

Program outcomes of B.A, B.Sc. & B.Com. students of Uluberia College

The urban socio-economic structure of Uluberia, is dominated mostly with medical institutes like hospitals, nursing homes & pharmaceutical firms. Most of the graduates, passing out of Uluberia College, enroll themselves into professional courses for skill-development, viz. nursing courses, vocational training courses, imparting marketing skills for pharmaceutical products to find their way into these institutions as nurses & medical sales representatives. Those with a bachelor's degree in science try to find jobs at science or pharmaceutical laboratories. As for most, they either pursue Post-Graduation Courses in Distance mode through Uluberia College, [the college provides Open Distance Post-Graduation programs in affiliation with Vidyasagar Open University], prepare for competitive examinations for employment at banks & govt. sectors, or be an entrepreneur of small-scale industries, especially those having a Commerce educational background. Graduate women are often seen to acquire skills in stitching and embroidery to start their own home industry and graduate men are seen to acquire machinery skills to join white-collar jobs at factories & small-scale industries in & around Uluberia. Some are also seen to acquire electrical skills to be able to perform odd electrical jobs. Basic Computer knowledge, extended by Uluberia College, as a compulsory ICT course, guides these aspirants through their professional struggles.

Programme Specific Outcome of Bengali

Bengali, though a regional language, is very rich and prospective both from literary and linguistic aspects. In comparison to some other regional languages of India it is not very old but it can take pride in its lavish and diverse literary wealth.

Honours graduate in Bengali can opt for higher studies and can pursue academic profession. After postgraduation they can choose to engage themselves in research work and can join in Research Institutes as whole time Researcher. They can also opt for teaching profession and by qualifying School Service Examinations can join in Schools or by qualifying SET, NET they can join in Colleges or Universities.

They can also engage themselves in free-lance writings, can take job in publication institute, can opt for journalism, can accept whole-time job in theatre workshop, can act as proof reader or script writer and can undertake the job of book binding.

Course Specific Outcome of Bengali

Students of Bengali Language and Literature have to study History of Bengali Literature from its origin to the present day which provides them a good information regarding the chronological development of the language and its literature. Along with the History of Bengali Language & Literature they have to study the literary history of Sanskrit, English and Hindi so that they can compare the richness and diversity of Bengali language with those languages.

Besides the study of linguistic science, the students are given ample scope to study the variegated branches of Bengali literature like poetry, short stories, novels, novella, essays, drama etc. which help them to enrich their thinking faculty and widen their outlook towards life and the surrounding world.

They have to study metrics, linguistic ornaments, metaphors etc. technical tools of Bengali language that help them to acquire a thorough knowledge of the tit bits of the language.

The pre-modern and post-modern literary development of Bengali Language as part of their Course widens the perspective of the learners and helps them to acquire a good grasp of the subject for further academic endeavour.

In their Course Dalit Literature and Cult has been incorporated which gives the student a chance to explore beyond the scope of mainstream literature.

Through Discipline Specific Elective Course, the social and cultural history of Bengali language has been introduced so that the students can have a sufficient knowledge of the social and cultural background of the country. Along with this they have to study the literature of Bangladesh- a growing and enriched literature. A study of Comparative Literature has also been introduced in the course. Biographical literature, Popular literature and culture are also parts of their course. All these would help to widen the knowledge and outlook of the students.

Print and Publication, Practical Application of Bengali language in Theatre, Cinema etc. has been incorporated in the Course as Skill Enhancement Course. All these would open up different opportunities before the students to pursue jobs in Publication and Printing Houses, Theatre Workshop, Professional Script writing etc.

Thus, beyond academic sphere a student of Bengali Language and Literature has ample scope to pursue variegated professions according to their choice and taste.

Programme Specific Outcome- B.A. in English

The undergraduate programme of B.A. in English provides the students the opportunity to study a wide range of British, American and global Anglophone literary texts. The courses vary from classical Greek literature to modern Indian writing in English encompassing all the areas that lie in between. Individual courses focus on specific historical periods like 19th century British literature; a particular theme or issue for example Women's Writing; country or geographical region- oriented literature such as Indian writing in English or critical approach for instance Literary Theory and Literary Criticism. It allows the students to explore the vast array of texts to understand how writers use their creative assets and associate them with various social, cultural, political, historical, psychological, philosophical, imaginative issues and express that in their own language. By studying literature of all sorts, viz; fiction, poetry, nonfictional prose, drama, critical essays, literary theories the students traverse the entire human experience.

At Uluberia College we ensure that the students read the texts along with the contexts. Learning to read between the lines they develop the faculty of critical reading and thinking. The creative nature of literary texts allows their minds to set their imaginations free and not only so but to evaluate every human experience from an unbiased perspective and gain deeper insight into life. Along with developing the language and literary skills this programme also helps the students shape analytical and interpretative arguments, become critical readers, utilize their intellectual faculties to write and express their thoughts and finally to establish themselves in life as intellectual beings fully furnished with effective thinking ability and communicative skills.

Programme specific objectives:

- **Learning English as Lingua Franca:** The students are expected to learn English as a global master, mastering the LSRW (Listening-Speaking-Reading-Writing) skills effectively. To attain perfection in using the language in various contexts and comprehend the potpourri of English language.
- **Reading text and context:** The students should read the texts not only as a piece of literature but as a case study, thereby learning about the socio-cultural-political scenarios associated with the text and understanding the relation between culture, history and texts.
- **Knowledge of tradition and culture:** By reading the texts as case studies students are expected to gain knowledge about various traditions and cultures across the world which would expand their vista of learning, they would develop insight in multiple areas and stream of humanities other than literature and would tend to grow interest in interdisciplinary studies which is one of the objectives of the New Education Policy.
- **Food for intellect:** A complete study of the texts would help the students to nurture analyzing and analytical faculties. They would learn to analyze various genres from social, cultural, political, historical perspectives; apply theoretical frameworks to different types of discourses. These would help them in higher studies, research possibilities and career in academics.
- **Career building:** The students would get the hang of communicative skills and writing skills which would help them to choose career option from a number of options viz. career in media and mass communication, public administration, corporate sector, publishing sector, jobs as translator and many more.

Course Specific Outcomes- B.A. in English

Following are a few course specific outcomes that the students are expected to accomplish after completion of their course.

History of Literature and Philology

The students would know the origin, growth and history of English language and literature. They would comprehend a working knowledge regarding the genres of fiction, poetry, drama. They would learn the language science specifically linguistics and phonetics.

European Classical Literature

The students would be able to understand about the rich classical texts from Greco-Roman literatures and trace the nature of influence that these classical literatures have on modern English.

Indian Literature

They learn how Indian literature became a distinct field of study, trace the development of Indian English literature before and after independence, read canonical texts written in regional language in a translated form, learn the socio-political background of Partition in India.

British Literature

They students are able to trace the developmental history of English Literature from Old English Period to 19th century, become familiar with major literary works by British writers in the field of Drama and Poetry, be acquainted with major religious, political and social movements from 14th to 19th century and their influence on literature and learn various interpretative techniques to approach literary texts of varied genres.

Women's Writing/ Gender Studies

They learn the history of Feminist movement globally and also in India. Learn the basis of gender studies, the difference between sex and gender, read canonical texts by eminent woman writers across the globe.

Text and Performance

This paper encourages the students to have an interdisciplinary experience, read extensively about theatre and performances, learn to transgress boundaries between disciplines.

These are a few examples of the course specific results that the courses offered by the Department of English produce.

Programme Specific Outcome of Sanskrit

Sanskrit is one of the most important ancient languages of India. It is a classical language appreciated both in India and abroad. Most classical literary works of India are written in Sanskrit. Students, who have a genuine urge to learn this language and go through the classical texts in original Sanskrit, choose this subject as the major subject in their graduation.

Honours graduate in Sanskrit can opt for higher studies and can pursue academic career. After post-graduation they can apply for College or Universities by qualifying SET or NET. They can also apply for teaching posts in schools. Those who have aptitude for research can join in Research Institutes within or outside India.

Besides academic profession an Honours Graduate in Sanskrit can pursue the professions like Priesthood, Legal Advisor, Yoga Trainer, Translator etc.

Course Specific Outcome of Sanskrit

Students of Sanskrit Honours have to study original verses of Veda—the texts, grammatical analysis, translation and poetic excellence. Critical survey of ancient Sanskrit literature like Brahmana, Aranyaka, Upanishad, Vedanta, Ramayana, Mahabharata and Puranas are included in the course. Thus, the course provides opportunities to the students for becoming well versed in classical texts of our country.

Classical Sanskrit literature, Critical survey of Sanskrit Drama, Poetics and Literary Criticisms are parts of the course which help them to acquire a literary taste and critical outlook.

They have to study Vyakarana, Figures of Speech and Meter and thus develop a strong grasp of the technical aspects of the language.

Darshana shastras like Samkhya, Vedanta, Nyaya as well as Gita with its teachings of physical and mental discipline are included in the course. All these help the students to delve into the treasures of ancient India.

