PROGRAMME OUTCOME

PROGRAMME SPECIFIC OUTCOME

&

COURSE OUTCOME

OF

UNDER GRADUATE COURSES

Internal Quality Assurance Cell

BABA BHAIRABANANDA AUTONOMOUS MAHAVIDYALAYA, CHANDIKHOLE

Dist: Jajpur, Odisha

CONTENT

Faculty of Arts

Faculty of Science

Faculty of Commerce

Arts Faculty

ANTHROPOLOGY

A) PROGRAM OUTCOMES

- This program could provide well trained anthropologists for research laboratories, teaching, NGOs, archaeological survey of India, administration & management, museums, tourism & heritage sector, social services, forensic laboratories and many other diversified fields

B) PROGRAM SPECIFIC OUTCOMES

- The student will be able to possess knowledge, skills & aptitude related to field work methods, research tools & techniques, basic human physiology, social structure and organisation, pre-historic knowledge, human evolution & fossils, tribes & other communities of India, human & environmental relationships, Demographic knowledge, human growth & development, anthropology & its applications, forensic science etc..

C) COURSE OUTCOMES

- To enable students to learn human genetics, cell, chromosomes, abnormalities, laws of inheritance & basic human biology.
- On successful completion of the course, student can acquire knowledge on social control, social organization & institution, economy & property inheritance, concept of religion & magic etc.
- To enable students to learn geo-chronology of earth, pre-historic culture, tools & techniques used in pre-historic era & reconstruction of past through various dating methods.
- The course will enable the students to learn the relationship between human & non-human primates, the origin of primate, the phylogenetic relationship & distribution of primates as well as origin of modern humans.
- On completion of this course, the students are enabled with the knowledge of basic concepts on peasants & tribes in India, constitutional safeguards & developmental programmes, community & caste system along with the changes in villages of India.
- This course aims to enlighten the students on concepts in ecology, adaptation to various ecological conditions, ecological rules, human adaptation in pre-state societies & ecological dimensions.
- This course aims to provide basic concept of race, major races of mankind, human & genetic diversity as well as population composition & demographical knowledge.
- On successful completion of this course, the students shall be well versed with the concept of culture and various theories of culture and society like evolutionism, diffusionism, functionalism & structuralism.
- This course aims to develop an understanding of the conceptual framework of human growth and development, pre-natal & post-natal growth, bio-cultural factors, nutrients and their functions, human physique and their body composition.

- This course aims to provide an in-depth knowledge of research methods & fieldwork methods by focussing on tools & techniques of data collection as well as evaluation & analysis of data.
- On successful completion of this course, the student shall be able to understand various pre-historic eras like Pleistocene, Mesolithic, Neolithic & proto-historic culture of India along with various rock art forms of India.
- This course aims to provide the student with the knowledge of anthropology & its application in day to day life, in various sectors, future dynamics, bio-social implications, conceptual framework, anthropological concepts in social development.
- On successful completion of this course, a student shall be well versed with the concept of forensic science and its application, basic human skeletal biology, use of forensic science in personal identification as well as medicolegal use of forensic science.
- The course focuses to enlighten the students regarding the origin, history & development of anthropology in India, study various aspects of Indian village as well as a special focus on development projects and problems related to tribes in India is also studied.
- This course aims to provide an understanding of anthropological approach to understand religion, economic organisations, political institutions & various associations of our society.
- To enlighten the students about the concept and meaning of demography, theories of demography, population composition, census & national population policy of India.

ECONOMICS

C) PROGRAM OUTCOMES

- Economics subject enables the learners to build up a professional carrier as economists, financial advisors, economics planners and policy makers.
- It prepares them to cope up with the stress and strain involved in the process of economic development.
- Department supports the education and training of students, teachers and research in economics

D) PROGRAM SPECIFIC OUTCOMES

1. The behavioural patterns of different economic agents, advance theoretical issues and their applications.
2. Macroeconomics
3. Understand the basic concept of microeconomics.
4. Acquaint with some basic statistical methods to be applied in economics.
5. Acquaint with some basic mathematical methods to be applied in economics.
6. Acquaint with some basic theoretical concept of public finance.
7. Acquaint with the measurement of development with the help of theories along with the conceptual issues of poverty and inequalities with Indian perspectives.
8. Delineate the fiscal policies designed for developed and developing economics.

9. Facilitate the historical developments in the economic thoughts propounded by different schools.
10. Learn the basic concept of monetary analysis and financial marketing in Indian financial markets.
11. Learn the development issues of Indian economy.
12. Acquaint with some basic concept of environmental economics along with the solution of the environmental problems.
13. Learn the real and monetary sides of International economics.
14. Acquaint with the characteristics of the economy of Odisha.

C) COURSE OUTCOMES

Core – I (INTRODUCTORY MICROECONOMICS)

- After completion of the course, the students shall be able to explore the subject matter of Economics
- To know supply and demand: How market works, markets and welfare
- This course will enable the households- The budget constraint
- The firm and market structures
- The input markets- The demand for labour.

Core – II (MATHEMATICAL METHODS FOR ECONOMICS – I)

- This course will enable students to know more about Set and set operations.
- Elements of matrix algebra and input output analysis.
- Differential calculus and its economic applications.
- Integral calculus and its economic applications.
- Use of differential and difference equations in economics.

Core – III (INTRODUCTORY MACRO ECONOMICS)

- After completion of this paper, the students will be able to know basic concepts of macro economics.
- Measurement of macroeconomic values
- To know about Money – Evolution and function, cash transaction, cash balances, etc.
- Knowledge about Inflation, Deflation, Depression and Stagflation
- Determination of National income

Core – IV (MATHEMATICAL METHODS FOR ECONOMICS – II)

- To know about Linear Models.
- Second and higher order derivatives.
- Differentials and total derivatives.
- Single and multivariable optimisation.
- Optimisation with Equality constraints.

Core – V (MICROECONOMICS – I)

- After completion of the course, the students shall be able to know the Basic concepts of microeconomics such as laws of demand and supply and elasticity etc.
- Concepts of consumer behaviour like cardinal utility and ordinal utility analysis.
- Application of Indifference curve analysis in deriving demand curves, price effect, income effect and substitution effect.
- Theory of production- iso-quants, laws of returns to scale, law of variable proportion.

- Traditional and modern theory of cost.

Core – VI (MACROECONOMICS – I)

- The students will be able to know the Theories of Consumption Function.
- Theories of Investment Function.
- Demand for and supply of money.
- Aggregate Demand and Aggregate Supply.
- Inflation, unemployment, expectations and trade cycles.

Core – VII (STATISTICAL METHODS FOR ECONOMICS)

- Basic concepts of statistics such as measures of central tendency, dispersion, skewness and kurtosis.
- Elementary probability theory including probability distributions.
- Methods of sampling and census.
- Correlation and simple regression
- Index numbers.

Core – VIII (MICROECNOMICS – II)

- To analyse the behavioural patterns of different economic agents regarding profit, price, cost etc.
- The decision making process in different market situations such as perfect competition, monopolistic competition, monopoly and oligopoly markets.
- To deal with the advance theoretical issues and their practical applications of distribution theories.
- General equilibrium, economic efficiency and market failure.

Core – IX (MACROECONOMICS – II)

- This course will help students understand financial markets and reforms.
- Open economy macroeconomics.
- Modelling economic growth.
- Macroeconomic policy.
- Schools of macroeconomic thought and the fundamentals of macroeconomic theory and policy.

Core – X (PUBLIC ECONOMICS)

- This course will enable students to understand introduction to public finance.
- Public expenditure.
- Public revenue.
- Public budget.
- Public debt.

Core – XI (INDIAN ECONOMY – I)

- After completion of this course, the students shall be able to have knowledge of basic characteristics of Indian economy as a developing economy.
- Population and economic development
- National Income in India - The growth story and Regional disparities
- Economic planning in India
- Current challenges.

Core – XII (DEVELOPMENT ECONOMICS – I)

- The students shall be able to have knowledge of economic development.
- Theories of economic growth and development.

- Poverty, inequality and development.
- Institutions and economic development.
- Agriculture, industry and economic development.

Core – XIII (INDIAN ECONOMY – II)

- Once the course is completed, the students shall have an idea about Agricultural development in India.
- Industrial development in India.
- Tertiary sector and HRD.
- Externa sector- Foreign trade, export and import, balance of payment, trade policies,and foreign capital.
- Indian economy and environment -Environmental Policies, rules, National Forest policy, Policy statement for abatement of pollution, National conservation strategy, etc.

Core – XIV (DEVELOPMENT ECONOMICS – II)

- This course will enable students to know about Population and development - Demographic concepts, costs and benefits of population growth etc.
- Dualism and economic development - Geographic, social and
- technological, regional inequalities, international inequality, dependency, exploitation and unequal exchange
- Environment and development.
- Financing economic development.
- Globalisation, international trade and economic development.

DSE – I (ECONOMIC HISTORY OF INDIA – 1857 TO 1947)

- This course will enable the students to know about Colonial India: Background and introduction.
- Macro trends- National income, population and occupational structure
- Agriculture - Agrarian structure and land relations.
- Railways and industry - De-industrialisation debate, evolution of entrepreneurial and industrial structure
- Economy and state in the imperial context.

DSE – II (ODISHA ECONOMY)

- After completion of this course, the students will know about Introduction of the economy of Odisha not only before 1947 but also onwards of independence regarding the economy of Odisha.
- Macroeconomic of Odisha
- Economy of agriculture and its allied activities.
- Economy of industry, health, education specially elementary education, secondary education, higher education etc.

DSE – III (ECONOMICS OF AGRICULTURE)

- After completion of this course students will acquaint about the concept of agriculture, its importance, linkage between agriculture and industry.
- Agricultural marketing structure and its system.
- Agricultural price policy.
- From traditional agriculture to modern agriculture concept
- Impact of WTO on agriculture and its shortcomings.

EDUCATION

A) PROGRAM OUTCOMES

- After graduation Education helps in realization of human values and sense of social service.
- Graduates in Education will be responsible and dutiful citizen having critical temper and creative ability.
- Promotes teaching ability to young and adults alike.
- The course generates employability in primary and secondary levels.
- Provides scope for higher studies and research in Education.

B) PROGRAM SPECIFIC OUTCOMES

1. Understand basic concepts and ideas of educational theory.
2. Build understanding and perspective on the nature of the learner, diversity and learning.
3. Comprehend the role of the systems of governance and structural – functional provisions that support school education.
4. Develop understanding about teaching, pedagogy, school management and community involvement.
5. Build skills and abilities of communication, reflection, art, aesthetics, theatre, self expression and ICT.

C) COURSE OUTCOMES

Core – I (BASICS IN EDUCATION)

- After completion of the paper, students shall be able to explain the concept of education and its relationship with philosophy.
- Bases of Education - Meaning, nature and purpose of Education. Aims and functions.
- Reflections of Indian schools of Philosophy on Education.
- Western schools of Philosophy and their Educational implications.
- Doctrines of Great Educators of East and West and their influence on the practices of school Education with special reference to aims and ideals of Education, curriculum, method of teaching and the role of teacher.

Core – II (EDUCATION AND SOCIETY)

- After completion of this paper, students shall be able to justify Education as a process and explain its function.
- They shall be able to describe the aims of education from sociological perspective.
- The students will be competent to list various agencies of Education and their functions.
- They can justify Education as a sub-system of society and how other sub-systems affect Education.
- After this paper the students will be able to appreciate the importance of Education for social change.

Core – III (THE LEARNER AND LEARNING PROCESS)

- After completion of this paper, the students shall be able to establish relationship between Education and Psychology.

- They shall understand various methods used to study individual behavior.
- The students will be able to explain the application of Education Psychology in teaching learning process.
- Understanding individual difference from intelligence, creativity and personality point of view and explain the concept of learning and factors affecting learning.
- They shall be able to reflect the contribution of various learning theories in teaching learning process and explain different category of people from different personality type and the type of adjustment.

Core – IV (PEDAGOGICAL SKILLS)

- After completion of this course, the students shall be able to explain the concept of pedagogy.
- They shall be able to differentiate pedagogy from other allied concepts.
- They will be able to define type of task of teaching.
- Establish relationship between teaching and learning.
- In addition, they shall be able to list out different approaches and methods of teaching.

Core – V (TECHNOLOGY AND INNOVATIONS IN EDUCATION)

- On completion of this course, the students will be able to understand the meaning, nature and scope of Educational Technology.
- The will be able to explain with examples various approaches to Educational Technology.
- They shall describe systems approach and its application in Educational context.
- The students will be capable of explaining the concepts, principles, modes, process and barriers of communication and ther implications in Educational context.
- They shall be able to explain the instructional design and its underlying principles and describe different models of teaching and their use in effective classroom teaching.

Core – VI (PEDAGOGY OF SCHOOL SUBJECTS)

- On completion of this paper, the students shall be able to explain the meaning and scope of History and relate History with other school subjects.
- They will be able to explain the different approaches to organization of contents in History.
- Achieve mastery over different methods and approaches for curriculum transaction.
- List out the different types of teaching learning materials in history and explain their importance.
- This paper will enable them to prepare lesson plan in History.

Core – VII (STATISTICS IN EDUCATION)

- This paper will enable students to describe the importance of statistics in field of Education.
- After completion of this course the students will be able to convey the essential characteristics of a set of data by representing in tabular and graphical forms.
- Compute relevant measures of average and measures of variation.
- The can spell out the characteristics of normal probability of distribution.

- Examine relationship between and among different types of variables of a research study.

Core – VIII (CURRICULUM DEVELOPMENT & EDUCATIONAL GUIDANCE)

- On completion of this paper, the students shall be able to define and explain the concept of curriculum.
- They can list different types of curriculum with examples and suggest bases of curriculum such as, Philosophical, Psychological and Sociological.
- Describe different considerations for curriculum planning and elucidate different process of curriculum development.
- They shall be able to explain the role of teacher in curriculum development and identify major issues and trends in curriculum.
- Explain National Curriculum Framework (2005), explain different types of guidance & counselling along with listing out different type of counselling services and the role of teacher in organising those services.

