUTCOMES:

The study of Political Science opens the scope to the learners with specific knowledge and skills prepare for a professional career like teacher (School, College and University level), administrator, Political Scientists, lawyers etc. It also offers knowledge about the basics of political education. Political science education enables students to learn about the constitutions of various countries. It educates students about politics and government at all levels, including national, state, local and global. The CBCS is supposed to provide students with relevant and contemporary knowledge.

This curriculum, in particular, provides students a strong conceptual foundation, basic analytical skills, and a thorough and up-to-date overview of the key areas of Political Science. The programme covers the major fields of political science (Western Political Thought, Political Theory, Comparative Politics, International Relations, Public Administration, and Indian Government and Politics), as well as offering options in some papers like SEC and DSE.

The programme is made up of 142 credits that are spread out over six semesters.

Society and Political Science: Understanding the interconnection between policy decisions and their societal consequences. This is accomplished in India through a comprehensive teaching of public administration practice.

Ideal Citizenship: The course curriculum inculcates students a basic understanding of citizenship rights and duties and enabling them to act as responsible citizens by commemorating important days such as Independence Day and Republic Day.

Communication Establishment: Establishing connections between academia and civil society in order to effectively handle socio-political issues.

PROGRAMME SPECIFIC OUTCOMES

Political Science, as we all know, is a social science discipline that analyses government and state as well as applying empirical theory and scientific methodology to the analysis of political issues. Just as the world today revolves around political and economic factors, a formal degree in Political Science is quite useful. The day-to-day life of an individual living in a society and state is the subject of this course. Political science is the study of how institutional circumstances, as well as political actors' beliefs, interests, and resources, impact political behaviour, governance, and power. As a result, a degree in political science allows students to not only improve their understanding of the fundamental structures and processes of governmental systems, public policies and political forces that directly affect their lives, but also to analyse political problems, arguments, information, and theories, as well as apply methods appropriate for gathering and interpreting data relevant to this discipline. Above all, it assists students in becoming informed citizens by increasing their understanding of their rights and responsibilities as residents of a state.

An honours graduate of the college's Political Science programme should be able to:

1. Demonstrate knowledge of essential political processes, institutions, actors, behaviour, and ideas, as well as knowledge of important political theories, methodologies, and concepts.
2. Acquire an understanding of how to think systematically about the moral considerations of politics.
3. Demonstrate a thorough understanding of political interactions in national and international contexts.
4. Understand the fundamental structures and operations of government systems, as well as their theoretical underpinnings.
5. Identify and assess political problems, arguments, facts, and/or theories.

6. Use methods that are appropriate to the discipline of political science for collecting and interpreting data.
7. Educate elected politicians on parliamentary procedures and the country's constitution.
8. Service to the people by choosing civil services.
9. Understanding the nature of national and international politics, as well as current events.
10. Examining the provisions of the Indian Constitution, as well as major legislation and reforms.
11. A critical assessment of social, economic, and political variables in order to grasp the diversity of Indian society.
12. Increasing awareness of national political history, international relations, and contemporary Indian and Western political thinkers.
13. Encourage a comprehensive, comparative understanding of specific world constitutions such as the United Kingdom, the United States of America and France.
14. Helping to develop knowledge about administrative studies, with an emphasis on Indian administrative structures and practices.
15. Analyzing India's relations with its neighbours and great powers.

COURSE OUTCOMES

HONOURS

SESSION: 2017-18 to 2020-21

Semester	Course Code	Course name	Course Outcomes
I	CC-1 (Hons.) & GE-1	WESTERN POLITICAL THOUGHT	It helps the students to discover the political philosophy in Western World. It inculcates the knowledge about the history and origin of different political theories and interprets them in historical context as well as relates them to the contemporary politics.
	CC-2	POLITICAL THEORY	'Political Theory' enables the students to learn the ideas of great Political Thinkers of ancient world. It also helps to understand modern political theories.
II	CC-3	INDIAN POLITICAL THOUGHT	It enables students to know the theories given by Indian thinkers in different ages.
	CC-4	INDIAN GOVERNMENT AND POLITICS	The study of Indian Political System delivers knowledge to the students about Indian Government and Politics. It inspires the students to think and analyses the politics of our nation.
	GE-2	POLITICAL THEORY	'Political Theory' enables the students to learn the ideas of great Political Thinkers of ancient world. It also helps to understand modern political theories.
III	CC-5	COMPARATIVE POLITICS	It helps to understand comparative analysis of various political systems of the world. Political Systems of different countries like UK, USA, and France are discussed here. Students acquire knowledge about the Party system of various countries like UK, USA, France, Nigeria and Mexico. It allows the students to critically analyses about the advantages and disadvantages of these political Systems along with Indian political system.
	CC-6	PUBLIC ADMINISTRATION - Basic Theories	It helps the students to understand different theories of Public Administration i.e. Classical theories such as Scientific Management theory, Neo-classical Theories such as Human Relations Theory and Contemporary theories such as Ecological approach.
	CC-7	LOCAL GOVERNMENT IN INDIA	It helps the students to understand rural and urban local self-Government in India. It also highlights on RTI, Lokpal and Lokayukta.

	GE-3	INDIAN POLITICAL THOUGHT	The study of "Indian Political Thought" disseminates knowledge to the students about various Indian thinkers and their thoughts.
	SEC-1	LEGISLATIVE SUPPORT	It mainly focuses on law making procedure and functions of Union Legislature.

Semester	Course Code	Course name	Course Outcomes
IV	CC-8	INTERNATIONAL RELATIONS	It helps the students to understand various concepts of International Relations i.e. National Power, Balance of Power, Collective Security etc. It also highlights post-cold war global issues such as Globalization, Human Rights and Terrorism. Students acquire knowledge about India's Foreign Policy and Nuclear Disarmament.
	CC-9	SOCIOLOGY AND POLITICS	It helps the students to understand the relationship between Political Science and Sociology – two way impacts of society on politics and politics on society.
	CC-10	INTERNATIONAL ORGANIZATIONS	The Study Of 'International Organisations' conveys the knowledge to the students about the activities of various regional and International Organisations such as SAARC,ASEAN,NATO,OPEC and UNO etc.
	GE-4	INDIAN GOVERNMENT AND POLITICS	The study of Indian Political System transmits knowledge to the students about Indian Government and Politics. It helps the students to think and analyse about the politics of our country.
	SEC-2	DEMOCRATIC AWARENESS THROUGH LEGAL LITERACY	It enables students to understand various laws concerning dowry, sexual harassment, consumer rights and cyber-crime among others. It also discusses the court system, including juvenile and Mahila courts, as well as Lok Adalat.
V	CC-11	SOCIAL MOVEMENTS IN INDIA	This Core Course focuses on various social movements ("old" and "new") - from trade union and peasant movements to women's movements, environmental movements.
	CC-12	ELEMENTARY RESEARCH METHODS IN POLITICAL SCIENCE	The Study of "Elementary Research Methods In Political Science" transmits knowledge to the students about Research Methodology.

	DSE-1	SELECT COMPARATIVE POLITICAL THOUGHT	It helps the students to understand the salient features of Western and Indian Political Thought. Some Indian and Western political thinkers, as well as their theories, are discussed here.
	DSE-2	DEMOCRACY AND DECENTRALIZED GOVERNANCE	It enables the students to understand about the various issues of International Relations like global economy and Bretton Wood Institutions etc. It also gives knowledge about various other aspects like New Social Movements, Role of MNCs & NGOs and Global Organizations like WTO.
Semester	**Course Code**	**Course name**	**Course Outcomes**
VI	CC-13	INDIAN FOREIGN POLICY	It helps the students to gain knowledge about the structure of foreign-policy making in India including the nature and direction of India's foreign policy concerns. It also helps to understand the objectives, goals and foreign policy trends at bilateral and multilateral levels.
	CC-14	CONTEMPORARY ISSUES IN INDIA	Contemporary Issues In India are discussed here. Caste system, secularism, communalism, discrimination against women and social backwardness are major concerns of this Core Course.
	DSE-3	LOCAL GOVERNMENT IN WEST BENGAL	It helps the students to understand the structure and functions of rural and urban local self-Government in India. It also highlights on empowerment of women, SCs, STs
	DSE-4	POLITICAL ECONOMY OF INTERNATIONAL RELATIONS	It mainly focuses on political economy of International Relations. Approach to the study of Political economy of Robert Gilpin and various economical organizations including global trade are key themes of this Paper.

COURSE OUTCOMES

GENERAL

SESSION: 2017-18 to 2020-21

Semester	Course Code	Course name	Course Outcomes
I	CC-1 A	WESTERN POLITICAL THOUGHT	It helps the students to discover the political philosophy in the Western world. It inculcates the knowledge about the history of origin of different political theories and interprets them in historical context as well as relates them to the contemporary politics.
II	CC-1B	POLITICAL THEORY	It helps the students to learn the ideas of various Political Theories.
III	CC-1C	NDIAN POLITICAL THOUGHT	It enables students to know the theories given by Indian thinkers in different ages.
	SEC-1	LEGISLATIVE PRACTICES AND PROCEDURES	It mainly focuses on law making procedure and functions of Legislatures (Union and State). It also includes the powers and functions of different tiers of governance (from central to urban and rural local self-government).
IV	CC-1D	NDIAN GOVERNMENT AND POLITICS	The study of Indian Political System conveys the whole body of knowledge to the students about Indian Government and Politics.
	SEC-2	ENVIRONMENTA L AWARENESS	The study of Environmental Awareness provides students with a comprehensive understanding of various environmental issues. It also encompasses significant environmental movements.
V	DSE-1A	SELECT COMPARATRIVE POLITICAL THEORIES	It enables students in understanding the distinctive features of Western and Indian political thought. Some Indian and Western political thinkers, as well as their theories, are covered here.
	SEC-3	DEMOCRATIC AWARE NESS THROUGH LEGAL LITE RACY	It enables students to understand various laws concerning dowry, sexual harassment, consumer rights and cybercrime, among others. It also highlights the court and tribunal system, which includes juvenile and Mahila courts.
	GE-1	INDIAN POLITICAL	It enables students to know the theories given by Indian

		THOUGHT	thinkers in different ages.
VI	DSE - 1B	PUBLIC POLICY : CONCEPT AND IMPLICATIONS IN INDIA	It helps students to understand public policy and its implications in India.
	SEC-4	HUMAN RIGHTS EDUCATION	The study of 'Human Rights Education' assists students in gaining knowledge about the meaning and brief history of Human Rights as outlined in the Universal Declaration of Human Rights. It also discusses the challenges and prospects of India's human rights movements.
	GE - 2	INDIAN GOVERNMENT AND POLITICS	The study of Indian Political System delivers knowledge to the students about Indian Government and Politics. It inspires the students to think and analyses the politics of our nation.

SESSION: 2016-17

HONOURS

Part	Paper	Title of Paper	Course Outcomes
I	I	POLITICAL THEORY	'Political Theory' allows a student to learn the ideas of ancient political thinkers. It also helps to understand modern political theories.
	II	WESTERN POLITICAL THOUGHT	It assists students in learning about political philosophy in the Western world. It inculcates the knowledge about the history and origin of different political theories and interprets them in historical context as well as relates them to the contemporary politics.
II	III	GOVERNMENT AND POLITICS IN INDIA	The study of 'Government and Politics In India' delivers knowledge to the students about Indian Political System. It encourages students to think about and analyse our country's politics.
	IV	COMPARATIVE GOVERNMENT AND POLITICS	It helps in understanding of comparative analyses of various political systems throughout the world. The political systems of various countries, such as the United Kingdom, the United States, and France are discussed here. Students learn about the political parties in countries such as the United Kingdom and the United States of America. It enables students to critically evaluate the benefits and drawbacks of these political systems.
III	V	INTERNATIONAL RELATIONS	It aids students in comprehending various concepts in international relations, such as national power, balance of power and collective security, among others. It also addresses issues such as globalisation, human rights, and terrorism that have arisen since the end of the Cold War. Students gain an understanding of India's foreign policy as well as nuclear disarmament. India's relations with neighboring countries are also discussed here.
	VI	POLITICAL SOCIOLOGY	It enables students in understanding the connection between Political Science and Sociology – the two-way impacts of society on politics and politics on society.
	VII	PUBLIC ADMINISTRATION	It helps the students to understand nature, scope and evolution of Public Administration as a discipline. The country's Union

III			Administration and State Administration of West Bengal are discussed here. It helps the students to understand rural and urban local self-Government in India. It also highlights on RTI, Lokpal and Lokayukta.
	VIII	INDIAN POLITICAL THOUGHT	Students learn about various Indian thinkers and their ideas through the study of "Indian Political Thought."

SESSION: 2016-17
GENERAL

Part	Paper	Title of Paper	Course Outcomes
I	I	POLITICAL THEORY	It helps students in understanding the concepts of various political theories. 'Political Theory' allows students to learn about the ideas of ancient political thinkers. It also aids in the comprehension of contemporary political theories.
II	II	INDIAN GOVERNMENT AND POLITICS	The study of 'Indian Government And Politics' delivers knowledge to the students about Indian Political System. It encourages students to think about and analyse our country's politics.
	III	COMPARATIVE GOVERNMENT	It helps in understanding of comparative analyses of various political systems throughout the world. The political systems of various countries, such as the United Kingdom, the United States, and France are discussed here.
III	IV	CONTEMPORARY ISSUES IN INDIA	It enables students in understanding some important issues in India such as secularism, communalism, caste politics, human rights and environmental politics etc.

DEPARTMENT OF MATHEMATICS
GUSHKARA MAHAVIDYALAYA

Programme out Come for B.Sc. Mathematics (Honours, General and Generic)

PROGRAMME OUTCOMES (PO)

Programme Outcomes are the topic that relates with the students that what the knowledge they want to earn after the end of the programme mainly at the end of the time of this graduation. The Program Outcomes of UG in Mathematics are in the following manner that after completion of the programme the students will be able to:

PO1: Students think the subject distinguishing and intelligence.

PO2: They are able to know what lack of knowledge presence in their course study and what have to do for that reason so they overcome this situation.

PO3: They think Mathematics in better and vast way and realize the importance of basic needs in real life and then they apply it in real life so that they can achieve the perfect goal.

PO4: In Online mode teaching are more effective with the use of social media, digital electronics, gadgets, etc. In this method education though doesn't spread properly among the students, teacher-students' relation overcome such obstacles via such electronic gadgets for that learning of Mathematics reaches to the students in fineer measure.

PO5: Think students to design real life specific problem such that calculation in real life and actual life facts and they know how to defeat such labyrinths.

PO6: At the completion of the programme students get better chance to acquire their future planning via career counselling, so that they can involve in higher studies or any secure placed, even they also involve in business.

PO7: Students can achieve proper education via learning Mathematics so that they can develope a real human being in themselves.

PO8: Students also understand the relation between Mathematics and other subjects by applying quantitative models arising in social sciences, management and other basic sciences.

PROGRAMME SPECIFIC OUTCOMES

PSO1: Technical competence: In degree course, students get suitable knowledge for high ability. In technical
matter, combining the subject to other basic sciences like physics, chemistry, students can get proper technological knowledge.
PSO2: Professional Idea: Teacher take more initiative for learning mathematics for that students get a vast idea
in professional career and teacher give proper quality and quantitative skills to students so that they can make
a managerial career.
PSO3: Management and Business Mathematics: In degree course, proper infrastructure and ability of

teachers

help students to make the relation between Management mathematics and the Business

mathematics by

using the correct consciousness of mathematics.

B.Sc. Honours Programme in Mathematics- Course Learning Outcome (2022-23)

Semester-I

Core Course:

BMH1CC01 (Calculus, Geometry & Differential Equations):

CO1: Define Hyperbolic functions and higher order derivatives.

CO2: Leibnitz rule and its application to problems type of concavity and inflection points, envelopes and asymptotes.

CO3: Reduction formulae, derivations and illustrations of reduction formulae for the integration of different functions.

CO4: Differential equations and mathematical models.

CO5: General, particular, explicit, implicit and singular solutions of a differential equation.

Semester-I

Core Course:

BMH1CC02 (Algebra):

CO1: Derivation of De Moivre's theorem for rational indices and its applications.

CO2: The inequality involving AM≥GM≥HM.

CO3: Cauchy-Schwartz inequality.

CO4: Well-ordering property of positive integers.

CO5: Division algorithm, Divisibility and Euclidean algorithm. Congruence relation between integers.

CO6: Principles of Mathematical Induction, statement of Fundamental Theorem of Arithmetic.

Semester-II

Core Course:

BMH2CC03 (Real Analysis):

CO1: Review of Algebraic and Order Properties of $\mathbb{R}$, ε-neighborhood of a point in $\mathbb{R}$.

CO2: Idea of countable sets, uncountable sets and unaccountability of $\mathbb{R}$.

CO3: Sequences, Bounded sequence, Convergent sequence, Limit of a sequence, lim inf, lim sup. Limit Theorems.

CO4: Tests for convergence: Comparison test, Limit Comparison test, Ratio Test, Cauchy's nth root test and Integral test.

CO5: Alternating series.

CO6: Leibniz test. Absolute and Conditional convergence.

Semester-II

Core Course:

BMH2CC04 (Differential Equations and Vector Calculus):

CO1: Systems of linear differential equations and types of linear systems.

CO2: Differential operators and an operator method for linear systems with constant coefficients.

CO3: Equilibrium points.

CO4: Interpretation of the phase plane Power series solution of a differential equation about an ordinary point.

CO5: Define Triple product, introduction to vector functions and operations with vector-valued functions.

CO6: Limits and continuity of vector functions.

Sem-III

Core Course:

BMH3CC05 (Theory of Real Functions & Introduction to Metric Spaces):

CO1: Define Limits of functions (ε - δ approach), sequential criterion for limits, divergence criteria. Limit theorems,

one sided limits, Infinite limits and limits at infinity.

CO2: Formulation of Relative extrema and interior extremum.

CO3: Rolle's theorem. Mean value theorem, intermediate value property of derivatives and Darboux's theorem.

CO4: Applications of mean value theorem to inequalities and approximation of polynomials.

CO5: Application of differential calculus : Curvature.

Sem-III

Core Course:

BMH3CC06 (Group Theory -I):

CO1: Define Symmetries of a square, dihedral groups.

CO2: Definition and examples of groups including permutation groups and quaternion groups.

CO3: Properties of cyclic groups, classification of subgroups of cyclic groups, Cycle notation for permutations.

CO4: Formulation of External direct product of a finite number of groups, normal subgroups, factor groups.

Sem-III

Core Course:

BMH3CC07 (Numerical Methods & Numerical Methods Lab):

CO1: Define the Algorithms, Convergence, Errors: Relative, Absolute. Round off and Truncation.

CO2: System of linear algebraic equations: Gaussian Elimination and Gauss Jordan methods.

CO3: Newton's methods, Error bounds, Finite difference operators.

CO4: Gregory forward and backward difference interpolations.

Sem-III

Skill Enhancement Courses (SEC)

Choose any one from the following courses-

(1) **BMH3SEC11 (Logic and Sets)** , (2) **BMH3SEC12 (Computer Graphics)** and (3) **BMH3SEC13 (Object Oriented Programming in C++)**

(1) **BMH3SEC11 (Logic and Sets):**

CO1: Propositional equivalence: Logical equivalences.

CO2: Predicates and quantifiers: Introduction, Quantifiers, Binding variables and Negations.

CO3: Operation of Standard set, Classes of sets, Power set of a set.

CO4: Set identities, Generalized union and intersections. Relation: Product set.

CO5: Composition of relations, Types of relations, Partitions, Equivalence Relations with example.

(2) **BMH3SEC12 (Computer Graphics):**

CO1: Development of Computer Graphics: Raster Scan and Random Scan graphics storages, displays processors

and character generators.

CO2: Points, lines and curves: Scan conversion, linedrawing algorithms, circle and ellipse. generation, conic section generation.

CO3: Two-dimensional viewing: Coordinate systems, linear transformations, line and polygon clipping algorithms.

(3) **BMH3SEC13 (Object Oriented Programming in C++)** :

CO1: Programming paradigms, characteristics of object oriented programming languages.

CO2: Brief history of C++, structure of C++ program, differences between C and C++.

CO3: Objects, classes, constructor and destructors, friend function, inline function, encapsulation, data abstraction, inheritance, polymorphism, dynamic binding, operator overloading.

CO4: Template class in C++, copy constructor, subscript and function call operator,

concept of namespace and exception handling.

Sem-IV

Core Course:

BMH4CC08 (Riemann Integration and Series of Functions):

CO1: Riemann condition of integrability, Darbaux sum, Darbaux theorem, properties of Riemann integral as

monotone and continuous functions.

CO2: Improper integrals and convergence of beta and gamma function.

CO3: Pointwise convergence, theorems on the continuity and derivability of the sum function of a series of

functions, Cauchy criterion for uniform convergence and Weierstrass M-test.

CO4: Riemann-Lebesgue lemma, study of Bessel's inequality.

CO5: Knowledge of radius of convergence, CauchyHadamard theorem, short description of Weierstrass Approximation theorem.

Sem-IV

Core Course:

BMH4CC09 (Multivariate Calculus):

CO1: Limit and continuity of functions of several variables, chain rule of one and two independent parameters,

then study Jacobian, we discuss Lagrange multipliers method.

CO2: Double integral over a rectangular region, volume by triple integrals, change in variable of double and

triple integrals.

CO3: Vector fields, line integrals, Fundamental theorems for line integrals, applications.

CO4: Green's theorem, study Stoke's theorem and lastly Divergence theorem.

Sem-IV

Core Course:

BMH4CC10 (Ring Theory and Linear Algebra I):

CO1: Rings, properties of rings, integral domains and fields, prime and maximal ideals.

CO2: Ring homomorphisms, Isomorphism theorems I, II, III.

CO3: Vector spaces, subspaces, linear span, basis and dimensions, deletion and replacement theorems.

CO4: Linear transformations, null space, rank and nullity, matrix representations, Isomorphism theorems,

change of coordinate matrix.

Sem-IV

Skill Enhancement Courses (SEC)

Choose any one from the following courses-

(1) BMH4SEC21 (Graph Theory), (2) BMH4SEC22 (Operating System (Linux)) and (3) BMH4SEC23 (MATLAB Programming)

(1) BMH4SEC21 (Graph Theory):

CO1: Definitions, basic properties of graphs, complete graphs, isomorphism of graphs.

CO2: Eulerian circuits, Hamiltonian cycles and theorems, incidence matrix, weighted graph.

CO3: Travelling salesman's problem, Tree and their properties, spanning tree, Warshall algorithm.

(2) BMH4SEC22 (Operating System (Linux)):

CO1: Linux-the Operating System, overview of Linux architecture, start-up scripts, Linux security.

CO2: The Ext2 and Ext3 file systems, file permissions, user management, types of users, using the command line

and GUI tools.

CO3: File and directory management, different editors, signals, systems call for process, memory management,

library and system calls for memory.

(3) BMH4SEC23 (MATLAB Programming):

CO1: The MATLAB environment, variables and constants, MATLAB TOOL toolboxes.

CO2: Matrix and linear algebra review, matrix operations and functions in MATLAB.

CO3: Algorithms and structures, simple sequential algorithms, control structures.

CO4: Programming, reading and writing data, Personalized functions, MATLAB graphic functions.

CO5: Numerical methods and simulations, random number generations.

Sem-V

Core Course:

BMH5CC11 (Partial Differential Equations and Applications):

CO1: First order partial differential equations, general solution of quasi linear equations, canonical forms,

method of separation of variables for solving 1st order partial differential equations.

CO2: Derivation of Heat equation, Wave equation and Laplace equation, canonical forms.

CO3: Cauchy-Kowalewskaya theorem, Cauchy problem, semi infinite string with a fixed end, nonhomogeneous

Wave equation, solving the Heat Conduction problem.

Sem-V

Core Course:

BMH5CC12 (Mechanics I):

CO1: Co-planar forces, equilibrium of a particle on a rough curve,

CO2: Virtual work, stable and unstable equilibrium, **equilibrium of flexible string.**

CO3: Simple harmonic motion, motion of a particle under central force, Keplar's laws of motion.

CO4: Stability of nearly circular orbits,varying mass.

CO5: Motion of a particle in three dimensions, motion on a smooth sphere.

CO6: Degrees of freedom, momental ellipsoid, principal axes, motion about a fixed axis.

CO7: Compound pendulum, conservation of momentum and energy.

Sem-V

Discipline Specific Electives 1 (DSE1):

Choose any one from the three courses-

(1) BMH5DSE11 (Linear Programming), (2) BMH5DSE12 (Number Theory) and (3) BMH5DSE13 (Point Set Topology)

(1) **BMH5DSE11 (Linear Programming):**

CO1: Simplex method, convex sets, simplex algorithm, two-phase method, Big-M method and their comparison.

CO2: Duality, primal-dual relationship, dual simplex method.

CO3: Transportation problem, northwest-corner method, algorithm for solving transportation problem.

CO4: Assignment problem, Hungarian method for solving assignment problem, travelling salesman problem.

CO5: Game theory, solving two person zero sum games, games with mixed strategies, linear programming

solution of games.

(2) BMH5DSE12 (Number Theory):

CO1: Linear Diophantine equation, statement of prime number theorem, Goldbach conjecture.

CO2: Linear congruences, Fermat's Little theorem, Wilson's theorem.

CO3: Number theoretic functions, totally multiplicative function, the Mobius Inversion formula.

CO4: Euler's phi-function, Euler's theorem.

CO5: Order of an integer modulo n, primitive roots for primes, quadratic congruences with composite moduli.

CO6: RSA encryption and decryption, Fermat's last theorem.

(3) BMH5DSE13 (Point Set Topology):

CO1: Countable and uncountable sets, Cantor's theorem, Zorn's lemma, axiom of choice.

CO2: Hausdorff's maximality principle, ordinal numbers.

CO3: Basis and Subbasis for topology, Interior points, boundary of a set, open maps, product topology.

CO4: Metric topology, Baire category theorem.

CO5: Connected and path connected spaces, components and path components, compactness in metric spaces.

CO6: Totally bounded spaces, the Lebesgue number lemma, local compactness.

Sem-V

Discipline Specific Electives 2 (DSE2):

Choose any one from the three courses-

(1) BMH5DSE21 (Probability & Statistics), (2) BMH5DSE22 (Portfolio Optimization), (3) BMH5DSE23 (Boolean Algebra and Automata)

(1)) BMH5DSE21 (Probability & Statistics):

CO1: Sample space, real random variables, cumulative distribution function.

CO2: Mathematical expectation, moment generating function, binomial distribution, Poisson distribution,

negative binomial distribution, exponential distribution.