Students of Sanskrit Honours have to study Indian Social Institutions and Polity which includes Dharma Shastra, Structure of the society and Values of life and

also position of Women in society. This knowledge is much useful to be aware of the social, moral and legal aspects of Indian society as a whole.

As part of their Discipline Specific Course, Modern Sanskrit Literature, Sanskrit Studies in East and West, Sanskrit Fables in World Literature, Sanskrit Grammar-Philology etc. are incorporated. Students can opt for any two of the above subjects as per their interest and aptitude.

Skill Enhancement Course of Sanskrit includes Sanskrit Writing Skill (English to Sanskrit, Sanskrit to English), Spoken and Computational Sanskrit, Importance of Indian Inscription in the reconstruction of Ancient Indian History & Culture and History of Decipherment of Ancient Indian Scripts. The students have to pursue any two of the above options following their aptitude and this would provide them opportunities to explore professions beyond the traditional academic straight jacket.

DEPARTMENT of HISTORY

PROGRAMME SPECIFIC OUTCOME

History as a discipline offers multifarious economic opportunities in different avenues. A knowledge of history equips a learner to opt for administrative services in international, national, regional, state, district or village level after excelling in those particular competitive examinations.

Teaching can become a worthy profession. After successful completion of the course, pass out students may take up services as teachers in schools, colleges, universities or become career-counselors in academic institutes to impart training to aspiring candidates for competitive examinations such as for SET, NET, IAS, IFS, IRS, WBCS, UPSC etc

To become a successful researcher, an in-depth knowledge of history is vital in identifying and analysis of a problem and offering a realizable solution or attaining a hypothesis.

To become an Archeologist or Museologist, knowledge of history is indispensable.

To choose tourism as a profession, which the course offers, a knowledge of history leads to a successful job operation.

To formulate schemes in or association with the Government-run projects or NGOs created for the purpose of uplifting economically-depressed sections of the society and to understand the demographic cross-cultural patterns, a knowledge of regional or local history becomes an essential requirement. History is a necessary tool for working at grass-root levels or in village panchayats to have cognizance of that area.

COURSE SPECIFIC OUTCOME

A student of History Honors has to study History of India (From the Earliest Times to c. 300B.C.E ; c.33B.C.E.to 750C.E; c.750-1206; c.1206-1526; c.1526-1605; (c.1605-1750s; c.1750s-1857; c.1857-1964) which gives him ample scope to have a thorough knowledge of Indian History.

He has to study Social Formations and Cultural Patterns of the Ancient World and the Medieval World other than India the knowledge of which is essential to understand and compare the social and cultural patterns of other parts of the world in ancient and medieval ages.

The study of the history of Modern Europe and the Rise of the Modern West (1&2) are included in the Curriculum which give him ample scope to understand modern Europe and widen his outlook.

A student of History has to study History of World Politics (c.1945-1994) which is much necessary to understand world politics as a part of his historical knowledge.

In Discipline Specific Electives the students are offered the following courses to choose from:

History of Bengal (c.1757-1947), History of South East Asia (19th & 20th centuries), History of Modern Asia (c.1840-1945), History of America (c.1776-1945).

In view of imparting an all comprehensive education the students are offered Skill Enhancement Courses-1. Archives and Museums 2. Understanding Popular Culture 3. Understanding Heritage 4. An Appreciation: An Introduction to Indian Art

Thus it can well be surmised that the syllabus taken in its entirety reflects a holistic approach.

A primary focus of studying history is to form a comprehensive overview of historical issues, events and details, to sequentially situate topics in order to bring out their inter-connectedness within a chronological and contextual frame, thus enabling learners to develop a much better understanding of current events. During the last half century, the discipline of history has deepened and broadened. Disciplines such as Sociology, social anthropology, philosophy, religion, literature, history of science and technology and such others particularly the “unheard and subdued voices” in the study of gender, sub-alterns, minorities have been included in the orbit of history. Quantitative analyses have been applied, leading to new insights. As students of history, they are encouraged to cross the boundaries of orthodoxy and to deal with new approaches and controversies, to overcome rigid psyche and to acknowledge negative elements too. Students also learn to accept the fact that there is no last word in history but to look upon the discipline as an essential voice in a continuing discussion. A student learns that a real history always reveals a contemporaneous process of continuous conflict, adjustment, accommodation, absorption and integration. Thus history aims to “rethink old problems, open up questions which were considered closed, locate the theme within historiographical debates and pose new issues of inquiry by which further work may be made possible.” History can make the students realize that human experiences are diverse and complex and can make them aware of the many entangled threads of continuity and change that connect the present to the past.

PROGRAMME SPECIFIC OUTCOME FOR UNDERGRADUATE DEGREE IN PHILOSOPHY

The present curriculum for the undergraduate degree in Philosophy is designed specifically covering intricately **the fundamental aspects** of one of the fundamental branches of humanities. Philosophy, as ‘Mother of all sciences’, deals with the problems of life and world as a whole. Hence it is expected that by studying Philosophy students would acquire a new outlook towards life as well as the surrounding world where they live. The programme also opens up wide scope of creating interest among students for choosing a career in multiple avenues like teaching, research and professional course like law.

After completion of the graduation in Philosophy a student must develop the following abilities:

1. Understand the basic theoretical concept of some of the social sciences like Political Science, History, Sociology, Education etc.
2. The students would develop their reasoning faculty and power of critical thinking.
3. Must be adept in handling critical situation as Philosophy helps to develop insight and understanding.
4. Must be able to see life’s problem from a different angle.
5. Finally, it is expected that they must develop an aptitude towards the subject.

COURSE SPECIFIC OUTCOME FOR UNDERGRADUATE DEGREE IN PHILOSOPHY

The undergraduate course in Philosophy encompasses a wide range of areas in its fold like Eastern & Western Philosophy, Eastern & Western Logic, Psychology, Ethics or Moral Philosophy, Religion, Social & Political Philosophy, Analytic Philosophy and Environmental Philosophy.

Study of Eastern & Western Philosophy opens up a vast field of knowledge before the learners and they come into touch with the richest minds of both the Oriental & Occidental world and thus broaden their outlook and develop their understanding.

By studying Logic as part of their curriculum the students can sharpen their reasoning faculty which helps them to reason justifiably and properly when needed. And exactly because of this a

student of Philosophy can easily shine if he chooses to study Law and undertakes legal profession as his future career.

By studying Psychology students of Philosophy acquire some basic knowledge of the mental structure of human beings which surely helps to develop their understanding of man's nature. In today's complex world it is indeed very important. This study also helps them to act as counsellor.

Study of Ethics or Moral Philosophy helps to inculcate sense of morality among the students and helps to view morality in a greater perspective lying outside the sphere of the straight jacket moral teaching. Gender ethics & Bioethics are also incorporated in the syllabus and hence the students have ample scope to gather sufficient knowledge in these spheres.

In contemporary scenario proper understanding of the true spirit of religion is of utmost importance. The study of different World Religion like Hinduism, Buddhism, Jainism, Christianity, Islam etc provides an opportunity to view religion in its true perspective and helps to develop a secular attitude among the students.

Social and Political Philosophy impart necessary information regarding social & political scenario the knowledge of which is very much important in today's world.

In CBCS system Skill Enhancement Course (SEC) has been introduced in all undergraduate curriculums. In Philosophy three important topics (including many subtopics) have been incorporated in SEC: a) Logical Reasoning & application: Indian & Western; b) Man & Environment and c) Business Ethics. All these topics are very much interesting and most relevant in the contemporary world. The first topic includes Logic & Law and by studying this topic students become well acquainted with the process of argumentation & its application in legal field. In the present world one of the crying needs calling our utmost concern is environment. By studying various aspects of man's relationship with environment it is expected that students would be conscious of their responsibilities towards the environment. Business Ethics is another most relevant topic in contemporary world. Study of this topic would enable the students to apply ethical principles in business.

Scope for students after graduation:

1. After graduation a student can go for higher studies and there is ample scope for research in Philosophy. By qualifying NET/SET they can apply for teaching post in Colleges & Universities.
2. Scope for School teaching is limited for the students of Philosophy as in Secondary Schools as this subject is not included in the Curriculum but in Higher Secondary Curriculum Philosophy has been incorporated and there is scope for the students to teach there.

3. After graduation they can study Law and pursue legal profession as has already been mentioned.
4. Philosophy is an interdisciplinary subject hence after graduation they can join with NGOs and can act as social counsellor.
5. They can also choose business entrepreneurship as their profession because a study of philosophy widens understanding of human nature which is very much necessary for becoming a successful businessman.

Department of Political Science

Programme specific Outcomes

PS1. Political Science goes beyond the politics prevalent in a national social system. It helps to understand the basic concept and ideological orientations of this discipline.

PS2. Political Science helps us to understand the basic concept of power, specially its origin and evolution.

PS3. Political Science helps to raise many questions such as who decides. It describes power relations. How are decisions being made or consequences of a decision?

PS4. It familiarizes students with important theories and issues of International Relations.