Core – IX (EDUCATIONAL ASSESSMENT & EVALUATION)

- After studying the course the students shall be able to describe the role of assessment in Education and differentiate measurement, assessment and evaluation.
- Establish the relationship among measurement, assessment and evaluation and to explain different forms of asessment that aid student learning.
- Use wide range of assessment tools and techniques and construct these appropriately.
- Classify educational objectives in terms of specific behavioural form and prepare a good achievement test on any school subject.
- Explain the characteristics of good measuring instruments and list out different type of assessment techniques.

Core – X (INTRODUCTION TO EDUCATIONAL RESEARCH)

- On completion of this course the students shall be able to describe the nature, purpose, scope of research in Education.
- Identify types of research in Education and explain the characteristic of qualitative, quantitative and mixed research.
- Select and explain an appropriate method for a research study.
- Select appropriate tools and techniques for the collection of data.
- Describe the procedure of preparation of Research Report.

Core – XI (HISTORY OF EDUCATION IN INDIA)

- This course will enable students to narrate the concept of Education in the context of Indian heritage.
- Describe Education in ancient India, particularly, Vedic Education, panishadic Education and the Buddhist Education.
- Critically examine the Education system in Medieval India.
- Elaborate the role of teacher, school and community in preservation of Indian heritage and achievement of National goals.
- Evaluate the Education system during British period with spewcial emphasis on the commissions and committees. Elaborate the status of Education during post-independence period with special emphasis on the commissions and committees.

Core – XII (COMPARATIVE EDUCATION)

- Students shall be able to explain the scope of comparative Education.
- List out the factors of comparative Education.
- Compare the structure, curriculum and evaluation system of India with that of China, Japan, U.K and U.S.A.

Core – XIII (EDUCATIONAL PLANNING, ADMINISTRATION AND MANAGEMENT)

- After completing the course, the students will be able to explain the concept, nature, scope and principles of Educational management.
- Describe the functions of Educational management and administration along with listing down various types of administration.
- Elaborate the steps in planning.
- Explain different types of administration and elaborate functions of state level Educational bodies.
- Describe the sources of financing in Education.

Core – XIV (CONTEMPORARY CONCERNS IN INDIAN EDUCATION)

- After completion of the course, the students shall be able to explain the concept of universalization of elementary and secondary education along with its implementation strategies.
- To describe present position of secondary education.
- Explaining the challenges of secondary education.
- Explaining the present scenario of higher education and agencies for improvement.
- Explain the concept of value education, environment education and life skills education.

DSE – I (ICT IN EDUCATION)

- Once the course is completed, the students shall be able to explain the concept, nature and scope of ICT in Education.
- Differentiate Web 1.0 and Web 2.0 and describe the importance of open source software in Education.
- List and explain various approaches in adoption and use of ICT in Education and various stages of ICT usages in general and pedagogical usages in particular.
- Describe the needed teacher competencies for ICT usage in the classroom.
- Demonstrate the use of various computer software such as Word processing, Spreadsheets and Presentation.

DSE – II (SPECIAL EDUCATION)

- On completion of the course, the students shall be able to know about the concept, nature, objectives, types and historical perspective of special Education.
- Explain the innovations and issues of special Education.
- Elaborate the policies and programmes of special Education.
- Able to identify different type of special category children and understand various Educational interventions meant for special children.
- Explain the role of resource teacher and special teacher.

DSE – III (POLICY AND PRACTICES IN SCHOOL EDUCATION IN ODISHA)

On completion of the course the students will;

- Analyze the various policies on education for school education in Odisha.
- Evaluate progress of school education.
- Examine the problems in implementation of policies on school education.
- Explore status of women education and education for SC, ST and minorities in India.

DSE – IV (POLICY AND PRACTICES IN SCHOOL EDUCATION IN ODISHA)

On completion of the course the students shall be able to;

- Define meaning and scope of inclusive education.
- Identify the assumptions of disability underline current general and special education practicals..
- Understand various suggestions given by different recent commissions on education of children with disabilities for realizing the concept of "Universalization of Education".
- Explore and utilize pedagogical approaches that can support students with a variety of learning profiles in respectful ways..
- Explain the meaning and implications of universal design in learning (UDL) for classroom pedagogy.
- Examine different support services and collaboration for inclusive education.

ENGLISH

A) PROGRAM OUTCOMES

- Read, interpret and write about a diverse range of texts in English.
- Understand those texts analytically and critically.
- Understand those texts on the basis of careful close reading.
- Understand those texts through past and current literary theory.
- Understand that those text are culturally constructed in time, place and tradition.
- Understand how those texts inform culture.
- Participate in the critical and cultural discourses of English.
- Participate appropriately through multiple spoken and written forms.
- Analyze instances of the variety of literary forms closely in terms of style, figurative language and convention.

B) PROGRAM SPECIFIC OUTCOMES

1. The students know the nature of the subject in comparison to the secondary level.
2. The students get more knowledge of structure and semantics.
3. The students have the literary sense and comprehension of the subject.

C) COURSE OUTCOMES

Core – I (BRITISH POETRY AND DRAMA 14^{TH} O 17^{TH} CENTURIES)

- After completion of this course, the students shall be able to understand 14^{th} century poetry, spirit of renaissance and period of expansion of horizons.
- Chauser: The wife of Bath's Tale.
- Thomas Champion, Sir Philip Sidney, etc.
- William Shakespeare: Twelfth Night.
- Marlowe: The Jews of Malta.

Core – II (BRITISH POETRY AND DRAMA 17TH TO 18TH CENTURIES)

- The students will be able to know Period of English revolution, the Jacobean period etc.
- John Milton, John Donne, Andrew Marvel, G. Herbert.
- Ben Jonson.
- Pope and Robert Burns.
- Dryden: All for Love.

Core – III (BRITISH LITERATURE: 18TH CENTURY)

- This course will enable students to know Restoration, Glorious revolution, Neo-classicism, Enlightenment.
- Joseph Addison.
- Daniel Defoe.
- Oliver Goldsmith and Samuel Johnson.
- Thomas Gray.

Core – IV (INDIAN WRITING IN ENGLISH)

- After completion of this course, the students will be able to know Indian writing in English.
- Crystallization: R. K. Narayan.
- Nissim Ezekiel, Kamala Das, Jayanta Mahapatra, A. K. Ramajan and Sarojini Naidu.
- Performing: Salman Rashdie – Midnight's Children.
- Maturation: Amitav Ghosh, Shadow Lines.

Core – V (BRITISH ROMANTIC LITERATURE)

- The students after completing this course will be familiar with The Romantic Revival.
- William Blake.
- William Wordsworth, Samuel Taylor Coleridge and Lord Byron.
- John Keats and P. B. Shelly.
- William Wordsworth.

Core – VI (19TH CENTURY BRITISH LITERATURE)

- After completion of this course, the students will be familiar with the 19th Century British literature.
- Bacon's Essays.
- Bentrand Russel "Unpopular Essays".
- Jane Austen.
- Criticism: Matthew Arnold.

Core – VII (AMERICAN LITERATURE)

- American Civil War and Literary Growth.
- Harriet Jacobs.
- Billy Budd.
- Walt Whitman, Emily Dickinson, Robert Frost and Rita Dove.
- Desire under the Elms-Eugene O'Nell.

Core – VIII (BRITISH LITERATURE: EARLY 20TH CENTURY)

- The students will be able to understand highlights which include developments in society and economy in the western society.

- T.S. Elliot, W.B. Yeats, Ezra Pound, T.E. Hulme and Hilda Dolittle.
- War poetry: Wilferd Owen and Siegfred Sassoon.
- Virginia Woolf.
- T. S. Elliot(contd.).

Core – IX (EUROPEAN CLASSICAL LITERATURE)

- The students shall be able to know Classical Antiquity and Geographical space.
- Epic poetry: Homer.
- Tragedy: Sophocies.
- Comedy: Aristophanes.
- Criticism: Aristotle.

Core – X (WOMEN'S WRITING)

- In defence of A literature of their own – Mary Wollstonecraft.
- Desiring self: Fiction by Women from the centre.
- Desiring and dissenting self: Fiction by Women fom the periphery.
- Tongues of flame: Poetry by Women from across the world.
- Discoursing at par: Literary criticism by women.

Core – XI (MODERN EUROPEAN DRAMA)

- The students will be familiar with Politics, social change and the stage and European drama.
- Henrik Ibsen.
- Heiner Muler.
- Eygene Ionesco.
- Samul Beckett.

Core – XII (INDIAN CLASSICAL LITERATURE)

- The students will be able to understand Vedic Literature.
- Selections from epic literature.
- Sanskrit drama.
- Aesthetics and maxims.

Core – XIII (POSTCOLONIAL LITERATURE)

- Definition and characteristics of Post Colonial Literature.
- Indian literature.
- Carribean African literature.
- South African literature.
- Criticism

Core – XIV (POPULAR LITERATURE)

- Introduction to Popular literature.
- Detective fiction.
- Romance.
- Campus Fiction.
- Rewriting mythology.

DSE – I (LITERARY THEORY)

- After completion of the course, the students will be able to understand – Crises in literary criticism and the search for a method.
- New criticism and formalism.
- Structuralism and Poststructuralism.

- Maxims and new Historicism.
- Ramchandra Guha and Judith Butler.

DSE – II (READING WORLD LITERATURE)

- Concept of the idea of world literature and uses of reading world literature.
- European literature.
- Carribean and African literature.
- Canadian short fiction.
- Latin American Poetry.

DSE – III (RESEARCH METHODOLOGY)

- Research and the initial issues.
- Literature review.
- Hypotheses and formulation of research design.
- Results and documentation.
- Internal assessment.

HISTORY

A) PROGRAM OUTCOMES

- After the completion of BA, history scholars will be able to distinguish between primary and secondary sources and identify and evaluate evidence.
- Students will demonstrate in discussion and written work their understanding of different peoples and cultures in past environments and of how those cultures changed over the centuries.
- They will be able to produce their own historical analysis of documents and develop the ability to think critically and historically when discussing the past.
- The study of history will give them the ability to compare and contrast different processes, modes of thoughts and modes of expression from different historical time periods and in different geographical areas.
- Students will offer multi-causal explanations of major historical developments based on a contextualized analysis of interrelated political, social, economic, cultural and intellectual processes.
- Students will be able to write an original research paper that locates and synthesizes relevant primary and secondary sources and has a clear, coherent and plausible argument, logical structure, proper references.
- Students will present orally their research or a summary of another's research in an organized, coherent and compelling fashion.

B) PROGRAM SPECIFIC OUTCOMES

1. Students will have the ability to apply historical methods to evaluate critically the past and how historians and others have interpreted it.
2. Students will be able to acquire basic historical research skills, including the effective use of libraries, archives and data bases.
3. Students will be able to organise and express their thhoughts clearly and coherently both in writing and orally.
4. Students will be able to demonstrate broad knowledge of historical events and periods and their significance.

5. Students will be able to recognise how different individuals, groups, organisations, societies, cultures, countries and nations have affected history. History gave the students wisdom and foresight for the future.

C) COURSE OUTCOMES

Core – I (HISTORY OF INDIA – I)

- After completing this course, the students shall be able to Reconstruct Ancient Indian History.
- Pre-historic hunter-gatherers.
- The advent of food production.
- The Harappan civilization.
- Cultures in transition.

Core – II (SOCIAL FORMATIONS AND CULTURAL PATTERNS)

- On completing the course, the students will be able to understand Evolution of humankind.
- Neolithic culture.
- Bronze age civilizations.
- Nomadic groups in central and west Asia.
- Ancient Greece.

Core – III (HISTORY OF INDIA – II)

- The students will be able to understand Economy and Society.
- Changing political formations (circa 300BCE to circa CE).
- Towards early medieval India (circa CE fourth century to CE 750).
- Religion, philosophy and society (circa 300 BCE-CE 750).
- Cultural developments (circa 300 BCE-CE 750).

Core – IV (SOCIAL FORMATIONS AND CULTURAL PATTERNS OF THE MEDIEVAL WORLD)

- The students will study Roman Republic.
- Religion and culture in ancient Rome.
- Economic developments in Europe from 7^{th} to 14^{th} centuries.
- Religion and culture in medieval Europe.
- Societies in Central Islamic lands.

Core – V (HISTORY OF INDIA – III)

- In this course, students will be studying early Medieval India.
- Political Structure.
- Agrarian Structure and Social change.
- Trade and Commerce.
- Religious and Cultural developments.

Core – VI (RISE OF MODERN WEST – I)

- The students will be able to know transition from feudalism to capitalism.
- Early colonial expansion.
- Renaissance.
- The reformation.
- Economic developments of the sixteenth century.

Core – VII (HISTORY OF INDIA – IV)

- After completion of the paper, the students shall be able to interpret the sources of Delhi Sultanate.
- Sultanate Political structures.
- Emergence of Regional identities.
- Society and economy.
- Religion, society and culture.

Core – VIII (RISE OF MODERN WEST – II)

- The students will be able to understand 17th century European crises.
- The English revolution and European politics in the 18th century.
- Rise of modern science.
- Mercantilism, European economies and Preludes to the Industrial Revolution.
- The American Revolution of 1776.

Core – IX (HISTORY OF INDIA – V)

- The students will be able to find out sources and Historiography.
- Establishment of Mughal rule.
- Consolidation of Mughal rule.
- Society and economy.
- Cultural ideas.

Core – X (HISTORICAL THEORIES & METHODS)

- After completion of this course, the students shall be able to understand the meaning and scope of History.
- Traditions of Historical Writings.
- History as Interdisciplinary practice.
- Modern theories.
- Historical methods.

Core – XI (HISTORY OF MODERN EUROPE – I)

- The students will be able to understand The French Revolution.
- Revolution and its European repercussions.
- Restoration and Revolution: c. 1815 – 1848.
- Capitalist Industrialization and Socio-Economic transformation.
- Varieties of Nationalism and the remaking of states in the 19th and 20th centuries.