CO3: Joint probability density function, conditional expectations, bivariate normal distribution,

joint moment generating function, linear regression for two variables.

CO4: Chebyshev's inequality, central limit theorem for independent and identically distributed

random variables with finite variance, ChapmanKolmogorov equations, classification of states.

CO5: Random samples, estimation of parameters, testing of hypothesis.

(2) **BMH5DSE22 (Portfolio Optimization):**

CO1: Financial markets, measures of return and risk, risk free assets, portfolio of assets, diversification.

CO2: Mean-variance portfolio optimization, efficient frontier, portfolios with short sales, capital market theory.

CO3: Capital assets pricing model-the capital market line, security market line, portfolio performance evaluation measures.

(3) BMH5DSE23 (Boolean Algebra and Automata):

CO1: Definition and basic properties of ordered sets, duality principle, lattices as algebraic structures products and homeomorphisms

CO2: Properties of modular and distributive lattices, Boolean polynomials, Quinn-McCluskey method, Logic gates, switching circuits and application of it..

CO3: Strings, languages, regular expressions, regular languages and their relationship with finite automata,

closure properties of regular languages.

CO4: Context free grammars, parse trees, pushdown automaton and the language accepted by PDA, pumping lemma, closure properties, decision properties.

CO5: Turing Machines, programming with a Turing machine, variants of Turing machine and their equivalence.

CO6: Recursively enumerable and recursive languages, halting problem, Post Correspondence Problem and undecidability problems about CFGs.

Sem-VI

Core Course:

BMH6CC13(Metric Spaces and Complex Analysis):

CO1: Sequences in Metric space, Cauchy sequences, Cantor's theorem.

CO2: Continuous mappings, uniform continuity, connectedness, compactness.

CO3: Heine-Borel theorem, finite intersection property, homeomorphism, Banach Fixed point theorem.

CO4: Limits, continuity, regions in the complex plane, derivatives.

CO5: CauchyRiemann equations, sufficient conditions for differentiability.

CO6: Analytic function, exponential function, derivatives of functions, contours, contour integrals, Cauchy-Goursat theorem, Cauchy integral formula.

CO7: Liouville's theorem, convergence of sequences and series, Taylor series and its examples.

CO8: Laurent series and its examples, uniform convergence of power series.

Sem-VI

Core Course:

BMH6CC14 (Ring Theory and Linear Algebra II):

CO1: Polynomial rings over commutative rings, principal ideal domains, reducibility tests, irreducibility tests.

CO2: Divisibility in integral domains, primes, unique factorization domains and Euclidean domains.

CO3: Dual spaces, double dual, annihilators, Eigen spaces of a linear operator and diagonalizability.

CO4: CayleyHamilton theorem, canonical forms.

CO5: Inner product spaces and norms, Bessel's inequality, least squares approximation.

CO6: Normal and self-adjoint operators, orthogonal projections and Spectral theorem.

Sem-VI

Choose any two from the three items (1) DSE3, (2) DSE4 and (3) Project works (PW).

(1) Discipline Specific Electives 3 (DSE3):

Choose any one from the three courses-

(a) BMH6DSE31(Mathematical Modelling),(b) BMH6DSE32(Industrial Mathematics)and (c) BMH6DSE33(Group Theory II).

(a) BMH6DSE31(Mathematical Modelling):

CO1: The modelling process, arguments from scales, least squares, parameter estimation,.

CO2: Generalized least squares estimators, population models, equilibria, oscillations, growth and decay.

CO3: Difference equations: modelling of traffic flows, Poisson process, single server queueing models.

(b) BMH6DSE32(Industrial Mathematics):

CO1: Medical imaging and inverse problems, elementary differential equations, complex numbers and matrices, calculus, geological anomalies in Earth's interior from measurements at its surface, Tomography.

CO2: X-ray behaviour and Beers law, lines in the place.

CO3: Radon transform, linearity, phantom, back projection, properties and examples.

CO4: CT scan, algorithms of CT scan machine, algebraic reconstruction techniques abbreviated as ART with application to CT scan.

(c) BMH6DSE33 (Group Theory II):

CO1: Automorphism, automorphism groups of finite and infinite cyclic groups, commutator subgroup and its properties.

CO2: Properties of external direct products, internal direct products, Fundamental theorem of finite abelian groups.

CO3: Group actions, permutation representation associated with a given group action, applications of group

actions, index theorem.

CO4: Groups acting on themselves by conjugation, Sylow's theorems and consequences, Cauchy's theorem,

non-simplicity tests.

(2) **Discipline Specific Electives 4 (DSE4):**

Choose any one from the three courses-

(a) BMH6DSE41 (Bio Mathematics), (b) BMH6DSE42 (Differential Geometry) and (c) BMH6DSE43 (Mechanics II)

(a) BMH6DSE41 (Bio Mathematics):

CO1: Mathematical biology, continuous models, Allee effect, Gompertz growth, kinetics, bacterial growth in

a Chemostat, prey predator systems, epidemic models.

CO2: Activator-inhibitor systems, numerical solution of the models and its graphical, representation, steady

state solutions, phase plane methods and qualitative solutions, bifurcations, spatial models, two species

model with diffusion, conditions for diffusive instability, travelling wave solutions, spread of genes in

a population.

CO3: Discrete models, steady state solution and linear stability analysis, linear models, decay models, discrete

Prey-Predator models, Host-Parasitoid systems, case studies, models in genetics, stage structure models,

age structure models.

(b) BMH6DSE42 (Differential Geometry):

CO1: Theory of space curves, planer curves, torsion and Serret-Frenet formula, osculating circles and spheres,

evolutes and involutes of curves.

CO2: Theory of surfaces, direction coefficients, first and second fundamental forms, lines of curvature, Euler's

theorem, Rodrigues's formula, conjugate and asymptotic lines.

CO3: surfaces, canonical geodesic equations, Clairaut's theorem, normal property of geodesics, torsion of a

geodesic, geodesic curvature, Gauss-Bonnet theorem.

(c) BMH6DSE43 (Mechanics II):

CO1: Interpretation of Newton's laws of motion, concept of absolute length and time, limitation of Newton's laws

in solving problems.

CO2: Equilibrium of fluid in a given field of force, isothermal and adiabatic changes in gases, convective equilibrium, stress quadric.

CO3: Constraints and their classifications, GibbsAppell's principle of least constraints, work energy relation

for constraint forces of shielding friction.

(3) Project works (PW).

BMH6PW01 (Project Work):

CO1: Students can choose any core from any semester. Teacher gives students an innovative area of that topic

and students write an symposia on that topic.

CO2: Students discuss of that topic with teacher for clear idea and students also search information's from internet oriented study.

B.Sc. Mathematics General - Course Learning Outcome (2022-23)

SEM-I

Core Course

BMG1CC1A (Differential Calculus):

CO1: Limit and Continuity (ε and δ definition), Types of discontinuities, Differentiability of functions.

CO2: Successive differentiation, Leibnitz's theorem, Partial differentiation, Euler's theorem.

CO3: Parametric presentation of curves and tracing of parametric curves.

CO4: Polar coordinates and tracing of curves in polar coordinates.

CO5: Value theorems, Taylor's theorem with Lagrange's and Cauchy's forms of remainder.

SEM-II

Core Course

BMG2CC1B (Differential Equations):

CO1: First order exact differential equations. Integrating factors, rules to find an integrating factor.

CO2: First order higher degree equations solvable for x, y, p.

CO3: Methods for solving higher-order differential equations.

CO4: Basic theory of linear differential equations, Wronskian, and its properties.

CO5: The Cauchy-Euler equation, Simultaneous differential equations, Total differential equations.

CO6: Linear Partial differential equation of first order, Lagrange's method, Charpit's method.

SEM-III

Core Course

BMG3CC1C (Real Analysis):

CO1: Finite and infinite sets, examples of countable and uncountable sets.

CO2: Real line, bounded sets, suprema and infima, completeness property of R, Archimedean property of R, intervals.

CO3: Real Sequence, Bounded sequence, Cauchy convergence criterion for sequences.

CO4: Cauchy's theorem on limits, order preservation and squeeze theorem, monotone sequences.

CO5: Infinite series. Cauchy convergence criterion for series, positive term series, geometric series, comparison test.

CO6: Sequences and series of functions, Point wise and uniform convergence. Mn-test, M-test.

SEM-III

Skill Enhancement Courses 1 (SEC1):

Choose any one from the three courses-

(1) BMG3SEC11 (Logic and Sets), (2) BMG3SEC12 (Analytical Geometry) and (3) BMG3SEC13 (Integral Calculus).

(1) BMG3SEC11 (Logic and Sets):

CO1: Introduction, propositions, truth table, negation, conjunction and disjunction.

CO2: Implications, bi-conditional propositions, converse, contra positive and inverse propositions and precedence

of logical operators.

CO3: Sets, subsets, Set operations and the laws of set theory and Venn diagrams.

CO4: Difference and Symmetric difference of two sets. Set identities, Generalized union and intersections.

(2) BMG3SEC12 (Analytical Geometry):

CO1: Techniques for sketching parabola, ellipse, and hyperbola.

CO2: Reflection properties of conics, translation and rotation of axes.

CO3: Second degree equations, classification of conics.

CO4: Cylindrical surfaces. Central coincides, paraboloids, plane sections of coincides.

CO5: Generating lines, classification of quadrics.

(3) BMG3SEC13 (Integral Calculus):

CO1: Integration by partial function, integration of rational function. Properties of definite integral.

CO2: Reduction functions of rational trigonometric, exponential function and their combinations.

CO3: Double integration over rectangular region, Double integrals in polar co-ordinates.

CO4: Triple integrals, Triple integral over a parallelepiped and solid regions.

Sem-IV

Core Course

BMG4CC1D (Algebra):

CO1: Definition and examples of groups, examples of abelian and non-abelian groups, the group Zn of integers.

CO2: Subgroups, cyclic subgroups, the concept of a subgroup generated by a subset and the commutator

subgroup of group.

CO3: Lagrange's theorem, order of an element, Normal subgroups: their definition, examples, and characterizations, Quotient groups.

CO4: Subrings and ideals, Integral domains and fields, examples of fields: Zp, Q, R, and C. Field of rational functions.

SEM-IV

Skill Enhancement Courses 2 (SEC2):

Choose any one from the three courses-

(1) BMG4SEC21 (Vector Calculus), (2) BMG4SEC22 (Theory of Equation) and (3) BMG4SEC23 (Number Theory).

(1) BMG4SEC21 (Vector Calculus):

CO1: Differentiation and partial differentiation of vector function.

CO2: Derivative of sum, dot product and cross products.

CO3: Gradient divergence and curl.

(2) BMG4SEC22 (Theory of Equation):

CO1: General properties of polynomials, graphical presentation of a polynomials.

CO2: Descarte's rule of signs positive and negative rule. Relation between roots and coefficients, transformation of equation.

CO3: Symmetric function and application of symmetric function of the roots and properties of the derived function.

(3) BMG4SEC23 (Number Theory):

CO1: Division algorithm, Lame's theorem, linear Diophantine equation, fundamental equation of arithmetic.

CO2: Goldbach conjecture binary and decimal representation of integers.

CO3: Number theoretic function, sum, and number of devisor, totally multiplicative functions.

CO4: Dirichlet product, the Mobius inversion formula, generator function, Euler's phi function.

SEM-V

Discipline Specific Elective-1A (DSE1A):

Choose any one from the three courses-

(1) BMG5DSE1A1 (Matrices), (2) BMG5DSE1A2 (Mechanics) and (3) BMG5DSE1A3 (Linear Algebra).

(1) BMG5DSE1A1 (Matrices):

CO1: Concept of linear independence, subspaces of R2, R3, dilation, rotation.

CO2: Iinterpretation of eigen values and eigen spaces as invariant subspaces.

CO3: Rank of matrix, reduction to normal form.

CO4: Matrices in diagonal form, solutions of a system of linear equations using matrices, illustrative example

from Physics, Chemistry, Geometry.

(2) BMG5DSE1A2 (Mechanics):

CO1: Conditions of equilibrium of a particle, laws of friction, centre of gravity, work and potential energy.

CO2: Velocity and acceleration of a particle along a curve, tangential and normal components (space curve).

CO3: Newton's laws of motion, simple harmonic motion, projectile motion.

(3) BMG5DSE1A3 (Linear Algebra):

CO1: Vector spaces, subspaces, quotient spaces, linear span, basis and dimension, dimension of sub spaces.

CO2: Linear transformations, null space, dual space, dual basis.

CO3: Isomorphism theorems, change of coordinate matrix.

SEM-V

Skill Enhancement Courses-3 (SEC3)

Choose any one from the three courses-

(1) BMG5SEC31 (Probability and Statics), (2) BMG5SEC32 (Mathematical Finance) and (3) BMG5SEC33 (Mathematical Modelling).

(1) BMG5SEC31 (Probability and Statics):

CO1: Sample space, probability axioms, mathematical expectation.

CO2: Moment generating function, Poisson distribution, Normal distribution, Exponential distribution.

CO3: Joint cumulative distribution function, marginal and conditional distributions, conditional expectations, independent random variables.

(2) BMG5SEC32 (Mathematical Finance):

CO1: Basic principles, time value of money, inflation, net present value, comparison of NPV and IRR, floating rate bonds, immunization.

CO2: Asset return, short selling, portfolio return, random returns, diversification, portfolio diagram, Markowitz model.

(3) BMG5SEC33 (Mathematical Modelling):

CO1: Applications of differential equations, mixture problem, forced motion, electric circuit problem.

CO2: Applications to Traffic Flow, vibrating string, conduction of heat in solids, conservation laws.

SEM-VI

Discipline Specific Elective-1B (DSE1B).

Choose any one from the three courses-

(1) BMG6DSE1B1 (Numerical Methods), (2) BMG6DSE1B2 (Complex Analysis) and (3) BMG6DSE1B3 (Linear Programming).

(1) BMG6DSE1B1 (Numerical Methods):

CO1: Algorithms, Convergence, Bisection method, False position method,.

CO2: Fixed point iteration method, Secant method, LU decomposition, GaussJacobi.

CO3: Lagrange and Newton interpolation: linear and higher order, finite difference operators.

CO4: Integration: trapezoidal rule, Simpson's rule, Euler's method for solving ordinary differential equations.

(2) BMG6DSE1B2 (Complex Analysis):

CO1: Limits, Limits involving the point at infinity, continuity.

CO2: Properties of complex numbers, Cauchy Riemann equations, sufficient conditions for differentiability.

CO3: Analytic functions, examples of analytic functions, exponential function, Logarithmic function, trigonometric function.

CO4: Contours, Contour integrals and its examples, upper bounds for moduli of contour integrals, Cauchy Goursat theorem, Cauchy integral formula.

CO5: Liouville's theorem and the fundamental theorem of algebra.

CO6: Convergence of sequences and series, Laurent series and its examples, absolute and uniform convergence of power series.

(3) BMG6DSE1B3 (Linear Programming):

CO1: Linear Programming Problems, Graphical Approach for solving some Linear Programs, Convex Sets.

CO2: Theory of simplex method, optimality and unboundedness, the simplex algorithm, simplex method in

tableau format.

CO3: Duality, formulation of the dual problem, primaldual relationships, economic interpretation of the dual.

SEM-VI

Skill Enhancement Courses-4 (SEC4)

Choose any one from the three courses-

(1) BMG6SEC41(Boolean Algebra), (2) BMG6SEC42 (Transportation and Game Theory) and (3) BMG6SEC43 (Graph Theory).

(1) BMG6SEC41(Boolean Algebra):

CO1: Definition, examples, basic properties of ordered sets, duality principle, maximal and minimal elements,

complete lattices.

CO2: Distributive lattices, Boolean algebras, Karnaugh diagrams, switching circuits, Application of switching circuits.

(2) BMG6SEC42 (Transportation and Game Theory):

CO1: Transportation problem, least cost method, VAM.

CO2: Assignment problem and its mathematical formulation, Hungarian method for solving assignment problem.

CO3: Game theory, solving two person zero sum games, games with mixed strategies, graphical solution procedure.

(3) BMG6SEC43 (Graph Theory):

CO1: Definition, examples and basic properties of graphs, complete graphs, bi-partite graphs.

CO2: Eulerian circuits, Hamiltonian cycles, the adjacency matrix, travelling salesman's problem, shortest path,

Dijkstra's algorithm.

B.Sc. Generic Elective of Mathematics (for other Honours Discipline):

Course Learning Outcome (2022-23)

Sem-I

Generic Electives-1 (GE-1)

MATH-GE1 (Differential Calculus):

CO1: Limit and Continuity (ε and δ definition), Types of discontinuities, Differentiability of functions.

CO2: Successive differentiation, Leibnitz's theorem, Partial differentiation, Euler's theorem.

CO3: Parametric presentation of curves and tracing of parametric curves.

CO4: Polar coordinates and tracing of curves in polar coordinates.

CO5: Value theorems, Taylor's theorem with Lagrange's and Cauchy's forms of remainder.

SEM-II

Generic Electives -2(GE-2)

MATH-GE2 (Differential Equations):

CO1: First order exact differential equations. Integrating factors, rules to find an integrating factor.

CO2: First order higher degree equations solvable for x, y, p.

CO3: Methods for solving higher-order differential equations.

CO4: Basic theory of linear differential equations, Wronskian, and its properties.

CO5: The Cauchy-Euler equation, Simultaneous differential equations, Total differential equations.

CO6: Linear Partial differential equation of first order, Lagrange's method, Charpit's method.

Sem-III

Generic Electives -3(GE-3)

MATH-GE3 (Real Analysis):

CO1: Finite and infinite sets, examples of countable and uncountable sets.

CO2: Real line, bounded sets, suprema and infima, completeness property of R, Archimedean property of R, intervals.

CO3: Real Sequence, Bounded sequence, Cauchy convergence criterion for sequences.

CO4: Cauchy's theorem on limits, order preservation and squeeze theorem, monotone sequences.

CO5: Infinite series. Cauchy convergence criterion for series, positive term series, geometric series, comparison test.

CO6: Sequences and series of functions, Point wise and uniform convergence. Mn-test, M-test.

Sem-IV

Generic Electives -4(GE-4)

MATH-GE4 (Algebra):

CO1: Definition and examples of groups, examples of abelian and non-abelian groups, the group Zn of integers.

CO2: Subgroups, cyclic subgroups, the concept of a subgroup generated by a subset and the commutator

subgroup of group.

CO3: Lagrange's theorem, order of an element, Normal subgroups: their definition, examples, and characterizations, Quotient groups.

CO4: Subrings and ideals, Integral domains and fields, examples of fields: Zp, Q, R, and C. Field of rational functions.

Department of Music

Programme Specific Outcome (PSO) B.A. (General) (MUSIC)

PSO-1	The student is able to give a practical demonstration of raga, Rabindra Sangeet, folk, Atulprasadi, Rajanikanta, D.L.Roy and Nazrul Sangeet for a period of atleast one hour a day.
PSO-2	He is able to demonstrate various aspects of above mentioned Sangeet category and their differentiation.
PSO-3	He studies about the theoretical aspects of the prescribed ragas and above mentioned Sangeet category.
PSO-4	He learns to write the practical compositions according to the Hindusthani and Akarmatrik Notation system
PSO-5	He understands the basic terminologies of Indian music.
PSO-6	He studies about the compositional forms and notation systems of Hindustani and Akarmatrik.
PSO-7	He studies about the life and contribution of the composers of Indian music.
PSO-8	He learns about the music in the Vedic period, and also studies the works of music scholars of the past.
PSO-9	He makes an analytical study of various musical forms of Indian music.

Course Outcome of the courses of B.A. (General)

B.A. (General) - Music

SEMESTER - I

"General Theory"

CC-1A The student understands the brief knowledge of the following terms: Sangeet, Nada, Shruti, Swara etc.

1. Knowledge of the Ten Thata System of V.N Bhatkhand
2. Knowledge of the Mela System of Venkatmakhi.
3. Thata and its characteristics
4. Raga and its characteristics.
5. *Biography with musical contribution in the following:*

   Amir Khasru, Tansen, Rabindranath Tagore, Najrul Islam, Atul Prasad Sen, Dwijendralal Roy, Rajanikanta Sen.
6. Defination of Tal, Matra, Laya .
7. *Knowledge of the following:*

   Som, Khali, Tali, Bibhag, Sampadi, Bisampadi, Tal Jati, Laykari, Tihai, Abartan.

SEMESTER - II

CC- 1B : (Practical)

KNOWLEDGE OF SWARA, RAGA AND OTHER SONGS

******Playing (manual) Tanpura is compulsory***

1. Voice culture: Suddha Swaras, Komal Swaras, Teebra Swaras .

2. 5 (five) Alankars

3. Drut Kheyal (any two) following Ragas;

   Bhairab , Bilabal, Yaman, Bhupali.

4. Rabindra Sangit (any four)

   1. Four songs from Rabindranath Tagore
   2. One song from Dwijendralal Roy.
   3. One song from Najrul Islam.
   4. One song from Atulprashad Sen .One song from Rajanikanta Sen .

"Stage Performance and Viva Voce"

The student is able to give a practical demonstration of the prescribed abovementioned music category and is able to demonstrate various aspects of ragas and their differentiation.

B.A. (General) - Music

SEMESTER – III

CC- 1C: History of Indian Music

Music during the Indus Valley Civilization.

1) Music in the Vedic Period.

2) Development of Dhrupad.

3) Development of Khyal.

4) Theoretical knowledge of Akar Matric Swaralipi System.

5) Theoretical knowledge of Hindusthani Notation System.

6) Theoretical knowledge of the following Ragas.

Bhairab , Bilabal, Yaman, Bhupali, Asabari, Khambaj, kafi, Bhairabi.

7) Theoretical knowledge of Trital, Ektal, Choutal, Dadra, and Kharba.

Ability to write the thakas of the above Talas in Barabar ,Dwigun and ChowgunLaya.

SEMESTER – IV

CC- 1D : **Swara-Malika, Drut Kheyal, Rabindra Sangit & Folk Songs**

*****Playing (manual) Tanpura is compulsory**

1) Swara-Malika in different Talas (such as : Tintal, Jhaptal, Ektal)

Khambaj, Kafi, Bhupali, Bhairabi

2) Drut Kheyal (any four) of the following Ragas :

Bhairabi ,Kafi, Khambaj, Jounpuri, Ashabari,

Behag

3) Rabindra Sangit (any five)

4) Any four Folk Songs.

SEMESTER - V

DSE- 1A : Knowledge of Raga

Jounpuri-Asawari- Darbarikanada, Todi-Multani, Bhupali- Deshkar, Bhairab-Jogiya-Ramkeli, Puriya-Marwa-Sohini, Desh-Jaijayanti, Kamod Chhayanat, Behag-Sankara, Iman-Sudh Kalyan, Sudha-Sarang-Shyamkalyan

GE-1: Elementary Knowledge of Music

Brief knowledge of the following terms:

Sangit , Nada, Sruti, Swara (suddha, komal, tibra, chal, Achal), Saptak, Astak, Varna, Alankar, Murchhanna, Alap, Tan, Badi, Sombadi, Vivdi, Anubadi, Arohan, Abhorahan, Pakad, jati;

1. Knowledge of the Ten Thata System of V.N Bhatkhande
2. Knowledge of the Mela System of Venkatmakhi.
3. Thata and its characteristics
4. Raga and its characteristics.
5. Biography with musical contribution in the following: Amir Khasru, Tansen, Rabindranath Tagore, Najrul Islam,Atul Prasad Sen, Dwijendralal Roy, Rajanikanta Sen.

1. Knowledge of the following:

Som, Khali, Tali, Bibhag, Sampadi, Bisampadi, Tal Jati,Laykari, Tihai, Abartan.

2. Defination of Tal, Matra, Laya

SEMESTER – VI

DSE- 1B : Knowledge of Tala and Notation reading Hindusthani &Akarmatrik (Both) :

a) Barabar laya and Dwigun and Chowgun laya (any five) Trital, Jhaptal, Ektal, Chowtal, Dhamar, Dadra, Kaharwa, Teora, Rupak, Surfaktal

b) General Study of Rabindra Sristya tala

c) Ability to reading Hindusthani Notation System & Akarmatrik System both.

GE-4 – History of Indian Music

1) Theoretical knowledge of the following Ragas.

Bhairab , Bilabal, Yaman, Bhupali, Asabari, Khambaj, kafi, Bhairabi.

2) Theoretical knowledge of Trital, Ektal, Choutal, Dadra, and Kharba.

Ability to write the thakas of the above Talas in Barabar , Dwigun and Chowgun Laya.

SEC-4 : Swara-Malika, Drut Kheyal, Rabindra Sangit & Folk Songs

***Playing (manual) Tanpura is compulsory**

1) Swara-Malika in different Talas (such as : Tintal, Jhaptal, Ektal)Khambaj, Kafi, Bhupali, Bhairabi
2) Drut Kheyal (any four) of the following Ragas : Bhairabi ,Kafi, Khambaj, Jounpuri, Ashabari, Behag
3) Rabindra Sangit (any five)

14. Any four Folk Songs from the following:

"Historical and Theoretical Study of Ragas" (Course – 103)

CO-1 The student studies in detail the theoretical aspects related to the Practical ragas

CO-2 He understands the evolution of ragas from the medieval time, (13th century CE) to the modern time

CO-3 He understands the development of the methodology according to which Indian ragas have been classified

"Music of the Ancient World" (Course – 104)

CO-1 The student makes a detailed study of the music of Persia, Greece, Mesopotamia and Egypt, with relation to its origin, scales, forms and musical instruments

CO-2 He understands the music

SUBJECT: SANSKRIT

CATEGORY: GENERAL

Course Outcome

SEMESTER-I

Core Course –I (Sanskrit poetry)

1. Sanskrit poetry

- Aims to get the students acquainted with the Classical Sanskrit Poetry.
- Intends to give an understanding of literature, through which students will be able to understand the basics of Sanskrit.
- Seeks to help the students negotiate the texts independently with the help of proficiency of Sanskrit.