PS5. It helps to understand the processes and dynamics of government and politics. It also familiarizes with the contemporary issues, centre-state relations, political parties, emergence of new leadership at different levels, demand for autonomy movements, ethnic conflicts, women's issues and problems, basic concept and issues concerning human rights and challenges, urban and rural development etc.

Course specific outcome

Introduction to Political Science: To understand the concepts of Political Science and to have basic knowledge about this discipline.

Comparative Government and Politics: To understand the comparative analysis of various forms of government or political system of different countries like USA, UK, People's Republic of China, France etc. It helps to analyze critically different forms of government.

International Relations: This course enables the students to understand the various concepts of International Relations such as Theories of IR, Balance of Power, Collective Security, Disarmament etc. It discusses various process of IR. It also talks about world organisations like UNO, WTO, WHO etc.

Public Administration: It inculcates knowledge of Organisation, Mode, Structures and functions of Civil Service. It also encourages the students to know about Budget preparation and its execution.

Scope for Students after Graduation

1. After graduation, Students of Political Science, can easily go for Journalism especially highly demanding Mass Communicative Media World.

2. If they feel highly enthusiasm in this subject, they can opt for post graduation. After post graduation qualifying NET/SET, they can choose teaching as their profession under Schools, colleges and universities.

3. One of the greatest opportunity is that academic similarities between Political Science and Civil Service Examinations. They can also apply for other jobs e.g. Police, Defense.

5. Political Science mainly deals with state, law-making, constitution, public policy, public administration. So after graduation, if anyone wants to study Law, he/she can become an honored Lawyer.

6. Political Science is an interdisciplinary subject. So after completing graduation, Students can go for working with NGO as social workers.

EXPLORING THE SKYLINE OF PHYSICS

Brushing dusted corners of our minds, we turn the page to a quote from the legend Sir Issac Newton, “I do not know what I may appear to the world, but to myself I seem to have been only like a boy playing on the seashore, and diverting myself in now and then finding a smoother pebble or a prettier shell than ordinary, whilst the great ocean of truth lay all undiscovered before me”. This is exactly how the human race since time immemorial has continued journey through ages. The quest to know the unknown, see the unseen, “to follow knowledge like a sinking star, beyond the utmost bound of human thought”, in the words of Tennyson's Ulysses, acted as impulse to help them stride forward.

Physics is the natural science that studies matter, its motion and behaviour through space and time and the related entities of energy and force at both macroscopic and microscopic levels. Physics concentrates upon the forces having an impact upon matter, that is, gravitation, heat, magnetism, electricity and others. It is also the science of matter and energy and interactions among them, at atomic and sub-atomic levels.

Programme specific outcomes for Undergraduate degree course in Physics

Not always does the length of the word reflect the depths of the waters it sails through. 'Physics' is one such word. Its seven letters never suffice to put across the dictionary of comprehension it offers. Now, it is time for us to look with care, to walk with care so that we can understand what is Physics. That is exactly what we try to inject into the students during this course, so that the basic building blocks get strengthened up, based on which students can explore numerous career avenues, summarised here.

Acquiring knowledge in Physics Hons, a wide spectrum of future prospects get opened up :

- Higher studies and Research in any of these topics become accessible for the students, comprising of not only the theoretical arena but also the experimental regime. One of the largest experimental set-ups Worldwide as we know, is being run at CERN, LHC, an inevitable part of which incorporates detailed knowledge of Nuclear and Particle Physics, computational ability and technical expertise.
- Future avenues to reach beyond the potential barriers of the Earth, travelling the galactic distances by investigating the terrestrial objects through theoretical and observational Astrophysics and Cosmology, become viable for the students.
- Hands-on experience of electronics enables the students to further pursue their career in Technologies.
- An initial perception of Computational aspects of Physics can help them to gradually reach the territory of Robotics to Artificial Intelligence and Machine Learning.
- Incorporation of technical tools like “Gnu plot” or “Latex” further provides a student necessary impetus for future Research works.
- Industrial regimes of Quantum Optics, Cryptography and Nanotechnologies also become accessible to the students.
- Interdisciplinary fields like Biophysics, Physical Chemistry, Environmental Sciences also open up with enormous opportunities.
- Choosing the teaching profession at various levels also become feasible.
- Windows for Entrepreneurships in different categories might also be opened up in one manner or other.

Course specific outcomes for B.Sc. in Physics

In order to understand the fundamental principles of the Universe, Physics utilises many workings from the other natural sciences. Because of this overlap, phenomena studied in Physics, conservation of energy for example, are common to all material systems and are often considered as the laws of Physics. Since any natural system adheres to the laws of physics, this is often referred to as the fundamental science. In the undergraduate course of Physics (Honours), we initially touch upon the elementary aspects of the subject in order to motivate the students for digging further deep to acquire in-depth knowledge: knowledge of not only theoretical aspects of Physics, but also of experimental understandings and computational simulations.

- Mathematical Physics is inevitably helpful in formulating the theory of any system. Students are prepared to handle mathematical tools and concepts gradually during the course.
- Students also get acquainted with advanced topics of Vector space, Tensors and Group theories, if opted for in Discipline Specific Elective (DSE) course.
- These mathematical concepts flourish further with varying colours as students learn to apply them computationally. 'Python' programming language is now-a-days emerging as the most effective weapon in this regard Worldwide with its vast range of applicability. Different layers of programming are unfolded so that at the end of the course, students become well-trained in Python.
- The transition from Classical to Quantum World is very lucidly included in the course. Studying the former one first in details, starting from the Laws of Mechanics, Thermodynamics and Kinetic theories, students enter into the realm of Quantum Mechanics of sub-atomic particles to finally become habituated with solving corresponding Equations of Motions computationally using 'Python'.
- Exposure to the 'Special Theory of Relativity', helps them to work further with Relativistic systems and apply them correspondingly with adequate effects in future.
- In this course, students also have the opportunity to learn the nitty-gritties of Electronics and corresponding applications, which can help them further to pursue careers in respective domains.
- Sections on the finer details of Solid State Physics, can be supportive for the students to explore advanced sectors in Nano-Physics, Crystallography etc. in future.

Regimes of Research and Industrial applications of Laser Physics and Technologies are also explored during this journey. Further details are also covered in Skill Enhancement Courses (SEC), if opted for.

- The sub-atomic Nuclear and Particle Physics, being integral parts of the course, students get the exposure to future aspects in this arena as well. As a part of their DSE course, students can also be aware of Nuclear and Particle detectors and accelerators, helping them further to get hold of corresponding sectors from both research and industrial point of views.
- Fields of Astrophysics and Cosmology might as well seem viable for them as they can acquire preliminary ideas of them in their DSE course, if opted for.
- Hands-on experiences to work with 'Latex' and 'Arduino' in SEC, can help the students to take leap in future Research and Technical Worlds.
- As we all know, Physics emerges completely when the theoretical predictions merge with Experimental observations. To stay concurrent, theoretical ideas throughout the course, are backed up by experimental experiences at least at elementary levels, so that the students get well-equipped for numerous future prospects and career avenues.
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PROGRAMME SPECIFIC OUTCOME FOR UNDERGRADUATE DEGREE IN CHEMISTRY

The present curriculum for the undergraduate degree in Chemistry is designed specifically covering intricately **the fundamental aspects** of one of the fundamental branch of science as well as the wide areas of **application** that the subject imparts .The programme also opens up wide scope of creating interest among students for choosing a career in multiple avenues like teaching ,research and industry.

After completion of three year degree course in Chemistry a student must have the following abilities.

- 1) Understand the basic theoretical concepts of all the disciplines of Chemistry and have an ability to solve various types of problems, both where reasons are necessary and also numericals. Students must also develop higher thinking order skills in solving critical problems.
- 2) Must be adept in handling chemicals, glasswares and other equipments in the laboratory, maintain laboratory safety measures and have the ability of demonstrating chemical reactions.
- 3) Must have the ability to analyse chemical reactions and understand the underlying theory in all the disciplines.
- 4) Develop the confidence of handling sophisticated instruments as required in the syllabus like Spectrophotometers.
- 5) Students must have a sound knowledge of Computers and modern softwares associated with chemistry like Chemdraw etc.
- 6) They should have the knowledge of Nomenclature in Chemistry, Periodic table, its elements and classification, mechanisms in Chemistry, Structure of various compounds and an idea of the geometry, Isomerism and structure reactivity relation.
- 7) Knowledge of mathematics as required, Quantum mechanical calculations , ideas on Equilibrium reactions ,Rate laws ,Stability of Complexes, Electrochemistry, Nuclear chemistry, Thermodynamics etc.
- 8) The students must be aware of the hazards of using chemicals in chemical reactions and try to develop a green route for a sustainable environment.
- 9) They must have the capability of correlating various physical processes with other subjects like physics and biological sciences.
- 10) They must develop a scientific temperament and most importantly they must have an aptitude for the subject.