Core – XII (HISTORY OF INDIA – VII)

- After completion of the course, the students shall be able to understand India in the mid 18th century.
- Expansion and consolidation od colonial power.
- Colonial state of ideology.
- Economy and society.
- Popular resistance: causes and consequences.

Core – XIII (HISTORY OF INDIA – VIII)

- The students are expected to know cultural changes and social and religious reform movements.
- Nationalism: Trends upto 1919.
- Gandhian nationalism after 1919: Ideas and movements.
- Communalism and Partition.

- Emergence of a New State.

Core – XIV (HISTORY OF MODERN EUROPE – II)

- The students will be able to know liberal democracy, working class movements and socialism in the 19th and 20th centuries.
- The crises of feudalism in Russia and experiments in socialism.
- Imperialism, war and crises: c. 1880-1939.
- Cultural transformation since circa 1850.
- Intellectual developments since circa 1850.

DSE – I (HISTORY OF THE UNITED STATES OF AMERICA)

- The students will be able to know the background of USA.
- Making of the republic.
- Evolution of American Democracy.
- Early capitalism.
- The Agrarian south and civil war.

DSE – II (HISTORY AND CULTURE OF ODISHA)

- The students will be able to know socio-political life of early and medieval Odisha.
- Religion, Art and Literature of early and medieval Odisha.
- Political and economic structure in medieval Odisha.
- Colonialism in Odisha.
- Socio-cultural changes in modern Odisha.

DSE – III (HISTORY OF UNITED STATES OF AMERICA – II)

- The students shall be able to know about Reconstructions: Political changes and Economic transformation.
- Resistance and reform.
- U.S. imperialism.
- Afro-American movements.
- Socio-Cultural, religious and intellectual movements.

POLITICAL SCIENCE

A) PROGRAM OUTCOMES

- Students graduating through B.A. Hons Programme in Political Science from this college are expected develop an analytical skill which will enable them to solve the problem related issues that he faces in next level of studies.
- Students, although at the initial stage after getting admission faces difficulty in their language skill, but when they pass the programme, they are expected to become pretty able to communicate their understanding in the subject.
- Students of this programme will become capable to ask questions, critically appreciate a scholarly presentation of any form and debate upon the issues which invite cross discussions.
- Students graduating from this college in this programme become able to relate the social and national issues to what they have learnt from their books and in the classroom situations.

- 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.
- Students completing the programme become confident in the sense that they feel they are employable.
- 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.
- The programme instils among the students the greater values of life to become worthy citizen of the country.

B) PROGRAM SPECIFIC OUTCOMES

1. A basic understanding of the Programme creates capabilities to articulate and participate as an informed and responsible citizen who has a direct role to play in nation-building.
2. The Programme provides an introduction to the dynamics of Indian politics.
3. This activity equips the student for competitive exams conducted by UPSC, WBPSC, SSC, NET, SET and enhances employability.
4. For those opting for a career in politics, study of this Programme greatly props ones meaningful engagement with policymaking and its implementation by developing relevant skills.
5. With an exposure to the functioning of different political systems across the world and their constitutions and governing structures, students would have a leeway in taking up leadership roles as a result of this activity that enhances skills.

C) COURSE OUTCOMES

Core – I (UNDERSTANDING POLITICAL THEORY)

- Introducing Political Theory(What is politics, Theorising polics).
- Traditions of Political Theory(Liberal, Marxist, Anarchist, Conservative).
- Democracy: The History of an idea.
- Procedural Democracy and its critique.
- Paticipation and representation.

Core – II (CONSTITUTIONAL GOVERNMENT AND DEMOCRACY IN INDIA)

- The constituent assembly & the constitution)
- Philosophy of the Constitution.
- Fundamental Rights and Directive Principles.
- The Legislature : Parliament and The Executive: President and Prime Minister.
- The Judiciary: Supreme Court.
- Federalism: Divisions of Powers, Emergency Provisions, Fifth and Sixth Schedules and Panchayati Raj and Municipalities.

Core – III (POLITICAL THEORY-CONCEPTS AND DEBATES)

- Negative freedom: Liberty and Positive freedom: Freedom as Emancipation and Development.
- Formal Equality: Equality of opportunity, Political equality, Egalitarianism.
- Procedural Justice, Distructive Justice and Global Justice.
- Natural Rights, Moral and Legal Rights, three generations of Rights and Rights and Obligations.
- Major debates.

Core – IV (POLITICAL PROCESS IN INDIA)

- Political parties and the party system.
- Determinants of voting behaviour.
- Regional aspirations.
- Caste and Politics.
- The changing nature of the Indian State.

Core – V (INTRODUCTION TO COMPARATIVE GOVERNMENT AND POLITICS)

- Understanding comparative politics.
- Historical context of modern government.
- Colonialism and decolonialism.
- Themes of comparative analysis – Britain, Brazil, Nigeria and China.

Core – VI (PERSPECTIVES ON PUBLIC ADMINISTRATION)

- Public administration as a discipline.
- Theoretical perspectives.
- Neo-Classical theories.
- Public policy.
- Major approaches in public administration.

Core – VII (PERSPECTIVES ON INTERNATIONAL RELATIONS AND WORLD HISTORY)

- Studying International relations.
- Classical realism and Neo-Realism & Liberalism and Neo-liberalism.
- Marxist approaches, Feminist perspectives, Eurocentricism and perspectives from the global south.
- World War – I, Significance of the Bolshevik Revolution, Rise of Facism and World War – II.
- Cold War, Emergence of the third World, collapse of the USSR, post Cold War.

Core – VIII (POLITICAL PROCESSES AND INSTITUTIONS IN COMPARATIVE PERSPECTIVE)

- The Approaches to studying comparative politics.
- Electoral system.
- Party system.
- Nation-State.
- Democratization.

Core – IX (PUBLIC POLICY AND ADMINISTRATION IN INDIA)

- Public policy.
- Decentralization.
- Budget.
- Citizen and Administration interface.
- Social welfare administration.

Core – X (GLOBAL POLITICS)

- Globalization: Conceptions and Perspectives.
- Contemporary Global issues.
- Ecological issues, proliferation of Nuclear Weapons and Internationa Terrorism.
- Migration, Human Security.

Core – XI (CLASSICAL POLITICAL PHILOSOPHY)

- Text and interpretation.
- Antiquity Plato and Aristotle.
- Interlude : Machiavelli.
- Possessive individualism hobbes.
- Locke: Laws of Nature and Presentation themes.

Core – XII (INDIAN POLITICAL THOUGHT – I)

- Traditions of Pre-colonial Indian Political Thought.
- Ved Vyasa: Rajadharma and Manu: Social laws.
- Kautilya: Theory of State.
- Aggannasutta: Theory of Kingship.
- Abul Fazal: Monarchy; Kabir – Syncretism..

Core – XIII (MODERN POITICAL PHILOSOPHY)

- Modernity and its discourses.
- Romantics – Jean Jacques Rousseau and Mary Wollstonecraft.
- Liberal socialist – John Stuart Mill.
- Radicals – Karl Marx.
- Alexandra Kollontal.

.**Core – XIV (INDIAN POLITICAL THOUGHT – II)**

- Introduction to modern Indian Political Thought II – Rammohan Roy: Rights.
- Pandit Ramabai: Gender, Vivekananda: Ideal Society.
- Gandhi: Swaraj, Ambedkar: Social Justice.
- Tagore: Critique of Nationalism, Iqbal: Community and Savarkar: Hindutva.
- Nehru: Secularism and Lohia: Socialism.

DSE – I (HUMAN RIGHTS IN A COMPARATIVE PERSPECTIVE)

- Human Rights: Theory and Institutionalization.
- Issues: Torture-USA and India.
- Surveillance and Censorship: China and India.
- Caste and Race: South Africa and India.
- Gender and Violence, Adivasis/Aboriginals and the Land Question: Australia and India.

DSE – II (DEVELOPMENT PROCESS AND SOCIAL AND SOCIAL MOVEMENT IN CONTEMPORARY INDIA)

- Development process since Independence – State, Planning, Liberalization, Reform.
- Industrial development strategy and its impact on the social structure – mixed economy, privatization, new middle class..
- Agrarian development strategy and its impact on the social structure – land reforms, agrarian crisis.
- Social movements – Tribal, Peasants, Dalit, Women, Maoist challenge, civi9l rights movements.

DSE – III (INDIA'S FOREIGN POLICY IN A GLOBALIZATION WORLD)

- India's Foreign Policy: From a postcolonial state to an aspiring global power.
- India's relations with the USA and USSR/Russia , India's engagements with china.
- India in South Asia: Debating Regional Strategies.

- India's negotiating style and strategies: Trade, Environment and Security regimes.
- India in the contemporary multipolar world.

DSE – IV (WOMEN POWER AND POLITICS)

- Patriarchy.
- Feminism.
- Family, Community and State.
- History of the Women's Movement in India and Violence against women.
- Work and Labour.

SANSKRIT

A) PROGRAM OUTCOMES

- Students graduating through B.A. Hons Programme in Sanskrit from this college are expected to develop an analytical skill which will enable them to solve the problem related issues that he faces in next level of studies.
- Students, although at the initial stage after getting admission faces difficulty in their language skill, but when they pass the programme, they are expected to become pretty able to communicate their understanding in the subject.
- Students of this programme will become capable to ask questions, critically appreciate a scholarly presentation of any form and debate upon the issues which invite cross discussions.
- Students graduating from this college in this programme become able to relate the social and national issues to what they have learnt from their books and in the classroom situations.
- 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.
- Students completing the programme become confident in the sense that they feel they are employable.
- 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.
- The programme instils among the students the greater values of life to become worthy citizen of the country.

B) PROGRAM SPECIFIC OUTCOMES

1. Students are expected to develop the Sanskrit language skill to communicate both in writing and verbally.
2. It is expected that at the end of the programme students will get a fair knowledge of the development of Sanskrit language and literature visà-vis its culture – how it emerged, evolved and sustained through the passage of more than thousand years.
3. After graduating they are expected to grow the sense of art and literature that will enable them to understand better the human social and cultural relationships.
4. Students will also become able to appreciate the art and literature, especially in terms of great Indian heritage which is embedded in Sanskrit literature.

5. Students are also expected to learn analytical skills while learning the appreciation ability.

C) COURSE OUTCOMES

Core – I (MORAL TEACHINGS AND BASICS OF SANSKRIT)

- Hitopadesa.
- Yaksaprasna of Mahabharata.
- Sabdarupa and dhaturupa.

Core – II (DRAMA-I & HISTORY OF SANSKRIT LITERATURE-I)

- Abhijnanasakuntalam (Act I – IV).
- History of Sanskrit Literature-I.

Core – III (DRAMA-II & DRAMATURGY)

- Abhijnanasakuntalam (Act V-VII).
- Dramaturgy.

Core – IV (AN INTRODUCTION TO THE TECHNIQUE OF PANINIAN GRAMMAR & PROSODY)

- Vocabulary relevant to Sanskrit grammar and arrangement of Paninian Grammar.
- Samjnaprakaranam.
- Chandas.

Core – V (POETRY & HISTORY OF SANSKRIT LITERATURE-II)

- Meghadutam.
- History of Sanskrit Literature-II.

Core – VI (META-RULES OF PANINIAN GRAMMAR, POETICS AND FIGURES OF SPEECH)

- Paribhasaprakaranam.
- Sahityadarpanah (Ch. I & II).
- Sahityadarpanah (Alamkaras).

Core – VII (CASES AND CASE ENDINGS IN PANINIAN GRAMMAR & TRANSLATION-I)

- Siddhantakaumudi (Karaka-Vibhakti I-IV).
- Translation from Sanskrit-Odia/English.

Core – VIII (INSCRIPTIONS, UPANISAD & BHAGAVADGITA)

- Inscriptions.
- Kathopanisad.
- Bhagavatagita.

Core – IX (CASE AND CASE ENDINGS OF PANINIAN GRAMMAR, TRANSLATION-II)

- Siddhantakaumudi.
- Translation from Odia/English passage-Sanskrit.
- Amarakosa.

Core – X (ORNATE PROSE & PROSE WRITING)

- Dasakumarracharitam.
- Sukanasopadesa.
- Essay in Sanskrit.
- Expansion of idea in Sanskrit.

Core – XI (ORNATE POETRY IN SANSKRIT & HISTORY OF SANSKRIT LITERATURE-III)

- Sisupalabadham.
- Kiratarjuniyam.
- History of Sanskrit Literature-III (Mahakavyas and Champu).

Core – XII (VEDA, VEDIC GRAMMAR & HISTORY OF VEDIC LITERATURE)

- Vedic Suktas.
- Vedic Grammar.
- History of Vedic Literature.

Core – XIII (ARTHASASTRA, DHARMASASTRA AND AYURVEDA)

- Arthasastra.
- Manusmrti.
- Ayurveda.

.**Core – XIV (TECHNICAL LITERATURE IN SANSKRIT)**

- Jyotisha.
- Vastu.

DSE – I (THE SCIENCE OF VASTU AND VRKSA)

- Gruhopakarana Prakarana of Vastu Ratnakara.
- Vrksayurveda in Brhatsamhita.

DSE – II (SOCIO-POLITICAL THOUGHT IN ANCIENT INDIA)

- Yajnavalkyasmrti.
- Manusmrti.

DSE – III (ETHICAL LITERATURE IN SANSKRIT)

- Chanakyaniti.
- Nitisataka of Bhartrrhari.
- Viduraniti.

SOCIOLOGY

A) PROGRAM OUTCOMES

- Sociology seeks to understand all aspects of human social behaviour, including the behaviour of individuals as well as the social dynamics of small groups, large organizations, communities, institutions, and entire societies.
- Sociologists are typically motivated both by the desire to better understand the principles of social life and by the conviction that understanding these principles may aid in the formulation of enlightened and effective social policy.
- Sociology provides an intellectual background for students considering careers in the professions or business.
- Students graduating through B.A. Honsin Sociology Programme from this college are expected to develop an analytical skill which will enable them to solve the problem related issues that he faces in next level of studies.
- Students, although at the initial stage after getting admission faces difficulty in their language skill, but when they pass the programme, they are expected to become pretty able to communicate their understanding in the subject.