Section -A

a) Raghuvaṃśam (canto 14: verse-31-68)

- Literary style of Kālidāsa (upamā Kālidāsasya)
- Ancient Indian tradition, Culture and Society
- Indian basic ethos i.e. brotherhood, compassion, conjugal relationshipetc.

b) Kirātārjunīyam (canto 1: verse- 1-25)

- Literary style/poetic excellence of Bhārabi
- Concepts of ancient Indian epic and Purāṇas
- Flourishing of language
- Moral values
- Kingship and welfare of state/ state policy

Section -B

c) The History of Literature

- Ancient Indian poetics, works and literary styles
- Preservation of Literary heritage/ tradition
- Comparison and contrast with contemporary literature

SEMESTER – II

Core Course – 2(Sanskrit Prose)

Section A

a) Daśakumāracaritam

- Literary style of Daṇḍi, especially padalālityam
- Imaginative facts which may be turned into reality with basicvalues/ethics

Section B

a) The History of Sanskrit literature (prose)

- Literary style of Daṇḍi, Subandhu and Bānabhaṭṭa
- Historical, social and cultural background of these writers
- Preservation of Literary heritage/ tradition
- Reflection of Indian culture and society

b) The History of Sanskrit literature (fables)

- Leisure, moral values and enjoyment of self
- Didactic lesson given through some sort of animal story or through plants or through forces of nature

- Personification of the animal characters by giving them human attributes & a moral lesson at the end

C)The History of Sanskrit Literature (Historical Kavyas)

- Knowledge About Court Poet, their writings on patron rulers Kingdom and Dynasties

SEMESTER - III

Core Course – 3 (Sanskrit Drama)

Section A

Abijñānaśakuntalaṃ

- Technical aspects of the stage-performance
- Aesthetics of the poetic creation of Kālidāsa and his philosophical outlook
- Society and culture reflected in the play

Section B

The History of Sanskrit Literature (Drama)

- Basic knowledge of the history of Sanskrit drama
- History of dramatists such as Bhāsa, Kālidāsa, Śūdraka, Viśākhadutta, Śrīharṣa, Bhavabhti, Bhaṭṭanārāyaṇa

SEC – 1 (Yogasūtra of Patañali)

- Studens are introduce to the Philosophical conceptes of yoga.
- They also learn about the practical aspects of yoga by way of getting knowledge about practices such as Yama, Niyama, Āsana, Prāṇāyām, Dhyāna etc. (eight forms of Yoga Practic).

Semester – IV

Core Course-4(Sanskrit Grammar)

Section A

The Concept of Samjnas

- Introducing with the basic Sanskrit grammar with the concept of Various Samjnas like Sutra,vartika,Bhasya etc.
- Ability of usages the Samjnas

Section B

Potential Participles, Nominal Suffixes(Matvarthiya)

- Understanding the drive and application of Matvarthiya Pratyaya in Sanskrit grammar and Literature.

SEMESTER - V

DSE – 1 (Philosophy, Religion and Culture in Sanskrit Literature)

a) The History of Vedic Literature
Students would be able to know about how and in what circumstances were the Vedas created.

Moreover, they would also know about the society, economy and culture as reflected in the Vedas.

b) The Social, Religious and Cultural aspects as reflected in the *Puraṇas*
Students would come to know about the society, economy and culture as reflected in the *Puraṇas*.

GE – 1 (Indian Social Institution and Polity)

a) *Manusaṃhitā* (Chapter VII)
- History of ancient Indian social, judicial and political thought and its modern utility
- Social obligations and duties of individuals in every stage (*āśrama*) of life
- Sanctity of *dharma* in householder's life

b) *Arthaśāstra (Dūtapraṇidhi)*
- Knowledge of ancient Indian ideas on statecraft, economic policy and administrative strategies etc.
- Fundamental objectives of good governance and foreign policy

• Relevance of the Kauṭiliyan administrative theories

SEC – 3 (Basic Sanskrit Part – II)

a) The History of Sanskrit Literature (R*āmāyaṇa, Mahābhārata,* Fables & Historical *Kāvyas)*

- *Knowledge of epics and Kāvyas.*

b) *"Lokavyavahārajñānaśunya-mūrkhapaṇḍitacatuṣṭaya-katha"* – from *Pañcatantra*

- Knowledge of practical morality.

SEMESTER - VI

DSE – 2 (Literary Criticism)

a) Metrics

- Concept of classical metre and strategies for metrical analysis of Sanskrit text
- Formation and scanning of the verses
- Reading style- accentuation, pronunciation and punctuation
- Weight-sensitive stress and quantitative poetic metre (phonological phenomena

b) Sāhityadarpaṇa (chapter - X)

- Definition and examples of Śabdālaṅkara and Arthālaṅkara
- Usages of these figure of speeches
- Science of the decoration of speech i.e. Literary embellishments
- Cultivation of the culture of appreciation of Sanskrit alaṅkāras in Sanskrit literature

GE – 2 (Ethical Issues in Sanskrit Literature)

- Development of a strong foundation for the understanding and enjoyment of fiction
- Valuable lessons about ethics and behaviour

SEC – 4 (Moral Values in Sanskrit Literature)

- Development of personality with the help of moral values

SUBJECT: SANSKRIT

CATEGORY: HONOURS

Course Outcome

SEMESTER-I

Core Course –I, Classical Sanskrit literature (poetry)

2. Classical Sanskrit literature (poetry)
    - Aims to get the students acquainted with the Classical Sanskrit Poetry.
    - Intends to give an understanding of literature, through which students will be able to understand the basics of Sanskrit.
    - Seeks to help the students negotiate the texts independently with the help of proficiency of Sanskrit.

d) Raghuvaṃśam (canto 14: verse-31-68)
    - Literary style of Kālidāsa (upamā Kālidāsasya)
    - Ancient Indian tradition, Culture and Society
    - Indian basic ethos i.e. brotherhood, compassion, conjugal relationshipetc.

e) Kirātārjunīyam (canto 1: verse- 1-25)
    - Literary style/poetic excellence of Bhārabi
    - Concepts of ancient Indian epic and Purāṇas
    - Flourishing of language
    - Moral values
    - Kingship and welfare of state/ state policy

f) History of Literature (Kāvya)
    - Ancient Indian poetics, works and literary styles
    - Preservation of Literary heritage/ tradition
    - Comparison and contrast with contemporary literature

Core Course – 2(Critical Survey of Sanskrit literature)

1. Critical Survey of Sanskrit literature

a) Vedic Literature, Ramāyaṇa and Mahābhārata
    - Core texts, great epics, which are basically the reflection and the basic unit/pillar of Indian culture and society
    - Ancient Indian ethos, polity, sovereignty, secularism, integrity, equality and equity
    - Enrichment of self by knowing the glorious and elaborative past
    - Literary, aesthetics and moral values

b) Purāṇa
    - Myths, which are the reflections of the conceptual world
    - Unity between the deities and men

- Spiritual and philosophical questions {Fantasy (dreams & imagination)}
- Explore creative approaches to matters of faith and belief, rightand wrong etc. (intangible values)
- Unity between the supreme and inner power

c) History of Sanskrit Grammar

- Basic structure of language
- Syntax, semantics, roots etc
- Tradition and continuity of Indian grammar
- Derivative forms of the padas and composition of vākyas orstavakas

d) History of Indian Philosophy

- Basics of Indian philosophy
- Doctrines of Indian philosophy
- Critics of Indian philosophy
- Realisation of self and the universe/universal reality

SEMESTER – II

Core Course – 3, Classical Sanskrit Literature(prose)

Section A

a) Kādambarī

- Prose romance of Bāna
- Basic qualities to be a real leader
- Teaching and advices regarding the policy of administrationPolitical ethos

Section B

b) Daśakumāracaritam

- Literary style of Daṇḍi, especially padalālityam
- Imaginative facts which may be turned into reality with basicvalues/ethics

Section C

b) The History of Sanskrit literature (prose)

- Literary style of Daṇḍi, Subandhu and Bānabhaṭṭa
- Historical, social and cultural background of these writers
- Preservation of Literary heritage/ tradition
- Reflection of Indian culture and society

c) The History of Sanskrit literature (fables & folk tales)

- Leisure, moral values and enjoyment of self
- Didactic lesson given through some sort of animal story orthrough plants or through forces of nature
- Personification of the animal characters by giving them humanattributes & a moral lesson at the end

Core Course – 4(Self-Management in the Gītā)

Self-Management in the Gītā

- Essence of all Vedic Philosophy
- Self-realization and establishment of self
- Enhancement of the level of knowledge in spiritual and conceptualframework through meditation
- Theory of Action (righteous actions in respect of space and time)/Work ethics
- Habits of taking food, Moral values (sacrifice, compassion, execution of the duty etc.), Personally development
- Introduction of the management of Gītā (stress management, time management, leadership, managerial traits)

Core Course – 5 (Classical Sanskrit Literature – Drama)

a) *Abijñānaśakuntalaṃ*
   - Technical aspects of the stage-performance
   - Aesthetics of the poetic creation of Kālidāsa and his philosophical outlook
   - Society and culture reflected in the play

b) The History of Sanskrit Literature (Drama)
   - Basic knowledge of the history of Sanskrit drama
   - History of dramatists such as Bhāsa, Kālidāsa, Śūdraka, Viśākhadutta, Śrīharṣa, Bhavabhūti, Bhaṭṭanārāyaṇa

Core Course – 6 (Poetic and Literary Criticism)

a) *Kāvyālaṃkārasūtravṛtti*
   - Philosophy of Sanskrit literary aesthetics
   - Essence, style & content of Kāvya
   - The distinctive compositions (*rīti*) of poetry

b) Metrics
   - Concept of classical metre and strategies for metrical analysis of Sanskrit text
   - Formation and scanning of the verses
   - Reading style-accentuation, pronunciation and punctuation

- Weight-sensitive stress and quantitative poetic metre
- Rhythm (*tāla*) and vibration

c) *Sāhityadarpaṇa* (X)

- Developing knowledge of *śabdālañkāra* and *arthālañkāra*
- Definitions and examples of *śabdālañkāra* and *arthālañkāra* and their usages
- Science of the decoration of speech i.e. literary embellishments
- Cultivation of the culture of appreciation of *alañkāra*s in Sanskrit literature

Core Course - 7 (Indian Social Institution and Polity)

c) *Manusaṃhitā* (Chapter VII)

- History of ancient Indian social, judicial and political thought and its modern utility
- Social obligations and duties of individuals in every stage (*āśrama*) of life
- Sanctity of *dharma* in householder's life

d) *Arthaśāstra (Dūtapraṇidhi)*

- Knowledge of ancient Indian ideas on statecraft, economic policy and administrative strategies etc
- Fundamental objectives of good governance and foreign policy
- Relevance of the Kauṭiliyan administrative theories

SEC- 1 (Basic Sanskrit)

a) *Brāhmi* Script

- Developing familiarity with *Brāhmi*
- Ability to read epigraphs in *Brāhmi*

b) Ś*abdarupa*

c) *Dhaturupa*

d) Translation

e) Ethical and moral values as embedded in *Pañcatantra* (*Brahmadattakarkaṭakathā*)

- Valuable lessons about ethics and behaviour
- Personality development with the help of moral values

SEMESTER-IV

Core Course – 8(Indian epigraphy and chronology)

a) Indian epigraphy and chronology

- Study of the History, the basic elements and chronology of theepigraphy
- Society, culture, polity and economy of the then civilization

- Documentation (monumental record) of our glorious past and analysis of it with historical context for the advancement of our knowledge

b) Silalekh- Junagarh Rock Inscription Mahruli
Iron Pillar Inscription of Candra

- Epigraphic outlook
- Historical elements
- Cultural elements
- Literary elements
- Societal elements

Core Course – 9(Modern Sanskrit literature)

a) Survey of modern Sanskrit literature in Bengal

- Literary tradition down the ages
- Contribution of Bengal scholars to preserve the Sanskrit literary history
- Literary criticism

b) Samskṛtoddhāraṇa –Sukhamay Mukhopadhyaya
Cipiṭakacarvaṇam- Srijiba Nyayatirtha

- Preservation of the ancient Indian literature and reflection of the same i

Modern approaches of Sanskrit writing

Core Course – 10(Sanskrit and world literature)

a) Sanskrit and world literature
   - Sanskrit studies across the globe
   - Sanskrit critics and their literary criticism (i.e. W. Jones, F.Maxmuller, H. Wilson, Aurobindo, D. Saraswatietc)
   -

SEC - 2(Spoken Sanskrit)

- Inculcate basic knowledge and its application in daily use (spoken manner-interaction)
- Unveil the beauty of the language (from the vibrating sound to its rich content) in a creative and fun way to generate the dying interest to curious minds
- Allows the students in delving into the original texts relating to various subjects from the Indian knowledge systems
- Skill of communication and interaction

Evolution of Bengali Scripts

- Phonetic laws and tendencies in a scientific manner
- Phonological and morphological development of Bengali language in linguist's view point
- Enrichment of knowledge about the nature, grammar and history of human language

Letter Writing

- Composition of short sentences and paragraph
- Translation
- Skill of writing comprehension (sequencing, describing, classifying theexpression of the experience)

b) Political thought in Sanskrit literature [Mudrārakṣasa (1&2), Arthaśāstra (Sasanadhikara)]
   - Ancient Indian treatise on statecraft, economic policy andadministrative strategies
   - Fundamental objectives of good governance (promotion of the welfare of the subjects)
   - State policy and foreign policy of a ruler (democratic approach)
   - Technique of effective leadership

SEMESTER – V

Core Course – 11 (Vedic Literature)

a) *Ṛgvedasaṃhitā - Agnisūkta, Indrasūkta, Aksasūkta, Devisūkta*
- Introduction to various types of Vedic texts
- To know the social culture of the ancient India *ṛṣis*
- Philosophical concepts in the Vedas

b) Vedic Grammar
- Phonetic structure of Vedic Sanskrit
- Vedic pronunciation with basic knowledge of *Saṃhitā-pātha and pada-pātha*

c) *Īśapaniṣad* (Eighteen hymns)
- The concept of *Īśa*
- Pursuit of *karma* versus as pursuit of *ātman*, *vidyā* versus *avidyā*
- The doctrine of *ātman*

Core Course – 12 (Sanskrit Grammar)

a) The concept of *saṃjñā*s: *sūtra*s, *vārtika*s, *bhāṣya*s etc.

b) *Samāsa* (Selected *sūtra*s up to *dvandva* compound)
- Basic structure of language
- Syntax, semantics, roots etc.
- Tradition and continuity of Indian grammar
- Derivative forms of the *padas* and composition of *vākya*s or *stavaka*s.

DSE - 1 (Sahityadarpan: Chapter VI)

a) Discussion of *Nāṭyatattva* (Dramaturgy) with definitions and examples

DSE - 2 (Elements of Linguistics)

a) Knowledge of Indo-European language family and the development of Sanskrit

b) Study of phonetic laws and tendencies

c)

SEMESTER – VI

Core Course – 13 (Indian Ontology and Epistemology)

a) *Tarkasaṃgraha*
- Philosophical traditions of the Indian subcontinent
- Indian philosophy (orthodox and heterodox schools)
- Advocates an integrated approach to human personality

- where material and psychological growth complement each other
- Logical structure and validity of Indian philosophical system

b) *Vedāntasāra*

• Doctrines of Vedanta

• Authority, subject matter and necessity of Vedanta

• Nature of Jiva and its difference from the supreme

• Introduction of theoretical concepts and practical techniques for the development of human personality

Core Course – 14 (Sanskrit Composition and Communication)

a) Case-ending and cases from Nominative to Ablative case as in *Siddhāntakaumudī*

- Its reflection of nouns, adjectives, pronouns and numberals.
- Knowledge on *pratipadika*.
- This cours also aims at teaching composition and other related information based on *Laghu-Siddhāntakaumudī kārak-prakaraṇa*.

DSE - 3 (Fundamentals of Ayurveda)

- Ancient theories on human body, etiology, symptomology and therapeutics for a wide range of diseases.
- Importance of diet, hygiene, prevention, medical education, and the teamwork of a physician, nurse and patient necessary for recovery to health.

DSE - 4 (*Śrīmadbhagavadgītā*, chapter – lll)

- Essence of all Vedic Philosophy
- Self-realization and establishment of self
- Enhancement of the level of knowledge in spiritual and conceptual framework through meditation
- Theory of Action (righteous actions in respect of space and time)/ Work ethics
- Habits of taking food, Moral values (sacrifice, compassion, execution of the duty etc.), Personality Development
- Introduction of the management of Gītā (stress management, time management, leadership, managerial traits)

Note: Generic Elective Courses for students of other Honours Disciplines is are the same as the General Core Courses.

PROGRAMME SPECIFIC OUTCOME (PSO)

Sanskrit

Sanskrit is the bridge between the ancient India and present India. The literature in Sanskrit provides us with a unique and contextually specific picture of Indian society, and culture. Sanskrit as a reservoir of Indian culture it adds to the notion of Indian unity and identity.

The academic programme, both Honours and General courses not only enable the students to acquire under-mentioned professional skills but also aims to get the students acquainted with rich heritage and dynamic prevalent scenario of India through various texts of ancient pedagogy, composed in Sanskrit.

- **Development of individual personality:** The ethical concepts as revealed in the Sanskrit texts are essential in assisting an individual to gain confidence and positivity within a highly challenging modern reality.
- **Applicability of values:** Various sections of the *smṛti*s and *saṃhita*s prepare students to handle real-life scenarios based on their explication of values and the nature of reality.
- **Developing a rational mindset:** Theories as reflected in the political and the juridical texts such as the *Manusaṃhitā* and the *Arthaśāstra*, as well as in *Śaḍadarśana* help the learners to get in touch with logic and disputation in general and legal arguments and their rationale in their specifics helping them to seek their career pathways in related professions.
- **Linguistic ability:** Knowledge of the language aids the students of the discipline to diversify into other subjects such as philosophy, history, or even political science as many of the sources of these subjects are in Sanskrit. Moreover, Linguistic skills developed while studying Sanskrit helps in the development of a citizen who is more in tune with his human faculties and hence in a unique position to help in the growth of a peaceful society.
- **Inculcation of universal moral values and its application:** Characters of various Sanskrit Dramas, epics, fables and the advice of Kauṭilya and Manu ensure students handling life scenarios in a broader spectrum.
- **Effective decision making:** Decision-making process usually relies on knowledge acquired through experience. Lessons of Gītā, Manusaṃhitā and Arthaśāstra ensure students get a better understanding, based on the values,

preferences, experiences and beliefs of the decision-maker, to make beneficial decisions in life.

- **Management Ability**: Application of the managerial principles as reflected in the course enable the students to prosper not only as a person, but also as a team in a multidisciplinary environment. The personality traits also enhance managerial techniques of the taught by which, he will be the ideal leader.

Helps them realize their competence as a leader in respect ofdecision making and also helps them to multiply their positive impact to create the right human capital to meet the challenge of the emerging future.

- **Conceptual framework of the universal reality:** Vedas, Upaniṣads and Purāṇas introduce the students to understand the roots of the universe, cosmic nature and reality etc., which ushers them to have deeper understanding of the same.
- **Logical reasoning:** Sāṃkhya, Yoga, Nyāya and Vedānta systems of philosophies teach students to better frame their thoughts and introspect themselves through a different perspective. A conclusion or logical consequence preceded by a rule or material conditional statement enhances their logical reasoning (deductive, inductive and abductive) ability.
- **Skill of communication:** The learners can be able to develop interpersonal communicative skills through electronic media and in person while improve their reading, writing and speaking abilities by connecting ideas of books media and technology.
- **Skill of comprehension:** Diversification of the course to teach students from fictionsin drama to logics of Philosophy enables students to form a valid and positive thinking process that enhances their comprehension skills.
- **Research works and Discoveries:** Sanskrit lexicography enables students to apply their knowledge to apprehend new discoveries or excavations to understand the past and get involve in various crucial research works.
- **Computational Linguistics:** It is an instrumental in popularizing Sanskrit by making its learning and usage more pervasive. Various computational approaches (developmental, structural and comprehension) for Sanskrit are very useful in generating more knowledge about the heritage text of Sanskrit, which can evolve and revive relevant thoughts to transform our society. Employing statistical processes or machine learning algorithms and modelling various kinds of linguistic phenomena to be used by students who have basic understanding of the target language.
- **Manuscriptology, Museology and Archaeological survey:** Accumulation of knowledge of the Sanskrit texts and the student's thought process open new horizons for the students to get exposure in the fields of Manuscriptology, Museology, Archaeology and various other surveys. The literary treasures also be exposed and be analyzed with logical reasoning to establish a cultural, societal and literary continuity which reflects Indian identity.
- **Upliftment of self:** Self-establishment, the highest esteemed need of human nature,only is acquired by self-satisfaction and self-actualization.

GUSHKARA MAHAVIDYALAYA

Department of Economics:

B.A. / B.Sc. (Hons.):

Economics Learning Objectives

The following set of objectives is a result of the combined efforts of all of the Economics departments of the **Gushkara Mahavidyalaya**. They were developed from the view of a student pursuing a Bachelor's Degree in Economics and Economics (Honours). However, they are equally appropriate for students who are taking economics courses while pursuing a economics related degree.

Students Obtaining the Following Objectives During Study Economics At UG Level:

- General familiarity with the following areas in economics: Micro Economics, Macro Economics, International Trade, Computer Application in Economics and Public Finance.
- The ability to work effectively and understand the present as well as future economic scenario of the country and international level.
- The ability to use the power of computers in applications in economics.
- The ability to communicate effectively, both orally and in writing.
- Learned how to think critically and analyze economic problems.
- The ability to work in teams as well as independently.
- Developed formal (abstract) thinking skills as well as concrete thinking skills.
- The ability to initiate their career after Graduation.

The preceding objectives can be met by the individual Learning Objectives by the ongoing programs which encourage:

- The timely and effective advisement of students.
- Capstone experiences for students with independent projects strongly encouraged.
- Opportunities for students and faculty to interact with alumni and with professional economists.
- Dialogues with colleagues in departments servicing economics students.
- The use of modern computing resources involving economic applications through SPSS at Graduation level.

Computer Knowledge and Information Skills

- Students obtaining a Graduation Degree in Economics should have basic computer application knowledge and skills during post graduation.
- The basic analytical and technical skills to work effectively in the various fields of economics.

- The ability to perform accurate quantitative measurements with an understanding of the theory and use of computer application in economics, interpret with statistical results, perform calculations on these results and draw reasonable, accurate conclusions.
- The ability to use information technology tools such as the Internet and computer-based literature searches as well as printed literature resources to locate and retrieve systematic information needed for practical and theoretical work.
- Knowledge and understanding of the economic as well as social issues effecting the day to day environment.
- Using computer as a tool in writing, drawing graphs, tables, diagrams and data analysis to communicate scientific information
- Having familiarity with the applications of computers in the analysing primary and secondary data and finding accurate results.
- Having an appreciation of the applications of computers in data acquisition and processing.
- Retrieval of information using library or internet resources.

Oral and Written Communication Skills in Economics; Ethics in Economics

- Students obtaining a baccalaureate Economics degree should have these Communication Skills in Economics.
- Adequate skills in technical writing and oral presentations. [Students must be given the opportunity to practice effective writing and oral communication throughout the Economics curriculum.]
- The ability to communicate scientific information in oral and written formats for Economists.
- An understanding of current ethical issues in economics and be able to apply ethical principles in classes i.e. Use of Consumer Protection Act.

Quantitative Reasoning Skills

- Students obtaining a baccalaureate Economics degree should have Quantitative Reasoning Skills.
- To develop sufficient quantitative reasoning skills successfully to pursue their career objectives, a related career or further professional training.
- To develop their proficiency in algorithmic and calculation skills.
- To develop the ability to collect and interpret numerical data accurately.
- To develop the ability to solve economic problems using extrapolation, rational estimation and statistical validity.
- Ability to relate theories involving numbers and the practice of the theory.
- To obtain the proficiency in the scientific method (formulating hypotheses and arriving at appropriate answers and conclusions)

Knowledge of Economics Principles and Facts; Appreciation for Economics as a Discipline:

- Developed a mastery of critical thinking skills, problem-solving skills and data analysis skills leading to the ability to collect and analyze data.
- To apply fundamental economic principles to collect and explain data.
- To assess the relative validity of several possible solutions to any economic problems.
- To develop the working knowledge of economics principles during economics degree program.

1. The thrust of the program being evenly balanced between theory and its practical application, the students, upon passing the course, can justifiably claim to have achieved a fair amount of hands-on experience. This experiential knowledge comes in immediately handy in case the students opt for jobs.
2. The program is so structured as to imbue the students with a spirit of further exploration of the subject. This paves the way for them to effortlessly move into higher researches if they so desire.
3. The program primes the students with the knowledge of the latest advances of the subject.
4. Liberally studded with problem solving modules, the program equips the students with the required skill to excel in the entrance tests for admission to premier Institutes.
5. One most significant outcome of the programme is the inculcation of higher values of life among the learners that enable them to face any hazard of the future life.

Programme Outcome: B.A/B.SC Honours

1. Students graduating through B.A. Hons Programme from this college are expected develop both linguistic and analytical skill that would prove useful in their next level of studies. Also, students become capable of critically appreciating a scholarly presentation of any form and debate upon the issues which invite cross discussions.
2. Students graduating from this college in this programme become able to relate to the social and national issues about which they acquire theoretical understanding in the class room.
3. Project work and field study give them an experience to learn by themselves and experiment with the theoretical knowledge that they were given within the four wall of the classroom.This, in turn, infuses into them the confidence to become employable.
4. This college trains the students to undertake primary level of research work and thus they become motivated for advanced research when they go for higher studies.
5. The programmeinstils among the students the greater values of life to become worthy citizen of the country.

Semester	Course code	Course Title	Course Outcome
I	CC1	**Introductory Microeconomics**	To explore the Subject Matter of Economics and to discuss about the Elementary Theories of Demand, Supply & Market. To explain the Theory of Consumer Preferences & Choice and Theory of Firm including the concepts of Production, Cost & Revenue. To introduce a framework for learning about consumer behaviour and analysis of consumer decisions, going on to the behaviour of firms and their decisions about optimal production, along with the impact of different market structures on firms' behaviour. To explore the idea of Market Morphology including Classification and nature of different Markets. To explain the short-run and long-run equilibrium of firm and industry under perfect competition. To explain producer's surplus, the effects of external economies and diseconomies, the change in cost under perfect competition
	CC2	**Statistical Methods-I**	To make the students familiar with Tabular and Diagrammatic Presentation of Data. To make the students familiar with Measures of Central Tendency. To make the students familiar with Measures of Dispersion. To make the students familiar with Measures of Skewness and Kurtosis. To explore the simple Correlation and Regression Analysis. To teach Index Numbers, Time Series, Population Statistics.
II	CC3	**Introductory Macroeconomics**	To discuss about different Macroeconomic Problems & Policies. To illustrate the concept of Circular Flow & National Income Accounting and theories of Money, Inflation & Unemployment. To explain the meaning of consumption function, relationship between APC and MPC, consumption and income, concept of multiplier and analysis the theories of absolute and relative income hypotheses. To explain the relationship between investment and savings, demonstrate investment multiplier, and understand the meaning of MEC and MEI under the simple Keynesian model of income determination.