The Outcomes of UG Course, B. Sc. in Chemistry

The three year undergraduate course in Chemistry encompasses a wide range of areas in all the disciplines i.e. Inorganic, Physical and Organic Chemistry. As a fundamental branch of science the conceptual areas are well included in the syllabus and also updated with the latest basic developments. In the higher semesters, areas of industrial application along with fundamentals are present. The laboratory experiments are set based on the theoretical areas in all the disciplines in each semesters and Skill Enhancement Courses as well as Discipline Specific Courses are made compulsory. There is also a scope for the dissertation in the final semester.

With such an organised course, a student having interest in the subject has every chance of

- i) Qualifying in the entrance level exams for post graduate ,conducted Nationally as well as within State and further scholarship exams for research and teaching.
- ii) Apart from the academic future, students have the ability for qualifying in public service examinations in food safety, forensic, health inspectors etc.
- ii) The course not only helps students to gain interest in research in fundamental areas but also related to industry like Glass and Ceramic, Pharmaceutical, Biochemical, Polymer, Agricultural, Petrochemical, Cement , Food Processing, Pesticide and Paint.
- iv)The course also helps to achieve skills for a future in professional schools. Since the basics of the subject are well covered, it helps the students for a career in teaching, be it school level or higher education.
- V) With such a subject background, choosing a profession like entrepreneurship (small scale) related to manufacturing and marketing of chemicals cannot be ruled out.

Department of Mathematics

Programme Specific Outcomes

The mission of the degree course in Mathematical Sciences is to provide graduate students with a strong foundation that may enable the students to succeed in subsequent careers and educational programs. After the degree course in Mathematics, the students:

1. Will be prepared for demonstration with deep knowledge in core classes, to read, analyze and write proofs, to communicate mathematical ideas written and verbally. And can demonstrate basic manipulative skills in algebra, geometry, trigonometry and calculus etc.
2. Investigate and apply mathematical problems and solutions in a variety of contexts related to science, technology, business and industry, and illustrate these solutions using symbolic, numeric, or graphical methods.
3. Understand, formulate and use quantitative models arising in social science, business and other contexts.
4. Apply mathematical knowledge; and be able to solve mathematical problems using technology.
5. Will be able to join teaching profession in primary and secondary schools.
6. Could opt for MSc and after Post -graduation can apply to College or University by qualifying SET & NET. They can also pursue his career as Researcher.
7. Will avail themselves of the opportunity for employment in government jobs, jobs in banking, insurance and investment sectors, data analyst jobs and jobs in various other public and private enterprises.

Course Specific Outcome

Name of the Topics	Course outcomes
Real Analysis	Knowledge gained: <ul style="list-style-type: none">• Idea of real numbers• Basic definition of open sets & closed sets• Convergence of sequence and series• Behaviour of continuous functions• Application of Darboux theorem, Rolle's theorem• Concepts of Riemann integrable functions• convergence of improper integral and tests of convergence• Convergence of series of functions
Geometry	Knowledge gained: <ul style="list-style-type: none">• classification of conics using the discriminant

	<ul style="list-style-type: none"> • Concepts of tangent and normal of conics • Able to treat a plane by its equation • Able to create the equation of a straight line by direction ratio and direction cosines • Able to find the equations of some Central conicoids, paraboloids etc.
Vector Analysis	<p>Knowledge gained:</p> <ul style="list-style-type: none"> • Basic concept of a vector • Able to find the product of two or three vectors • Idea of parallel forces • Concept of vector functions and find the limits, continuity, differentiation and integration of vector functions of one variable.
Algebra	<p>Knowledge gained:</p> <ul style="list-style-type: none"> • Idea of a polar forms of complex numbers • Idea of some special functions of complex variables • Able to find the roots of some polynomial equations • Concepts of varies type of relations • Able to create a partition on a set by an equivalence relation. • Able to define a mapping by a relation • Concept of a group and theorems about group. • The idea of a subgroup, cyclic group and normal subgroup. • Application of Lagrange's theorem on a group and discussion about the converse of Lagrange's theorem • Idea of a norm and inner product spaces
Metric Space	<p>Knowledge gained:</p> <ul style="list-style-type: none"> • Concept of metric space • Able to create an open set and closed set in an arbitrary space • Able to try a few concepts of real analysis in an arbitrary metric space
Complex analysis	<p>Knowledge gained:</p> <ul style="list-style-type: none"> • Analytic functions, Cauchy-Riemann differential equations, harmonic functions. • Power series, zeros, singularities. • Cauchy's theorem, Cauchy's integral formula, and applications. • Differentiation of functions on \mathbb{C}, deciding if a function on \mathbb{C} is analytic. • Development of functions into power series, classifying singularities.

	<ul style="list-style-type: none"> • Integration of functions on \mathbb{C}, applications to counting zeros and poles. • Differentiation and integration of functions on \mathbb{C}, with applications to problems from real analysis.
Differential Equation	<p>Knowledge gained:</p> <ul style="list-style-type: none"> • Able to solve First order higher degree equations • Concepts of Clairaut's equations and singular solution • Able to solve linear differential equations of second order • Able to find the Power series solution of a differential equation about an ordinary point
Multivariate Calculus	<p>Knowledge gained:</p> <ul style="list-style-type: none"> • Concept of neighbourhood of a point, interior point, limit point, open set and closed set in \mathbb{R}^n • Continuity and differentiability of a function of two or more variables
Mechanics	<p>Knowledge gained:</p> <ul style="list-style-type: none"> • Idea of coplanar forces • Condition of stability of a perfectly rough heavy body lying on a fixed body • Application of Newton laws of motion and law of gravitation • Able to solve a few problems in particle dynamics
Probability	<ul style="list-style-type: none"> • Probability theory is the branch of mathematics that deals with modelling uncertainty. It is important because of its direct application in areas such as genetics, finance and telecommunications. It also forms the fundamental basis for many other areas in the mathematical sciences including statistics, modern optimisation methods and risk modelling.
Statistics	<ul style="list-style-type: none"> • The theory and methods of Statistics play an important role in all walks of life, society, medicine and industry. They enable important understanding to be gained and informed decisions to be made, about a population by examining only a small random sample of the members of that population.

Course Outcomes of B.Sc. Botany

SEMESTER- I:

CC-1. Phycology and Microbiology (BOT-A-CC-1-1-TH, BOT-A-CC-1-1-P)

On completion of the course, students are able to:

1. Understand the diversity among Algae.
2. Know the systematic, morphology and structure, of Algae. Understand the life cycle pattern of Algae.
3. Understand the useful and harmful activities and economic importance of Algae.
4. Understand the principles and applications of microscopy and classification of micro organisms. Interpret the different structure of viruses and it's multiplications.
5. Understand the Microbial Genetics and Recombination in Bacteria

CC-2. Mycology and Phytopathology (BOT-A-CC-1-2-TH, BOT-A-CC-1-2-P)

On completion of the course, students are able to:

1. Understand the Biodiversity of Fungi
2. Know the Economic Importance of Fungi and Lichen
3. Learn about the general characters, classification, reproduction and life cycle of fungi.
4. To study and get knowledge about parts and working principles of compound and dissecting microscope.
5. Students are capable to become practical knowledge about micro-preparation and observation of permanent slides of genera.
6. Understand the concept, principle and types of sterilization methods.
7. Know the concept and characteristics of antiseptic, disinfectant and their mode of action.
8. Principle, working and applications of instruments viz, pH meters, spectrophotometer, centrifuge, viscometer, and laminar air flow.
9. Know the terminologies in plant pathology.
10. Understand the scope and importance of Plant Pathology.

11. Know the prevention and control measures of plant diseases and its effect on economy of crops.

SEMESTER- II:

CC-3. Plant anatomy (BOT-A-CC-2-3-TH, BOT-A-CC-2-3-P)

On completion of the course, students are able to:

1. Know the scope and importance of the discipline.
2. Understand plant communities and ecological adaptations in plants.
3. Understand the scope & importance of Anatomy.
4. Know various tissue systems.
5. Understand the normal and anomalous secondary growth in plants and their causes.
6. Perform the techniques in anatomy.

CC-4. Archegoniate (BOT-A-CC-2-4-TH, BOT-A-CC-2-4-P)

On completion of the course, students are able to:

1. Understand the morphological diversity of Bryophytes
2. Understand the economic importance of the Bryophytes.
3. Know the taxonomic position, occurrence, thallus structure, reproduction of Bryophytes.
4. To get knowledge about classification, mode of reproduction and detailed study of some important bryophytes.
5. To impart knowledge to general characters, classification and stelar evolution of pteridophytes.
6. Student will able to understand general characters, distribution, classification by sporne and detailed study of some genera.
7. Understand the role of gymnosperms as a connecting link between pteridophytes and angiosperms

SEMESTER- III:

CC-5. Palaeobotany and Palynology (BOT-A-CC-3-5-TH, BOT-A-CC-3-5-P)

On completion of the course, students are able to:

1. Know the scope of Paleobotany, types of fossils, its role in Global economy and geological time scale.
2. Understand the various fossil genera representing different fossil groups.
3. Know different types of Pollen aperture type
4. Know different application of paleontological study including Forensic science

CC-6. Reproductive biology of Angiosperms (BOT-A-CC-3-6-TH, BOT-A-CC-3-6-P)

On completion of the course, students are able to:

1. Appreciate the diverse morphology of angiosperms.
2. Make scientific illustrations of vegetative and reproductive structures of plants
Develop the skill of scientific imaging of plants.
3. Realize the importance of field study Change their attitude towards over exploitation of rare/endemic plants.
4. Get knowledge on structure and development plant embryo.