- Students of this programme will become capable to ask questions, critically appreciate a scholarly presentation of any form and debate upon the issues which invite cross discussions.
- Students graduating from this college in this programme become able to relate the social and national issues to what they have learnt from their books and in the classroom situations.
- 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.

B) PROGRAM SPECIFIC OUTCOMES

1. Critical Thinking: The programme seeks to develop in students the sociological knowledge and skills that will enable them to think critically and imaginatively about society and social issues.
2. Sociological Understanding: The ability to demonstrate sociological understandings of phenomena, for example, how individual biographies are shaped by social structures, social institutions, cultural practices, and multiple axes of difference and inequality.
3. Written and Oral Communication: The ability to formulate effective and convincing written and oral arguments.
4. Better understanding of real life situation: The ability to apply sociological concepts and theories to the real world and ultimately their everyday lives.
5. Analytical thinking: Field survey and preparation of dissertation paper is an inseparable part of Sociology Hons Programme. Students have to collect primary data for census as well as his/her research topic and analyse the data to draw conclusions. So, qualitative and quantitative analytical skills are enhanced.
6. Observation power: a sensible observation power is necessary to identify the research problems in field study. So a perception about human society slowly grows up.
7. Communication skills and Social interaction power: Students of Sociology stream have to work beyond the class room boundary at the time of field study activities. As a result good communication skill develops while interacting with local people.
8. Ethical and Social Responsibility: Students have to learn about institutions, folkways , mores, culture, social control ,social inequality, population composition, population policy, society and culture of India. All these help to instil among the students of Sociology a sense of ethical and social responsibility.
9. Professional and Career Opportunities: Students will have the opportunity to join professional careers in Sociology and allied fields. Sociology provides an intellectual background for students considering careers in business, social services, public policy, government service, nongovernmental organizations, foundations, or academia. This programme lays foundation for further study in Sociology, Social work, Rural Development, Social Welfare and in other allied subjects

C) COURSE OUTCOMES

Core – I (INTRODUCTION TO SOCIOLOGY)

- Sociology: Definition and subject matter, nature and scope.

- Basic Concepts: Society, culture, community, institutions, etc.
- Individual and Society: Individual and Society, socialization, stages and agencies of socialization, etc.
- Social Stratification: Meaning and definition, dimensions of stratification, etc.
- Social Control: Meaning and types, formal and informal social control, etc.

Core – II (INDIAN SOCIETY)

- Composition of Indian Society: Caste, Tribe, Religion, Language.
- Hindu Social Organisation: Bases of Hindu Social Organisation, Varna, Ashrama and Purushartha. Doctrine of Karma.
- Marriage and Family in India: Hindu marriage as Sacrament, forms of hindu marriage, etc.
- The caste systemin India: Origin, features and functions, caste and class, etc.
- Socia change in modern India: Sanskritization, westernization, secularization and modernization.

Core – III (SOCIOLOGICAL THOUGHT)

- Auguste Comte.
- Herbert Spencer.
- Karl Max.
- Emile Durkheim.
- Max Weber.

Core – IV (SOCIAL CHANGE AND DEVELOPMENT)

- Social Change.
- Theories of Social Change.
- Factors of Social Change.
- Economic Growth and Social Development.
- Models of Development.

Core – V (RESEARCH METHODOLOGY)

- Meaning and Significance of Social Research.
- Research Design and Types of Research Design.
- Hypothesis: Meaning, characteristics etc.
- Qualitative Social Research.
- Quantitative methods in Social Research

Core – VI (GENDER AND SOCIETY)

- Social Construction of Gender.
- Feminism: Meaning, origin and growth of Feminist Theories.
- Gender and Development.
- Status of Women in India.
- Major Challenges and issues affecting Women in India.

Core – VII (RURAL SOCIOLOGY)

- Origin and Scope of Rural Sociology.
- Rural social structure.
- Rural social problems.
- History of Evolution.
- Rural Development Programmes.

Core – VIII (GLOBALIZATION AND SOCIETY)

- Meaning and characteristics of globalization.
- Dimensions of contemporary globalization.
- Consequences of globalization.
- Globalization and Indian Society.
- Impact of globalization on religion, culture, education, family, marriage, women and tribes.

Core – IX (MARRIAGE, FAMILY AND KINSHIP)

- Theoretical perspectives.
- Marriage.
- The family.
- Contemporary issues.
- The kinship and clan system.

Core – X (SOCIAL DISORGANIZATION AND DEVIANCE)

- Social disorganization.
- Theories of deviant behaviour.
- Crime and punishment.
- Social problems.
- Atrocities against women, domestic violence, dowry and divorce.

Core – XI (POLITICAL SOCIOLOGY)

- State: Characteristics, Aristotle's classification of types of state.
- Influence, power and authority.
- Political culture and political socialization.
- Political participation.
- Political parties and pressure groups.

Core – XII (ENVIRONMENT AND SOCIETY)

- Environment and its concepts.
- Environmental issues.
- Environmental movements.
- Contemporary environmental problems.
- Environment protection efforts at the global level and the national level in India.

Core – XIII (URBAN SOCIOLOGY)

- Meaning, nature, scope and importance of Urban Sociology.
- Theories of patterns of city growth.
- Social institutions of Indian urban communities.
- Urban social problems.
- Urban development in India plans.

.**Core – XIV (SOCIOLOGY OF SOCIAL INSTITUTIONS)**

- Community, groups, institutions and organizations.
- Family, marriage and kinship.
- Religion.
- Education.
- Economy.

DSE – I (SOCIOLOGY OF MOVEMENTS)

- Social movements.

- Religious movements in India.
- Peasants movements in India.
- Backward class movements in India.
- Women's movements in India.

DSE – II (INDUSTRIAL SOCIOLOGY)

- Introduction: Meaning and definition of Industrial Sociology.
- Social-Industrial thought.
- The Development of Industry.
- Industrial Organisation.
- Industrial and labour relations.

DSE – III (POPULATION STUDIES)

- Population studies.
- Population theories.
- Population consumptions in India.
- Population planning and policies.
- Population control.

Science Faculty

BOTANY

A) PROGRAM OUTCOMES

- Knowledge and understanding of: 1. The range of plant diversity in terms of structure, function and environmental relationships. 2. The evaluation of plant diversity. 3. Plant classification and the flora of Odisha & Bihar. 4. The role of plants in the functioning of the global ecosystem. 5. A selection of more specialized, optional topics. 6. Statistics as applied to biological data.
- Intellectual skills – able to: 1. Think logically and organize tasks into a structured form. 2. Assimilate knowledge and ideas based on wide reading and through the internet. 3. Transfer of appropriate knowledge and methods from one topic to another within the subject. 4. Understand the evolving state of knowledge in a rapidly developing field. 5. Construct and test hypothesis. 6. Plan, conduct and write a report on an independent term project.
- Practical skills**:**Students learn to carry out practical work, in the field and in the laboratory, with minimal risk. They gain introductory experience in applying each of the following skills and gain greater proficiency in a selection of them depending on their choice of optional modules. 1. Interpreting plant morphology and anatomy. 2. Plant identification. 3. Vegetation analysis techniques. 4. A range of physiochemical analyses of plant materials in the context of plant physiology and biochemistry. 5. Analyze data using appropriate statistical methods and computer packages. 6. Plant pathology to be added for sharing of field and lab data abtained.
- Transferable skills: 1. Use of IT (word-processing, use of internet, statistical packages and databases). 2. Communication of scientific ideas in writing and orally. 3. Ability to work as part of a team. 4. Ability to use library resources. 5. Time management. 6. Career planning.

- Scientific Knowledge**:** Apply the knowledge of basic science, life sciences and fundamental process of plants to study and analyze any plant form.
- Problem analysis**:**Identify the taxonomic position of plants, formulate the research literature, and analyze non reported plants with substantiated conclusions using first principles and methods of nomenclature and classification in Botany.

B) PROGRAM SPECIFIC OUTCOMES

1. Design solutions from medicinal plants for Health problems, disorders and disease of human beings and estimate the phytochemical content of plants which meet the specified needs to appropriate consideration for the public health.
2. Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and development of the information to provide valid conclusions.
3. Create, select, and apply appropriate techniques, resources, and modern instruments and equipments for Biochemical estimation, Molecular Biology, Biotechnology, Plant Tissue culture experiments, cellular and physiological activities of plants with an understanding of the application and limitations.
4. Apply reasoning informed by the contextual knowledge to assess plant diversity, its importance for society, health, safety, legal and environmental issues and the consequent responsibilities relevant to the biodiversity conservation practice.
5. Apply ethical principles and commit to environmental ethics and responsibilities and norms of the biodiversity conservation.
6. Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

C) COURSE OUTCOMES

- Understand the diversity among Algae.
- Know the systematic, morphology and structure, of Algae. Understand the life cycle pattern of Algae.
- Understand the useful and harmful activities of Algae.
- Understand the Biodiversity of Fungi
- Know the Economic Importance of Fungi
- Understand the morphological diversity of Bryophytes.
- Understand the economic importance of the Bryophytes.
- Understand the Biochemical nature of cell.
- Know the chemical nature of biomolecules.
- Understand the different types of interaction in Biomolecules.
- Structure and general features of enzymes.
- Concept of enzyme activity and enzyme inhibition.
- Learn about the movement of sap and absorption of water in plant body.
- Understand the plant movements.
- Understand the morphological diversity of Bryophytes and Pteridophytes and Gymnosperms.
- Understand the economic importance of the Bryophytes and Pteridophytes and Gymnosperms.
- Know the evolution of Bryophytes and Pteridophytes and Gymnosperms.
- Understand the habit of the angiosperm plant body.
- Know the vegetative characteristics of the plant.
- Learn about the reproductive characteristics of the plant.
- Understand the plant morphology and basic taxonomy.

- The eukaryotic cell cycle and mitotic and meiotic cell division
- Structure and organization of cell membrane
- Process of membrane transport and membrane models
- Mendelian and Neo-mendelian genetics
- To study the phenomenon of dominance, laws of segregation, independent assortment of genes.
- To understand the different types of genetic interaction, incomplete dominance, codominance, inter allelic genetic interactions, multiple alleles and quantitative inheritance etc.
- To equip the students with skills related to laboratory as well as industries based studies
- Know importance and scope of plant physiology.
- Understand the plants and plant cells in relation to water.
- Understand the process of photosynthesis in higher plants with particular emphasis on light and dark reactions, C3 and C4 pathways.
- Understand the respiration in higher plants with particular emphasis on aerobic and anaerobic respiration.
- Learn about the movement of sap and absorption of water in plant body
- Understand the plant movements.
- Know the scope and importance of the discipline.
- Understand plant communities and ecological adaptations in plants.
- Know the concept of methodology in taxonomy.
- Learn about conservation of biodiversity, Non-conventional Energy and Pollution.
- Discover botanical regions of India and vegetation types of Odisha.
- Understand Bioremediation, Global warming and climate change.
- Gain knowledge about "Cell Science".
- Understand Cell wall Plasma membrane, Cell organelles and cell division.
- Learn the scope and importance of molecular biology.
- Understand the biochemical nature of nucleic acids, their role in living systems, experimental evidences to prove DNA as a genetic material.
- Understand the process of synthesis of proteins and role of genetic code in polypeptide formation.
- Understand the role plants in human welfare.
- Gain knowledge about various plants of economic use.
- Know importance of plants & plant products.
- Understand the chemical contents of the plant products.
- Know about the utility of plant resources.
- Know the taxonomic position, occurrence, thallus structure, reproduction of Bryophytes.
  72.Know the scope of Paleobotany, types of fossils, its role in global economy and geological time scale.
- Understand the various fossil genera representing different fossil groups.
- Know the details of Microscopy- Principles of light microscopy, electron microscopy (TEM and SEM).
- Understand & perform Chromatography and cultural techniques in Botany.
- Understand the methods used in Micrometry, Microtomy and Microphotography.
- Learn and understand about mineral nutrition in plants.
- Understand the growth and developmental processes in plants.
- Know about Photosynthesis and Respiration in plants.
- Understand the process of translocation of solutes in plants
- Know the nitrogen metabolism and its importance.

- Understand the properties of Monosaccharides, Oligosaccharides and Polysaccharides.
- They will learn about the Significance of Carbohydrates.
- Understand the Properties of saturated fatty acids, and unsaturated fatty acids.
- Understand lipid metabolism in plants.
- Understand the Beta Oxidation, Gluconeogenesis and its role in mobilization of fatty acids during germination.
- They will learn about the Significance of lipids.
- They will be able to understand Brief outline of biosynthesis of amino acid.
- Understand the protein - structure and classification and protein biosynthesis in prokaryotes and eukaryotes.
- They will learn about the nucleic acid metabolism.
- Understand the diversity of Gymnosperms in India
- Know the evolutionary trends and affinities of living gymnosperms with respect to external and internal features
- Know the conceptual development of „taxonomy" and „systematics"
- Understand the Phylogeny of angiosperms -A general account of the origin of Angiosperms.
- Understand the general range of variations in the group of angiosperms.
- Trace the history of development of systems of classification emphasizing angiospermic taxa.
- To learn the wide activities in angiosperm and trends in classification.
- Learn about the characters of biologically important families of angiosperms.
- Know the floral variations in angiospermic families, their phylogeny and evolution.
- Understand various rules, principles and recommendations of plant nomenclature produces in plant identification.
- Understand major evolutionary trends in various parts of angiospermic plants
- Know the methods of pollination and fertilization.
- Know fertilization, endosperm and embryogeny.
- Understand the scope & importance of Anatomy.
- Know various tissue systems.
- Understand the normal and anomalous secondary growth in plants and their causes.
- Perform the techniques in anatomy.
- With respect to recent knowledge students should know about the different tools in the taxonomy so as to relocate the phylogenetic position of plant or taxa.
- Understand the concept, principle and types of sterilization methods.
- Know the concept and characteristics of antiseptic, disinfectant and their mode of action.
- Know the cultivation methods of bacteria, yeast, fungi and virus.
- Principle, working and applications of instruments viz, pH meters, spectrophotometer, centrifuge, viscometer, and laminar air flow.
- Understand the Microbial Genetics and Recombination in Bacteria.
- Know the terminologies in plant pathology.
- Understand the scope and importance of Plant Pathology.
- Know the prevention and control measures of plant diseases and its effect on economy of crops.
- Understand the science of plant breeding.
- To introduce the student with branch of plant breeding.