			To discuss the motives of holding money, Keynesian liquidity theory, Loanable fund theory, of rate of interest determination and supply of money. To explain the construction of IS and LM curves, comparatives static analysis on IS-LM framework, the relative effectiveness of monetary and fiscal policies and the value of multiplier.
	CC4	**Mathematical Economics-I**	To provide the knowledge of Sets & Set Operations and its applications in Consumer Preferences and Budget in Terms of Sets. To teach some Preliminary Mathematical Concepts and its applications in Calculations of Population Growth, Compound Interest, Depreciation & Present Value. To teach Matrix Algebra and its applications in Partial Market Equilibrium Model - Simple National Income Determination Model & Comparative Static Analysis. To provide the knowledge of Functions & Derivatives and its applications in the Utility Function , Demand & Supply Functions ,Production & Cost Functions ,Revenue Function ,Consumption Function etc. To teach Optimization Techniques and Techniques of Integration and their applications in Utility Maximization, Cost Minimization, finding Total Functions, Consumer's Surplus, Producer's Surplus etc. To provide the knowledge of Techniques of dynamic analysis and applications of different models in Economics.
III	**CC5**	**Intermediate Microeconomics**	To explore the knowledge of the Theory of Imperfect Competition. To explore the knowledge of the Theory of Oligopoly. To explore the knowledge of the Theory of Factor Pricing. To provide the knowledge about General Equilibrium and Welfare Economic.

	CC6	**Intermediate Macroeconomics**	To explain the Keynesian Analysis of the Investment Function along with its Shortcomings, concepts of MEC & MEI. To explain classical quantity theory of money, complete classical model and Say's law and Walras' law. To discuss the complete Keynesian model and the comparison with the classical system. To discuss about the Quantity Theory Approach to Inflation. To illustrate the Harrod and Domar's Model of Economic Growth . To discuss the role of expectation with cobweb model and Mundell-Flemming model in open economy.
	CC7	**Mathematical Economics-II**	To explain the determinants and Matrices with the concepts of Scalar, Vector under Bordered Hessian and Cramer's rules and its application in the IS-LM model. To explain the Linear Programming. To explore the concepts and features of Input-Output Analysis. To explore Basic Game Theory and its applications. To discuss the Decisions under Uncertainty.
	SEC1		
		Managerial Economics	To discuss the meaning and scope of Managerial Economics, the goals of profit maximization hypothesis with the help of Boumol and Williamson models To explain the demand analysis where demand forecasting is discussed with different methods. To explain the price determination under different structures as mark up pricing, limit pricing etc. To discuss the financial Investment decisions

		Indian Official Statistics	To discuss the Official Statistics, its aims and objectives, the functions of Indian Statistical System and its Institutional framework with the national/ state level data on different variables. To explain the Economics Statistics, Population Statistics, Employment Statistics, Agriculture Statistics, Financial Statistics etc. To understand the Economic Survey. To demonstrate the registration of Vital events, measures of morality, fertility and reproduction and the use of demographic formulation. To discuss the International Statistical System with the comparison of major macro variables national income, purchasing power parity, gender, environment, social statistics.
		Insurance Market and Its Products	To discuss the evolution of insurance, the classification of insurance, the insurance organization in India, the impact of privatization on it, the IRDA Act-1999, the Insurance 9 Amendment) Act-2002. To explain the principles of insurance viz. utmost good faith, insurable interest, the contribution and Proximity cause, and the methods of reinsurance. To demonstrate the significance of claims settlement, disputes, arbitration and litigation, trends of claims.

IV		**Selected Features of Indian Economy CC8**	To explore India as a Developing Economy. To discuss about the Structural Changes in Indian Economy. To explore the Trends in Demographic Features in India from Different Census Data, Theory of Demographic Transition, Population Policy etc. To discuss about the Distributional Issues in India. To discuss about the Planning in India and Macroeconomic Policies & Policy Reforms. To discuss the agricultural performances and policies in Indian economy. To explain the industrial performances and policies in Indian economy.
	CC9	**Statistical Methods-II**	To make the students familiar with the theory of Set and its applications with the consumer preference & Budget in terms of sets. To conceptualize the Theory of Probability. To explain the Random Variables and Mathematical Expectation. To explore the Univariate Probability Distributions. To make the students familiar with Sampling Theory and Sampling Distributions. To explore the theory of Estimation and Testing of Hypothesis.
	CC10	**Development Economics**	To explore the Meaning of Economic Development along with Alternative Approaches. To explore the Characteristics of Underdevelopment & Obstacles to Development. To explain the Classic Theories of Economic Growth & Development To make the students familiar with Development Strategies. To explain the theories of Poverty, Inequality & Development and the Roles of Market & State in Development Policymaking.

	SEC2	**Basic Computer Applications**	To discuss the File Creation and the Management System in computer. To explain the Word Processing i.e. the basic features of text formatting. To discuss the Spread Sheet Solutions under in which the functions of mathematical, financial, statistical etc. To explain the presentations under in which pasting charts, exporting as PDF included.
		Indian Stock Market Trading	To explain about the share market, the key indicators of stock markets segments, the participant of stock markets, the eligibility criteria for memberships, the entry and the cancellation of registration. To discuss the broker-client relations, the registration document and unique code of clients, also the sub-broker-client relations, the neat system and the market phases. To demonstrate the clearing and settlement, the settlement agencies, the securities and funds settlements, the shortages handling and the risk of settlement.
		Business Plan Formulation and Appraisal	To explain the idea of a good business opportunity, the RAMP model for business opportunity evaluation. To discuss the purpose of a business plan, the contents of business plan. To demonstrate the procedure for setting up a business project and the significance, content and formulation of business report. To discuss the project evaluation and selection, NPV, IRR and benefit-cost ratio. To explain the project financing, equity angel debt financing and other sources.

V	**CC11**	**International Economics**	To generalize the Basic Concepts & Tools of Trade Theory. To explore the Classical Theories of Trade and the Neoclassical Modification of The Ricardian Theory. To make the students familiar with International Equilibrium and Terms of Trade. To explore the Neoclassical Trade Models and Theories of Trade Restriction. To explain the Balance of Payments and Exchange Rate.
	CC12	**Money & Banking**	To understand the introduction of money and its evolution and the development of banking system. To explain the Financial Institutions, Markets, Instruments and Financial Innovations. To discuss the Banking System, Banking Sectors Reforms and the determination of rate of interest in India. To understand how central banks, conduct monetary policy and the use different models to think about monetary and macroeconomic issue .
	DSE-1	**Rural Development**	To impart better education with values and transformation of knowledge from class room to common man. To attain inclusive growth and reduce regional imbalances and income inequalities. To include critical thinking to carry out scientific investigation objectively without. To equip the student with skills to analyse problems, formulate a hypothesis, evaluate validate results, and draw reasonable. To continue to acquire relevant knowledge and skills appropriate to professional activities.
		Selected Features of West Bengal Economy	To discuss the early economic history of Bengal, the 19th century-deindustrialization and Drain of resources, the economic condition of Jute and Textile industry. To explain the growth and structural transformation, the trends in per capita SDP a comparison between Indian and West Bengal. To discuss the employment structure, the trends in distribution of workforce-gender segregation of employment, a comparison between Indian and West Bengal-farm and non-farm employment. To discuss the agricultural growth and the relation between industry and agriculture, the problems and prospects of small-scale industry and the performance of

			MGNREGS in West Bengal. To explain about the elementary education, health status and HDI in West Bengal. To demonstrate the infrastructure and environment for education, banking sector, forest management etc in West Bengal.
	DSE-2		
		Public Economics	To discuss about the Nature & Scope of Public Economics. To explain the theories of Taxation and the introduction of GST. To explain the theories of Public Expenditure & Public Debt To discuss the compensatory Fiscal Policy and the Fiscal Federalism in India.
		Environmental Economics	To discuss the interaction between man and nature, the key issues and problems of environmental and the link between economy and environment. To understand that environmental problem is not the problem of a single country or region but a global problem/issue. Hence, policy formulation may be for all countries. To demonstrate the scientific management of waste materials; realize the role and importance of individuals to keep the environment clean. To understand the causes and victims of environmental pollution like poverty, population explosion, and over-use of resources, careless or unscientific dump/management of wastes.

			To suggest appropriate measures to correct environmental degradation, aware of those ingredients such as healthy climate, quality of human beings, domestic and other natural habitats and biodiversity levels, productivity and productions, sustainability, etc. are all influenced by environment.
VI	**CC13**	**Basic Econometrics**	To discuss the definition & Scope of Econometrics, Types, Relationship between Econometrics and Economic Theory, Objectives of Econometrics etc. To explain the introduction of simple Linear Regression Model with the help of Gauss-Markov theorem and others (Two Variable Case). To discuss about the Multiple Linear Regression Model: The CLRM (Three Variable Case) and the Dummy Variable. To explain the Violations of Classical Assumptions: Sources, Consequences and Detection. To explore the Specification Problem.
	CC14	**Field Survey and Project Report**	Course Learning Outcomes are specific and measurable statements that define the knowledge, skills, and attitudes learners will demonstrate by the completion of a course. Learning Outcomes are written with a verb phrase and declare a demonstrable action within a given time frame, such as by the end of the course.

	DSE-3	**Political Economy**	To discuss about the Characteristics of Classical Political Economy and the different Classical Economic Thoughts. To discuss about the Social Change in Historical Perspective. To explore the Classical Theory of Value. To explore Surplus Value and Capitalism. To discuss about the Capitalism & Accumulation of Capital and Theory of Capitalist Crisis To explain the relationship between the State and the Economy.
		Social Economics	To understand about the components of social Economics, evolution of HDI, poverty alleviation, and the health and education outcomes for economic development. To explain the demand for health, uncertainty and health insurance market, its failure and the role of public intervention. To discuss the evaluation of health programs, the burden of disease, health systems and the gender gap in health issues. To explain the rate of return to education, quality of education, gender differential in educational achievement. To discuss the meaning Of gender inequality and major gender gap and the woman as decision making unit.

	DSE-4	**Entrepreneurship Development**	To inculcate innovative ideas for their new initiatives. To manage their own/family business in skillful manner with new idea coping with fast changing requirements of the society. To work together collaboratively for the startup of their new business instead of waiting for white collar job. To communicate skillfully with government officials and financial institutes with full confidence. To equip with growth strategies in small business. To enhance the ability to analyses Sickness in Small Business.
		Financial Economics	To understand the evolution of limited companies, the basic concepts of financial decision areas, the money and capital markets and the risk of returns. To explain the concept of capitals structure and cost of capital and its theories (NI, NOI and M-M approach). To discuss the investment theory and portfolio analysis, the basic theory of interest, internal rate of interest, the yield curves, spot rate and forward rates. To understand the single period random cash flows, the Markowitz model and the two-fund theorem, risk-free assets and the one-fund theorem. To explain the capital asset pricing model (CAPM), the introduction of derivates, options terminology, the derivates markets regulatory framework in India.

COURSE OUTCOME (CO) B.A. THREE YEARS (HONOURS) DEGREE COURSE IN GEOGRAPH [PART-I, PART-II, PART-III] PART-I PAPER-I (THEORY): GEOTECTONICS, GEOMORPHOLOGY AND HYDROLOGY 1.0: GEOTECTONICS-I 1. This unit comprises of knowledge on structure and development of the earth, especially of its crust and mantle. Students learn the geographical ideas concerning development of the crust, tectonic features in regional and global scale and formation or deformation of structural features. 2.0: GEOTECTONICS-II 1. The continuous mechanism of the Continental Drift explains the students about the Origin of Continents and Oceans. Also they learn the methods to identify various rocks at different time scale. 3.0: GEOMORPHOLOGY-I 2. Theories of Davis, Penck and Hack on Cyclic and Non-Cyclic concept of Landscape evolution helps in understanding the content and importance of geomorphology. Therefore, students learn the landform evolution and development as a result of endogenetic and exogenetic forces. 4.0: GEOMORPHOLOGY-II 1. The study of exogenetic processes of fluvial, Aeolian, Coastal and Glaciers leading to the formation of different landforms on the surface of the earth. This has in widening the thoughts on how natural landforms differ from one region to another. 5.0: GLOBAL HYDROLOGY 1. The water circulation plays an important role in distribution of the energy on earth. As water is a one of the free gift of nature, it should be judiciously used. PAPER- II (PRACTICAL): CARTOGRAPHIC TECHNIQUES IN GEOGRAPHY 1.0: SCALES AND CARTOGRAMS 1. The course study helps to develop the cartographic techniques and skill, to draw different types of scales which can be applied for calculating distance between two given places. 2.0: DIAGRAMS AND MAPPING TECHNIQUES 1. Based on calculations relevant graphical representations are taught so that the students develop the idea of comparative study on data of any given place. 3.0: MAP PROJECTION 1. This is another method of drawing suitable maps based on the latitudes and longitudes. Each map projection have its own advantages, disadvantages and limitations 4.0: SURVEYING AND MAPPING 1. With the help of instruments students learn to measure the area, height, distance, and the level of the ground surface. PART-II PAPER-III (THEORY): CLIMATOLOGY, SOIL GEOGRAPHY AND BIOGEOGRAPHY 1.0: CLIMATOLOGY-I 1. To learn about the natural phenomenon that result in the change in temperature, genesis of monsoon and the importance of planetary winds which are distributed all over the globe. 2.0: CLIMATOLOGY- II 1. The main objective of the study is to develop the sense of awareness on the current issues on climate change, evidences, causes and future problems. 3.0: SOIL GEOGRAPHY 1. To understand the physical and chemical properties and the importance of soil. Various methods to be followed for the conservation of soil from the excess exploitation by human activities. 4.0: BIOGEOGRAPHY- I 1. Learning the meaning of Biosphere and Biogeography is important because the

Energy Sources, Law of Energy Exchange, Food Chains and Flow of Energy are the combined energies that make a Biosphere which is studied under Biogeography. 5.0: BIOGEOGRAPHY-II 1. To learn the impact of climate and soil on distribution of vegetation and animals. Wildlife conservation of crocodiles and tigers with special reference to West Bengal is an issue of concern. 2. Also to study the importance of the Tidal Mangrove Forest of India (Sundarban) and its biodiversity. PAPER-IV (PRACTICAL): ANALYTICAL TECHNIQUES IN GEOGRAPHY 1.0: DATA COLLECTION AND REPRESENTSTION 1. This includes the learning of fundamental statistical concepts along with some of the basic application. This helps the students to summarize data visually and numerically. This increases the ability to organize data for appropriate statistical analysis and are able to represent it graphically. 2.0: DATA ANALYSIS AND INTERPRETATION 1. Data analysis and interpretation is considered vital because selection of a correct method for graphical representation along with relevant explanation makes the work meaningful and complete. Therefore, in this unit the students learn to calculate and interpret the given data. 3.0: DATA RECORDING, AREA MEASUREMENT AND SPECIMEN IDENTIFICATION 1. Take data recordings from the Barometer, Hygrometer and Maximum and minimum Thermometer and understand the atmospheric pressure and temperature for the day. 2. Soil testing in laboratory is done specifically for identifying the Soil PH and Organic Carbon. They learn its importance as this can help in improving the soil condition of agricultural fields for better yield. 4.0: MORPHOMETRIC ANALYSIS AND INTERPRETATION OF TOPOGRAPHICAL MAPS: PLATEAUS AND PLAIN REGIONS 1. With the help of topographical maps students learn different symbols with which they interpret the original landforms. They learn to analyze and understand about the physical and cultural relationship of a particular area. PART- III PAPER- V (THEORY): NATURE OF GEOGRAPHY 1.0: DEVELOPMENT OF GEOGRAPHY 1. To learn about the Scope and Content of Geography. Also they come to know the development of geography in the Ancient, Medieval and in the 20th century. 2.0: DEVELOPMENT OF SCHOOLS OF SCHOOL OF THOUGHT IN MODERN GEOGRAPHY 1. In context to Modern Geography students learn the country wise developments in geography by research scholars and philosophers. 3.0: CONCEPTS AND TRENDS IN GEOGRAPHY 1. Concepts of Determinism, Positivism, Neo-Determinism, Empiricism and Positivism are some of the important concepts to understand the Nature of Geography. 4.0: APPROACHES TO REGIONAL STUDIES 1. When students study the concepts and various trends in geography, they easily understand how the approaches are developed. 5.0: ENVIRONMENT AND DEVELOPMENT 1. By studying the relationship between environment and urban development students understand the various region wise development according to the environmental condition. PAPER-VI (THEORY): ECONOMIC AND SOCIAL GEOGRAPHY 1.0: RESOURCE 1. It is very important that students are made aware of the

renewable and non-renewable resources and at individual level make proper use of these resources and also learn its conservation methods. 2.0: ECONOMIC ACTIVITY 1. For the development of industries and agricultural activities it is important to have detailed knowledge about the region, favorable conditions and policies framed by the government. 3.0: SOCIETY AND CULTURE 1. To gain wider knowledge of various societies and different characteristics of culture of the world. 2. Also to know how culture influence people's perception of a place or region. 4.0: SETTLEMENT 1. This has been broadly categorized under two heads i;e Urban and Rural Settlement. In this unit the settlement pattern and the reasons are also discussed. 5.0: POPULATION 1. The reasons for difference in population density, high or low fertility and mortality rates in various geographical region are easily understood by the students as they can apply relevant theories and concepts that lead to such variations. PAPER-VII (THEORY): GEOGRAPHY OF INDIA 1.0: INDIA: PHYSICAL ASPECT 1. To learn about the evolution of Peninsula and Extra-Peninsula rivers and also the patterns of drainage. When the physical aspects are known students get clear idea about the geology, drainage, climate and soil condition and are able to relate with surrounding physical scenario. 2.0: ECONOMIC ASPECTS 1. The various agricultural and industrial policies that were framed and amendments which were made since Independence for the overall developments of the economy. 3.0: SOCIO – CULTURAL ASPECTS 1. Theories on Population Growth, different language groups and their spatial distribution, caste and social morphology with special reference to India are some of the vital topics which describes the socio-cultural aspects of a region or country. 4.0: WEST BENGAL 1. As Physical Geography is one of the main branch in Geography, therefore, physiography in context to West Bengal is explained in details. This becomes easy for the learners to understand the landscape more precisely. 2. The flood and drought cause damage to both life and property at the same time. Students learn about the measures and management which are useful for every individual 3. The importance and need of a healthy environment. 5.0: REGIONAL ASPECT 1. Every region is different from the other based on physical and climatic conditions (such as Chotanagpur Plateau, West Bengal, and Malabar Coast). Based on the location of these places a comparative study is done on the socio-economic and cultural scenario. PAPER-VIII (PRACTICAL): APPLIED GEOGRAPHICAL TECHNIQUES AND FIELD REPORT 1.0: ANALYSIS OF GEOLOGICAL MAPS 1. In this unit with the help of geological maps which shows the geological features such as rock structure, bedding plane, strike and dip etc are well traced out. This is helpful for the students in their future prospects as they can opt for specialization in geological studies. 2.0: ANALYSIS OF CLIMATIC DATA AND MAPS 1. Construction of Station Model and interpretation of Weather Maps helps to analyze climatic data and can understand the climatic condition of any area. 3.0: COMPUTER APPLICATION, REMOTE SENSING AND GIS 1. With the advent of

new and advanced technology, the importance of geospatial science has increased. .The content of this this unit such as Data Entry, Remote Sensing, GIS are the modern cartographic techniques which can provide job opportunities to students. 2. In recent years GIS and Remote Sensing has emerged as an emerging career option. The tools and techniques can be widely used in the fields of agriculture, irrigation, forestry, transportation and others. 4.0: FIELD REPORT 1. The purpose of a field report is to describe the observation of people, place or events and to analyze that observed or collected data. 2. A field report is always based on a selected topic. Students apply the statistical techniques and with the help of computer applications a field report is prepared. PROGRAMME OUTCOME (PO) 1. The course structure of B.A. Honours Degree course in Geography aims at understanding the different branches of geography. 2. Starting from the origin of the earth followed by the landscape evolution and global hydrology provides deeper knowledge. 3. Cartographic techniques, Analytical techniques and the modern method of Applied geographical techniques further provides a wider spectrum to understand the subject, its importance, relevance and application. 4. The importance of man and environment relationship and methods of conservation are equally important. 5. To learn the techniques of data collection, data analysis and interpretation. 6. To know about the development of geography from the ancient periods up till the 20th century. 7. Economic geography is the study of economic activity and factors affecting them. 8. The use of software especially for Remote Sensing and GIS has developed more interest and skills among students. Preparing a field report is another integral part of the prescribed syllabus. 9. The methods of collecting data and interacting with the people helps to understand the environment and society closely. COURSE OUTCOME (CO) B.A. THREE YEARS (GENERAL) DEGREE COURSE IN GEOGRAPHY [PART-I, PART- II, PART-III] PART-I PAPER-I (THEORY): PHYSICAL GEOGRAPHY 1.0: GEOTECTONICS 1. The content of this unit is Geological history of the earth, internal structure of the earth, the Continental Drift theory and the Plate tectonics. This provides the basic knowledge about geotectonics – formation of different landmass. 2.0: GEOMORPHOLOGY 1. This is with reference to the process of weathering and Mass wasting. The fluvial processes and formation of landforms. The theories of Landscape Evolution by Davis and Hack helps to understand the cycle of landscape evolution. 3.0: CLIMATOLOGY 1. To know about the layering in the atmosphere, its importance and impact of circulations in the atmosphere. 2. Koppen's Classification of climate of the World and India is an important part under this unit to understand the global circulations in the atmosphere. 4.0: SOIL GEOGRAPHY 1. The properties of soil, soil formation, causes of soil erosion and methods of soil conservation is covered under this unit as it is important for students to understand the seriousness of soil conservation. 5.0: BIOGEOGRAPHY 1. Biogeography includes the entire ecosystem.

The impact of climate change and problems of deforestation and conservation of forest is topic of concern and practice. PART-II PAPER-II (THEORY): GEOGRAPHICAL THOUGHT, ECONOMIC AND SOCIAL GEOGRAPHY 1.0: GEOGRAPHICAL THOUGHT 1. The contributions of Humbolt and Ritter to the discipline of geography is of great importance. Also the concepts of Determinism and Possibilism helps to understang the scope and content of geography. 2.0: ECONOMIC GEOGRAPHY 1. This unit is a comparative study of agricultural and industrial regions of India and the USA. 3.0: POPULATION GEOGRAPHY 1. This unit lays emphasis on growth, distribution and density of population of the world. Also the types of population migration with reference to India has also been included. Population explosion and food crisis is another vital topic of concern. 4.0: HABITAT, SOCIETY AND ECONOMY 1. The major racial groups and their world distribution. Major linguistic groups and their distribution in India. The Bushmen of Africa and the Pygmies are the content of this unit. This helps to understand the different habitats, society and the economy. 5.0: SETTLEMENT GEOGRAPHY 1. This unit helps to understand the rural and urban types and pattern of settlement in India. The characteristics of urban agglomeration, metropolis and megalopolis, also the functional classification of towns to understand the reasons of variations in growth and density in different areas. PAPER- III (PRACTICAL): CARTOGRAPHIC TECHNIQUES IN GEOGRAPHY 1.0: SCALES AND CARTOGRAMS 1. Statistical data are represented by using various geographical techniques such as the linear scale, comparative scale, proportional diagrams etc. along with interpretation which helps to understand the ground information more clearly. 2.0: MAPPING TECHNIQUES AND MAP PROJECTION 1. This is an integral part of geography. The students learn the mapping techniques and map projections, its advantages and limitations. 3.0: MAP INTERPRETATION 1. Map interpretation is another important part because it helps the students to pen down the information gathered after processing the data. Topographical maps and weather maps are used in this unit. 4.0: SURVEYING 1. The plain table survey, use of prismatic compass and the dumpy level is used to understand and calculate the undulating surface of the ground. 5.0: FIELD REPORT AND LABORATORY NOTEBOOK 1. A field report on " Socio- Economic aspects" of a selected area is prepared using the cartographic techniques mentioned above. Students gain knowledge and develop skills. From the stage of collecting data to the completion of the field report, makes it easier to understand the techniques and the application of cartogram. PART-III PAPER-IV: GEOGRAPHY OF INDIA AND ANALYTICAL TECHNIQUES IN GEOGRAPHY GROUP-A (THEORY), GEOGRAPHY OF INDIA 1.0: PHYSICAL ASPECTS 1. The physical aspects with reference to India are the river systems, structure and relief. Also the climatic characteristics and natural vegetation has been covered in this unit. 2.0: SOCIO- ECONOMIC ASPECTS 1. The socio- economic aspects included in this unit are power resources, the locational factors

of iron, steel and aluminium industries, population growth and distribution. 3.0: REGIONAL ASPECT 1. With special reference to geography of India, selected areas such as Kashmir Himalaya, Deccan Trap, Bengal Delta and Marusthali helps to understand the physiography of India. PAPER- IV: GEOGRAPHY OF INDIA AND ANALYTICAL TECHNIQUES IN GEOGRAPHY GROUP- B (PRACTICAL); ANALYTICAL TECHNIQUES IN GEOGRAPHY 1.0: STATISTICAL TECHNIQUES 1. Processing data using statistical methods in geography (e.g., frequency distribution, measure of central tendency etc.,) helps the students to understand its importance and relevance in the subject. 2.0: LABORATORY WORK 1. This includes the methods and techniques to identify different rocks and minerals. Also students learn about the fertility and type of soil to be used for various crops by the soil kit (soil PH). 3.0: LABORATORY NOTE BOOK AND VIVA- VOCE 1. A laboratory note- book is prepared based on the topics mentioned above. PROGRAMME OUTCOME (PO) 1. The geological time-scale and geological history of the earth is the basic knowledge to be acquired in Physical Geography. 2. To learn about the evolution of landscape. 3. The reasons, importance and effects of the global circulation in the atmosphere. 4. Importance of soil and forest conservation and to develop a sense of self-consciousness. 5. Contributions of eminent scholars to the discipline of geography and its scope. 6. To understand man's economic achievement in terms of production and consumption in the light of the environment. 7. To understand the various facets pertaining to the spatial variation in the distribution of the human population across the globe. 8. It also aims to study the size, forms, functions and regional association of human settlement and trace their growth and pattern of distribution. 9. Cartographic techniques and field work helps in incorporating the analytical and statistical techniques and to bring forth the final result. B.A. PART-I (HONOURS) IN GEOGRAPHY, CBCS SEMESTER -I CC-1: GEOTECTONICS AND GEOMORPHOLOGY (THEORY) UNIT-I: GEOTECTONICS 1. This course is framed to identify the age and source of crustal rocks. It also includes the study of major tectonic events of the Earth's crust, deformation, kinematics and stability. This helps the students to recognize the historical development of ideas and scientific breakthrough associated with formulation of the Plate Tectonic Theory. UNIT-II: GEOMORPHOLOGY 1. Emphasis is placed on the mechanism of geomorphic processes and on the relationship between properties of earth materials and the forces applied to them by gravity, wind, ice water, waves and humans. 2. Various landform features formed by the agents of geomorphic process has helped the students to identify the landforms and the processes and factors that work behind the formation of various landforms. CC-2: CARTOGRAPHIC TECHNIQUES AND GEOLOGIGAL MAPS (THEORY AND PRACTICAL) CC-2 (THEORY) 1. Students learn the classification and various types of maps such as Cadastral maps, Topographical maps, Thematic maps etc It is helpful to students as they can interpret the maps and understand the settlement pattern, drainage

pattern, vegetation, transport and communication network of any region or area. 2. Types and characteristics of selected rocks and minerals are taught so that they can develop the skill of identifying the rocks and minerals. Some of the techniques of identification are colour, structure, texture etc. CC-2 (PRACTICAL) 1. Cartographic techniques is the method of preparing maps based on calculation and geological maps study details with the identification of geological features. 2. Geography, being a practical based subject, students learn the actual procedure and technique of drawing and interpreting maps and constructing projections. Also they understand its relevance advantages and disadvantages. SEMESTER -II CC-3 (THEORY): HUMAN GEOGRAPHY UNIT-1: NATURE AND PRINCIPLES 1. Human geography deals with the people and the social environment created by them. 2. It is the study of evolution of humans, concept of race, ethnicity and society. 3. Knowing about the concept of Culture, Cultural Diffusion, Convergence and Cultural realms of the world, learners know how it can bring up more development in any region. UNIT-2: SOCIETY, DEMOGRAPHIC AND EKISTICS 1. This unit discusses about the evolution of human from hunting and gathering period till the present modern time. 2. How humans have made themselves compatible with the extreme types of climate such as the Arctic and Hot Desert regions. 3. Students' also learn about the importance of resources. The increase in the population may result in the depletion of natural resources. Therefore, countries with overpopulation have to make judicial use of these natural resources. 4. The types and pattern of rural settlement and the functional classification of urban settlements highlight the reasons for the arrangement of such settlement. CC- 4: CARTOGRAMS, SURVEY AND THEMATIC MAPPING (THEORY AND PRACTICAL) CC-4: (THEORY) 1. Concept of Cartograms and Thematic Maps, Concept and utility of Isopleths, Choropleth, Climograph, Hythergraph and Ergo graph are the important topics covered under this unit. 2. The techniques of preparing and interpreting demographic charts and maps are also taught. 3. The measurement of height, distance and level of the ground are calculated with the help of survey equipment such as Dumpy Level, Transit Theodolite and Prismatic Compass. CC-4: (PRACTICAL) 1. Diagrammatic representation of data (Star diagram, Age-Sex pyramid, Pie diagram, Circles, Dots and Sphere Isoclines and Choropleth methods) helps in the interpretation and reflects a clear picture of a place based on any given data. 2. Countering by Dumpy Level and Prismatic Compass along with determination of height of objects using Transit Theodolite (accessible and inaccessible base) students can calculate the distance between two given points and can and see how smooth or undulating the surface is. This methods are generally used before laying railway tracks, making roadways and bridges. B.A. PART-II (HONOURS) IN GEOGRAPHY, CBCS SEMESTER -III CC-5(THEORY): CLIMATOLOGY UNIT-1: ELEMENTS OF THE ATMOSPHERE 1. Students learn about all the elements which form the atmosphere.