CC-7. Plant systematic (BOT-A-CC-3-7-TH, BOT-A-CC-3-7-P)

On completion of the course, students are able to:

1. Know the conceptual development of „taxonomy“ and „systematics“
2. Understand the Phylogeny of angiosperms -A general account of the origin of Angiosperms.
3. Understand the general range of variations in the group of angiosperms.
4. Trace the history of development of systems of classification emphasizing angiospermic taxa.
5. To learn the wide activities in angiosperm and trends in classification.
6. Learn about the characters of biologically important families of angiosperms.

7. Know the floral variations in angiospermic families, their phylogeny and evolution.
8. Understand various rules, principles and recommendations of plant nomenclature produces in plant identification.
9. Understand major evolutionary trends in various parts of angiospermic plants

SEMESTER- IV:

C-8. Plant geography, Ecology and Evolution (BOT-A-CC-4-8-TH, BOT-A-CC-4-8-P)

On completion of the course, students are able to:

1. Students learned about the interaction between biotic and abiotic components of the environment.
2. Know about the concept of energy flow in the ecosystem.
3. Students will acquire knowledge regarding vegetation, endemic species and its analysis
4. Know about different pollutions, consequences in the environment and its mitigation.
5. Students will know about the floristic regions and plant formation of the planet.
6. Students will know the vegetation types of West Bengal
7. Understand the various concepts of Biodiversity, values and factor influence its loss.
8. They can able to identify the threats to biodiversity and its habitat loss.

CC- 9. Economic Botany (BOT-A-CC-4-9-TH, BOT-A-CC-4-9-P)

On completion of the course, students are able to:

1. The study of Economic botany helps to the importance and uses of plant and plant parts.
2. Identify the economically important plants.

CC-10. Genetics (BOT-A-CC-4-10-TH, BOT-A-CC-4-10-P)

On completion of the course, students are able to:

1. Genetics is the study of genes, genetic variation, and heredity in living organisms.
2. It is generally considered a field of biology, but intersects frequently with many other life sciences and is strongly linked with the study of information systems

3. A brief idea may generate in student community in connection with genetics and its uses in modern medicine.
4. Understand the process of synthesis of proteins and role of genetic code in polypeptide formation.

SEMESTER- V:

CC-11. Cell and Molecular biology (BOT-A-CC-5-11-TH, BOT-A-CC-5-11-P)

On completion of the course, students are able to:

1. Gain knowledge about “Cell Science”.
2. Understand Cell wall Plasma membrane, Cell organelles and cell division. Learn the scope and importance of molecular biology.
3. Understand the biochemical nature of nucleic acids, their role in living systems, experimental evidences to prove DNA as a genetic material.
4. Plant Molecular Biology focuses on exploration of molecular basis of plant life.
5. The course paper enlighten mainly on DNA, RNA, Protein, molecular systems and regulation of gene expression in prokaryotic and eukaryotic organisms.
6. Through this course paper students will be able to understand the function of cells at molecular level.

CC-12. Biochemistry (BOT-A-CC-5-12-TH, BOT-A-CC-5-12-P)

On completion of the course, students are able to:

1. Understand the properties of Monosaccharides, Oligosaccharides and Polysaccharides.
2. They will learn about the Significance of Carbohydrates.
3. Understand the Properties of saturated fatty acids, and unsaturated fatty acids.
4. Understand the Beta Oxidation, Gluconeogenesis and its role in mobilization of fatty acids during germination.

5. They will learn about the Significance of lipids.
6. They will be able to understand Brief outline of biosynthesis of amino acid.
7. Understand the protein -structure and classification and protein biosynthesis in prokaryotes and eukaryotes.
8. They will learn about the nucleic acid metabolism.

SEMESTER- VI:

On completion of the course, students are able to:

CC-13. Plant Physiology (BOT-A-CC-6-13-TH, BOT-A-CC-6-13-P)

On completion of the course, students are able to:

1. To become knowledgeable in plant and its water relations.
2. Students will able to gain knowledge on role of micronutrients in plant growth, their development and understand the mechanism of nitrogen metabolism.
3. To gain knowledge about chloroplast structure, photosynthetic pigments, the path of energy from the light reactions through Calvin cycle.
4. Students are able to understand the process of translocation of organic solutes in plants.
5. To understand the energy releasing steps in Glycolysis. Students will be familiar about the mechanism of respiration.
6. To acquire knowledge in plant growth regulator and its uses, understand the physiology of flowering and photoperiodism.
7. Learn and understand about mineral nutrition in plants.
8. Understand the growth and developmental processes in plants.
9. Understand the process of translocation of solutes in plants

CC- 14. Plant Metabolism (BOT-A-CC-6-14-TH, BOT-A-CC-6-14-P)

On completion of the course, students are able to:

1. Know the nitrogen metabolism and its importance.
2. Know about Photosynthesis and Respiration in plants.
3. Understand lipid metabolism in plants.

Skill enhancement courses

SEC A (SEM III)

1. Applied Phycology, Mycology and Microbiology (BOT-A-SEC-A-3-1)

On completion of the course, students are able to:

- i. In this paper aims the students get awareness of different microorganisms and its application in the industrial field.
- ii. To equip the students with skills related to laboratory as well as industries based studies.
- iii. Get to know about some useful fermentation products.

2. Biofertilizers (BOT-A-SEC-A-3-2)

On completion of the course, students are able to:

- i. Understand the advantages of Biofertilizer technology.
- ii. Mycorrhizal association, types of mycorrhizal association. VAM and its influence on growth and yield of crop plants.
- iii. To gathering knowledge about different types of Organic farming and methods of vermicomposting and its field application.

SEC B (SEM IV)

3. Plant Breeding (BOT-A-SEC-B-4-3)

On completion of the course, students are able to:

- i. Understand the science of plant breeding.
- ii. To introduce the student with branch of plant breeding for the survival of human being from starvation.
- iii. To study the techniques of production of new superior crop varieties.

- iv. Understand the modern strategies applied in Genetics and Plant Breeding to sequence and analyze genomes
- v. Get the detail knowledge about modern strategies applied in Plant Breeding for crop improvement i.e. Mass selection, Pureline Selection and Clonal selection.
- vi. Know about exploitation of Heterosis, hybrid and variety development and their releasethrough artificial hybridization.
- vii. Understand the role plants in human welfare.

4. Mushroom Culture Technology (BOT-A-SEC-B-4-4)

On completion of the course, students are able to:

- i. To provide an adequate knowledge about importance and habitation of mushroom.
- ii. To get knowledge nutritional value, cultivation unit and storage methods.
- iii. To acquire knowledge about spawn and spawning techniques.
- iv. To understand the factors influencing the mushroom cultivation and post harvesting methods.
- v. Students get detailed knowledge about cost economics, importance and preparation of value added products.

Discipline specific elective courses (DSE)

DSE-A (Group- A)

SEM V

1. Biostatistics (BOT-A-DSE-A-5-1-TH, BOT-A-DSE-A-5-1-P)

On completion of the course, students are able to:

- i. To learn the sampling techniques, diagrammatic and graphical representation.
- ii. To gain knowledge about measures of central tendency and theories of probability.

- iii. The students will know the basic principles of biostatistics and computer applications in biology.
- iv. Understand the fundamental concepts of biostatistics.

2. Industrial and Environmental Biology (BOT-A-DSE-A-5-2-TH, BOT-A-DSE-A-5-2-P)

On completion of the course, students are able to:

- i. Understand the applications of fermentation technology.
- ii. To equip the students with skills related to laboratory as well as industries based studies

SEM VI

3. Medicinal and Ethnobotany (BOT-A-DSE-A-6-3-TH, BOT-A-DSE-A-6-3-P)

On completion of the course, students are able to:

- i. Understand different systems of traditional medicines
- ii. Acquire knowledge on collection and processing of herbal drugs
- iii. Get knowledge on pharmacological importance of medicinal plants and its bioactive compounds
- iv. Acquire knowledge on different adulterants.
- v. Impart knowledge on various tribal groups of West Bengal and their ecological knowledge.

4. Stress Biology (BOT-A-DSE-A-6-4-TH, BOT-A-DSE-A-6-4-P)

On completion of the course, students are able to:

- i. To know Environmental factors- water stress, salinity stress and temperature stress and plant response.
- ii. To know different mechanisms that protect plants against environmental stress

DSE-B (Group-B)

SEM V

5. Plant Biotechnology (BOT-A-DSE-B-5-5-TH, BOT-A-DSE-B-5-5-P)

On completion of the course, students are able to:

- i. To gain the knowledge on important techniques about plant tissue culture.
- ii. Students learn about somatic hybridization techniques and cryopreservation.
- iii. To study and impart the genetic transformation protocols and its applications.
- iv. To gain the fundamental knowledge of metabolic engineering of secondary metabolites.
- v. To understand the types of bioreactors and its commercial application.