- To study the techniques of production of new superior crop verities.
- Understand the modern strategies applied in Genetics and Plant Breeding to sequence and analyze genomes
- Get the detail knowledge about modern strategies applied in Plant Breeding for crop improvement i.e. Mass selection, Pureline Selection and Clonal selection.
- Know about exploitation of Heterosis, hybrid and variety development and their release through artificial hybridization.
- Know about the genomic organization or living organisms, study of genes genome, chromosome etc.
- Gain knowledge about the mechanism and essential component required for prokaryotic DNA replication.
- Understand the fundamentals of Recombinant DNA Technology.
- Know about the Genetic Engineering.
- Understand the principle and basic protocols for Plant Tissue Culture.
- The concept of operon and its structure and regulation.

CHEMISTRY

A) PROGRAM OUTCOMES

- Demonstrate, solve and an understanding of major concepts in all disciplines of chemistry.
- Solve the problem and also think methodically, independently and draw a logical conclusion.
- Employ critical thinking and the scientific knowledge to design, carry out, record and analyze the results of chemical reactions.
- Create an awareness of the impact of chemistry on the environment, society, and development outside the scientific community.
- Find out the green route for chemical reaction for sustainable development.
- To inculcate the scientific temperament in the students and outside the scientific community.
- Use modern techniques, decent equipments and Chemistry software

B) PROGRAM SPECIFIC OUTCOMES

1. Gain the knowledge of Chemistry through theory and practical's.
2. To explain nomenclature, stereochemistry, structures, reactivity, and mechanism of the chemical reactions.
3. Identify chemical formulae and solve numerical problems.
4. Use modern chemical tools, Models, Chem-draw, Charts and Equipments.
5. Know structure-activity relationship.
6. Understand good laboratory practices and safety.
7. Develop research oriented skills.
8. Make aware and handle the sophisticated instruments/equipments.

C) COURSE OUTCOMES

After completion of these courses students should be able to;

- Write an expression for rate constant K for third order reaction
- Solve the numerical problems based on Rate constant
- Understand the term specific volume, molar volume and molar refraction Know the meaning of phase, component and degree of freedom and derive the expression for rotational spectra for the transition from J to J+1
- Know the meaning of various terms involved in co-ordination chemistry
- To understand Werner's formulation of complexes and identify the types of valences
- Know the limitations of VBT
- Know the shapes of d-orbital's and degeneracy of d-orbital's and draw the geometrical and optical isomerism of complexes
- Define organic acids and bases.
- Distinguish between geometrical and optical isomerism.
- Discuss kinetics, mechanism and stereochemistry of SN^1 and SN^2 reactions.
- Compare between E_1 and E_2 reactions.
- Understand the evidences, reactivity and mechanism of various elimination and substitution reactions.
- Know the principles of common ion effect and solubility product and study the methods of thermo-gravimetric analysis.
- Understand the principles of Spectro-photometric analysis and properties of electromagnetic radiations.
- Study the Voltammetry and Polarography as an analytical tool and measure the absorbance of atoms by AAS.
- Know the importance of chemical industry and classify various insecticides.
- Study the nutritive aspects of food constituents.
- Understand the characteristics of some food starches and study the manufacture of cement, dyes, Glass, Soap and detergents by modern methods. Know the role of agriculture chemistry and its potential
- Understand the basic concept of soil, properties of soil & its classification on the basis of pH.
- Know the different plant nutrients, their functions and deficiency symptoms.
- Identify the problematic soil and recommend a method for their reclamation.
- Have the knowledge of various pesticides, insecticides, fungicides and herbicides.
- Understand Mechanics of system of particles and know the Redox reaction.
- Study the Crystal Field Theory.
- Solve the cell reaction and calculate EMF and calculate interplanar distance.
- Understand De-Broglie hypothesis and Uncertainty principle
- Derive Schrödinger's time dependent and independent equations
- Study the electronic configuration of lanthanides and actinides and get knowledge of Crystalline solid.
- Understand different operation in stoichiometric molecule and study the Bioinorganic chemistry.

- Understand the p-type semiconductor and n-type semiconductor.
- To study UV, IR and NMR spectroscopy.
- Discuss different types of rearrangement reactions.
- Determine structure of compound by spectroscopic methods and understand the difference between carbocation and carbanion.
- To study alkaloids, Ephedrine, citral molecule with their properties and application.
- Know the different analytical techniques.
- To understand different types of separation techniques and to study principle, construction and working of GC and HPLC and to give an extended knowledge about chromatographic techniques used for separation of amino acids.
- Discuss the problem based on distribution coefficient and extraction techniques.
- Know the various pharmaceutical drugs, their application and synthesis.
- To study the waste management.
- To understand the function of dyes, paints and pigments.
- To study the various type of surfactants.
- To know about molasses and bagasse and to study the different types of polymer.
- Calculate molar and normal solution of various concentrations and determine specific rotations and percentage of to optically active substances by polorimetrically.
- Study the energy of activation and second order reaction and study the stability of complex ion and stranded free energy change and equilibrium constant by potentiometry.
- Find out the acidity, Basicity and PKa Value on pH meter.
- Study the gravimetric and volumetric analysis of ores and alloy and prepare a various inorganic complexes and determine its % purity and to study binary mixture with removal of borate and phosphate.
- To understand the chromatographic techniques
- Perform the Binary mixtures.
- Preparation of organic compounds, their purifications and run TLC.
- Determination of physical constant: Melting point, Boiling point.
- Different separation techniques.

GEOLOGY

A) PROGRAM OUTCOMES

- Ensuring an atmosphere conducive to teaching and learning
- Preparing students for the competitive world
- Holistic development of young adults enrolled as students
- Providing Quality Higher Education and taking care of intellectual, social, economic, emotional needs of students
- Adopting student-friendly approaches to teaching and learning as far as practicable

- Kindling interest in students not only in their subjects but also in related fields and help them ramify and diversify areas of interest

B) PROGRAM SPECIFIC OUTCOMES

1. Collaborative learning is encouraged during the field training programmes and educational tours
2. Encouraging faculty members to participate in conferences, seminars, workshops and other faculty development programmes to enrich and update their academic and administrative knowledge and capacity building
3. Encouraging standard research activities of faculty members and students
4. Organizing Career Counselling sessions for students
5. Assists students in competitive examinations (JAM etc.)
6. Overall development of an ethical sense and increasing awareness in terms of gender sensitization, cleanliness, environmental protection etc.

C) COURSE OUTCOMES

After completion of these courses students should be able to;

- Concept of internal structure of earth.
- Concept about origin of earth.
- Understanding the concept of landform development.
- Concept about changes of climates in quaternary time.
- Concept of geological time and plate tectonics.
- Fundamental concepts of interpretation and aerial photography.
- Basic principles to identify the earth surface features from satellite image and digital image processing.
- Concept of crystal chemistry and structure.
- Physics of rock forming minerals.
- Idea about structure of minerals.
- Concept about natural light.
- Idea about optical properties of minerals.
- Concept about cosmic abundance of elements and different chemical bonding.
- Physical properties and formation process of magma.
- Forms, texture, structure and formation of various igneous rocks.
- Types and properties of igneous rocks.
- Outline of sedimentation process
- Structure and texture of various sedimentary rocks.
- Different sedimentary provenance and basins of India.
- Types of sedimentary rocks.
- Controls and types of metamorphism.
- Metamorphic facies and grades.
- Structure, texture and concepts of metamorphism.
- Types of metamorphic rocks.
- Concept about fossilization and fossil records.

- Important invertebrate groups and morphology.
- Concept about evolution of vertebrates.
- Concept about different types of plant fossils.
- Fundamentals of litho-bio and chrono-stratography.
- Sequence stratography and their subdivisions with Indian example.
- Physiography and tectonic subdivisions of India.
- Concept of stress and strain in rocks.
- Concept about different kinds of structures in rock such as fold, fault, lineation, foliation etc.
- Ability to understand different structure, deformation mechanism and uncomformity.
- Basic understanding of the concept of genesis and origin of deposits and mineral association.
- Understanding the structure and texture of deposits.
- Introductory concepts of coal and petroleum.
- Different types of ore deposits and localization.
- Concept about mineral exploration.
- Different types of metallic and industrial minerals.
- Concept about ground water and hydrological cycle.
- Different types of aquatic, ground water provinance and sea water intrusion.
- Concepts of geological aspects of location, design construction, operation and maintenance of various engineering work.
- Different types of engineering properties of rocks.
- Concept about mining and different drilling methods.
- Understanding natural disasters and its management.
- Concepts about natural resources.
- Basic understanding on the origin, classification and coal petrology.
- Highlight global and Indian scenario of coal bed methane.
- Importance of other fuels.
- To understand how earth's climate system work.
- To understand the interaction between hydrosphere and atmosphere.
- Heat budget of earth.
- Concept about climate and weather.
- Understanding world climate circulation.
- Concept about air pollution and climate change.

MATHEMATICS

A) PROGRAM OUTCOMES

- Enabling students to develop a positive attitude towards mathematics as an interesting and valuable subject of study.
- A student should get a relational understanding of mathematical concepts and concerned structures, and should be able to follow the patterns involved, mathematical reasoning.

- Ability to analyze a problem, identify and define the computing requirements, which may be appropriate to its solution.
- Introduction to various courses like group theory, ring theory, field theory, metric spaces, number theory.
- Enhancing students' overall development and to equip them with mathematical modelling abilities, problem solving skills, creative talent and power of communication necessary for various kinds of employment.
- Ability to pursue advanced studies and research in pure and applied mathematical science.

B) PROGRAM SPECIFIC OUTCOMES

1. Think in a critical manner.
2. Know when there is a need for information, to be able to identify, locate, evaluate, and effectively use that information for the issue or problem at hand.
3. Formulate and develop mathematical arguments in a logical manner.
4. Acquire good knowledge and understanding in advanced areas of mathematics and statistics, chosen by the student from the given courses.
5. Understand, formulate and use quantitative models arising in social science, Business and other context.

C) COURSE OUTCOMES

After completion of these courses students should be able to;

- Learn to solve system of linear equation.
- Learn to solve Diophantine equation.
- Learn to find roots of polynomial over rational.
- Learn to find graphs, roots and primes integer using maxima software.
- Introduction to complex analysis.
- Gain Knowledge of fundamental concepts of real numbers.
- Verify the value of the limit of a function at a point using the definition of the limit.
- Introduction to sequence and series.
- Learn to check function is continuous understand the consequences of the intermediate value theorem for continuous functions, differentiation and various rules, verify the value of the limit of a function at a point using the definition of the limit in R*R.
- Learn Maxima software.
- Problem solve on algebra and calculus by using maxima software.
- Knowledge of application of mathematics.
- Introduction to analytical geometry of 2 dimensional.
- Study of lines in 2 and 3 dimension.
- Finding equation in various form of line, circle, ellipse, sphere, cones etc.
- Give the knowledge of geometry using maxima software.
- Geometrical representation and problem solving on MVT and Rolls theorem.
- Finding extreme values of function.
- Introduction to Ordinary Differential Equation.

- Problem solve on analytic geometry and calculus by using maxima software.
- Problem solving on geometry and calculus.
- Gain Knowledge of fundamental concepts of real numbers in n dimensions.
- Find the extreme value in 2 dimensions.
- Study multiple integration.
- To understand logical concepts and to show logical equivalences by using truth tables and rules in logics.
- Learn concept related to counting.
- Introduction to advanced counting.
- Problem solving on multivariable calculus and discrete mathematics.
- Introduction to application of mathematics in real life.
- Learn to build logical concept.
- Introduction to vector space and subspace.
- Use computational techniques and algebraic skills essential for the study of systems.
- Linear equations, matrix algebra, vector spaces, eigen values and eigenvectors, Orthogonality and Diagonalization.
- To apply appropriate numerical methods to solve the problem with most accuracy.
- Using appropriate numerical methods determine approximate solution of ODE and system of linear equation.
- Compare different methods in numerical analysis w.r.t accuracy and efficiency of solution.
- To demonstrate used of interpolation method in numerical analysis.
- Use computational techniques and algebraic skills essential for the study of systems of Linear equations, matrix algebra, vector spaces, eigen values and eigenvectors, Orthogonality and Diagonalization.
- Able to understand the Euclidean distance function on R n and appreciate its properties, and state and use the Triangle and Reverse Triangle Inequalities for the Euclidean distance function on R n Explain the definition of continuity for functions from R n to R m and determine whether a given function from R n to R m is continuous development of real analysis.
- Explain the geometric meaning of each of the metric space.
- Distinguish between open and closed balls in a metric space.
- Define convergence for sequences in a metric space and Determine whether a given sequence in a metric space converges.
- Describe fundamental properties of the real numbers that lead to the formal.
- Comprehend rigorous arguments developing the theory underpinning real analysis.
- Appreciate how abstract ideas and rigorous methods in mathematical analysis can be applied to important practical problems.
- Problem solving on metric space and connected and contactless.
- Understand the importance of algebraic properties with regard to working within various number systems.
- Extend group structure to finite permutation groups (Caley Hamilton Theorem). Generate groups given specific conditions.
- Symmetry using group theory.