Also they learn about the Ozone layer which protects the earth from the ultra violet rays. 2. The effects of Green House and the gasses which are released in the atmosphere are one of the cause for the depletion of the protective Ozone layer. Therefore, awareness among every individual is necessary. UNIT-2: ATMOSPHERIC PHENOMENA, CLIMATE CHANGE AND CLIMATIC CLASSIFICATION 1. Based on different theories and atmospheric phenomena students learn the evidences and causes of climatic change. 2. The reasons for stability and instability in weather and rise in temperature every year are matters of concern, as it directly or indirectly affect the living being on the planet. Therefore, it is important to build awareness and concern among students. CC-6: STATISTICAL METHODS IN GEOGRAPHY (THEORY AND PRACTICAL) UNIT – 1 & 2 (THEORY) 1. Students learn the importance and significance of Statistics in Geography. 2. Geographers use statistical techniques to make generalizations related to complex spatial patterns, describe and summarize spatial data etc The learners acquire the skill and method of collecting, compiling, calculating the data and apply relevant statistical techniques. 3. It is also useful for those engaged in the field of academic research. CC-6: STATISTICAL TECHNIQUES IN GEOGRAPHY (PRACTICAL) 1. The computed statistical data are graphically represented and interpreted. Graphical representation of data of any study area results in better analysis and presentation of data. 2. The primary goal of teaching statistical techniques is to calculate data into easy understandable summaries. CC - 7: GEOGRAPHY OF INDIA UNIT-1: GEOGRAPHY OF INDIA 1. Along with knowing the physiography of the country, students' acquire deeper knowledge of India and the infinite variety of caste, and creed, language and tribes. 2. Over the years efforts and policies have been laid down by the government for the development in the agricultural sector as well as industrial development. Based on the current scenario students' can make a comparative study of the rate of development in the country in various sectors. UNIT-2: GEOGRAPHY OF WEST BENGAL 1. This unit particularly deals with the state of West Bengal. Its content is about the physiographic divisions and forest and water resource. Students learn the importance of water resource and how it is being contaminated, government's role in dealing with such problems. 2. Mining, setting up of new industries and depletion of forest cover to accommodate the growing population has been a major point of concern. This has imposed a negative impact on the biodiversity of West Bengal. SKILL ENHANCEMENT COURSE SEC-1(A): REMOTE SENSING SEC-1(A): (PRACTICAL) 1. This unit is particularly framed for students to explore and understand the space in much detailed and digital way. 2. Remote Sensing is about collecting information with the help of satellites, sensors used and platforms. Principles of image interpretation is a vital part. SEMESTER-IV CC-8 (THEORY): REGIONAL PLANNING AND DEVELOPMENT UNIT- 1: REGIONAL PLANNING 1. Regional Planning deals with the efficient placement of land use activities, infrastructure and settlement growth

across a larger area of land .It also includes formulating of laws that will guide the efficient planning and management of such said region. 2. Regional Planning also helps in reducing the conflicts and competition for resources between cities and region. 3. Students develop specialized knowledge in Regional Planning which provide a range of professional skills such as designing the layout of a region and laying development plans. UNIT-2: REGIONAL DEVELOPMENT 1. The study on Regional Development focuses on the socio- economic and Environmental Development of regions with a view to train students to take qualified, professional, expert, and managerial positions in the sphere of complex socio- economic and environmental regional development. 2. Students acquire the knowledge and understand the reasons which are the cause of regional imbalance in India. They learn to give logical suggestion for a region's development. CC-9 (THEORY): ECONOMIC GEOGRAPHY UNIT – 1: CONCEPT AND APPROACHES 1. Economic geography is the study of interdependence of production and development of a region. 2. Students understand the reasons why certain regions are outstanding in the production and exportation of various articles and why others are significant in the importation and utilization of these things. UNIT -2: ECONOMIC ACTIVITIES 1. Students learn the importance of Economic activities in Primary, Secondary and Tertiary level which leads to economic growth of a country. CC – 10: ENVIRONMENTAL GEOGRAPHY (THEORY) 1. Students acquire the knowledge on the inter-dependent relation between man and environment. 2. This spreads awareness on the effects that are caused due to Environmental Degradation and Pollution. 3. Students also learn Urban Environment issues which are related to Waste Management. (PRACTICAL) 1. A field survey is conducted based on a questionnaire. Students collect primary data and extract the environmental problems of the selected area. SEC- 2: FIELD WORK (PRACTICAL) 1. Students learn the importance of preparing a field report as it helps in getting a clear view of the socio- economic scenario of the area and can understand the reasons for the present condition of the study area. B.A. PART-III (HONOURS) IN GEOGRAPHY, CBCS SEMESTER – V CC – 11: RESEARCH METHODOLOGY AND FIELD WORK UNIT- 1: RESEARCH METHODOLOGY (THEORY) 1. The techniques of writing scientific reports has been highlighted. From the initial stage to the final completion of a project or fieldwork has been explained in details. 2. The first unit is framed to understand the significance of literature review in research, followed by objectives, hypothesis and problems of a research. 3. Techniques of preparing notes, references, bibliography, abstract and keywords. UNIT -2: FIELD WORK (PRACTICAL) 1. Field work is an essential component in geography. This helps the students to develop subject knowledge and perspective. 2. Pre- field, field and post- field preparations has been included in this unit. The field work includes selection of a study area, field techniques and tools such as questionnaire, interview, photos, collection of samples and post – field

tasks. 3. Based on the above mentioned techniques, students prepare a field report of a selected area. The theoretical information along with the survey on ground provide exposure and also helps in developing skills. CC – 12: REMOTE SENSING AND GIS UNIT- 1: REMOTE SENSING (THEORY) 1. This unit is particularly framed for students to explore and understand the space in much detailed and digital way. 2. Remote Sensing is about collecting information with the help of satellites, sensors used and platforms. Principles of image interpretation is a vital part. UNIT -2: GIS and GNISS (PRACTICAL) 1. The unit lays special importance of the use of GIS techniques and its application used for flood management and urban sprawl. 2. Principals of GNSS positioning – uses and waypoint collection method is equally an important topic. 3. Students are facilitated with computer labs. The software used is Q GIS. Geo-referencing of scanned maps, preparation of FCC using IRS LISS- 3 data and preparation of thematic maps etc. has helped in inculcating more interest in the subject. DSE-1(THEORY): CULTURAL AND SETTLEMENT GEOGRAPHY UNIT – 1: CULTURAL GEOGRAPHY 1. Emphasis has been laid on development of Cultural Geography, Cultural Landscape, Cultural Segregation, Cultural Diversity, and Major Races of the world, its distribution and characteristics. UNIT – 2: SETTLEMENT GEOGRAPHY 1. The difference between settlement types and pattern, characteristics of rural settlement, its site and morphology has been discussed in details. 2. Urban morphology, urban growth, urban agglomeration and mega city has also been covered under this unit. 3. Functional Classification of cities by Harris and Nelson included in this unit is of equal importance to students. DSE – 2 (THEORY): POPULATION GEOGRAPHY UNIT – 1 & UNIT – 2: POPULATION GEOGRAPHY 1. Theories of population growth: Malthusian Theory and Marxian Approach, Demographic Transition Model its relevance in the trends of population growth is of utmost importance in the present scenario. 2. Distribution and Density of population with respect to Migration, occupational structure, fertility and mortality are discussed under this unit. 3. The Human Development Index (HDI) helps to understand the achievements in the social and economic dimensions. 4. Contemporary Issues in population, such as Health and Unemployment highlights the quality and economic status of the growing population. SEMESTER- VI CC – 13(THEORY): EVOLUTION OF GEOGRAPHICAL THOUGHT UNIT- 1 & UNIT – 2: 1. Geography in Ancient period and its development in the medieval period. 2. Development of mapping and knowledge about the world Regional Geography. 3. Classical Geography in the 19th Century by Humbolt and Ritter. 4. Quantitative Revolution and its critique. 5. Indian contribution to Geography. CC- 14: DISASTER MANAGEMENT (THEORY AND PRACTICAL) UNIT-1 & UNIT-2 1. In this unit special emphasis has been given to understand the Causes, Consequences and Management of pre and post disaster. 2. Preparedness, Resilience and Capacity building is very essential to overcome the trauma faced by the people during any kind of hazard or a

disaster. 3. Hazard mapping helps to learn about the vulnerable areas affected by natural calamities each year. DSE – 3 (THEORY): RESOURCE GEOGRAPHY UNIT- 1 & UNIT-2 1. Emphasis has been laid on the problems of resource depletion with special reference to forests, water and fossil fuels as these are vital and needs to be conserved for social and economic wellbeing. 2. Distribution, problems and management of energy resources, Sustainable resource development and Contemporary energy crisis and future scenario helps to understand that we have reached to an alarming stage. DSE-4 (THEORY): SOIL AND BIO GEOGRAPHY UNIT -1 & UNIT- 2 1. To understand the development and characteristics of Soil profile, its physical and chemical properties. 2. Also the fertility of soil, soil degradation and management is also important which has been addressed under this unit. 3. Bio geography with special reference to Biosphere and Laws of energy exchange, bio geo chemical cycle and threat to bio diversity, its causes, consequences and conservation is important to understand the importance of a healthy environment. PROGRAMME OUTCOME 1. Students develop an understanding of concepts, theoretical frameworks, Perspectives and methods of inquiry. 2. To know about the forces (endogenetic and exogenetic) that lead to the formation of various landforms. 3. To be able to identify and interpret landforms and geomorphic processes from topographical and geological maps. 4. Learn to analyze data, apply statistical techniques and lay in a graphical representation to make the given data easier to understand and interpret. 5. It provides a better understanding of evolutionary time frames. The geographic distribution of plants and animal species and ecosystem over space and time. 6. To develop a sense of awareness and concern for the environment, increasing population, depletion of natural resources, the global climatic change etc.,. and embrace the methods of sustainable development. 7. Students' acquire deeper knowledge of India and the infinite variety of caste, and creed, language and tribes. B.A. PART-I GEOGRAPHY-(GENERAL & GENERIC), CBCS SEMESTER- I CC-1: GEOMORPHOLOGY AND CARTOGRAPHY UNIT- 1: GEOTECTONICS AND GEOMORPHOLOGY (Theory) 1. Types of weathering and related landforms, lithosphere, plate tectonics and its associated landforms are covered under this unit to have a better understanding of geotectonics. 2. Geomorphology is associated with the various landforms that are formed on the earth's surface. Landforms developed in the arid regions, glaciated regions and the fluvial cycle of erosion by Davis and Penck are some of the important topics of this unit. UNIT-2: SCALES AND CARTOGRAMS (Practical) 1. Scales and Cartograms is an important part of geography. Diagramatic representation of data and its interpretation helps in better understanding of the ground. SEMESTER- II CC-2: PHYSICAL ENVIRONMENT AND SURVEYING UNIT-1: CLIMATOLOGY, SOIL AND BIOGEOGRAPHY (Theory) 1. This unit includes the elements of weather and climate, forms of precipitation, tropical , temperate cyclones and climatic classification by Koppen. 2. Physical and

chemical properties of soil, soil forming factors, definition of biosphere and biogeography is equally important to understand the physical environment in geography. UNIT-2: SURVEYING AND LEVELLING (Practical) 1. As a part of the prescribed syllabus it is important for students to learn about the applicability of surveying and levelling. SEMESTER- III CC-3: HUMAN GEOGRAPHY AND MAP STUDYING UNIT-1: HUMAN GEOGRAPHY (Theory) 1. The man- environment relationship with reference to the Eskimos, Space and Society is covered under this unit. 2. Population growth, types of population migration and world population distribution and composition helps to understand the contents of human geography. UNIT-2: MAP PROJECTION AND MAP INTERPRETATION (Practical) 1. This is another method of drawing suitable maps based on the latitudes and longitudes. Each map projection have its own advantages, disadvantages and limitations 2. A detailed study of the map helps students to interpret the information. SKILL ENHANCEMENT COURSE SEC-1: REMOTE SENSING UNIT-1: REMOTE SENSING (Practical) 1. The definition, development, platforms and types of Remote Sensing is the content of this unit. 2. Aerial photography, Satellite Remote Sensing, interpretation and application of Remote Sensing helps the students to develop a wider spectrum of knowledge. SEMESTER-IV CC-1: ENVIRONMENTAL GEOGRAPHY UNIT-1: (Theory) 1. The concepts and approaches of Environmental Geography, human- environment relationship, environmental problems and management are some of the vital topics of this unit to understand the importance of a healthy environment. UNIT-2: (Practical) 1. It includes the use of soil test- kit (PH, organic carbon), mapping of wetlands and forests from topographical sheet. SKILL ENHANCEMENT COURSE SEC-2: REGIONAL PLANNING AND DEVELOPMENT UNIT-1: REGIONAL PLANNING (Practical) 1. Emphasis has been given particularly on Human Development Index, agricultural and industrial development in India since 1970's and 1990's respectively. SEMESTER-V DSE-1A: GEOGRAPHY OF INDIA UNIT-1: (Theory) 1. This unit includes the physical setting of India and also the population size and growth since independence. 2. It also highlights the potential of Indian economy through its agricultural, mineral and energy resources. UNIT-2: (Field work) 1. Students prepare a field report based on primary data collected from field survey and secondary data collected from different sources. SKILL ENHANCEMENT COURSE SEC-3: COLLECTION, MAPPING AND INTERPRETATION OF CLIMATIC DATA UNIT-1: COLLECTION, MAPPING AND INTERPRETATION OF CLIMATIC DATA (Practical) 1. This unit specially deals with the climatic data collection, appropriate representation of data with the help of diagrams and interpretations. GENERIC ELECTIVE GE-1: PHYSICAL GEOGRAPHY UNIT-1: PHYSICAL GEOGRAPHY (Theory) 1. It includes the heat balance, global wind circulation pattern and the climatic classification of Koppen. 2. Internal structure of the earth, Plate Tectonics, Fluvial Cycle of Erosion by Davis and Penck and the global hydrological cycle

are some important topics of this unit. SEMESTER-VI DSE-1B: DISASTER MANAGEMENT UNIT-1: (Theory) 1. In this unit special emphasis has been given to understand the Causes, Consequences and Management of pre and post disaster. 2. Preparedness, Resilience and Capacity building is very essential to overcome the trauma faced by the people during any kind of hazard or a disaster. UNIT-2: (Practical) 1. An individual project report based on selected disasters is prepared. SKILL ENHANCEMENT COURSE SEC-4: ROCKS AND MINERALS AND THEIR MEGASCOPIC IDENTIFICATION UNIT-1: (Practical) 1. Students learn the methods and techniques to identify different rocks and minerals. GENERIC ELECTIVE GE-2: HUMAN GEOGRAPHY UNIT-1: HUMAN GEOGRAPHY (Theory) 1. The definition, major sub field and contemporary relevance has been discussed in this unit. 2. The concept of Space and society, race and religion are important components of Human Geography. 3. The world population distribution and settlement patterns and types helps to understand the trends of the changing scenario. PROGRAMME OUTCOME (PO) 1. Geotectonic and Geomorphology aims to draw out quantitative laws that govern the earth. 2. The primary goal of Climatology is to understand the unique characteristics of atmosphere in controlling the global climate, origin, types of climate, causes and processes influencing the climatic variations. 3. To develop a sense of responsibility in conservation of the environment. 4. Human Geography examines human society and how they develop their culture and economy. 5. Regional Planning aims to speed up the process of social progress of the community of any area. This develops techniques and planning skills. 6. Helps to understand the importance of renewable and non- renewable resources and come up with innovative ideas of sustainable development. 7. Spreading awareness of the causes and consequences of a disaster and developing various management techniques at local and national level. 8. The use analytical techniques and Remote Sensing has a wide range of applications for environmental planning and management.

HISTORY GENERAL

COURSE OUTCOMES

Core Course I (History of India: From the Earliest Times up to 300 CE)

This course covers a long period beginning from the earliest times to 300 CE. It will enable our students to have a fair idea starting from the prehistoric cultures of the subcontinent to the Gupta Period. The course is designed to provide an overall knowledge on the first urbanization of Indian subcontinent focusing on the different facets of Harappan Civilization. It gives emphasis on the different aspects of Vedic Culture to Second Urbanization. This course will help the students to have a fair knowledge on the first well organized and 'centralised' empire of Bharat that grew under the Mauryas and on their administration, economy, art and architecture. The contact of the Indian rulers with the foreign ones, the Indo-Roman trade and the Gandhara Art would surely enrich the students to broaden their domain of knowledge in the subject history. We think this course will be able to bring a better understanding not only on the political history but on the evolution of polity, society, economy, language, culture as well as the art and architecture of the subcontinent during the period as well.

Core Course II (History of India: 300 to 1206 CE)

Titled as History of India (300-1206 CE), it would help students to have a clear understanding of the political history of the sub-continent. It would also enable the students to get a clear picture of the decentralised Gupta Empire with its various achievements followed by the evolution of political structures of north India dating back from 7^{th} c. to 12^{th} c. CE. Not only that, it would also shade enough light on the evolution of polity of some of the dynasties that grew in the trans-Vindhyan region such as the Chalukyas, Rastrakutas and Cholas etc. Another important topic would be the discussion regarding the arrival of Islam in North India and the subsequent changes in the political structures.

Core Course III (History of India from 1206 to 1707 CE)

This course covers a period of approximately 500 years in Indian history, beginning from 13^{th} c. to 18^{th} c. CE. It will enable students to gather a better understanding on the foundation and

consolidation of Delhi Sultanate under the Turko-Afghans and the subsequent establishment of the Mughal Empire. The course has been designed to shed light on the political structures of regional states like Vijayanagar and Bahamani. In addition, this will help the students to get in touch with the growth and evolution of religious and cultural developments in north as well as in south India during the period concerned.

Core Course IV (History of India from 1707 to 1950 CE)

The course covers a two hundred fifty years of Indian history throwing light on the foundation and consolidation of the British East India Company's rule in India and the independence struggle against it. It would enlighten the students on the development of modern administrative setup by the British in India and the 1857 revolt. It would be able to provide the students a better understanding of the socio-religious reforms initiated by Raja Ram Mohan Roy, Derozio and Vidyasagar in 19th century which ultimately became instrumental in growing rationalism and consciousness at least amongst a section of the Indians. The course would also help students to know in detail about the freedom movement leading to the establishment of two states in partitioned British India.

Discipline Specific Elective I (Some Aspects of Society & Economy of Modern Europe – 15th to 18th Century)

The course, for the students, elucidates the path of progression followed by Europe from its feudal past to the capitalist present. Focusing on topics such as the Renaissance, Reformation, Scientific Revolution and the growth of European economy leading to the Industrial Revolution, it helps them to understand the basis of European primacy in the modern world.

Discipline Specific Elective II (Some Aspects of European History: 1789-1939)

Following the contours of European history from the French Revolution to the beginning of the WW II, the students are to grasp the essential details behind the growth of the modern state structure and the challenges it faced politically and socio-economically leading up to a situation

when the heavily militarized nations engaged in the WW I and led the world to the cusp of the second.

Generic Elective I (Women Studies in India)

Dealing with the basic concepts and theories related to gender and the practices that strengthen the existence of gender disparity, the course aims to give the students an entry into the movements that have challenged such a norm and the role of the state in advancing the cause of establishing gender parity.

Generic Elective II (Gender & Education in India)

The students following the course would be able to understand one of the main reasons behind the gender disparity existing in society and get to know about the impediments to such during the various periods of Indian history. Moreover, the course would also help them to know about the initiatives taken to positively change the situation.

Skill Enhancement Course I (Archives and Museums in India)

This course will enable the students to have a better understanding on the importance of archival and museum sources in the reconstruction of early, medieval and modern Indian history. It will benefit the students to get acquainted with the explored and excavated antiquities preserved in a museum. Besides, it will help the students to have an idea on exploration and excavation in an archaeological site or of a place of historical importance. It would be profitable for the students to learn the different functions and activities of an archive and of a museum.

Skill Enhancement Course II (Understanding Heritage)

The course would enlighten the students regarding the definitions, types and the nature of what constitutes heritage. The challenges facing the preservation of heritage in the rapidly expanding globalized world and the steps taken both nationally and internationally would be looked at in detail.

PROGRAMME SPECIFIC OUTCOME

An under-graduate student once completing the course would be able to:

- Earn proficiency in language – reading, writing and interpreting
- Know how archaeologists discover and utilise evidence so that they grow an interest in the vocation
- Grow an interest in learning a classical languages such as Sanskrit, Persian, Tamil etc.
- Learn a script such as Brahmi, Kharoshthi, Grantham etc. so that sources could be studied in their originals
- Place all events, even seemingly trivial ones, within their socio-economic background
- Know how museums or archives work

HISTORY HONOURS

COURSE OUTCOMES

Core Course I (History of India – I: From Earliest Times to 600 CE)

This course covers a long period beginning from the earliest times to 600 CE. It will enable our students to have a fair idea starting from the prehistoric cultures of the subcontinent to the Gupta Period. The course is designed to provide an overall knowledge on the first urbanization of Indian subcontinent focusing on the different facets of Harappan Civilization. It gives emphasis on the different aspects of Vedic Culture to Second Urbanization. This course will help the students to have a fair knowledge on the first well organized and 'centralised' empire of Bharat that grew under the Mauryas and on their administration, economy, art and architecture. The contact of the Indian rulers with the foreign ones, the Indo-Roman trade, the Gandhara Art and the decentralized Gupta Empire with their multifaceted art and architecture would surely enrich the students to broaden their domain of knowledge in the subject history. We think this course will be able to bring a better understanding not only on the political history but on the evolution of polity, society, economy, language, culture as well as the art and architecture of the subcontinent during the period as well.

Core Course II (Social Formations and Cultural Patterns of the Ancient World)

Focusing on the social formations and cultural patterns of the non-South Asian world it aims to make the students understand the complexities of human evolution, zoological as well as anthropological, and the later efflorescence of civilization in West Asia, especially in modern day Iraq, and the Greek Mediterranean which laid the base for the later development of civilization in the West.

Core Course III (History of India – II: 600 – 1206 CE)

Titled as History of India - III (600-1200 CE), it would help students to have a clear understanding on the archival and archaeological sources of the period concerned. It would also enable the students to get a clear picture on the evolution of political structures of north India dating back from 7^{th} c. to 12^{th} c. CE. Not only that, it would also shade enough light on the

evolution of polity of some of the dynasties that grew below the Vindhyan region such as the Chalukyas, Rastrakutas and Cholas etc. In addition too, this course, we think would be able to develop an idea on land grants, expansion of agriculture, trade and commerce, process of urbanization and of merchant guilds. And above all, this course would must enable the UG students to have a better understanding on the much debated feudalistic features during the early medieval period and also on the religious and cultural developments from Bhakti to Jainism and Buddhism.

Core Course IV (Social Formations and Cultural Patterns of the Medieval World)

The aim of the course is to aid in the comprehension of the burgeoning of Roman civilization and its contribution in terms of ideas for governance, philosophy, literature etc. and its decline leading to European feudalism. Additionally, processes related to the birth of a new religion in Islam in Hejaz and its rapid expansion into Africa, Europe and Asia is explicated.