6. Horticultural practices and Post Harvest Technology (BOT-A-DSE-B-5-6-TH, BOT-A-DSE-B-5-6-P)

On completion of the course, students are able to:

- i. Understand the importance and divisions of horticulture.
- ii. Learn the various methods of plant propagation.
- iii. Get to know about commercial horticultural plants.
- iv. Acquire knowledge on components of Green house technology.
- v. Acquire knowledge on breeding methods in commercially important plants.
- vi. Understand cut flower production and its advantages.
- vii. Learn about different types of protected floriculture.
- viii. Acquire knowledge on value added flower products.

SEM VI

7. Research Methodology (BOT-A-DSE-B6-7-TH, BOT-A-DSE-B-6-7-P)

On completion of the course, students are able to:

- i. Understand the principle and applications of microscopy and also observe the ultra structure of cell and cell organelles.

- ii. Analyze the functional groups of plants and microbial products through spectral analysis, radioactive contamination and environmental level of radio activity are monitored through scintillation and gm counter.
- iii. Understand the importance and mechanism of separation technique and molecular technique for compound isolation and diagnosis of infectious disease.
- iv. Statistical methods are used to analyze the research data further interpretation of findings.
- v. Inculcate complete knowledge of research

8. Natural resource management (BOT-A-DSE-B-6-8-TH, BOT-A-DSE-B-6-8-P)

On completion of the course, students are able to:

- i. Develop environmental concern in all their actions and practice Reduce, Reuse and Recycle.
- ii. try to reduce pollution and environmental hazards and change their attitude towards throwing away plastic wastes
- iii. Spread awareness of the need of conservation of biodiversity and natural resources.
- iv. Analyze the reasons for climate change and find out ways to combat it.

Programme Specific Outcome of Zoology

Zoology is a Science of animals. Students of Zoology Honours have to study animal life at all levels, from the simplest forms through to birds and mammals. They will be able to learn about populations and ecosystems, animal behaviour, evolution, biodiversity and conservation.

Studying Zoology Honours students can develop some special skills which help them to choose career as per their aptitudes.

1. They can opt for higher studies and can pursue MSc as part of their academic advancement. This would help them to prepare themselves for academic profession.
2. A graduate in zoology can perform cell viability study by trypan blue staining and can prepare a permanent slide of DNA through staining by feulgen reaction. They can show the female Barr body in human female blood cells which might help them perform or assist in research works involving such tests.
3. Students gain ability to record cardiac and simple muscle twitch with electrical stimulation. They develop the skill to perform qualitative tests for carbohydrates, proteins and lipids and quantitative estimation of urea and uric acids.
4. Students are skilled with tests performed in different medical laboratories like determination of blood groups, estimation of hemoglobin, preparation of hemin crystals and hem chromogen crystals, demonstration of blood pressure etc.
5. They Acquire skills in observation of and study of nature, biological techniques, experimental skills and scientific investigation.
6. A zoology graduate can apply statistical methods like chi-square and pedigree analysis to find out the science under natural phenomena and are skilled with construction and interpretation of phylogenetic tree and the study of fossils.

All these training help them to apply for jobs in Forest Department, Fishery, Medical Laboratories, Department of Environmental Studies, Zoological Survey of India etc.

Course Specific Outcome of Zoology

The course specific outcomes after studying Zoology Honours in the new CBCS system are as follows:

In the first semester students use to learn the no chordates (protists to pseudocoelomates), the structure & function of nucleic acids, the process of gene expression & regulation, different molecular techniques like PCR, western and southern blot and northern blot techniques.

In the Second Semester a student becomes familiar with coelomates of our surroundings & the fine structure of different cellular structures including their functions.

In the Third Semester a student learns the chordates surrounding us, to dissect out pituitary and the brain, the digestive and urino-genital system.

A student also learns about the different tissues and the controlling and coordinating systems of the body.

The fundamentals of biochemistry: the structure of carbohydrates, lipids, proteins, nucleic acids and enzymes including their tremendous activities for the sustenance of life are taught to them.

In Semester Four students learn the comparative anatomy of vertebrates, the physiology of digestion, respiration, circulation, thermoregulation, osmoregulation and renal physiology that helps them to conceptualize research prospects in respective fields.

They get an overview of the immune system, immunity & its mechanisms and the details regarding administration of vaccines.

In Semester Five students get scope to develop a positive attitude towards sustainable utilization & conservation of resource & biodiversity. They learn environmental parameters like pH, BOD etc.

In this Semester they also learn to distinguish classical and molecular genetics, understand the basic principles of sex determination and extrachromosomal inheritance. They gain in-depth knowledge of the genetic fine structure, the behavior of transposable genetic elements and chromosomal aberrations.

In the Final Semester Students are introduced with underlying concepts of developmental biology, the early, late and post embryonic development is vividly

studied by them and they also learn the implications of developmental biology like IVF and bone marrow transplantation.

They learn various aspects of evolutionary biology like origin of life, Geological time scale, modes of natural selection, species concept, evolution of Man, the necessity and utility of phylogenetic tree and of course the reason behind extinction of different organisms.

Skill enhancement courses are introduced to enable students with economically useful techniques like apiculture, sericulture, aquarium fisheries and medical diagnosis. Students can opt any two of the above alternative skill development courses according to their aptitude.

The discipline specific electives in the Sixth Semester also help a student to learn a lot about animal biotechnology, animal cell biotechnology, animal behavior and chronology, fish and fisheries.

Thus, a graduate in zoology becomes well aware of his/her surroundings, who learns to address the problems of diseased water-bodies, animal health and also the technique to deal with problems of natural surroundings with his knowledge of biodiversity for a sustainable glorious future.

B.Com
Uluberia College

Programme Outcome

The students will be ready for employment in functional areas like accounting, taxation, banking, insurance and corporate law. The programme will help to build an attitude in the students for working effectively and efficiently in a business environment. Learners will gain knowledge of various disciplines of commerce, business, accounting, economics, and finance, auditing and marketing.

Program Specific Outcome

Students also acquire skills to work as tax consultant, audit assistant and other financial supporting services.

Students have choices to pursue professional courses such as CA, M.COM, MBA, CMA, ICWA, CS, etc.

Students are able to play roles of businessmen, entrepreneur, managers, consultant, which will help learners to possess knowledge and other soft skills and to react aptly when confronted with critical decision making.

Course Outcome

Communicative English or Indian Language

Offer relevant and practically helpful pieces of prose and poetry to students so that they not only get to know the beauty and communicative power of English or Indian Language but also its practical application. Expose students to a variety of topics that dominates the contemporary socio-economic and cultural life. Develop oral and written communication skills of the students so that their employability enhances. Develop overall linguistic competence and communicative skills of students.

Environmental Studies

Furnish awareness about environmental problems. Impart basic knowledge about the environment and its allied problems. Develop attitude regarding environment concern. Acquire skills to help the concerned individuals in identifying and solving environmental problems.

Business Mathematics and Statistics

Students acquire new skills on the application of statistical tools and techniques in Business decision-making, Popular Quantitative Tools used in Business, practical exposure on calculation of measures of average, correlation and regression

Business Laws

It will increase the awareness of different laws of doing business, their meaning, evaluation and significance. Identify the law relating to sell of goods acts 1930, the Indian Partnership Act 1932.

Aware of the Negotiable Instrument Act 1881. Understand the law relating to the consumer protection act 1986 information technology act 2000 and cyber law.

Principles of Management

Understand the principles of business management and its scope and significance. Explain the process of business management and functions of business management. List the characteristics and the importance and planning and decision making. Discuss the meaning of delegation of authority and coordination and controlling Justify the recent traits in management.

Financial Accounting

On successful completion of this course the student are enabled with the Knowledge in the practical applications of accounting, learn principles and concepts of Accountancy, basic concepts of Partnership Accounting, company accounts etc.

Business Communication

Understand the concept of communication and types. Analyse the concept of business communication and its principles and roles of public relation management. Understand technology management information system and business communication. Perform procedures as per ms office, aided communication.

Company Law

Understand the background of the new company act 2013 and explain kinds of company. Define memorandum of association and articles of association. Determine private placement and prospectus and misrepresentation in prospectus. Write the meaning and nature of capital share and capital. Identify the difference between share and debenture and owned capital and debt capital. Explain membership in a company and its procedure and analyse the meaning of directors and concepts.

Marketing Management

Gain idea about marketing and its functions, consumer behavior, product and its classifications, pricing policies. Develop analytical ability to plan for various marketing and advertising strategy.

Human Resource Management

Understand the definition, objectives, function, scope, importance of human resource management. Compare the career planning and manpower planning. Explain the labour welfare and collective bargaining. Describe human resource planning and accounting

Cost Accounting

Understand the difference between cost accounting and financial accounting. Prepare the profit, reconciliation statement. Define job costing the process costing. Determine contract, and costing its elements and features and contracts costing. Classify normal loss and abnormal loss and normal gain and abnormal gain.