- Understand the three major concrete models of Boolean algebra: the algebra of sets, the algebra of electrical circuits, and the algebra of logic.
  Student will be able to solve first order differential equations utilizing the standard techniques for separable, exact, linear, homogeneous, or Bernoulli cases.
- Student will be able to find the complete solution of a nonhomogeneous differential equation as a linear combination of the complementary function and a particular solution.
- Student will have a working knowledge of basic application problems described by second order linear differential equations with constant coefficients.
- Student will be able to find the complete solution of a differential equation with constant coefficients by variation of parameters.
- Demonstrate by solving various problem based on Symmetry using group theory
- Find quotients and remainders from integer division
- Apply Euclid's algorithm and backwards substitution
- Understand the definitions of congruence, residue classes and least residues add and subtract integers, modulo n, multiply integers and calculate powers, modulo n
- Determine multiplicative inverses, modulo n and use to solve linear congruence.
- Theory of quadratic residue, Develop linear programming (LP) models for shortest path, maximum flow, minimal spanning tree, critical path, minimum cost flow, and transshipment problems.
- Understand the mathematical tools that are needed to solve optimization problems.
- Formulate pure, mixed, and binary integer programming models.
- Formulate the nonlinear programming models.
- Use some solution methods for solving the nonlinear optimization problems.
- Develop a report that describes the model and the solving technique, analyze the results and propose recommendations in language understandable to the decision-making processes in Management Engineering.
- Understand the definitions of congruence, residue classes and least residues add and subtract integers, modulo n, multiply integers and calculate powers, modulo n
- Application based on Diophantine and Chinese remainder theorem and operational research. Compute sums, products, quotients, conjugate, modulus, and argument of complex numbers. Define and analyze limits and continuity for complex functions as well as consequences of continuity. Conceive the concepts of analytic functions and will be familiar with the elementary complex functions and their properties.
- Determine whether a given function is differentiable, and if so find its derivative.
- Applies the theory into application of the power series expansion of analytic functions.
- Understand the basic methods of complex integration and its application in contour integration.
- Analyze sequences and series of analytic functions and types of convergence, Evaluate complex contour integrals directly and by the fundamental theorem, apply the Cauchy integral theorem in its various versions, and the Cauchy integral formula.

- Understand Integrability and theorems on integrability. Recognize the difference between point wise and uniform convergence of a sequence of functions.
- Illustrate the effect of uniform convergence on the limit function with respect to continuity, differentiability, and integrability.
- Study improper integration using Riemann integration.
- Applies the theory into application of the power series expansion of analytic functions.
- Understand the basic methods of complex integration and its application in contour Integration.
- To analyze sequences and series of analytic functions and types of convergence, Evaluate complex contour integrals directly and by the fundamental theorem, apply the Cauchy integral theorem in its various versions, and the Cauchy integral formula
- Solve improper integration using Riemann integration.
- Solve problem on convergence of function.
- Students will be able to define ring and subrings.
- Study of ideals and concept related to ideal.
- Study of various integral domain in ring.
- Introduction to field.
- Be familiar with the modeling assumptions and derivations that lead to PDEs. Recognize the major classification of PDEs and the qualitative differences between the classes of equations.
- Be competent in solving linear PDEs using classical solution methods.
- Problem on ring and PDE. Application of PDE in real life. Various structural study of ring.
- Students will able to understand two dimensional transformations.
- Students will able to understand three dimensional transformations.
- To get acquainted with typical problem on CG and existence solution.
- Introduction to projection and its types. Bezier curves.
- Understand and apply the concept of optimality criteria for various type of optimization problems.
- Solve various constrained and unconstrained problems in single variable as well as multivariable.
- Solve simple games using various techniques.
- Analyze economic situations using game theoretic techniques, Recommend and prescribe which strategies to implement.
- Problem solving on CG & OT.
- Application of projection in real life.
- Solve optimal real life problem based on supply and demands.
- Solve simple games using various techniques.
- Analyze economic situations using game theoretic techniques, Recommend and prescribe which strategies to implement

PHYSICS

A) PROGRAM OUTCOMES

After successful completion of three year degree program in physics a student should be able to;

- Demonstrate, solve and an understanding of major concepts in all disciplines of physics.
- Solve the problem and also think methodically, independently and draw a logical conclusion.
- Employ critical thinking and the scientific knowledge to design, carry out, record and analyze the results of Physics experiments.
- Create an awareness of the impact of Physics on the society, and development outside the scientific community.
- To inculcate the scientific temperament in the students and outside the scientific community.
- Use modern techniques, decent equipments and Phonics software's.

B) PROGRAM SPECIFIC OUTCOMES

1. Gain the knowledge of Physics through theory and practical's.
2. Understand good laboratory practices and safety.
3. Develop research oriented skills.
4. Make aware and handle the sophisticated instruments/equipments.

C) COURSE OUTCOMES

After completion of these courses students should be able to;

- Know the Cartesian, spherical polar and cylindrical co-ordinate systems.
- To understand the Special Theory of Relativity.
- Discuss the Michelson- Morley Experiment.
- To obtain the series solution by Frobenius method .
- Study the Generating function for Legendre, Hermite polynomials.
- Know the principles of structures determination by diffraction
- To understand the principles and techniques of X-rays diffraction
- Know the fundamental principles of semiconductors and be able to estimate the charge carrier mobility and density
- To give an extended knowledge about magnetic properties like diamagnetic, paramagnetic, ferromagnetic, ferrites and superconductors.
- Understand Newton's Laws of motion and their applications such as projectile and rocket motion
- Gain the knowledge of motion in central force field
- Classify elastic and inelastic scattering
- Know the difference between Laboratory and centre of mass system
- Understands Lagrangian and Hamiltonian formulation
- Solve the problems using Lagrangian and Hamiltonian formulation
- Get knowledge of canonical trans formation and Poisson's bracket.
- To discuss about dirac delta function & representation.
- To know about calculus, vector calculus, vector differentiation, integration.

- Discuss integral transform
- To know the Rutherford Experiment of atom.
- To understand molecular spectra of atom.
- To study the Raman spectra.
- To study the Zeeman Effect.
- To understand the Quantum Numbers.
- To study the Mechanical, Electrical and Thermal Properties of material.
- Discuss the type of Phase Diagrams.
- Know the solid solution and types of solid solution.
- Understanding the Point Defect, Line Defect with example.
- Study the Diffusion Mechanism.
- Know the difference between Elastic and Plastic Deformation.
- Know the AX-type crystal structure – eg. NaCl, ZnS etc.
- Understand Mechanics of system of particles.
- Know the Motion in Central Force Field.
- Elastic and inelastic scattering.
- Solve Langrangian and Hamiltonian formulation.
- Learn Canonical Transformation and Poissons Bracket.
- Understand De-Broglie hypothesis and Uncertainty principle.
- Derive Schrödinger's time dependent and independent equations
- Solve the problems using Schrödingers steady state equation.
- Get knowledge of rigid rotator
- Understand different operators in Quantum Mechanics.
- To study kinetic theory of Gases.
- To study Maxwell Relations and Application.
- Know the elementary concept of statistics.
- Understand statistical distribution of system of particles.
- To study statistical ensembles.
- To study Quantum statistics.
- Know the properties of nucleus likes binding energy, magnetic dipole moment and electric quadrupole moment
- To understand the concept of radioactivity and decays law
- To study achievement of Nuclear Models of Physics and its limitations
- To give an extended knowledge about nuclear reactions such as nuclear fission and fusion
- To understand the basic concept of Particle Physics.
- Know the special purpose Diode.
- To study the Transistor Amplifier.
- To discuss circuit network theorem.
- To discuss about IC and details of CRO
- To understand the FET, JFET,MOSFET.
- To study the Operational Amplifier and their types.
- To know the Timer IC- 555 and its classification.
- To study the Regulated Power supply.

- To understand the Sequential Logic Circuits.
- Know the history of LASERS and its basic concepts.
- Understand the basic principle and working of different types of lasers.
- Know the applications of lasers in various fields.
- Understand the characteristics of LASERS.
- Learn safety precaution sand measures while handling the lasers.
- Matrix formulation of geometrical optics.
- Discuss of interference by Newton, Young, Biprism, Michelson & Fabryperot interferometer & thin film.
- Polarization in Nicol prism, Laurent half shade polarimeter.
- Four vectors formulation & application.
- Basic concept of nuclei and nuclear model (liquid drop model and shell model)
- Discuss about Van-deGraaff generator, linear acceleratior, cyclotron.
- Basic principle of detector.
- Basic idea and features of particle physics.
- Discuss about nano structures, quantum confinement with application.
- Synthesis of nanostructures, PVD, CVD, sol-gel, photon lithography etc.
- Characterization of nanostructure & application of nano particles.

ZOOLOGY

A) PROGRAM OUTCOMES

- Demonstrate, solve and an understanding of major concepts in all disciplines of Zoology.
- Solve the problem and also think methodically, independently and draw a logical conclusion.
- Understand the evolution, phylogeny and history of phylum.
- Create an awareness of the impact of Zoology on the environment, society, and development outside the scientific community.
- To study and understand the classification of whole phyla includes in Non chordates with the help of charts/models/pictures.
- To inculcate the scientific temperament in the students and outside the scientific community.
- Use modern techniques, decent equipments and Zoology software"s and bio-informatics.

B) PROGRAM SPECIFIC OUTCOMES

1. Gain the knowledge of Zoology through theory and practical"s.
2. Study and understand the DNA Recombinant technology and its application for human welfare.
3. Understand the testing of hypothesis.
4. Use modern Zoological tools, Models, Charts and Equipments.
5. Know comparative and structure relationship among vertebrates.
6. Understand good laboratory practices and safety.
7. Develop research oriented skills.
8. Make aware and handle the sophisticated instruments/equipments.

9. Understand the immunological techniques like ELISA, Real time PCR for detection of pathogens

C) COURSE OUTCOMES

- Understand the evolution, history of phylum.
- Understand about the Non Chordate animals.
- To study the external as well as internal characters of non chordates.
- To study the distinguishing characters of non chordates.
- Understand the economical importance of Molluscs
- Understand the importance of corals.
- Understand the power of regeneration in organ and organism.
- Understand the various internal systems like Digestive system, nervous system with the help of charts.
- Understand the functions of Gemmules and spicules.
- Understand the economical importance of Molluscan shells.
- Understand the terms Histology and Physiology
- Understand the cell, tissue, organ, system and organisms.
- Study the derivatives of skin- horns, nails, hairs.
- Study and understand the terms- acidosis, alkalosis, asphexia, hypoxia, anoxia and cyanosis.
- Understand about the agencies responsible for Production of various products using biochemistry.
- Understand the term pH, Buffer.
- Understand the structure and function of carbohydrate, amino acids, proteins, and lipids.
- Understand the concept Enzymes and also Vitamins and minerals.
- Understand the Principle role of Vitamins in metabolism and Deficiency diseases.
- Know the biotic and abiotic components of ecosystem.
- Food chain & food web in ecosystem.
- Understand diversity among various groups of animal kingdom.
- Understand Animal community & ecological adaptation in animals.
- Scope , importance and management of biodiversity
- To study and understand the scope and branches of Medical Zoology.
- To aware the students for various parasites and diseases which spreads in human with the help of study of host-parasite relationship.
- To increase awareness for the health in students.
- Understand the various disease causing vectors like Mosquitoes.
- To aware about the typhoid, cholera likes disease.
- Understand the importance of medical diagnostic and also understand the term forensic Entomology
- Understand the Scope of cell biology, because cell is the basic unit of life.
- Understand the Main distinguishing characters between plant cell and animal cell.
- To study and understand the whole cell organelles with their structure and function.
- Understand the cell cycle and know the importance of various cells in body of organisms.

- Understand the various applications of cells by using cell biology like study of various types of tumour.
- Understand the Animal cells and various cell organelles by using microphotographs.
- Understand the various Applications of Biotechnology.
- Study and Understand the Hybridoma technology as well as Enzyme biotechnology.
- Study and understand the DNA Recombinant technology.
- Understand the industrial and environmental biotechnology.
- Study and understand the Stem cell biotechnology.
- Understand the Scope and Significance of Biotechnology.
- Understand the Importance of physiology and branches of it.
- Understand the terms-Osmosis, diffusion, pH and Buffer.
- Understand the Digestion and Excretion process, by studying the Organs of it
- Understand the process of Metabolism.
- Understand the term Detoxification.
- Understand the Circulatory system and Lymphatic system.
- Study the nervous system.
- Understand the Molecular biology and Genetics – study of karyotype and chromosomal disorders..
- Understand the cell divisions and types of mutation.
- Understand the structure and function of the cells.
- Understand the term cell signaling and its importance in cancer biology.
- Aware the students for Cancer.
- Understand the Tools and Techniques in Molecular Biology.
- Understand the term ELISA technique and DNA finger printing.
- To understand Origin of life with respect to prokyariotic and eukaryotic cells.
- Understand the evidences of organic evolution by anatomical embryological list, paleontological, physiological, genetics and molecular biology evidences.
- Understand theories of organic evolution, isolation, speciation.
- Understand geological time scale, methods and classification of animal distribution and factors affecting animal distribution.
- Understand the terms: Gametogenesis, Fertilization and early development.
- Understand the Morphogenesis and Organogenesis in animals.
- Understand the Aging, Apoptosis and Senescence.
- Understand the fundamentals of agricultural, forest, medical and veterinary entomology.
- Understand, Morphology and Anatomy of Insects.
- Understand intra specific and inter specific relationships among insects.
- To understand significance of beneficial and harmful insects with reference to their habit and habitat, life cycle, diseases caused by them and their control measures.
- Understand the methods for Apiculture, Sericulture, Aquaculture.
- Understand the methods of preservation o0f fish and fish products.
- Understand the pathology and economic importance of microbes in different fields(Agriculture, Industry, Medical science and food processing)

- To understand the host-microbe interaction.
- To understand the endocrine system and mechanism of hormone action.