Core Course V (History of India – III: circa 1206 CE-circa 1525 CE)

This course covers only 320 years in Indian history, beginning from 13th c. to 16th c. CE. It will enable students to gather a better understanding on the foundation and consolidation of Delhi Sultanate under the Turko-Afghans. The course has been designed to shade light not only on the political structures of regional states like Vijayanagar and Bahamani but on their society, economy, art and architecture of the regional powers of the period as well. In addition, this will help the students to get in touch with the growth and evolution of religious and cultural developments in north as well as in south India during the period concerned.

Core Course VI (Rise of the Modern West I: 15th and 16th Centuries)

The course aims to help one's understanding of the reasons for the rise of early modern Europe with its external growth aided by colonial expansion, and the attendant economic growth based on pillage of the Americas. It will moreover help in understanding the processes of internal strengthening by way of Renaissance and emergence of the nation-state system.

<u>Core Course VII</u> (History of India – IV: 1526 CE - 1757 CE)

This course gives a detailed history of the establishment and consolidation of the Mughal Empire with special reference to its polity and economy. This would enable the students to know about the Mughal administrative structure, their religious policies, Mughal-Rajput relations, Mughal nobility, north-western frontier and central Asian policy of the Mughal emperors etc. it would also enable them to acquire a fair knowledge of the land revenue, *mansabdari* and *jagirdari* systems under the Mughals, and the extent of external and internal trade during the 16th and 17th centuries and the excellence of art, architecture and paintings which grew under the great Mughals. Besides, this course would also give a thrust on the features of regional polity and their relations with the European companies.

<u>Core Course VIII</u> (Rise of the Modern West II: 17th and 18th Centuries)

Students are provided pathways to grasp an understanding of European expansion through the growth of newer political forms such as the parliamentary system and the strengthening of the central state by the rise of absolutism. They will also understand the nature of the enormous intellectual and socio-economic changes brought about by the Scientific and Industrial Revolutions respectively.

<u>Core Course IX</u> (History of India – V: 1757 CE - 1857 CE)

The course covers a hundred years of Indian history throwing light on the foundation and consolidation of the British East India Company's rule in India. It would enlighten the students on the development of modern administrative setup by the British in India. It would also help the students get a fair idea on the history of the development of modern industries in our country after two decades of 'Drain of Wealth'. It would be able to provide the students a better understanding of the socio-religious reforms initiated by Ram Mohan Roy, Derozio and Vidyasagar in 19th century which ultimately became instrumental in growing rationalism and consciousness at least amongst a section of the Indians. The course would also help students to know about the various tribal and peasant rebellions that grew during the 18th and 19th centuries against the British in India.

Core Course X (History of India – VI: 1858 CE - 1964 CE)

Steers the students through the rocky terrain that is South Asia's post-1857 history when newer forms of politics, economics along with societal consensus germinated, albeit in a manner not serving the needs of the toiling masses. Moreover, constant pulls and pushes from the past and the future are seen to define the freedom movement as well the communal movements. The post-independence path to modernization is also explicated.

Core Course XI (History of Modern Europe I: 1789 – 1870)

The content of this course would be able to give the UG students a sequential history of modern Europe with special emphasis on the political and socio-economic development of France during the 18th and 19th centuries starting from the French Revolution of 1789 to the rise of the Second Empire in France. It would also create a better understanding on the rise of anti-revolutionary and reactionary activities in Europe during the period. On studying the course the students would acquire knowledge on the Greek War of Independence and the different facets of Industrial Revolution in Britain and in Europe. The section deals with political and economic development in Italy and in Germany leading to the unification of both the countries.

Core Course XII (Studying History Writing: Indian & Western)

Dealing with the theory of the subject and historiography it endeavours to open the eyes of the students to its philosophical and operational aspects. Time, space, fact etc. are some of the notions that are deliberated upon as also are the various forms of history-writing and its relation with other disciplines. A section on research methodology assists the students looking to take up research later in their academic careers.

Core Course XIII (History of Modern Europe II: 1871 – 1945)

This course though covering only a period of seventy years' of history of modern Europe, would be able to provide the students a detailed understanding of the political events of Europe that led to the outbreak of two World Wars. It would help the students to have a better idea of some of historical coinage like 'Welt politick', 'Balance of Power' etc. The course would help the

students know against what political and economic background the different nations formed the two opponent blocks before the two great wars.

Core Course XIV (Making of the Contemporary World: 1946-2000)

The students after taking up the course would be able to get an inkling of the post-WW II world history where a brief period of unipolarism was followed by a bipolar world order which after the collapse of the communist states would again revert to unipolarism. Cold War, decolonization and globalization are some of the themes explored in the course.

Discipline Specific Elective I (Life and Culture in pre-Colonial Bengal: Prehistoric Times to mid-18th Century)

The course would enable the students to have a better understanding on the political, economic, social and cultural developments of Bengal from prehistoric period to 18th Century CE. The students would be benefitted a lot to know the process of developments on how the city of Murshidabad and Kolkata grew. It would be able to enlighten the students on the spread of different religious sects like Brahmanism, Vaishnavism, Buddhism and Jainism in Bengal. Besides, it will enrich our students on the developments of various literary works by the great scholars of the period as well as the developments of art and architecture during the period concerned.

Discipline Specific Elective II (Life and Culture in Colonial Bengal: 1757-1947)

Focusing on colonial Bengal the course aims to get the students to understand the nature of the colonial rule and its practices which lead to positive externalities such as modernity or reforms while at the same time having negative externalities such as the urban-rural divide and communalism.

Discipline Specific Elective III (History of Modern Asia I: 1840-1919)

This course will help our students to have an understanding on the pre-colonial China with a special emphasis on Confucian value system. It would also enable the students to learn the

Anglo-Chinese relations till the Opium War. It sheds light on the rebellions, restoration and growth of nationalism in pre-colonial China and the political, economic and cultural developments in pre- Meiji Japan.

Discipline Specific Elective IV (History of Modern Asia II: 1919-1939)

Getting the students to understand the travails of China in the post-WW I world in its encounter with modernity lies at the course with the violent path leading to the establishment of the communist republic. Japan's pathway during the same period focuses on its increased militarization and jumping into the fray of the WW II with devastating consequences.

Skill Enhancement Course I (Archives and Museums in India)

This course will enable the students to have a better understanding on the importance of archival and museum sources in the reconstruction of early, medieval and modern Indian history. It will benefit the students to get acquainted with the explored and excavated antiquities preserved in a museum. Besides, it will help the students to have an idea on exploration and excavation in an archaeological site or of a place of historical importance. It would be profitable for the students to learn the different functions and activities of an archive and of a museum.

Skill Enhancement Course II (Art Appreciation: An Understanding to Indian Art)

The students after attending this course would be able to gain an insight into the aesthetics of artistic creation of the subcontinent from the prehistoric period till modern times. Cave art to modern art with milestones from the early and medieval period would be used to give them an in-depth understanding of the nature of creative faculties as expressed in our part of the world.

Note: Students from other Honours disciplines are provided the General Core Courses as their Generic Elective Courses.

PROGRAMME OUTCOME

The students of the History Honours course on picking the subject are given an entry to a portal where the sources provide an introduction to an intensive empirically driven discipline. However, this need for knowing the facts of history as such is encompassed within the necessity to understand the nature of the sources, their creators and socio-economic milieu within which they were created. They also have to comprehend the idea that there is no one factual view of history as the same sources can be interpreted in a multitude of ways. Historians' truth is by its very nature different from scientific truth and historical facts are, except in form of single statements, amenable to multifarious explanations. They also have to understand that history and past are two different notions with the former being the territory of a specialist. They have to realize that popular ideas regarding history and its dissemination via the social media do not have any valency for a student of History. Their study of the subject is aimed to embolden them to act as bulwarks against popular misconceptions of history and even its use by those in power. History as a discipline speaks to power and authoritarianism. Moreover, they would be able to see that all identities whether they be ethnic, national, religious or gender are constructed over a period of time and in needs of societal progress should be deconstructed.

PROGRAMME SPECIFIC OUTCOME

An under-graduate student once completing the course would be able to:

- Earn proficiency in language – reading, writing and interpreting
- Know how archaeologists discover and utilise evidence so that they grow an interest in the vocation
- Grow an interest in learning a classical language such as Sanskrit, Persian, Tamil etc.
- Learn a script such as Brahmi, Kharoshthi, Grantham etc. so that sources could be studied in their originals
- Place all events, even seemingly trivial ones, within their socio-economic background
- Know how museums or archives work

COURSE OUTCOME

The Course outline of the discipline of History are multifaceted and having a contemporary outlook. After careful reading of the courses, the department of History has pointed out the following outcomes of the courses given in the syllabi.

CORE COURSE-1

The Core Course -01 of the discipline of History covers a long period beginning from the earliest times to 600 AD. It will enable our students to have a fair idea starting from the prehistoric cultures of the subcontinent to the Gupta Period. The course is designed to provide an overall knowledge on the first urbanization of Indian subcontinent focusing on the different facets of Harappan Civilization. It gives emphasis on the different aspects of Vedic Culture to Second Urbanization. This course will help the students to have a fair knowledge on the first well organized and 'centralised'empire of Bharat that grew under the Mauryas and on their administration, economy, art and architecture. The contact of the Indian rulers with the foreign ones, the Indo-Roman trade, the Gandhar Art and the decentralized Gupta Empire with their multifaceted art and architecture would surely enrich the students to broaden their domain of knowledge in the subject history. We think this course will be able to bring a better understanding not only on the political history but on the evolution of polity, society, economy, language, culture as well as the art and architecture of the subcontinent during the period as well.

CORE COURSE- 03

Core Course -03 titled as History of India- III (600-1200CE), would help students to have a clear understanding on the archival and archaeological sources of the period concerned. It would also enable the students to get a clear picture on the evolution of political structures of north India dating back from 7^{th} Cen. CE to 12^{th} Cen. Not only that, it would also shade enough light on the evolution of polity of some of the dynasties that grew below the Vindhyan region such as the chalukyas, Rastrakutas and Cholas etc. In addition too, this course, we think would be able to develop an idea on land grants, expansion of agriculture, trade and commerce, process of urbanization and of merchant guilds. And above all, this course would must enable the U G students to have a better understanding on the much debated feudalistic features during the early medieval period and also on the religious and cultural developments from Bhakti to Jainism and Buddhism.

CORE COURSE- V

Core Course – V covers only 320 years in Indian history, beginning from 13^{th} Cen. to 16^{th} Cen CE. It will enable students to gather a better understanding on the foundation and consolidation of Delhi Sultanate under the Turko-Afgans. The course has been designed to shade light not only on the political structures of regional states like Vijaynagar and Bahmani but on their society, economy, art and architecture of the

regional powers of the period as well. In addition, this will help the students to get in touch with the growth and evolution of religious and cultural developments in north as well as in south India during the period concerned.

COURSE OUTCOME

Core Course- 7

This course gives a detail history on the establishment and consolidation of Mughal Empire, with special reference to its polity and economy. This would enable the students to know about the Mughal administrative structure, theirreligious policy, Mughal –Rajput relations, Mughal nobility, north-western frontier and central Asian policy of the Mughal emperors etc. It would also enable them to acquire a fair knowledge on the land revenue system, Mansabdari and Jagirdari system under the Mughals, and the extent of internal and external trade during 16th and 17th Cen and theexcellence of art, architecture and paintings which grew under the great Mughals. Besides, this course would also give a thrust on the features of regional polity and their relation with the European companies.

CORE COURSE- 9

Core Course -9 though covers only one hundred years in Indian History, throws enough light on the foundation and consolidation of British East India Company's rule in India.It would enlighten the students on the development of modern administrative setup by the British in India. It would also help the students to get a fair idea on the history of development of modern industries in our country after two decades of 'Drain of Wealth'. It would be able to provide the students a better understanding on the socio-religious reforms initiated by Raja Ram Mohan Roy, Derozio and Vidyasagar in 18th Cen which ultimately became instrumental in growing rationalism and consciousness at least among a section of the Indians. The course would also help our students to know about the various tribal and peasant rebellions that grew during 18th and 19th Cen. against the British in India.

CORE COURSE- 11

The content of Core Course –XI, we think, would be able to give the UG students a sequential history of modern Europe with special emphasis on the political and socio-economic development of France during 18th and 19th Cen. starting from the French Revolution of 1789 to the rise of second empire in France. It would must create a better understanding on the rise of anti-revolutionary and reactionary activities in Europe during the period. On reading the course the students would acquire knowledge on the Greek War of Independence, The different facets of Industrial Revolution in Britain and in Europe. The section deals with political and economic development in Italy and in Germany leading to the unification of both the countries would must help students to get a fair idea on the advancement of Europe leading to the rise of nationalism in Balkan.

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CORE COURSE- XIII

History of Modern Europe- II (1871-1945)

This Course though covers only a period of seventy years' of history of modern Europe, would be able to provide the students a detail understanding of the political events of Europe that led to the outbreak of two World Wars. We think it would help the students to have a better idea on some of historical coinage like 'Welt politick', 'Balance of Power' etc. The course would help the students know how and in what political and economic background the different nations formed the two opponent blocks before the two great wars.

Discipline Specific Course- I

The course would enable the students to have a better understanding on the political, economic, social and cultural developments of Bengal from prehistoric period to 18th Century CE. The students would be benefitted a lot to know the process of developments on how the city of Murshidabad and Kolkata grew. It would be able to enlight the students on the spread of different religious sects like Brahmanism, Vaisnavism, Buddhism and Jainism in Bengal. Besides, it will enrich our students on the developments of various literary works by the great scholars of the period as well as the developments of art and architecture during the period concerned.

Discipline Specific Course- III

This course will help our students to have an understanding on the pre-colonial China with a special emphasis on Confucian value system. It would also enable the students to learn the Anglo-Chinese relations till the Opium War. It shades enough light on the rebellions, restoration and growth of nationalism in pre-colonial China and the political, economic and cultural developments in Pre- Mej Japan.

Skill Enhancement Course-I

This course will enable the students to have a better understanding on the importance of archival and museum sources in the reconstruction of early, medieval and modern Indian History. It will benefit the students to get acquainted with the explored and excavated antiquities preserved in a museum. Besides, it will help the students to have an idea on exploration and excavation in an archaeological site or to a place with historical importance. The students will be benefitted a lot to learn the different functions and activities of an archive and of a museum from this course too.

COURSE OUTCOME

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Discipline Specific Course- I

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Skill Enhancement Course-I

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Department of Nutrition

Gushkara Mahavidyalaya

(For the academic Year: 2017-18, 2018-19, 2019-20, 2020-21, 2021-2022, 2022-2023)

Course Outcome:

"Food is not fuel. Food is about family, food is about community. And we nourish all those things when we eat well."

--By Michael Pollan

A study of Nutrition is applied to our daily living. The course provides information on basic Nutrition and wellness concepts in relation to the individual, family & community throughout life.

Programme Outcome:

The syllabus for Nutrition at undergraduate level using the Choice Based Credit system has been framed incompliance with model syllabus given by UGC.

The main objective of framing this new syllabus is to give the students a holistic understanding of the subject giving substantial weightage to both the core content and techniques used in Nutrition.

The syllabus has also been framed in such a way that the basic skills of subject are taught to the students, and everyone might not need to go for higher studies and the scope of securing a job after graduation will increase.

Internship, Training, Workshop, Short-Term Course or Project Work also introduced to increase the scope of getting jobs after graduation.

Scheme for CBCS Curriculum:

Semester	Course Name		Course Detail	Credits
I (Hons.)	CC1	Theory	NUTRITIONAL PHYSIOLOGY-I	4
		Practical	„	2
	CC2	Theory	NUTRITIONAL ASPECT OF FOOD ITEMS	4
		Practical	„	2
II (Hons)	CC3	Theory	NUTRITIONAL PHYSIOLOGY-II	4
		Practical	„	2
		Theory	PHYSIOLOGICAL ASPECT OF NUTRITION	4

	CC4	Practical	„	2
III (Hons.)	CC5	Theory	NUTRITIONAL BIOCHEMISTRY	4
		Practical	„	2
	CC6	Theory	NUTRITION: LIFE CYCLE APPROACH	4
		Practical	„	2
	CC7	Theory	DIET THERAPY-I	4
		Practical	„	2
	Skill Enhancement Course–1	Theory	TECHNOLOGY OF FRUITS AND VEGETABLES OR ENVIRONMENT MANAGEMENT AND PUBLIC HEALTH	2
IV (Hons.)	CC8	Theory	NUTRITIONAL ASSESSMENT AND NUTRITION PROGRAMME	4
		Practical	„	2
	CC9	Theory	COMMUNITY NUTRITION AND EPIDEMIOLOGY	4
		Practical	„	2
	CC10	Theory	DIET THERAPY-II	4
		Practical	„	2
	Skill Enhancement Course–2	Theory	RURAL TECHNOLOGY AND PUBLIC WELFARE OR IMMUNOLOGY, TOXICOLOGY AND PUBLIC HEALTH	2
V (Hons.)	CC11	Theory	FOOD MICROBIOLOGY AND FOOD BORNE DISEASE	4
		Practical	„	2
	CC12	Theory	MEDICAL MICROBIOLOGY AND PATHOLOGY	4
		Practical	„	2
	Discipline Specific	Theory	HUMAN PATHOLOGY OR THERAPEUTIC NUTRITION AND CRITICAL CARE	4

	Elective–1	Practical	THEORY CONCERN	2
	Discipline Specific Elective–2	Theory	MOLECULAR BIOLOGY OR BIOPHYSICS AND BIOINSTRUMENTATION	4
		Practical	THEORY CONCERN	2
VI (Hons.)	CC13	Theory	NUTRACEUTICAL AND FUNCTIONAL FOOD	4
		Practical	„	2
	CC14	Theory	FOOD SAFETY AND FOOD STANDARD	4
		Practical	„	2
	Discipline Specific Elective–3	Theory	BIOSTATISTICS AND BIOINFORMATICS OR CONCEPT OF RESEARCH AND HEALTH MANAGEMENT	4
		Practical	THEORY CONCERN	2
	Discipline Specific Elective–4	Theory	FOOD SPOILAGE AND FOOD PRESERVATION OR ENTREPRENEURSHIP AND SMALL CATERING UNITS	4
		Practical	THEORY CONCERN	2

Specific Course Outcomes for Nutrition Honours:

Semester	Course Name		Course Detail
I (Hons.)	CC1	Theory (Credit-4)	**Physiology** The word *physiology* is from the Ancient Greek φυσιολογία (*phusiología*, "natural philosophy") and it is the study

			of how organisms perform their vital functions. Nutritional Physiology-I deals with how the body extracts the nutrients from the food, how we obtain the needed energy, how we utilize nutrients and how all this is related to health and disease. Nutritional Physiology-I surveys anatomical terminology, human body composition, cell structure and functions of different organelles, and the following human organ systems: Circulatory and Cardiovascular system, Digestive system, Respiratory system, and Musculoskeletal systems. Upon completion of the course students should be able to: ✓ Gain knowledge on different parts of the human body& enumerate the basic structure of Human body. ✓ Understand the relationship between a cell's structure and its function ✓ Interprets how Blood & Heart maintain the overall body's homeostasis. ✓ Relates how our body utilized nutrients to build up & protect from foreign particles like virus and bacteria. ✓ Gain knowledge on relations between diseases and disorders. ✓ Have an idea on gaseous exchange on lungs and the transportation of O_2 & CO_2 through blood vessels. ✓ Know how our body move freely form place to place and internal mechanism of muscular and skeletal systems.
		Practical (Credit-2)	At the end of the course students should: ✓ Determines Pulse rate the overall body's situation. ✓ Able to measure the blood pressure of an individual and determine the correlation of Blood Pressure and Diet. ✓ Have an idea of Bleeding Time & Clotting Time. ✓ Able to determine the Blood Group. ✓ Able to measure the Hemoglobin level of and individual

			which allow them to prepare a proper Diet Plan of Anemic condition.
	CC2	Theory (Credit-4)	Food supplies both the energy for all of the body's functions and the building blocks for growth and maintenance. In short food is the "fuel" of body. Food can be classified in various food groups and all are necessary for our overall growth. In the topic Nutritional Aspect of Food Items students will able to: ✓ Define various terms used in Nutrition which will helps them to understand the deep knowledge of Nutrition in future. ✓ Define the Balance Diet & importance of in in our modern society. ✓ Classify food in various groups and determine the nutritive value of food and importance in our diet. ✓ Gain knowledge of various methods used in food industry to produce different kinds of food products. ✓ Understand the importance of processing of food and how food industry converts the raw food into edible food. ✓ Understands the nutritional aspects of different food. ✓ Feel the importance of cooking and the effect of various methods of cooking on food. ✓ Have an idea on nutrient losses in cooking and how to minimized it in our daily life. ✓ Usage and importance of whole grains, pulses and vegetables in daily bases
		Practical (Credit-2)	At the end of the course students should: ✓ Able to calculates the nutritive value of prepared food items. ✓ Gain the knowledge of Portion size & Serving size of food. ✓ Able to calculate the nutritive value of food items according

			to portion size. ✓ Understand the right portion of food required for an individual.
II (Hons)	CC3	Theory (Credit-4)	Nutritional Physiology-II describe the Excretory system, Reproductive system, Nervous system & Endocrine system. In this topic student will have the opportunities to: ✓ Gather the knowledge of Structure and function of skin & Regulation of temperature of the body. ✓ Know the process of Urine formation in our body. ✓ Get the science behind the various physiological process like Menstrual cycle, Spermatogenesis, Oogenesis and the factors affecting or controlling the processes. ✓ Understands the brief anatomy of cerebrum, cerebellum, hypothalamus and neuron. ✓ Understand the structure and functions of endocrine gland & how hormones regulates the body's overall growth and developments.
		Practical (Credit-2)	At the end of the course students should: ✓ Develop further practical biological skills. ✓ Able to determine Total count (TC) of RBC, WBC and Platelets & Differential count (DC) of WBC which will helps them to describe the physiological or medical situation of patients in clinical conditions. ✓ Identify the various cells structure of body organs with reasons which helps them to understand human body clinically.
	CC4	Theory (Credit-4)	The nutrients in food, required in balanced amounts to produce and maintain optimum health, belong to the broad group of carbohydrates, proteins, fats, vitamins, and minerals. Water, not generally classified as a nutrient, must not be overlooked, because a lack of water even for a short period is life threatening.

			Physiological Aspect of Nutrition helps the students to: ✓ Define the various terms used in nutrition like Health, Growth, Development, Malnutrition. ✓ Understands the future scopes of Nutrition. ✓ To prepare and planning of a balance diet. ✓ Know the Physiological role, Dietary sources and Deficiency disorders of different nutrients. ✓ Understand the formulations of RDA.
		Practical (Credit-2)	In this part students will know- ✓ The sings of nutritional deficiency disorders and able to assess the situations in practical life. ✓ To Plot and Interpret the Growth chart using primary or secondary data in accordance with both ICMR and WHO Chart. ✓ How Diet Survey report calculate the overall Nutritional Status of a Family by using ICMR method.
III (Hons.)	CC5	Theory (Credit-4)	Studying the biochemistry of nutrition can uncover vital information about the role diet plays in the **establishment, development**, and prognosis of physical diseases such as cancer, diabetes, heart disease, and stroke - illnesses that have all been linked in some way to diet and nutrition. Nutritional Biochemistry involves the students to- ✓ Capable of describing biochemical pathways relevant in nutrient metabolism. ✓ Gain the knowledge of carbohydrate metabolisms like Glycolysis, Tricarboxylic acid (TCA) cycle, Gluconeogenesis, Glycogenesis, Glycogenolysis. ✓ Gather the information of dietary importance of starch, sucrose, lactose, glucose and fructose. ✓ Understands the mechanisms behind the regulation of blood sugar level & how if affect our overall health.

			✓ Classify protein according to structure. ✓ Have the basic idea of amino acids & the physiological role of it. ✓ Provide nutritional advice based on sound scientific findings. ✓ Classify lipids, its properties and functions of fats, oils and fatty acid. ✓ Critically evaluate and apply current scientific findings in Nutrition and Health. ✓ Have Brief idea on mechanism of enzyme action.
		Practical (Credit-2)	To enable students to perform: ✓ Acquire skills on preparation of solutions. ✓ Colorimetric estimation of biochemical molecules. ✓ Qualitative detection of sugar & proteins. ✓ be able to perform, analyses and report on experiments and observations in biochemistry.
	CC6	Theory (Credit-4)	Nutrition: A Lifecycle Approach adopts a lifecycle approach to **the study of nutrition**. Poor nutrition starts in utero and extends throughout the lifecycle. This amplifies the risks to the individual's health. It involves the student to: ✓ Thorough knowledge on the nutritional requirements at various stages of child growth and development. ✓ Effective understanding of diet planning principles and nutritional facts for balanced and healthy diet during pregnancy, infancy and childhood stage. ✓ Gain knowledge on the aspects of aging and the importance of the nutritional requirements and dietary modification during old age. ✓ Understands Nutritional requirements and dietary management in sports man and athletes.
		Practical	Students will able to:

		(Credit-2)	✓ Prepare a normal diet for infant, preschool children, college students, as well as pregnant & lactating mother. ✓ Calculate Nutritive value of specific diet according to portion size. ✓ Perform the preparation of the menu.
	CC7	Theory (Credit-4)	Diet therapy is the **branch of dietetics concerned with** the use of foods for therapeutic purpose. It is method of eating prescribed by a physician and prepared by a dietitian to improve health. Diet therapy usually involves the modification of an existing dietary lifestyle to promote optimum health. Diet Therapy-I enable students: ✓ To obtain knowledge on role of diet in disease conditions. ✓ To gain experience in planning, preparing and serving therapeutic diet. ✓ Have employability as dieticians and develop their own Diet clinics. ✓ Become a Registered dietitian ✓ Individual counseling and defending a position on issues impacting the nutrition and dietetics profession ✓ Recognize the disease and prevention of the disease.
		Practical (Credit-2)	In this part students will: ✓ Develop skills in planning, calculating, modifying the nutrient requirements and in preparation of therapeutic diets ✓ Acquire skills in diet counselling and feeding of patients. ✓ Able to prepare a proper hospital diet in accordance to patients need & based on biomedical teste results.
	SEC–1	Theory (Credit-2)	Skill Enhancement Course) means a **course that enables the students to enhance their practical skills and ability to pursue a vocation in their subject of specialization**. In **general**, the course aims to reach the following learning outcomes:

			✓ Has profound and detailed scientific knowledge and understanding of the (bio)chemical processes in biological raw materials during their transformation into food products. ✓ Has profound and detailed scientific knowledge and understanding of (bio)-chemical, physical and microbiological methods for analysis of raw materials and foods including the skills to identify and use such methods in the context of research, process and product design and optimization and food control. ✓ The students acquire knowledge of the different physical, chemical and nutritional properties of fruits and vegetable based products. ✓ The students acquire insight in the various chemical and biochemical changes which can occur during processing and which can influence the functional properties of the possible end properties. ✓ The students acquire insight into specific product and process related factors in the processing of fruits and vegetables. ✓ The students know how fruits and vegetables are industrially processed. They learn various ways of designing and monitoring processing chains with the emphasis on how quality, safety, authenticity, etc. of raw materials, processes and products are preserved. On the other hand, Environmental health is the branch of public health that: focuses on the **relationships between people and their environment**; promotes human health and well-being; and fosters healthy and safe communities. Environmental health is a key part of any comprehensive public health system. After studying this course, you should be able to: ✓ Define risk in the most appropriate way, and appreciate the

			need to priorities risks ✓ Appreciate the costs of illness associated with workplace activities ✓ Describe in outline the development of models used to explain the cause of incidents and to promote prevention ✓ Recognize the multiple causes contributing to many incidents, and be able to represent them diagrammatically ✓ Illustrate the components of an integrated management system.
IV (Hons.)	CC8	Theory (Credit-4)	Nutritional assessment is the **interpretation of anthropometric**, biochemical (laboratory), clinical and dietary data to determine whether a person or groups of people are well nourished or malnourished (over-nourished or under-nourished). "Nutritional assessment can be defined as the interpretation from dietary, laboratory, anthropometric, and clinical studies. It is **used to determine the nutritional status of individual or population groups as influenced by the intake and utilization of nutrients**" to enable the students to: ✓ Gain knowledge on the national effort in combating malnutrition ✓ Appreciate the national and international contributor towards national improvement in alleviating nutrition problems. ✓ Learn about the terms related to health and fitness ✓ Comprehend the interaction between fitness and nutrition ✓ Employability scope for Government services of public health.
		Practical (Credit-2)	In this part students will: ✓ Able to determine Body Mass Index (BMI) & interpret the results.