Management Accounting

Compare difference between cost accounting and management accounting. Calculate the break-even point analysis. Prepare cash budget and flexible budget. Explain the meaning, importance and limitation of ratio analysis. Calculate ratio, acid test ratio, inventory turnover ratio. Prepare statement showing changes in working capital and fund show statement

Information Technology & Its Application in Business

Make students familiar with computer environment & operating systems. Introduce students with accounting packages like tally. Develop skill and knowledge among students in applications of internet in education of Commerce.

Indian Financial System

Make the students aware of Indian Financial System, components of financial system, banking system, mutual fund, share market, etc. Enable students to understand the reforms and other developments in the Indian Banking. Impart knowledge about functions and role of Reserve Bank of India.

Business Economics

Understand the nature and scope of the business economics and their responsibilities. Describe the law of the demand and Griffins paradox and methods of demands for costing. Evaluate the concept of production function and law of variable proportions and isoquant curves. Design the theory of the population and the criticise it. Describe law of the supply and its criticism and evaluate concept of cost. Write down the theory of the revenue.

Entrepreneurship Development and Business Ethics

Enable students to understand project formulation, Entrepreneurship development, and awareness on various Entrepreneurship Development Programme, EDP schemes, and knowledge of entrepreneurial skills and to make the students understand the approaches to attain the goals of the business.

Taxation

Understand the concept of income tax. Solve a numerical problem under the head of income from salary. Solve a numerical problem under the head of income from house property. Calculate the numerical problem of income from other sources. Understand GST.

Auditing & Assurance

To develop an understanding of audit concept, vouching. Apply critical thinking skills and solve auditing problems through the use of case studies. Demonstrate the use of Auditing, Assurance Standards and Code of Ethics for professional Accountants.

Corporate Accounting

This course aims to enlighten the students on the accounting procedures followed by the Companies. Student's skills about accounting standards will be developed. Make the students aware of the valuation of shares of a company. Impart knowledge about holding company accounts, amalgamation, absorption and reconstruction of company.

Financial Reporting and Financial Statement Analysis

Students are able to report the financial health of any organisation. They are able to make the analysis of the financial condition on the basis of financial statement of any organisation and comment on the financial soundness of that organisation.

Financial Management

Awareness about capital structure and theories of capital structure, cost of capital in wide aspects, dividend policies and various dividend models, working capital management

Project Work

Develop competence in documentation and report writing. Students are able to develop leadership skills to organize seminar, workshop and other personality programme.

B. ED – Program & Course Learning Outcomes

A) The following **Program Learning Outcomes** have been prepared in the ascending order of the **Revised Bloom's Taxonomy**:

Program name	Learning Outcomes
B. Ed	Student- teachers will be able:
	1. To comprehend Child pedagogy & the various Constructive Learning Theories
	2. To apply their Content knowledge & Pedagogical skills in real life classroom teaching
	3. To analyze & compare between various teaching strategies in order to choose the most appropriate teaching strategy for the immediate class.
	4. To evaluate the existing teaching strategies in order to recognize its inadequacies in meeting learning objectives and to introduce innovations or improvements as per students' diverse needs & interest for constructive learning.
	5. To access the literature of various pedagogical skills & learning theories for conceptual framework in their research activities
	6. COVID – 19 has forced Program faculties to shift to online modes of teaching & learning. Students' growing acquaintance with Google Classroom [a Learning Management System] & Google Meet – the ICT tools adopted by the B. Ed program of Uluberia College in the face of COVID-crisis – have developed their Technology integrated Pedagogical skills which they could use to promote Blended & Flipped learning in their prospective teaching profession.

B) The following **Course Learning Outcomes** have been prepared in the ascending order of the **Revised Bloom's Taxonomy**:

Semester	Course No.	Course Name	Sub-courses	Learning Outcomes
1	I	Childhood & Growing Up		Student-teachers will be able to:
				1. Know about the developmental characteristics of a child.
				2. Explain the concept of growth & development, stages of development with special reference to the stage of adolescence.
				3. Be aware of the influence of heredity, environment including socio-cultural factors on developmental process.
				4. Develop the skills of applying the principles of development in improving the teaching learning process.
	II	Contemporary India & Education		Student-teachers will be able to:
				1. Comprehend the various constitutional provisions
				2. Develop the knowledge about the recommendations of various Commissions & National Policies of Education

				3. Examine the problems & solutions of Elementary 7 Secondary Education and find out probable solutions.
				4. Acquire the skill to eradicate inequality, discrimination & marginalization in education.
	IV	Language across Curriculum		Student-teachers will be able to:
				1. Recognize nature, function of language across the curriculum
				2. Acquaint with obstacles in language usage and ways to overcome them.
				3. Understand importance if use of First 7 Second Language, Multilingualism & impact of culture.
				4. Acquire knowledge about the communication process, verbal 7 non-verbal communication skills.
				5. Familiarize the students with barriers to (Listening, Reading, Speaking & Writing) LSRW skills & activities for developing these skills.
	V	Understanding Discipline & Subjects		Student-teachers will be able to:
				1. Know the basis of Knowledge & branches of emerging knowledge
				2. Be aware of the emergence of various disciplines
				3. Develop an understanding of science as a discipline
				4. Understand nature of Mathematics as a discipline
				5. Develop an understanding of Language as a discipline

				6. Develop an understanding of Social Science as a discipline
	EPC 1 [Enhancing Professional Capacities]	Reading & Reflecting on text		Student-teachers will be able to:
Semester	Course No.	Course Name	Sub-courses	<ol style="list-style-type: none"> 1. Know the meaning, process, importance & characterization of Reading
				Learning Outcomes
				2. Appreciate & apply different levels, types, techniques & methods of Reading.
II	III	Learning and Teaching		Student-teachers will be able to:
				3. Acquaint with reading skills & different types of texts.
				4. Develop Reading skills through various activities & metacognition.
				5. Learn the skill of reading Comprehension & enhance Vocabulary
				6. Acquaint with the problems of learning

				4. Demonstrate his/her understanding of different skills at different phases of instruction.
	VII (A)	Pedagogy of School Subjects Part - 1	1. Pedagogy of language teaching (Bengali & English)	<p>Student-teachers will be able to:</p> <ol style="list-style-type: none"> 1. Merit effective and constructive acquaintance with the basic foundation of language teaching in India & in West Bengal 2. Acquire practical expertise in pedagogical analysis and develop behavioral competence in teaching skill. 3. Apply principles, abstracted from the study of various methods and approaches, to purpose & procedure of lesson planning 4. Work out & practice strategies for teaching language skills & communication skills. 5. Credit working acquaintance with concepts of language learning assessments 6. Turn into resourceful user of different kinds of Language Test 7. Grow efficient in construction of test items 8. Explore and experience various resources for target language learning. 9. Try out various means of organizing various resources for target language learning
			2. Pedagogy of Science	Student-teachers will be able to:

			Teaching (Physical Science, Life Science)	1. Appreciate the significance of teaching science.
				2. Be acquainted with the Approaches & Methods of teaching Science.
				3. Be used to the application of scientific knowledge & skills
				4. Be acquainted with the various practical aspects of Science
			3. Pedagogy of Mathematics Teaching	Student-teachers will be able to:
				1. Understand the concept of Mathematics & Mathematics Education
				2. Know the objectives of teaching Mathematics & the principles behind the preparation of relevant curriculum & text books.
				3. Understand teaching methodologies in Mathematics education
				4. Apply mathematics education in cross-cultural perspectives.
				5. Understand the assessment & evaluation in the teaching learning of mathematics.
			4. Pedagogy of Social Science Teaching (History, Political Sc., Economics, Fine Arts)	Student-teachers will be able to:
				1. Appreciate the significance of teaching Social Science
				2. Be acquainted with the Approaches & Methods of teaching Social Science
				3. Be used to the application of knowledge & skills of Social Science

				4. Be acquainted with various practical aspects of Social Science
	VIII (A)	Knowledge & Curriculum-Part 1		Student-teachers will be able to:
				1. Introduce themselves to the epistemological, philosophical & sociological bases of Education as a discipline
				2. Distinguish between knowledge & information, knowledge & skill, teaching & training, reason & belief.
				3. Understand Education as a discipline in relation to Constitutional Goals, social issues & modern values.
				4. Understand the concept, scope & objectives of Education
				5. Realize the concept of Curriculum & Syllabi
				6. Design Curriculum in the context of school experiences, evaluation, power, ideology, process & practice and its transactional modes.
	IX	Assessment for learning	1. Assessment of the Learning Process	Student-teachers will be able to:
				1. Get basic knowledge for assessment of learning
				2. Know the process of evaluation and its uses
				3. Write educational objectives
				4. Know different techniques of evaluation, evaluation tools and their uses.