Commerce Faculty

COMMERCE

A) PROGRAM OUTCOMES

- This program could provide Industries, Banking Sectors, Insurance Companies, Financing companies, Transport Agencies, Warehousing etc., well trained professionals to meet the requirements.
- After completing graduation, students can get skills regarding various aspects like Marketing Manager, Selling Manager, over all Administration abilities of the Company.
- Capability of the students to make decisions at personal & professional level will increase after completion of this course.
- Students can independently start up their own Business.
- Students can get thorough knowledge of finance and commerce.
- The knowledge of different specializations in Accounting, costing, banking and finance with the practical exposure helps the students to stand in organization.

B) PROGRAM SPECIFIC OUTCOMES

1. Understand the basic concepts of the commerce, management, accounting & economics.
2. Analyse relationship among commerce, trade industry, services, management and administration.
3. Perform all accounting activities and can handle type of business very well.
4. Understand application of knowledge of commerce in business service sector industry, marketing, finance entrepreneurship development etc.
5. Develop communication skills and computer awareness and rules of income tax act.
6. Think about commercial and professional way or point of view.
7. Understanding legal issue/ law relating to banking and insurance sector.
8. Self employment confidences develop.
9. Students will prove themselves in different professional exams like C.A. , C S, CMA, MPSC, UPSC. As well as other coerces.
10. Students will gain thorough systematic and subject skills within various disciplines of finance, auditing and taxation, accounting, management, communication, computer.
11. The students will acquire the knowledge, skill in different areas of communication, decision making, innovations and problem solving in day to day business activities.
12. Students can also get the practical skills to work as accountant, audit assistant, tax consultant, and computer operator. As well as other financial supporting services.
13. Students will be able to do their higher education and can make research in the field of finance and commerce.

14. Students will learn relevant Advanced accounting career skills, applying both quantitative and qualitative knowledge to their future careers in business.

C) COURSE OUTCOMES

FINANCIAL ACCOUNTING:

- To enable the students to learn principles and concepts of Accountancy.
- Students are enabled with the Knowledge in the practical applications of accounting.
- To enable the students to learn the basic concepts of Partnership Accounting, and allied aspects of accounting.
- The student will get thorough knowledge on the accounting practice prevailing in partnership firms and other allied aspects.
- To find out the technical expertise in maintaining the books of accounts.
- To encourage the students about maintaining the books of accounts for further reference

BUSINESS LAW:

- The student will well verse in basic provisions regarding legal frame work governing the business world.
- To know the students with the basic concepts, terms & provisions of Mercantile and Business Laws.
- To develop the awareness among the students regarding these laws affecting trade business, and commerce.

COST ACCOUNTING:

- To acquaint the students with basic concepts used in cost accounting, various methods involved in cost ascertainment. To understand Basic Cost concepts, Elements of cost and cost sheet
- Providing knowledge about difference between financial accounting and cost accounting
- Ascertainment of Material and Labor CostAscertainment of Material and Labor Cost
- Student's Capability to apply theoretical knowledge in practical situation will be increased

CORPORATE LAWS:

- The objective of the course is to impart basic knowledge of the provisions of the Companies Act, 2013 and the Depositories Act, 1996. To impart students with the knowledge of fundamentals of Company Law and provisions of the Companies Act of 2013.
- To apprise the students of new concepts involving in company law regime
- To acquaint the students with the duties and responsibilities of Key Managerial Personnel.Case studies involving issues in corporate laws are required to be discussed.

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. ✓To make aware the students about the valuation of shares.
- To impart knowledge about holding company accounts, amalgamation, absorption and reconstruction of company.

INCOME TAX LAW AND PRACTICE:

- To understand the concept & functions and importance of management and its application.
- To provide basic knowledge and equip students with the application of principles and provisions of Income Tax Act 1961.
- To give knowledge about preparation & Submission of Income Tax Return, Advance Tax, and Tax deducted at Source, Tax Collection Authorities under the Income Tax Act, 1961.
- To understand the concept & functions and importance of management and its application

GST & INDIRECT TAX:

- To equip students with the principles and provisions of Goods and Services Tax (GST), which is, implemented from 2017 under the notion of One Nation, One Tax and One Market and to acquaint students with basic provisions of GST Law and basic working knowledge.
- To instill the Salient features of CGST Act, SGST Act (Odisha State), IGST Act
- To acquaint the students on the procedure relating to levy of, collection and exemption from,tax: (CGST & SGST)- **meaning and scope of 'supply' under GST law**,

HUMAN RESOURCE MANAGEMENT:

- To acquaint students with the twchniques and principles to manage human resources of an organization.
- Students will be versed with emerging challenges of human resource management, work force diversity, human resource information system etc.
- Enhance the capacity of the students to manage the human assets of the organization to ensure growth of the organization.

MANAGEMENT ACCOUNTING:

- To acquaint the students with basic concepts of management accounting, and basic understanding of tools and techniques used for managerial decision making
- After the completion of this paper, the students will be able to have confidence in managing cost issues and also to keep a check on cost control and taking managerial decisions.

MANAGEMENT PRINCIPLES AND APPLICATIONS:

- To provide the students with an understanding of basic management concepts, principles and practices.
- Students would be able to make use of different management principles in the course of decision making.
- To expose students to different concepts like CPM, PERT, EVA, ROI etc.

FUNDAMENTALS OF FINANCIAL MANAGEMENT:

- To familiar the students with the fundamentals of banking and thorough knowledge of Financial operations.
- To build up the capability of students for knowing Business Finance concepts and operations.
- To make the students aware of business finance tools and practices.
- To make understandable to the students regarding the new concepts introduced in the business finance system

AUDITING AND CORPORATE GOVERNANCE:

- At the end of the paper student will have detail knowledge about principles and techniques of audit in accordance with current legal requirement and as per the guidelines of different statutory authorities.

- Students will be versed in the fundamental concepts of Auditing and different aspects of tax.
- At the end of the paper student will have detail knowledge about principles and techniques of audit in accordance with current legal requirement and as per the guidelines of different statutory authorities

BUSINESS MATHEMATICS:

- To use and understand useful functions in business as well as the concept of EMI.
- To understand the different concept of population and sample and to make students familiar with Calculation of various types of averages and variation.
- To learn the applications of matrices in business.
- To understand the students to solve LPP to maximize the profit and to minimize the cost.
- To use regression analysis to estimate the relationship between two variables and to use frequency distribution to make decision.
- To understand the techniques and concept of different types of INDEX.

DSE –1: FINANCIAL MARKETS, INSTITUTIONS & SERVICES

- ✓ This course enables the students, the practical knowledge and the tactics in the Financial market.
- ✓ To study and critically analyze the basic concepts and trends in Financial Institutions.
- ✓ To aware of the recent changes in the field of financial market

DSE-2: FINANCIAL STATEMENT ANALYSIS AND REPORTING

- ✓ To use and understand the interpretation of financial statement of an organisation.
- ✓ To make students familiar with the different techniques of analyzing the financial statement.
- ✓ Students will be able to apply multivariate analysis, ratio analysis, cross sectional analysis and interpreting the income statement and position statement of an undertaking.
- ✓ To educate students regarding corporate reporting practices like statutory and non-statutory reports, integrated reporting etc..

DSE – 3: FUNDAMENTALS OF CORPORATE TAX PLANNING

- ✓ To provide a conceptual idea about the various provisions of tax planning related to corporate sector.
- ✓ After completion of this paper, students will be able to help tax consultants in tax planning, assessment and filing income tax returns of corporate sector, thereby they can get themselves self employed

DSE-4: BUSINESS RESEARCH METHODS AND PROJECT WORK

- ✓ This course aims at providing the general understanding of business research and the methods of business research. The course will impart learning about how to collect, analyze, present and interpret data.
- ✓ After completion of this paper, the students will be able to assess and apply a range of research method on a practical project

POST GRADUATION IN EDUCATION

PHILOSOPHICAL OUNDATIONS OFEDUCATION

UNIT-I: Concept of Philosophy.
Meaning, Nature and scope of educational philosophy Different branches of philosophy and their educational implications – Metaphysics, Epistemology and Axiology. Relationship between philosophy and education.

UNIT-II: Schools of western philosophy and their educational implications – Realism, Existentialism, Perenialism, andProgressivism.

UNIT-III Schools of Indian philosophy and their educational implications – Sankhya, Vedanta, Buddhism andJainism.

UNIT-IV Doctrines of Great Educators of West and their influence on the practices of education with special reference to aims of education, curriculum, method of teaching and role of teacher - Aristotle, Rousseau, John Dewey, andFroebel.

UNIT-V Doctrines of Great Educators of East and their influence on the practices of education with special reference to aims of education, curriculum, method of teaching and role of teacher - Gandhiji, Tagore, Sri Aurobindo, and Vivekananda.

SOCIOLOGICAL FOUNDATIONS OFEDUCATION

UNIT-I: Concept of Sociology: Meaning, Nature and Scope of Educational sociology. Relationship between sociology and education. Education as a process of social system and a process of socialization.

UNIT-II: Concept of social change and social control. Factors affecting social change; Theories of social change, Education as an instrument of social change and socialcontrol.
Meaning of culture, cultural lag and cultural acculturation, Education and culture.

UNIT-III: Democracy and Education, Socialism and Education, Secularism and Education. Role of Education in national integration. Role of education in international understanding.

UNIT-IV: Role of education in Globalization. Role of education in modernization. Values – concept, types, values enshrined in Indian constitution; Values and education.

UNIT-V: Concept of equality and equity and its educationalimplications;
Concept of women empowerment and role of education in women empowerment
Ensuring equality in education of SC, ST and children with special needs.

PSYCHOLOGICAL FOUNDATIONS OF EDUCATION

UNIT-I: Intelligence – Concept, Nature and Theories of Intelligence (Two Factor, Multifactor, Structure of Intellect, Stenberg's Triarchic theory, Gardener's Multiple theory) Creativity-Concept, nature, stages of development, fostering creativity in thechildren.

UNIT-II: Individual Difference- Concept, Nature, Areas, Causes and Educational provisions. Problem - solving- concept, conditions influencing problem- solving, steps in problem-solving, teaching problem-solving inschools.

UNIT-III: Schools of psychology and their contributions to education: Behaviorism, Gestalt, Hormic School and Psychoanalysis.

UNIT-IV: Bloom's Mastery learning, Gain's hierarchy of learning, Ausubel's meaningful reception learning, Bandura's observational learning; Bruner's discovery learning; Piaget's theory of cognitive development.

UNIT-V: Personality – Concept, Nature, Type and Trait theory of personality; Role of teacher in fostering goodpersonality.
Mental health of pupils and teachers. Frustration and conflict. Adjustment mechanism, stress management and education.

PEDAGOGICAL FOUNDATION

UNIT-I: Teaching – Concept and Nature of teaching, marks of goodteaching.
General principles of teaching – The Principle of motivation, principle of activities and learning by doing, principle of connecting with life.
General maxims of teaching.

UNIT-II: Teaching devices – Home work, Illustrations, Answering, Questioning, Oralteaching.
Fixing devices – Drill, Review and devices like school library, printed materials and other devices.
Audio- visual aids – concept, types, value of audio-visual aids, principles of using audio-visual aids in teaching-learning.

UNIT-III: Inductive and deductivemethod.
Analytic and synthetic method.
Project method.
Problem-solving method
Heuristic method.

UNIT-IV: Activitymethod
Play-way method.
Kindergarten method
Montessori method.
Dalton-plan

Assignment
Supervisedstudy.

UNIT-V: Lesson – Planning-concept, value and necessity of lesson-planning; Essential features of a good lessonplan.
Herbartian steps, Modified Herbantian steps,
Critical observation of lessons.
Unit plan-concept, classification of units- subject-matter unit, experience unit, adaptive unit, resource unit; characteristics of good teaching-learning unit.
Preparation of lesson-scheme.

PRACTICAL

ADMINISTRATION AND INTERPRETATION OF A PSYCHOLOGICAL TEST

The students are required to administer any one psychological test having educational relevance, interpret the result and prepare a record under the guidance of a teacher of the Department. The practical examination will be of six hours duration. The written examination will be conducted for three hours. Viva-Voce test will be conducted for three hours. The students will have to produce their practical records before the Viva-Voce test. The evaluation will be conducted both by Internal and External examiners jointly. The distribution of the marks of the practical examination is as follows:

STATISTICS IN EDUCATION

UNIT-I: Measures of Central Tendency – Concept of mean median and mode; Calculation of mean, median and mode; Their uses and limitations.

UNIT-II: Measures of variability-Concept of Range, Quartile Deviation, Average Deviation, and Standard Deviation; Calculation of Quartile Deviation, Average Deviation and Standard Deviation - Their uses andlimitations.

UNIT-III: The Normal Distribution – The meaning and Importance of Normal Distribution; Properties of the Normal Probability Distribution; Measuring divergence from normality; Applications of Normal Probabilitycurve.

UNIT-IV: Correlation- Its meaning; Types of correlation; Co-efficient of correlation; Calculation of the coefficient of correlation by Rank Difference and Product-Moment method; Biserial correlation- Its concept, calculation of Biseralcorrelation.

UNIT-V: The significance of the Difference betweenMeans.
The significance of the Difference between Standard Deviations.
The significance of the Difference between percentages and correlation coefficients.

The Chi-square Test and the Null Hypothesis.

EDUCATIONAL RESEARCH

UNIT-I: Meaning, Nature and Scope of Educational Research, Types of research-Fundamental, Applied andAction.
Quantitative Research.
Qualitative Research.

UNIT-II: Historical Research-Its nature, value, types and steps.
Descriptive Research – Its nature, value type andsteps.
Experimental Research-Its nature, value, types and steps; Experimental Designs.

UNIT-III: Formulation of research problem
Sources and criteria of identifying the problem.
Hypothesis - Its meaning and importance; Formulation of hypothesis; Types of hypothesis, criteria and statement of hypothesis.

UNIT-IV: Review of related literature-Need, source and methods. Sampling-concept, methods of selection, Random sampling, Stratified sampling, Cluster and Systematic sampling, Errors in sampling.