			✓ Determine the Measurement of circumference of chest, upper arm, waist - hip ratio and assess the subject`s Nutritional status. ✓ Nutritional assessments methods help the students to properly calculate the physiological & clinical assessment of the person ✓ Able to compare Weight for age, height for age, weight for height with reference value.
	CC9	Theory (Credit-4)	Community nutrition incorporates the **study of nutrition and the promotion of good health through food and nutrient intake in populations**. Community nutrition includes nutritional surveillance; epidemiological studies of diet; and also, the development, implementation, and evaluation of dietary recommendations and goals. In **general**, Community Nutrition and Epidemiology aims to reach the following learning outcomes: ✓ Assess the nutritional status of the community. ✓ Addressing the nutrition problems in the community through proper evaluation. ✓ Gain knowledge on the current nutritional scenario. ✓ Implement policies towards nutrition security. ✓ Make improvements in developing the current public health programmes.
		Practical (Credit-2)	This part enables the students to: ✓ Perform Microbiological examination of water (drinking water, supply water & pond water) & helps to determine which water is best for our health. ✓ To visit the old age home old age home / ICDS Centre / Nutrition Rehabilitation Centre (NRC) / Slum area / Any public place and Report Preparation on nutritional status and health concern. ✓ Prepare the field report accordance to their practical

			experience.
	CC10	Theory (Credit-4)	The grace of a perfect diet **helps controlling lifestyle diseases**. A therapeutic nutrition edit tames diseases like diabetes, cardiovascular diseases, and obesity. Therapeutic nutrition raises the therapeutic effects of particular foods for specific health conditions. Diet Therapy-II involves the students to- ✓ Understand the malnutrition problems and prevalence in India ✓ Gain knowledge on the national effort in combating malnutrition ✓ Apply the principles of diet for the management of metabolic diseases.
		Practical (Credit-2)	This part enables the students to: ✓ Acquire skills to plan a diet for metabolic diseases based on the dietary modification. ✓ Evaluate the related food source for the special conditions. ✓ Able to prepare a diet chart for non- communicable diseases.
	SEC–2	Theory (Credit-2)	Due to the **lack of knowledge and use of Information** and Communication Technology (ICT) in rural areas, development is at a very low rate. Information and Communication Technologies are developing day by day but are less applicable in rural areas. Lack of communication and resources are the cause of undeveloped. Rural Technology and Public Welfare involves the students to- ✓ The students become familiar with the typical life of the rural mass and their livelihood patterns. On the other hand, Immunology is **the study of the immune system** and is a very important branch of the medical and biological sciences. The immune system protects us from infection through various lines of defence. If the immune system is not

			functioning as it should, it can result in disease, such as autoimmunity, allergy and cancer. Immunology, Toxicology and Public Health concern the student to: ✓ The students will be **able to identify the cellular and molecular basis of immune responsiveness**. ✓ The students will be able to describe the roles of the immune system in both maintaining health and contributing to disease. ✓ **To contribute to the general knowledge of the harmful actions of chemical substances**, to study their mechanisms of action, and to estimate their possible risks to humans on the basis of experimental work on biological test systems.
V (Hons.)	CC11	Theory (Credit-4)	Foodborne illnesses are caused by **eating food contaminated with harmful microorganisms**. The majority of cases are caused by bacteria, Viruses, parasites, molds and toxins (chemicals) can also cause foodborne illness. Foods can become contaminated when food is not handled safely. Food Microbiology and Food Borne Disease involves the students to- ✓ Gain knowledge of the role of micro-organisms in health and disease. ✓ To understand the role of micro-organisms in spoilage of various foods. ✓ Know various Culture media and their applications and also understand various physical and chemical means of sterilization ✓ To gain knowledge of micro-organisms in relation to food and food preservation ✓ Employability scope as microbiologist in Food industry and Food Preservation Sectors.

			✓ Know about the spoilage and factors affecting the growth of microorganisms in food. ✓ Impart the knowledge about the role of micro-organisms in fermentation of foods. ✓ Aware about hygiene and sanitation in food industry.
		Practical (Credit-2)	Students will able to: ✓ Understand the operational functions of microscope and sterilizing equipment's. ✓ Developed skills in performing various microbiological tests used in food industry. ✓ Perform Microbiological techniques. And prepare of microbiological media.
	CC12	Theory (Credit-4)	Microbiology is the study of microscopic organisms Pathology describes the scientific study of disease which can be described as any abnormality that is causing changes in the structure or function of body parts. In pathology, the causes, mechanisms and extent of disease may be examined. Medical Microbiology and Pathology concern students to- ✓ Understand about morphological characteristics of different microorganism associated to food. ✓ Update the knowledge in identifying the important microorganism present in food. ✓ Gain knowledge of different communicable diseases ✓ Understand the microbial transport systems and the modes and mechanisms of energy conservation in microbial metabolism – Autotrophy and heterotrophy. ✓ Explain vaccine strategies and mechanisms of antiviral drugs and interferons
		Practical (Credit-2)	Students will able to: ✓ Know how viruses can be used as tools to study biological processes, as cloning vectors and for gene transfer. ✓ Understand the interactions between viruses and the host

			immune system. ✓ Detection and enumeration of indicator and index microorganisms for water borne pathogens.
	DSE–1	Theory (Credit-4)	Pathology is also important **to disease surveillance efforts**. Surveillance systems monitor the occurrence of disease, and an effective system can control and prevent an outbreak by picking up on early cases. Pathology methods can be used to speed up monitoring and make the process simpler and more efficient. Human Pathology enable students to: ✓ Provide the knowledge, technical skills and experience necessary for residents to competently practice anatomic and clinical pathology, ✓ includes developing knowledge of basic pathologic processes and skills needed to interpret laboratory data as well as make clinicopathologic correlations. ✓ The student will be able to apply knowledge of pathology's role in the diagnosis, staging, and management of disease. Proper nutrition helps recovering addicts feel better because **nutrients give the body energy, help build and repair organ tissue**, and strengthen the immune system. Therapeutic Nutrition and Critical Care helps students to: ✓ Describe the physiologic response to enteral feeding and its value on patient outcomes; ✓ Explain the consequences of overly aggressive nutrition therapy early in critical illness; and ✓ Describe how to monitor the ICU patient on enteral feeding through the phases of critical illness.
		Practical (Credit-2)	Students will able to: ✓ Estimate Hemoglobin, sugar, protein. ✓ Perform internship in hospital pathology dept. and enrich the skill of documentation.

			✓ Evaluate the patient's medical records and interpret their medical history related to the conditions. ✓ Analyze the food habits and bring about the dietary changes. ✓ Gain experience to plan and calculate the modified diet ✓ Acquire skill to supervise and handle the food preparation and service in the dietary department of the hospital. ✓ Use the nutrition care process for special conditions like allergy and burns.
	DSE–2	Theory (Credit-4)	Molecular biology **focuses on DNA, RNA and protein synthesis in cells** and is closely related to the fields of cell biology, genetics, genomics, and biochemistry. Molecular Biology gives student: ✓ In-depth knowledge of biological and/or medicinal processes through the investigation of the underlying molecular mechanisms. ✓ Communicate biological concepts and understanding to members of a diverse scientific community as well as to the general public. ✓ Execute quantitative analysis to interpret biological data. Biophysics applies the theories and methods of physics to questions of biology. The Bioinstrumentation Lab **develops novel scientific instrumentation and medical devices**. Our work brings together skills in biology, optics, mechanics, mathematics, electronics, computation and chemistry. Biophysics and Bioinstrumentation helps students to: ✓ Discuss the applications of biophysics and principle involved in bio instruments ✓ Describe the methodology involved in biotechniques ✓ Describe the applications of bio instruments
		Practical	Students will able to:

			✓ Apply responsibilities to promote societal health and safety, upholding the trust given to the profession by the society. ✓ Develop skills, attitude and values required for self-directed, lifelong learning and professional development ✓ Appreciate and execute their professional roles in society as biotechnology professionals. ✓ Demonstrate knowledge and practical skills of using instruments in biology and medical field ✓ Perform techniques involved in molecular biology and diagnosis of diseases.
VI (Hons.)	CC13	Theory (Credit-4)	In recent years, functional foods have gained popularity within health and wellness circles. Also known as nutraceuticals, functional foods are highly nutritious and associated with a number of powerful health benefits. Nutraceutical and Functional Food enable students to: ✓ To recognize the structure of the major bio-active food constituents that are being incorporated into functional foods ✓ Physiological and functional basis of various phytochemical compounds of natural as well as synthetic compounds ✓ Students will learn and get awareness about latest research area on nutraceutical and functional food compounds. ✓ Understand the basic principles of biotechnology ✓ Apply the knowledge of biotechnology for the development of new food products
		Practical (Credit-2)	Students will able to: ✓ Apply the knowledge of nutraceuticals and functional foods in food industries. ✓ Use student-focused language, begin with action verbs and ensure that the learning outcomes demonstrate actionable attributes.
	CC14	Theory	Food standard are A **set of criteria that a food must meet if it is**

		(Credit-4)	**to be suitable for human consumption**, such as source, composition, appearance, freshness, permissible additives, and maximum bacterial content. Food Safety and Food Standard will help students to: ✓ Gains knowledge on the importance of quality assurance in food industry. ✓ Thorough knowledge on various tests and quality assessment, using standards for quality assessment and food safety. ✓ Awareness on regulatory and statutory bodies in India and the world.
		Practical (Credit-2)	Students will able to: ✓ Detect various food adulterate present in market food which help them to rise awareness of general population. ✓ Corelate the health hazards caused by food adulterants.
	DSE–3	Theory (Credit-4)	Biostatistics is the **science of designing, conducting, analyzing and interpreting studies** aimed at improving public health and medicine. Bioinformatics is the science of developing and applying computational algorithms and analysis methodologies to big biological data such as genetic sequences. Bioinformatics is defined as the **application of tools of computation and analysis to the capture and interpretation of biological data**. Biostatistics and Bioinformatics enrich students to: ✓ Demonstrate knowledge of the scientific methods, purpose and approaches to research. ✓ Compare and contrast quantitative and qualitative research. ✓ Explain research design and the research cycle ✓ Prepare a key element of a research proposal.
		Practical (Credit-2)	At the end of course the students shall: ✓ be able to describe statistical methods and probability distributions relevant for molecular biology data.

			✓ know the applications and limitations of different bioinformatics and statistical methods. ✓ be able to perform and interpret bioinformatics and statistical analyses with real molecular biology data.
	DSE–4	Theory (Credit-4)	Food preservation is the **process of treating and handling food to stop or slow down food spoilage**, loss of quality, edibility, or nutritional value and thus allow for longer food storage. ✓ Student will enable to understand different food preservation techniques, process. ✓ Student will enable to extend shelf life of different food product by using the various methods of food preservation. ✓ Employment in various field of food industry, health clinic, NGO's etc. ✓ Perform training and communication skills relevant to the restaurant, food industry etc. Besides translating passion to reality, food entrepreneurship **provides the pleasure of satisfying people's need of consuming yummy food**. Creative business owners look for avenues to showcase their culinary skills or art of displaying the dish to the customer's delight. Entrepreneurship And Small Catering Units helps students to: ✓ This subject equips the students for skill development, academic, understanding entrepreneurship. ✓ Organization and Management skills. ✓ Planning of A Small Food Service Unit
		Practical (Credit-2)	At the end of course the students shall: ✓ Assess leadership, supervisory and human relation skills within the restaurant and food service Industry ✓ Perform training and communication skills relevant to the restaurant, food industry etc.

Outcome Assessment Strategies

Course outcome assessment will be achieved using a combination of the following:

- Internal Theory Examination- Written, Viva, Presentation, Term Paper, Home Projects, Class activities etc.
- Attendance of students in class and participation of students in various college programmes.
- External Theory Examination – Written
- External or Internal Practical Examination- Laboratory activities, Laboratory work, Lab book, Viva, Project or Entrepreneurship, Internship, Field work, group projects etc.

GUSHKARA MAHAVIDYALAYA

DEPARTMENT OF PHILOSOPHY

(HONOURS & GENERAL)

PROGRAMME OUTCOME (PO):

PROGRAMME NAME	PROGRAMME OUTCOME (PO)
THREE-YEAR B.A. IN PHILOSOPHY (HONOURS & GENERAL) **(Under Choice Based Credit System)** **(SIX-SEMESTER PATTERN)** **w.e.f. 2017-2018 onwards**	**1**: Students will be able to assess the existing knowledge, concepts, techniques, and methodology appropriate to the graduate's chosen discipline.
	2: Students will be able to apply discipline-based and/or cross-discipline-based knowledge to design a problem-solving strategy.
	3: Students will be able to identify the major philosophers and the philosophical schools from Greek to contemporary times.
	4: Students will be able to apply philosophical knowledge to contemporary issues.
	5: Students will be able to classify arguments (Inductive and Deductive).
	6: Students will be able to evaluate arguments (Strong/weak, Cogent/Uncogent, Valid/Invalid and Sound/Unsound) and identify their fallacies.
	5: Students will develop conceptual competence, demonstrate vigor of logical inquiry and produce clarity of expression.
	6: Students will be able to identify the five major world Religions and their founders.
	7: Students will be able to identify major issues, debates, or approaches appropriate to the discipline.
	8: Students will be able to attain the capacity to select a particular path as career path in many related areas like Academic, Research, Counseling, and so on.
	9: Students will be able to acquire the capacity to develop new direction and new hypothesis while doing research.
	10: Students will be able to exhibit disciplined work habits as an individual.

PROGRAMME SPECIFIC OUTCOME (PSO):

PROGRAMME NAME	PROGRAMME SPECIFIC OUTCOME (PSO)

THREE-YEAR B.A. IN PHILOSOPHY (HONOURS & GENERAL) **(Under Choice Based Credit System)** **(SIX-SEMESTER PATTERN)** **w.e.f. 2017-2018 onwards**	**1.** Students will be able to understand and discuss the major philosophical problems in the Indian as well as Western tradition. They can assess arguments and philosophical perspectives using critical reasoning and express complex thoughts logically and coherently.
	2. Students will be able to develop the ability to assess in a critical manner the primary sources of Indian Philosophy, as well as to analyze and discuss the complex subject matters contained in these sources with great precision.
	3. Students will be able to develop the expressive and communicative power of logical reasoning.
	4. Students will be able to develop an awareness of different mental states and processes that ultimately generates self-estimation and the capacity of checking of undeserved and crude emotional overflow.
	5. Students will be able to analyze the fundamental questions necessary to understand life as it is lived, with other humans, in a public realm.
	6. Students will be able to analyze and judge existing institutions and relationships. They acquire visions of the good social life: of what ought to be the ruling set of values and institutions that hold all sects of people together.
	7. Students will be able to understand the key issues in the current science-religion priority debate and engage into this debate rationally.
	8. Students will be able to develop a liberal outlook on religious issues and awaken a consciousness of religious pluralism.
	9. Students will be able to develop the capability of applying knowledge and skills within philosophy to areas that require an ability to analyze complex problems, as well as to develop possible solutions from a philosophical perspective.
	10. Students will be able to reconcile the traditional philosophical ideals and values with the mould of modernity.
	11. Students will be able to relate the traditional philosophical notions to actual life and experience, reducing the abstractness of the notions.
	12. Students will be able to learn much about themselves and their current values, principles, and beliefs, and perhaps also about the values, principles, and beliefs that it is worthwhile having.
	13. Students will be able to get the impetus to rise above the essentially absurd condition of humanity by exercising their personal freedom and choice. They also learn that nothing is predetermined in individual existence and that one has to "create oneself" and then live in accordance with this self.
	14. Students will be able to understand the application of philosophical knowledge in other interdisciplinary areas, such as, Sanskrit, Political Science, Sociology, and so on.

COURSE OUTCOME (CO):

SEMESTER-1

COURSE CODE	COURSE TITLE	COURSE TYPE	CREDIT	MARKS	COURSE OUTCOME
CC-1	OUTLINES OF INDIAN PHILOSOPHY-I	Core Course	6	75	Provides the general features of Indian philosophy emphasizing on its origin, spirit, and the basic concepts of the Vedic and Upanisadic World-Views. The main focus is on the three sect of Nastik philosophy - Carvaka, Buddhism and Jainism. This course also discuses Pramanas of Nyāya Philosophy, and the seven categories of Vaisesika.
CC-2	OUTLINES OF WESTERN PHILOSOPHY-I	Core Course	6	75	The objective of this course is to provide the origin and development of the philosophy of Greek sphere. The Pre-Socratic, Platonic and Aristotelian conception of epistemology, causation, theory of ideas, theory of forms and matter is included in this paper. For better understanding of the views of western modern philosophers this paper includes Descartes' method of doubt, Cogito ergo sum, criterion of truth, nature of substance, classification of ideas and the problem of mind-body; Spinoza's substance, attributes and modes, concept of God and Leibnitz's theory of Monad.
GE-1	INDIAN PHILOSOPHY	Generic Elective	6	75	To understand the basic philosophical views of Indian philosophy this paper is included. Emphasis has been given on the philosophy of Carvaka, Buddhism, Jainism, Nyaya, Vaisesika, Samkhya-Yoga, Mimamsa and Advaita Vedanta.
CC-1A	INDIAN PHILOSOPHY	Core Course	6	75	To understand the basic philosophical views of Indian philosophy this paper is included. Emphasis has been given on the philosophy of Carvaka, Buddhism, Jainism, Nyaya, Vaisesika, Samkhya-Yoga, Mimamsa and Advaita Vedanta.

SEMESTER-2

COURSE CODE	COURSE TITLE	COURSE TYPE	CREDIT	MARKS	COURSE OUTCOME
CC-3	OUTLINES OF INDIAN PHILOSOPHY-II	Core Course	6	75	The objective of this course is to provide knowledge to the students about Samkhya-Yoga Philosophy, Purva Mimamsa pramanas, different concepts of Brahman, jiva and jagat of Advaita and Visistadvaita Vedanta. This course also discusses the different theories of error in Indian Philosophy.
CC-4	OUTLINES OF WESTERN PHILOSOPHY-II	Core Course	6	75	In contrast to such rational philosophy, the empirical philosophy of John Locke, Berkeley and David Hume has been discussed here. Finally, students will also get the glimpses of Kant's critical philosophy.
GE-2	WESTERN PHILOSOPHY	Generic Elective	6	75	Western Philosophy encompasses the philosophical thought and work of the Western world. This course is characterized by a canonical set of thinkers like Plato, Aristotle, Descartes, Kant, etc. This course also reflects different theories that emphasize formalism and universal concepts.
CC-1B	WESTERN PHILOSOPHY	Core Course	6	75	Western Philosophy encompasses the philosophical thought and work of the Western world to the students. This course is characterized by a canonical set of thinkers like Plato, Aristotle, Descartes, Kant, etc. This course also reflects different theories that emphasize formalism and universal concepts.

SEMESTER-3

COURSE CODE	COURSE TITLE	COURSE TYPE	CREDIT	MARKS	COURSE OUTCOME
CC-5	INDIAN ETHICS	Core Course	6	75	A broad discussion is given on disparate conceptualizations of ethics by different schools of Indian Philosophy.
CC-6	WESTERN ETHICS	Core Course	6	75	This course introduces ethical principles and concepts which will develop moral thinking. It is also discuss various punishment theories to students. A brief discussion on the necessity and application of the study of ethics in our day-to-day life is provided. This course discusses issues like, suicide, euthanasia, gender equality, affluence and morality, etc.
CC-7	INDIAN LOGIC		6	75	This paper offers the students a textual reading of the Sanskrit text *Tarkasaṁgraha* of Annaṁbhatta. With the help of *dīpikā*, the students will penetrate into the arena of Indian logic and gather the concepts of pramana, prama, jnana, buddhi, smrirti, etc.
SEC-1	PHILOSOPHY IN PRACTICE	Skill Enhancement Course	2	50	This course is a branch in the modern Philosophy, using philosophizing as a means for posing, analyzing and solving world view problems that are determined on the basis of spiritual needs. This study of Philosophy enhances students to evaluate and analyze concepts, definitions, arguments and problems. This course also helps to organize ideas and issues, to deal with questions of value, and to extract what is essential from masses of information.
GE-3	LOGIC	Generic Elective	6	75	This course provides the logical principles to make proper arguments. There different scientific methods are procedures are includes in this course.
CC-1C	LOGIC	Core Course	6	75	This course provides the logical principles to make proper arguments. There different scientific methods are procedures are includes in this course.
SEC-1	PHILOSOPHY IN PRACTICE	Skill Enhancement Course	2	50	This course is a branch in the modern Philosophy, using philosophizing as a means for posing, analyzing and solving world view problems that are determined on the basis of spiritual needs. This study of Philosophy enhances students to evaluate and analyze concepts, definitions, arguments and problems. This course also helps to organize

					ideas and issues, to deal with questions of value, and to extract what is.

SEMESTER-4

COURSE CODE	COURSE TITLE	COURSE TYPE	CREDIT	MARKS	COURSE OUTCOME
CC-8	WESTERN LOGIC-I	Core Course	6	75	This course is designed to provide Modern techniques which help to proof arguments. In this course the students will acquire the basic concepts of the logical thinking of Western Philosophy. Emphasis will be on deductive logic with special reference to the text of I. M. Copi and C. Cohen's "*Introduction to Logic*". Students will understand the basic features of deductive arguments. They will learn the principles of valid argument and establish their understanding accordingly.
CC-9	PSYCHOLOGY	Core Course	6	75	This course generates an awareness of the nature and scope of Psychology. It evaluates the various methods used to judge the condition of mind and analyze the different factors constituting mental life: sensation, perception, memory, attention, and learning. It discerns the different states of consciousness. It also describes the different schools of Psychology.
CC-10	PHILOSOPHY OF RELIGION	Core Course	6	75	This course briefly presents the nature and scope, origin and development of philosophy of religion to students. Our students should understand the Philosophy of religion and various doctrines accordingly. That is why this course has been included in the curriculum. The Judaic-Christian concept of God, arguments for the existence of God and the arguments against the existence of God will be our major concern. In addition to that, the problem of evil and the problem of religious languages will imbibe in the students to think rationally about the various religious problems in our society.

SEC-2	PHILOSOPHY OF HUMAN RIGHTS	Skill Enhance ment Course	2	50	The philosophy of human rights attempts to examine the underlying basis of the concept of human rights that are attach to human beings and function as moral guarantees in support of our claims towards the enjoyment of a minimally good life. The rights relating to life, liberty, equality and dignity of the individual guaranteed by the Constitution is also included in this course.
GE-4	CONTEMPORA RY INDIAN PHILOSOPHY	Generic Elective	6	75	This course provides a thinker -wise analysis of the various philosophical issues in the Indian context to the students. This course have discoursed on Rabindranath Tagore's concept of the finite-infinite aspect of man, nature of religion and problem of evil; Swami Vivekananda's concept of Practical Vedānta, Universal Religion, and Yoga; and Sri Aurobindo's concept of reality, human evolution and Integral Yoga. It also provides analysis of S. Radhakrishnan's concept of man, religious experience and intuitive apprehension; Md. Iqbal's view of Self, World, and God; Mahatma Gandhi's doctrineof God Truth, ahiṁsā, and trusteeship.
CC-1D	CONTEMPORA RY INDIAN PHILOSOPHY	Core Course	6	75	This course provides a thinker -wise analysis of the various philosophical issues in the Indian context to the students. This course have discoursed on Rabindranath Tagore's concept of the finite-infinite aspect of man, nature of religion and problem of evil; Swami Vivekananda's concept of Practical Vedānta, Universal Religion, and Yoga; and Sri Aurobindo's concept of reality, human evolution and Integral Yoga. It also provides analysis of S. Radhakrishnan's concept of man, religious experience and intuitive apprehension; Md. Iqbal's view of Self, World, and God; Mahatma Gandhi's doctrineof God Truth, ahiṁsā, and trusteeship.
SEC-2	PHILOSOPHY OF HUMAN RIGHTS	Skill Enhance ment	2	50	The philosophy of human rights attempts to examine the underlying basis of the concept of human rights that are attach to

		Course			human beings and function as moral guarantees in support of our claims towards the enjoyment of a minimally good life. The rights relating to life, liberty, equality and dignity of the individual guaranteed by the Constitution is also included in this course.