				5. Know different characteristics of evaluation tools
				6. Know different types of teacher-made tests and will be able to construct them
				7. Compute simple statistics to assess learning
			2. Assessment of Learning System	Student-teachers will be able to:
				1. Understand the different aspects & complexities of Learning System
				2. Know about different school records, designed for specific purposes
				3. Understand the relationship between school & community
				4. Acquire knowledge about infrastructural & human resources in a school
				5. Understand the curricular process of a school
				6. Evaluate the effectiveness of the school and its other functional aspects
				7. Explore Students' Support System and other achievements of a school
	EPC- 2	Drama & Arts in Education		Student-teachers will be able to:
				1. Understand the use of Drama as a pedagogy

				2. Use Role Play techniques in the teaching-learning process.
				3. Understand the importance of the dramatic ways of presentation
				4. Integrate Singing Methods in the teaching-learning process.
Semester	Course No.	Course Name	Sub-courses	5. Understand various Dance forms and their integration into the educational process Learning Outcomes
111	VII (B)	Pedagogy of School Subjects – Part II	Pedagogy of Language Teaching (Bengali& English)	6. Use of Drawing & Painting in the teaching-learning process Student-teachers will be able to: 7. Develop creativity through different creative art forms 1. Design appropriate teaching-learning strategy/approach suited to a particular content. 8. Understand the efficacy of the different Art forms in the teaching-learning process

				2. Be at home with the principles of construction content analysis of school curriculum
				3. Use ICT and various teaching aids in teaching of languages
				4. Understand the historical development of Language teaching
				5. Develop various language learning skills
				6. Prepare a blueprint of what & how is to be delivered prior to entering the class.
			Pedagogy of Social Science Teaching (History, Political Sc., Economics, Fine Arts)	Student-teachers will be able to:
				1. Be aware of teaching & learning of the subject concerned.
				2. Examine critically the major concept, principles & values related to the subject concerned.
				3. Engage students with the various methods of teaching the concerned subject
				4. Provide students historical knowledge of the concerned subject and enhance their pedagogical analysis of the subject.
			Pedagogy of Science Teaching (Physical Sc. & Life Sc.)	Student-teachers will be able to:
				1. Be aware of teaching & learning of the subject concerned
				2. Examine critically the major concept, principles & values related to the subject concerned.
				3. Engage students with the various methods of teaching the concerned subject

				4. Enhance their pedagogical analysis of the subject
			Pedagogy of Mathematics Teaching	Student-teachers will be able to:
				1. Know about mathematics curriculum & text-book preparation.
				2. Know about practical activities related to mathematics
				3. Understand about assessment & evaluation in mathematics teaching-learning process.
				4. Apply Math related concepts of Pedagogical analysis to school-based Math Curriculum and learning design.
				5. Understand math-based simulation & integrated lesson plans.
	School Internship with Community based activities like gardening, cleaning, organizing rallies & campaigns on social issues, celebration of national festivals, first-aid, etc.			Student-teachers will be able to:
				1. Acquire hands-on experience of all school activities & record keeping, viz. morning assembly & midday meal activities, class time-tables, students' & faculty attendance records, stock register, meeting resolutions & co-curricular activities.
				2. Apply Pedagogical knowledge & skills in real classroom settings
				3. Analyze the various real-life problems school students face during teaching-learning process through the Action Research projects,
				4. Evaluate pedagogical strategies to see if they are helping to achieve learning outcomes when applied in real-life classes.

		5. Innovate, improve or tailor existing teaching strategies as per students' diverse needs and interest to meet learning objectives
		6.

Semester	Course No.	Course Name	Learning Outcomes
IV	VI	Gender, School & Society	Student-teachers will be able to:
			1. Develop gender sensitivity.
			2. Understand gender issues faced in schools
			3. Understand paradigm shifts in gender studies
			4. Understand how gender, power & sex is connected with Education in the context of enrolment, curriculum & pedagogy.
			5. Apply & evaluate the knowledge & understanding of Gender during real life field engagements (practicum)
	VIII (B)	Knowledge & Curriculum – Part II	Student-teachers will be able to:
			1. Realize the difference between curriculum & syllabi
			2. Discover the relationship between power, curriculum & ideology.
			3. Design curriculum in the context of school experiences, evaluation, power, ideology, process & practice, and its transactional mode.
			4. Apply & evaluate the knowledge & understanding of Curriculum during real life field engagements (practicum)
	X	Creating an Inclusive school	Student-teachers will be able to:

			1. Sensitizes the concepts of inclusive education & social inclusions
			2. Familiarize themselves with the programs & policies of inclusive education in India
			3. Understand types, causes, preventive measures & characteristics of different disabilities
			4. Understand street children, platform children, orphans, children born & brought up in correctional homes, child labour & other socio-economically backward children
			5. Know how inclusion can be practised in mainstream classes.
			6. Apply & evaluate the knowledge & understanding of Inclusive Education during visits to Special & Inclusive schools (practicum)
	XI	Health & Physical Education	Student-teachers will be able to:
			1. Understand the basic scenario of Health education in India
			2. Develop knowledge of common & uncommon diseases in India, their remedies & preventive measures
			3. Learn Tech related health risks & their remedies
			4. Study the health Education vision & mission of India
			5. Apply & evaluate the knowledge & understanding of health education during field engagements or while practising yoga & athletics (practicum)
	XI	Peace & Value Education	Student-teachers will be able to:
			1. Understand the concepts of peace & value
			2. Understand the components & different perspectives of peace education
			3. Be acquainted with methods & evaluation of value education
			4. Apply the understanding of peace & value to develop value-based stories, value-based co-curricular activities, value-based learning designs & integrating value during content delivery
	XI	Guidance & Counselling	Student-teachers will be able to:

			1. Understand the concepts of guidance & counselling
			2. Understand the concept of mental health
			3. Understand the characteristics of abnormal behaviour & mental illness
			4. Analyse the difference between adjustment & maladjustments
			5. Apply the knowledge while conducting Case Studies on maladjusted behaviours like truancy, lying, anxiety, phobia, substance abuse, anti-social behaviour, etc (practicum)
	XI	Work & Vocational Education	Student-teachers will be able to:
			1. Comprehend the modern approaches to work education as opposed to its traditional methods
			2. Acquire basic skills needed to incorporate modern methods & approaches to teaching of Work Education
			3. Acquire basic skills needed in a Work Education laboratory or to manage Work Units like project selection, budget planning, time allocation, material needed, exhibition of finished products, etc.
			4. Apply the knowledge in critically evaluating work education syllabus in the West Bengal Board of Secondary Education (WBBSE)
			5. Create new & innovative objects wall-mask making, clay modelling, paper making, paper-cutting work, cardboard work, book binding, glass painting, butik printing, tailoring & needle work, bamboo work, wood craft, fruit preservation, household wiring & electrical gadget repairing, terrace gardening, etc.
	XI	Yoga Education	Student-teachers will be able to:
			1. Understand the concept of yoga, its utility in modern life and the ancient systems of yoga
			2. Develop awareness of historical aspects of yoga
			3. Acquire skills of meditational practices & techniques
			4. Acquire skills to keep a healthy mind & body

			5. Practice Asanas & Pranayama
			6. Real life experience of yoga through visits to yoga ashrams & centres
	XI	Environmental & Population education	Student-teachers will be able to:
			1. Understand the concepts of environment, sustainable development & population education
			2. Be aware of the educational policies on environment & population education
			3. Analyse various population & environment education related issues like women's empowerment, ecofeminism, quality of life, population explosion, adolescent reproductive health, etc
			4. Apply the knowledge during field engagements – reporting on visits to polluted sites, industrial sites, etc., preparing resource material on any environmental issues along with a sustainable evaluation strategy, spreading environmental awareness through campaigns, etc.
	EPC - 3	Critical Understanding of ICT	Student-teachers will be able to:
			1. Understand the concept of ICT
			2. Understand security & ethical issues related to ICT, policies concerned with ICT, the concepts of hardware & software, usage of Windows/Linux Operating system, MOOCs, virtual universities, E-Contents, Online learning, etc.
			3. Develop the skills to use MS Word, Excel & Power Point, use of Internet for surfing & blogging & Techno-Pedagogic skills
			4. Apply the Technological knowledge & Pedagogical skills to prepare Lesson Plans
			5. Analyse different ICT uses in order to select the most appropriate as per school students' needs and interest to meet learning objectives
			6. Evaluate the various uses of ICT in order to choose appropriate ICT

			based learning resources.
			7. To introduce or improve the Lesson Plans/Teaching Strategies by exploring ICT based the multi-sensory learning.
	EPC - 4	Yoga Education – Self Understanding & Self Development	Student-teachers will be able to:
			1. Sensitize themselves towards the interrelationship between Yoga & Self-understanding, self-development & well being
			2. Develop skills to practice Mudras, Kriyas, Pranayama, meditation, etc.
			3. Perform yoga in different positions – supine position, prone position, sitting & standing position
			4. Analyse the significance of yoga in minimizing stress.
			5. Evaluate the values related to different yoga positions for physical & psychological well beings
			6. Designing & creating new yoga related activities to develop self-esteem