SEMESTER- 5

COURSE CODE	COURSE TITLE	COURSE TYPE	CREDIT	MARKS	COURSE OUTCOME
CC-11	SOCIO-POLITICAL PHILOSOPHY	Core Course	6	75	This course generates an awareness of the nature and scope of Social Philosophy and Political Philosophy; introduces some basic socio-political concepts including society, community, association, custom etc.; elucidates the concepts of social class and caste; and critically analyses the political ideals of democracy, socialism, secularism, nationalism and radical humanism of Rabindranath. This course aims students to understand how individuals come together to form societies and governments.
CC-12	WESTERN LOGIC-II	Core Course	6	75	This course gives emphasis on how to maintain validity in argumentations; it also teaches the students how one, from insufficient available information, can proceed towards justified generalization. This course also includes the Philosophy of Language which explores the general nature of language and its relation to the world and the human mind to the students.
DSE-1	SPECIAL TEXT: *KATHOPONISAD*	Discipline Specific Elective	6	75	The *Kathoponisad* teaches students that the essence of Veda is to make man liberated and free, look past what has happened, free from the past and the future, refocus attention past Ignorance to Knowledge, to the means of blissful existence beyond joy and sorrow.
DSE-2	SPECIAL TEXT:	Discipline	6	75	As a subject Philosophy wants to develop

	B. RUSSELL: *PROBLEMS OF PHILOSOPHY*	Specific Elective			the skill of critical thinking among the students, '*The Problems of Philosophy*' by Bertrand Russell has been introduced here. The text includes appearance and reality, existence of matter, idealism, knowledge by acquaintance and knowledge by description and Russell's view about induction has been included in this Course. The Problems of Philosophy advances an epistemological theory and a discussion of truth.
DSE- 1A	PHILOSOPHY OF RELIGION	Discipline Specific Elective	6	75	This course briefly presents the nature and scope, origin and development of philosophy of religion to students. Our students should understand the Philosophy of religion and various doctrines accordingly. That is why this course has been included in the curriculum. The Judaic-Christian concept of God, arguments for the existence of God and the arguments against the existence of God will be our major concern. In addition to that, the problem of evil and the problem of religious languages will imbibe in the students to think rationally about the various religious problems in our society.
GE- 1	INDIAN PHILOSOPHY	Interdisciplinary (Generic Elective)	6	75	This course has introduced in the syllabus to elucidate the basic concepts of the Indian Astik philosophy. Four pramanas of Nyaya, seven categories of Vaisesika, Satkarya Vada and the concepts of Prakriti of Samkhya, the philosophy of Yoga and the nature of Brahman and its relation to Jiva of Advaita philosophy has been primarily focused here. This course offers to students both surprising points of affinity and illuminating differences.
SEC-3	PHILOSOPHICAL ANALYSIS	Skill Enhancement Course	2	50	The primary objective of the philosophical analysis is to evaluate logic and create theories of sense. Students gain knowledge from this course about philosophical tradition that emphasizes the logical analysis of concepts and the study of language in which they are expressed.

SEMESTER- 6

COURSE CODE	COURSE TITLE	COURSE TYPE	CREDIT	MARKS	COURSE OUTCOME
CC-13	PHILOSOPHY IN THE TWENTIETH CENTURY: INDIAN	Core Course	6	75	Contemporary Indian philosophy has arisen in awareness of the need to reconcile the forces of tradition with those of modernity which is very needful to students. The course is about the philosophical thoughts Rabindranath Tagore, Swami Vivekananda, Sri Aurobindo, S. Radhakrishnan, Md. Iqbal and M. K. Gandhi.
CC-14	PHILOSOPHY IN THE TWENTIETH CENTURY: WESTERN	Core Course	6	75	Philosophical thoughts of G.E.Moore, B.Russell, A.J.Ayer, M.Heidegger and J.P.Sarte have been introduced in this course. Here students understand the logic behind the elimination of metaphysics, the function of philosophy and knowledge, the defence of common sense, the nature of philosophical analysis on meaning, being in the world, nothingness and freedom.
DSE-3	SPECIAL TEXT: RABINDRANATH TAGORE: *SADHANA*	Discipline Specific Elective	6	75	Though Sadhana is a collection of discourses offered at various times, it still represents the fine thread of Tagore's philosophy that forms the connecting link between all these lectures – that of the purpose of human life, i.e., the realization of Brahma in our every thought, our every word and our every action on this earth.
DSE-4	SPECIAL TEXT: HUME: *AN ENQUIRY CONCERNING HUMAN UNDERSTANDING*	Discipline Specific Elective	6	75	British philosopher David Hume's well-popular text '*An enquiry Concerning Human Understanding*' has been incorporated as a DSE paper in honours curriculum, keeping in mind to acquire knowledge of Hume's philosophy among the students.
DSE- 1B	*TARKASAMGRAHA* (SAPTAPADARTH	Discipline Specific	6	75	This course offers the students a textual reading of the Sanskrit text

	A)	Elective			*Tarkasaṁgraha* of Annaṁbhatta. With the help of *dīpikā*, the students will penetrate into the arena of Indian logic and gather the concepts of pramana, prama, jnana, buddhi, smrirti, etc.
GE- 2	WESTERN PHILOSOPHY	Interdisciplinary (Generic Elective)	6	75	After going through the course students can know the following matters : 1. Able to know the concept of Metaphysics, which is the knowledge of things as they are in themselves, i.e., of super sensuous. Gather knowledge about the impossibility of Metaphysics, the nature of metaphysics. 2. Description of the concept of realism which explain the fact that there is a world of real thought and persons, with qualities and relations which are as real as the things. Acquire knowledge regarding different theories associated with this topic, like scientific realism or Representative realism. 3. Knowledge about Idealism which is the doctrine of epistemological dualism as it believes in two world's – the world of mind, the world of external substance, as well as know the subjective idealism of Berkeley and Objective Idealism. 4. Description of the very idea of Kant's critical theory. We know that Kant's theory is an attempt at avoiding the Solipsism of Hume. Kant accepts an independent external reality as the ground. 5. Acquire knowledge about theories of causality. We know Cause is the agent which actively produces the effect and gain knowledge about the theories associated with the idea of cause. 6. Knowledge about the concept of substance which is a permanent thing that remains same throughout its changing steps and qualities. Get the overall idea of Descartes, Spinoza, lock and Berkeley. Locke and Berkeley admitted the concept of substance whereas Spinoza admits God as substance. 7. Able to know the exact relation between mind and body. And the different theories associated with this concept, such as Interactionism of Descartes and Parallelism of Spinoza. 8. Knowledge about the evidences for the

					idea of evolution implies slow process of gradual changes of development and gets the idea of Mechanistic view and the Emergent theory of Evolution.
SEC-4	ETHICS IN PRACTICE	Skill Enhance ment Course	2	50	Ethical practices constitute the foundation of higher learning. As major stakeholders of the academic community, students have a responsibility to abide by the ethical principles. As the students are the future of the nation, they should be concerned about the ethical practices. From this course, students gain knowledge about morality and ethics; motive and intention; moral action and moral judgment; normative theories; *purusartha* of Buddha and astika views; vedic concepts of rta, yajna, rna, vidhi,nisedha; concept of ahimsa in Yoga; niskamakarma; pancasila; jaina concepts of mahavrata. Students also get knowledge about awareness, views and praxis on basic moral concerns of environment. Thus, this course learns ethical responsibility.

GUSHKARA MAHAVIDYALAYA

DEPARTMENT OF PHILOSOPHY

(HONOURS & GENERAL)

PROGRAMME OUTCOME (PO):

PROGRAMME NAME	PROGRAMME OUTCOME (PO)
THREE-YEAR B.A. IN PHILOSOPHY (HONOURS & GENERAL) **(Under Choice Based Credit System)** **(SIX-SEMESTER PATTERN)** **w.e.f. 2017-2018 onwards**	**1**: Students will be able to assess the existing knowledge, concepts, techniques, and methodology appropriate to the graduate's chosen discipline.
	2: Students will be able to apply discipline-based and/or cross-discipline-based knowledge to design a problem-solving strategy.
	3: Students will be able to identify the major philosophers and the philosophical schools from Greek to contemporary times.
	4: Students will be able to apply philosophical knowledge to contemporary issues.
	5: Students will be able to classify arguments (Inductive and Deductive).
	6: Students will be able to evaluate arguments (Strong/weak, Cogent/Uncogent, Valid/Invalid and Sound/Unsound) and identify their fallacies.
	5: Students will develop conceptual competence, demonstrate vigor of logical inquiry and produce clarity of expression.
	6: Students will be able to identify the five major world Religions and their founders.

	7: Students will be able to identify major issues, debates, or approaches appropriate to the discipline.
	8: Students will be able to attain the capacity to select a particular path as career path in many related areas like Academic, Research, Counseling, and so on.
	9: Students will be able to acquire the capacity to develop new direction and new hypothesis while doing research.
	10: Students will be able to exhibit disciplined work habits as an individual.

PROGRAMME SPECIFIC OUTCOME (PSO):

PROGRAMME NAME	PROGRAMME SPECIFIC OUTCOME (PSO)
	1. Students will be able to understand and discuss the major philosophical problems in the Indian as well as Western tradition. They can assess arguments and philosophical perspectives using critical reasoning and express complex thoughts logically and coherently.
	2. Students will be able to develop the ability to assess in a critical manner the primary sources of Indian Philosophy, as well as to analyze and discuss the complex subject matters contained in these sources with great precision.
	3. Students will be able to develop the expressive and communicative power of logical reasoning.

THREE-YEAR B.A. IN PHILOSOPHY (HONOURS & GENERAL) **(Under Choice Based Credit System)** **(SIX-SEMESTER PATTERN)** **w.e.f. 2017-2018 onwards**	**4.** Students will be able to develop an awareness of different mental states and processes that ultimately generates self-estimation and the capacity of checking of undeserved and crude emotional overflow.
	5. Students will be able to analyze the fundamental questions necessary to understand life as it is lived, with other humans, in a public realm.
	6. Students will be able to analyze and judge existing institutions and relationships. They acquire visions of the good social life: of what ought to be the ruling set of values and institutions that hold all sects of people together.
	7. Students will be able to understand the key issues in the current science-religion priority debate and engage into this debate rationally.
	8. Students will be able to develop a liberal outlook on religious issues and awaken a consciousness of religious pluralism.
	9. Students will be able to develop the capability of applying knowledge and skills within philosophy to areas that require an ability to analyze complex problems, as well as to develop possible solutions from a philosophical perspective.
	10. Students will be able to reconcile the traditional philosophical ideals and values with the mould of modernity.
	11. Students will be able to relate the traditional philosophical notions to actual life and experience, reducing the abstractness

	of the notions.
	12. Students will be able to learn much about themselves and their current values, principles, and beliefs, and perhaps also about the values, principles, and beliefs that it is worthwhile having.
	13. Students will be able to get the impetus to rise above the essentially absurd condition of humanity by exercising their personal freedom and choice. They also learn that nothing is predetermined in individual existence and that one has to "create oneself" and then live in accordance with this self.
	14. Students will be able to understand the application of philosophical knowledge in other interdisciplinary areas, such as, Sanskrit, Political Science, Sociology, and so on.

COURSE OUTCOME (CO):

SEMESTER-1

COURSE CODE	COURSE TITLE	COURSE TYPE	CREDIT	MARKS	COURSE OUTCOME
CC-1	OUTLINES OF INDIAN PHILOSOPHY-I	Core Course	6	75	Provides the general features of Indian philosophy emphasizing on its origin, spirit, and the basic concepts of the Vedic and Upanisadic World-Views. The main focus is on the three sect of Nastik philosophy - Carvaka, Buddhism and Jainism. This course also discuses Pramanas of Nyāya Philosophy, and the seven categories of Vaisesika.
CC-2	OUTLINES OF WESTERN PHILOSOPHY-I	Core Course	6	75	The objective of this course is to provide the origin and development of the philosophy of Greek sphere. The Pre-Socratic, Platonic and Aristotelian conception of epistemology, causation, theory of ideas, theory of forms and matter is included in this paper. For better understanding of the views of western modern philosophers this paper includes Descartes' method of doubt, Cogito ergo sum, criterion of truth, nature of substance, classification of ideas and the problem of mind-body; Spinoza's substance, attributes and modes, concept of God and Leibnitz's theory of Monad.
GE-1	INDIAN PHILOSOPHY	Generic Elective	6	75	To understand the basic philosophical views of Indian philosophy this paper

					is included. Emphasis has been given on the philosophy of Carvaka, Buddhism, Jainism, Nyaya, Vaisesika, Samkhya-Yoga, Mimamsa and Advaita Vedanta.
CC-1A	INDIAN PHILOSOPHY	Core Course	6	75	To understand the basic philosophical views of Indian philosophy this paper is included. Emphasis has been given on the philosophy of Carvaka, Buddhism, Jainism, Nyaya, Vaisesika, Samkhya-Yoga, Mimamsa and Advaita Vedanta.

SEMESTER-2

COURSE CODE	COURSE TITLE	COURSE TYPE	CREDIT	MARKS	COURSE OUTCOME
CC-3	OUTLINES OF INDIAN PHILOSOPHY-II	Core Course	6	75	The objective of this course is to provide knowledge to the students about Samkhya-Yoga Philosophy, Purva Mimamsa pramanas, different concepts of Brahman, jiva and jagat of Advaita and Visistadvaita Vedanta. This course also discusses the different theories of error in Indian Philosophy.
CC-4	OUTLINES OF WESTERN PHILOSOPHY-II	Core Course	6	75	In contrast to such rational philosophy, the empirical philosophy of John Locke, Berkeley and David Hume has been discussed here. Finally, students will also get the glimpses of Kant's critical philosophy.

GE-2	WESTERN PHILOSOPHY	Generic Elective	6	75	Western Philosophy encompasses the philosophical thought and work of the Western world. This course is characterized by a canonical set of thinkers like Plato, Aristotle, Descartes, Kant, etc. This course also reflects different theories that emphasize formalism and universal concepts.
CC-1B	WESTERN PHILOSOPHY	Core Course	6	75	Western Philosophy encompasses the philosophical thought and work of the Western world to the students. This course is characterized by a canonical set of thinkers like Plato, Aristotle, Descartes, Kant, etc. This course also reflects different theories that emphasize formalism and universal concepts.

SEMESTER-3

COURSE CODE	COURSE TITLE	COURSE TYPE	CREDIT	MARKS	COURSE OUTCOME
CC-5	INDIAN ETHICS	Core Course	6	75	A broad discussion is given on disparate conceptualizations of ethics by different schools of Indian Philosophy.
CC-6	WESTERN ETHICS	Core Course	6	75	This course introduces ethical principles and concepts which will develop moral thinking. It is also discuss various punishment theories to students. A brief discussion on the necessity and application of the study of ethics in our day-to-day life is provided. This course discusses issues like, suicide, euthanasia, gender equality, affluence and morality, etc.
CC-7	INDIAN LOGIC		6	75	This paper offers the students a textual

					reading of the Sanskrit text *Tarkasaṁgraha* of Annaṁbhatta. With the help of *dīpikā*, the students will penetrate into the arena of Indian logic and gather the concepts of pramana, prama, jnana, buddhi, smrirti, etc.
SEC-1	PHILOSOPHY IN PRACTICE	Skill Enhancement Course	2	50	This course is a branch in the modern Philosophy, using philosophizing as a means for posing, analyzing and solving world view problems that are determined on the basis of spiritual needs. This study of Philosophy enhances students to evaluate and analyze concepts, definitions, arguments and problems. This course also helps to organize ideas and issues, to deal with questions of value, and to extract what is essential from masses of information.
GE-3	LOGIC	Generic Elective	6	75	This course provides the logical principles to make proper arguments. There different scientific methods are procedures are includes in this course.
CC-1C	LOGIC	Core Course	6	75	This course provides the logical principles to make proper arguments. There different scientific methods are procedures are includes in this course.
SEC-1	PHILOSOPHY IN PRACTICE	Skill Enhancement Course	2	50	This course is a branch in the modern Philosophy, using philosophizing as a means for posing, analyzing and solving world view problems that are determined on the basis of spiritual needs. This study of Philosophy enhances students to evaluate and analyze concepts, definitions, arguments and problems. This course also helps to organize ideas and issues, to deal with questions of value, and to extract what is.

SEMESTER-4

COURSE CODE	COURSE TITLE	COURSE TYPE	CREDIT	MARKS	COURSE OUTCOME
CC-8	WESTERN LOGIC-I	Core Course	6	75	This course is designed to provide Modern techniques which help to proof arguments. In this course the students will acquire the basic concepts of the logical thinking of Western Philosophy. Emphasis will be on deductive logic with special reference to the text of I. M. Copi and C. Cohen's "*Introduction to Logic*". Students will understand the basic features of deductive arguments. They will learn the principles of valid argument and establish their understanding accordingly.
CC-9	PSYCHOLOGY	Core Course	6	75	This course generates an awareness of the nature and scope of Psychology. It evaluates the various methods used to judge the condition of mind and analyze the different factors constituting mental life: sensation, perception, memory, attention, and learning. It discerns the different states of consciousness. It also describes the different schools of Psychology.
CC-10	PHILOSOPHY OF RELIGION	Core Course	6	75	This course briefly presents the nature and scope, origin and development of philosophy of religion to students. Our students should understand the Philosophy of religion and various doctrines accordingly. That is why this course has been included in the curriculum. The

					Judaic-Christian concept of God, arguments for the existence of God and the arguments against the existence of God will be our major concern. In addition to that, the problem of evil and the problem of religious languages will imbibe in the students to think rationally about the various religious problems in our society.
SEC-2	PHILOSOPHY OF HUMAN RIGHTS	Skill Enhance ment Course	2	50	The philosophy of human rights attempts to examine the underlying basis of the concept of human rights that are attach to human beings and function as moral guarantees in support of our claims towards the enjoyment of a minimally good life. The rights relating to life, liberty, equality and dignity of the individual guaranteed by the Constitution is also included in this course.
GE-4	CONTEMPORA RY INDIAN PHILOSOPHY	Generic Elective	6	75	This course provides a thinker -wise analysis of the various philosophical issues in the Indian context to the students. This course have discoursed on Rabindranath Tagore's concept of the finite-infinite aspect of man, nature of religion and problem of evil; Swami Vivekananda's concept of Practical Vedānta, Universal Religion, and Yoga; and Sri Aurobindo's concept of reality, human evolution and Integral Yoga. It also provides analysis of S. Radhakrishnan's concept of man, religious experience and intuitive apprehension; Md. Iqbal's view of Self,

					World, and God; Mahatma Gandhi's doctrineof God Truth, ahiṁsā, and trusteeship.
CC-1D	CONTEMPORARY INDIAN PHILOSOPHY	Core Course	6	75	This course provides a thinker -wise analysis of the various philosophical issues in the Indian context to the students. This course have discoursed on Rabindranath Tagore's concept of the finite-infinite aspect of man, nature of religion and problem of evil; Swami Vivekananda's concept of Practical Vedānta, Universal Religion, and Yoga; and Sri Aurobindo's concept of reality, human evolution and Integral Yoga. It also provides analysis of S. Radhakrishnan's concept of man, religious experience and intuitive apprehension; Md. Iqbal's view of Self, World, and God; Mahatma Gandhi's doctrineof God Truth, ahiṁsā, and trusteeship.
SEC-2	PHILOSOPHY OF HUMAN RIGHTS	Skill Enhancement Course	2	50	The philosophy of human rights attempts to examine the underlying basis of the concept of human rights that are attach to human beings and function as moral guarantees in support of our claims towards the enjoyment of a minimally good life. The rights relating to life, liberty, equality and dignity of the individual guaranteed by the Constitution is also included in this course.

SEMESTER- 5

COURSE CODE	COURSE TITLE	COURSE TYPE	CREDIT	MARKS	COURSE OUTCOME
CC-11	SOCIO-POLITICAL PHILOSOPHY	Core Course	6	75	This course generates an awareness of the nature and scope of Social Philosophy and Political Philosophy; introduces some basic socio-political concepts including society, community, association, custom etc.; elucidates the concepts of social class and caste; and critically analyses the political ideals of democracy, socialism, secularism, nationalism and radical humanism of Rabindranath. This course aims students to understand how individuals come together to form societies and governments.
CC-12	WESTERN LOGIC-II	Core Course	6	75	This course gives emphasis on how to maintain validity in argumentations; it also teaches the students how one, from insufficient available information, can proceed towards justified generalization. This course also includes the Philosophy of Language which explores the general nature of language and its relation to the world and the human mind to the students.
DSE-1	SPECIAL TEXT: *KATHOPONISAD*	Discipline Specific Elective	6	75	The *Kathoponisad* teaches students that the essence of Veda is to make man liberated and free, look past what has happened, free from the past and the future, refocus attention past Ignorance to

					Knowledge, to the means of blissful existence beyond joy and sorrow.
DSE-2	SPECIAL TEXT: B. RUSSELL: *PROBLEMS OF PHILOSOPHY*	Discipline Specific Elective	6	75	As a subject Philosophy wants to develop the skill of critical thinking among the students, '*The Problems of Philosophy*' by Bertrand Russell has been introduced here. The text includes appearance and reality, existence of matter, idealism, knowledge by acquaintance and knowledge by description and Russell's view about induction has been included in this Course. The Problems of Philosophy advances an epistemological theory and a discussion of truth.
DSE- 1A	PHILOSOPHY OF RELIGION	Discipline Specific Elective	6	75	This course briefly presents the nature and scope, origin and development of philosophy of religion to students. Our students should understand the Philosophy of religion and various doctrines accordingly. That is why this course has been included in the curriculum. The Judaic-Christian concept of God, arguments for the existence of God and the arguments against the existence of God will be our major concern. In addition to that, the problem of evil and the problem of religious languages will imbibe in the students to think rationally about the various religious problems in our society.
GE- 1	INDIAN PHILOSOPHY	Interdisci plinary (Generic	6	75	This course has introduced in the syllabus to elucidate the basic

		Elective)			concepts of the Indian Astik philosophy. Four pramanas of Nyaya, seven categories of Vaisesika, Satkarya Vada and the concepts of Prakriti of Samkhya, the philosophy of Yoga and the nature of Brahman and its relation to Jiva of Advaita philosophy has been primarily focused here. This course offers to students both surprising points of affinity and illuminating differences.
SEC-3	PHILOSOPHICAL ANALYSIS	Skill Enhance ment Course	2	50	The primary objective of the philosophical analysis is to evaluate logic and create theories of sense. Students gain knowledge from this course about philosophical tradition that emphasizes the logical analysis of concepts and the study of language in which they are expressed.

SEMESTER- 6

COURSE CODE	COURSE TITLE	COURSE TYPE	CREDIT	MARKS	COURSE OUTCOME
CC-13	PHILOSOPHY IN THE TWENTIETH CENTURY: INDIAN	Core Course	6	75	Contemporary Indian philosophy has arisen in awareness of the need to reconcile the forces of tradition with those of modernity which is very needful to students. The course is about the philosophical thoughts Rabindranath Tagore, Swami

					Vivekananda, Sri Aurobindo, S. Radhakrishnan, Md. Iqbal and M. K. Gandhi.
CC-14	PHILOSOPHY IN THE TWENTIETH CENTURY: WESTERN	Core Course	6	75	Philosophical thoughts of G.E.Moore, B.Russell, A.J.Ayer, M.Heidegger and J.P.Sarte have been introduced in this course. Here students understand the logic behind the elimination of metaphysics, the function of philosophy and knowledge, the defence of common sense, the nature of philosophical analysis on meaning, being in the world, nothingness and freedom.
DSE-3	SPECIAL TEXT: RABINDRANATH TAGORE: *SADHANA*	Discipline Specific Elective	6	75	Though Sadhana is a collection of discourses offered at various times, it still represents the fine thread of Tagore's philosophy that forms the connecting link between all these lectures – that of the purpose of human life, i.e., the realization of Brahma in our every thought, our every word and our every action on this earth.
DSE-4	SPECIAL TEXT: HUME: *AN ENQUIRY CONCERNING HUMAN UNDERSTANDIN G*	Discipline Specific Elective	6	75	British philosopher David Hume's well-popular text '*An enquiry Concerning Human Understanding*' has been incorporated as a DSE paper in honours curriculum, keeping in mind to acquire knowledge of Hume's philosophy among the students.
DSE- 1B	*TARKASAMGRAHA* (SAPTAPADARTH A)	Discipline Specific Elective	6	75	This course offers the students a textual reading of the Sanskrit text *Tarkasaṁgraha* of Annaṁbhatta. With

					the help of *dīpikā*, the students will penetrate into the arena of Indian logic and gather the concepts of pramana, prama, jnana, buddhi, smrirti, etc.
GE- 2	WESTERN PHILOSOPHY	Interdisciplinary (Generic Elective)	6	75	After going through the course students can know the following matters : 1. Able to know the concept of Metaphysics, which is the knowledge of things as they are in themselves, i.e., of super sensuous. Gather knowledge about the impossibility of Metaphysics, the nature of metaphysics. 2. Description of the concept of realism which explain the fact that there is a world of real thought and persons, with qualities and relations which are as real as the things. Acquire knowledge regarding different theories associated with this topic, like scientific realism or Representative realism. 3. Knowledge about Idealism which is the doctrine of epistemological dualism as it believes in two world's – the world of mind, the world of external substance, as well as know the subjective idealism of Berkeley and Objective Idealism. 4. Description of the very idea of Kant's critical theory. We know that Kant's theory is an attempt at avoiding the Solipsism of Hume. Kant accepts an independent external reality as the ground. 5. Acquire knowledge about theories of causality. We know Cause is the agent which actively produces the effect and

					gain knowledge about the theories associated with the idea of cause. 6. Knowledge about the concept of substance which is a permanent thing that remains same throughout its changing steps and qualities. Get the overall idea of Descartes, Spinoza, lock and Berkeley. Locke and Berkeley admitted the concept of substance whereas Spinoza admits God as substance. 7. Able to know the exact relation between mind and body. And the different theories associated with this concept, such as Interactionism of Descartes and Parallelism of Spinoza. 8. Knowledge about the evidences for the idea of evolution implies slow process of gradual changes of development and gets the idea of Mechanistic view and the Emergent theory of Evolution.
SEC-4	ETHICS IN PRACTICE	Skill Enhancement Course	2	50	Ethical practices constitute the foundation of higher learning. As major stakeholders of the academic community, students have a responsibility to abide by the ethical principles. As the students are the future of the nation, they should be concerned about the ethical practices. From this course, students gain knowledge about morality and ethics; motive and intention; moral action and moral judgment; normative theories; *purusartha* of Buddha and astika views; vedic concepts of rta, yajna, rna, vidhi,nisedha; concept of

					ahimsa in Yoga; niskamakarma; pancasila; jaina concepts of mahavrata. Students also get knowledge about awareness, views and praxis on basic moral concerns of environment. Thus, this course learns ethical responsibility.