UNIT-V: Data-Gathering tools andtechniques.
Qualitative Data Analysis.
Quantitative Data Analysis.
The Research Report-General format of the research report, style of writing the research report, Typing of the research report and Editing of the research report.

DEVELOPMENT OF EDUCATION IN INDIA

UNIT-I: Vedic education-aims of education, methods, curriculum andorganization.
Post-Vedic (Upnishadic) education - aims of education, methods, curriculum and organization.
Buddhist education - aims of education, curriculum, methods of teaching and organization, important centers of learning during Buddhist period.

UNIT-II: Islamic education - aims of education, curriculum, methods of teaching; Types of educational institutions during medieval period, important centers of learning during medievalperiod.

UNIT-III: Development of education in British India with reference to Macaulay's Minutes, Wood's Education Despatch, Report of Hunter Commission, Gokhele's Bill, University Education Commission (1902), Calcutta University Commission (1917), Hartog Committee Report (1929); National Education movement towards development of a national system of education.

UNIT-IV: Development of education in independent India with reference to the University Education Commission (1948-49), Secondary Education Commission (1952-53), The Education Commission (1964-66), National Policy on Education (1986) and its revised formulations of 1992.

UNIT-V: Development of education in Odisha during ancient period, medieval period, pre-independence period and post-independence period with reference to primary, secondary and highereducation.

MODERN TRENDS IN INDIAN EDUCATION

UNIT-I: Constitutional provisions of education
Early Childhood Care andEducation
Sarva Sikshya Avijan-Its problems and issues.
Learning without Burden

UNIT-II: Universalisation of Secondary Education with reference to Rastriya Madhyamika Siksha Avijan (RMSA). The Navodaya Vidyalaya and its feasibility. Role of National Open School in Secondary education. Vocationalisation of secondary education at the lowest and higher secondarystages.
Role of NCERT and SCERT in qualitive development of secondary education.

UNIT-III: Role of UGC in qualitative development of highereducation.
Rastriya Uchatar Siksha Aviyan (RUSA)
Curricular reform in higher education.
Examination reform in higher education
Autonomous Colleges-Problems and Issues
Evaluation of performance of teachers in higher education Open University and its role in higher education.

UNIT-IV: Problems and issue of environmental education, population education, value-oriented education and education of SC and ST problems and Issues of vocational education and technical education.

UNIT-V: Equalization of educationalopportunities.
Continuing and Life-long education.
e-learning-meaning-importance, types, advantages and limitations.
Privatization of education-Problems and issues.
Women empowerment and education.

PRACTICAL

(Book Review)

The students are required to review a book of educational relevance under the guidance of a teacher of the Department. They are required to make a critical appraisal of the book and prepare a report. It will be valued jointly by the Internal and External Examiners. The marks are distributed as follows.

EDUCATIONAL ASSESSMENT

UNIT-I: The measurement and assessment process: Concept, scope and need. Interrelationship between measurement and assessment in education. Norm-referenced and criterion-referenced measurement. Functions of assessment. Basic principles ofassessment.

UNIT-II: General principles of test construction and standardization. Steps involved in standardizing a test. Writing test items-objective types, essay types and interpretive type. Item analysis procedure for norm-referenced and criterion-referenced masterytest.

UNIT-III: Reliability-measures of reliability, equivalence and internal consistency (Split half and Richardson estimates). Factors affecting reliability of a test. Validity-content related, criterion related and construct related evidence, Factors affecting validity. Objectivity-meaning, method of improving objectivity of tests.
Norms and interpretations of test scores. Types of norms: Grade norms, percentile rank, standard scores-Z, T and C scores. Caution in interpreting test scores.

UNIT-IV: Educational objectives-Task analysis. Content analysis. Identification of teaching objectives. Educational objectives. Comparison of educational and teaching objectives. Taxonomy of educational objectives: cognitive domain, affective domain and psychomotor domain. Principles of selecting instructional objectives. Writing the objectives in behavioral terms.

UNIT-V: Objective type test and obje4ctive based test. Types of objective type tests: Supply type, selection type, true-false type, matching type, multiple choice type, analogy type, classification type. Principle of construction of the above type tests.

GUIDANCE AND COUNSELLING IN EDUCATION

UNIT-I: Meaning and nature of guidance, Principles of guidance, Assumptions of guidance; Objectives of guidance at different stages. Types of guidance: Educational Vocational and Personal.

UNIT-II: Essentials of launching guidance programme. Guidance services: Individual inventory service,
Information orientation service, Plkacement service and follow-up service.

UNIT-III: Meaning, nature and need of counselling Types and principles of counselling. Education and counselling. Goals of counselling. Theories of counselling: Rational theories, learning theory approach and psychoanalytic approach. Techniques ofcounselling.

UNIT-IV: Guidance and counselling movement: India, Greece, Europe, England and USA Organisation of guidance programmes in Indianschools.

UNIT-V: Functions of counselor. Characteristics of a successful counsellor. Training programmes for the counsellors. Standards of counsellor education. Counsellor training programmes in India. A model programme of professional training for counsellor in India. Professional ethics in counselling. Professionalgrowth.

EDUCATIONAL TECHNOLOGY

UNIT-I: Meaning, nature, scope and significance of educational technology. Components of educational technology-software and hardware. Educational technology and instructional technology. Concept, nature, component, models and theories ofcommunication.

UNIT-II: Designing instructional system. Task analysis and team teaching. Levels of teaching: memory level, understanding level and reflective level. Modern models of teaching. Modification of teacher behaviour: microteaching, simulation and Flander's Interaction Analysis.

UNIT-III: Programmed instruction: origin and types. Teaching machines. Computer assisted instruction. Emerging trends in educational technology: UGC, CIET andSIET.

UNIT-IV: Teaching aids: Projected aids, non-projected aids, graphic aids, direct experiences, Reprographic equipments, Mass media in educational technology. Radio, T.V, Vieeo Cassette Recorder, Satelite Instructional Television Experiment (SITE).

UNIT-V: Distance education, Open University. Continuing and lifelong education. Non-formal education: concept, salient features and objectives.

CURRICULUM DEVELOPMENT

UNIT-I: Concept and types of curriculum: child centered and experience centered curriculum. History of curriculum development in India. Core curriculum and NPE-1986. Bases of curriculum. philosophical, sociological and psychological Factors affecting curriculum development.

UNIT-II: Conceptual framework for curriculum design. Representative curriculum design: subject centered design, discipline design, broad fields design. Learner centred design- child centred design, experienced centred design, humanistic design. Problem centred design: life situations design, core design, social problems and reconstructionistdesign.

UNIT-III: Curriculum evaluation: meaning, need and importance of curriculum evaluation, implementation strategy of curriculum. Recommendations of Secondary Education Commission (1952-53) and Educatina Commission (1964-66) on curriculum development.

UNIT-IV: Curriculum organisation: vertical and horizontal. Understanding organisational patterns. Organising learning experiences: components of a curriculum guide. Purposes of a curriculum guide. Principales of curriculum organisation.

UNIT-V: Future and futurism in curriculum. Dealing with the future.
Future directions: certainty Vs. uncertainty . Future intelligence.
Future curricula: new curriculum designs, new curriculum areas, curriculum considerations and choice. An extreme future curriculum design, a more traditional curriculum model. The challenges of dealing with thefuture.

PRACTICAL

PREPARATION AND PRESENTATION OF A SYNOPSIS ON A RESEARCH TOPIC.

The students are required to prepare a synopsis on a research topic under the guidance of a supervisor. After preparation he/she will have to present that synopsis in the class before the team of evaluations. On the basis of the recommendations of the team of evaluators the student will modify if required and submit the same in the department. The students are required to conduct research on the same topic of the synopsis in the 4^{th} semester. The synopsis will be finally evaluated at the end of this semester jointly by the internal and external examiners. Division of marks will be as follows.

EDUCATIONAL ADMINISTRATION, SUPERVISION AND MANAGEMENT.

UNIT-I: Educational Administration: Meaning, nature, scope andsignificance.
Functions of Educational Administration
Theories of Educational Administration
Principles of Educational Administration
Administrative Structure of Education in Centre and State.

UNIT-II: Educational Supervision: Meaning, nature, scope and significance.
Types of supervision: Democratic and autocratic
Steps of supervisory programme: Planning, organising and implementing.
Factors influencing supervision
Difference between Administration and supervision

UNIT-III: Educational Planning: Meaning, nature and significance
Types of educationalplanning.
Problems of educational planning in india
Institutional Planning: Meaning, nature and scope
Steps of institutionalplanning.

UNIT-IV: Educational Management: Meaning, nature, scope and significance
Components of educationalmanagement
Types of Educational Management: Centralised and decentralised, external and internal, auto cratic and democratic, creative and laisseiz faire.
Managerial Behaviour: Meaning and factors affecting managerial behaviour.
Trends in Educational Management- Management by Objectives (MBO)
Decision making, Organizational Development (OD), Organisational Compliance (OC)

UNIT-V: Total QualityManagement:
Basic concept of Total Quality Management (TQM)
Components of Total Quality Management
Principles of Total Quality Management.
Total Quality Management in Higher Education.

ENVIRONMENTAL EDUCATION

UNIT-I:

- Concept of environment and its differentaspects
- Relationship between man and environment
- Environment and quality oflife
- Role of education for development of environmentawareness.

UNIT-II:

- Meaning of environmental pollution and its different aspects
- Air pollution
- Waterpollution
- Soilpollution
- Noisepollution
- Thermalpollution
- Radiation pollution
- Lightpollution.
- Causes of environmental pollution
- Consequences of environmentalpollution
- Measures for controlling environmental pollution.

UNIT-III:

- Meaning and nature of environmentaleducation
- Importance of environmentaleducation
- Functions of environmentaleducation
- Scope of environmentaleducation
- Principales of environmentaleducation

UNIT-IV:

- Objectives of environmentaleducation
- Curriculum for environmentaleducation
- Techniques/ Strategies for teaching environmental education
- Role of teacher, students and community members for improving environmentalconditions.

UNIT-V:

- Environmental management inIndia
- Policies and programmes for protection ofenvironment
- Environment and school healthprogramme
- Suggestions for conservation and upgradation ofenvironment.

TEACHER EDUCATION (SPECIAL PAPER)

UNIT-I:

- Meaning and scope of teachereducation
- Importance of teachereducation.
- Objectives of teacher education at elementary and secondarylevel.
- Development of teacher education inIndia.
- Problems and issue of teachereducation.

UNIT-II:

- Teaching as a profession and itscharacteristics
- Professional growth of teacher - Meaning, purposes andstrategies.

- Teacher Effectiveness- Meaning and criteria forassessment.
- Characteristics of a good teacher, professional ethics and accountability ofteacher.
- Evaluation of teacher at differentlevels.
  - Evaluation byauthority
  - Evaluation bystudents
  - Selfevaluation
  - Peerevaluation
- Importance of teacherevaluation
- Tools and techniques for teacherevaluation.

UNIT-III:

- Preservice teacher education for elementary and secondary level- Aims and objectives, need, progress andproblems.
- Curriculum for pre-service teacher education with reference to NCFTE-2009 and NCTE at elementary and secondarylevel.
- Role of NCERT, SCERT, BSE, DIET, RIEs, CTEs andIASE.

UNIT-IV:

- In-service, teacher education for elementary level - Aims and objectives, need, progress and problems with reference to Sarva Siksha Abhiyan (SSA)
- IN service teacher education for secondary level-Aims and objectives, needs, progress and problems with reference to Rashtriya Madhyamik Siksha Abhiyan(RMSA)

UNIT-V:

- Qualitative Improvement of teacher education and role of NCTE(1964-66)
- Recommendations of Indian Education Commission (1964-66) NPE-1986, Revised NPE-1992 and programme of action on teacher education at elementary and secondarylevel.
- Research trends in teachereducation.

SPECIAL EDUCATION (SPECIAL PAPER)

UNIT-I:

- Concept and nature of specialeducation
- Objectives of specialeducation.
- Categorization of specialeducation.
- Historical development of specialeducation
- Integrated education fordisabled.

UNIT-II:

- Education of orthopedically handicapped; Types of handicap, characteristics, educational programmes
- Education of Hearing impaired: Characteristics, etiology, prevention, educationalprogrammes.
- Problems and issue of integration and inclusion role ofteacher.

UNIT-III:

- Education of visually impaired: Characteristics, degree of impairment, prevention, educational programmes.
- Education of mentally retarded: Characteristics, types educationalprogramme.
- Problems and issues of integration and inclusion role ofteacher.

UNIT-IV:

- Education of learning disabled children: Characteristics, types, identification, causes, educational programmes.
- Education of emotionally disturbed children: Definition, identification, classification, characteristics, role ofeducation.
- Problems and issues of integration and inclusion, role ofteacher.

UNIT-V:

- Giftedness: Definition, characteristics, identification and educationalprovisions.
- Inclusive Education: Concept, importance, objectives principles, as human right (Right to access, equality and quality education), problems andissues.
- Children with Special Needs (CWSN): Types of marginalized children (Physical, Social, Emotional and their needs, strategies to address their specialneeds.
- Main streaming, Resource teacher, Resourceroom.
- Inclusive school: Concept, features, dimensions barriers for converting a general school to inclusiveschool.

ECONOMICS OF EDUCATION (SPECIAL PAPER)

UNIT-I:

- Concept and scope of Economics ofEducation
- Significance of Economics ofEducation
- Education as investment- Concept, significance and strategies
- Education as consumption- Concept, significance andstrategies.

UNIT-II:

- Cost benefit analysis of education- Meaning andimportance
- Taxonomy of cost ofeducation
- Taxonomy of benefit ofeducation
- Inputs and outputs: Concept and relationship between the two.

UNIT-III:

- Educational expenditure- Types - direct and indirect, current andrecurrent.
- Grant in Aid-Meaning and types, role ofGovernment.
- Sources of Income: Private andGovernment.

UNIT-IV:

- Financing education: Concept and sources of finance.
- Principals offinancing
- Problems offinancing
- Manpowerplanning
- Role of centre and state for financingeducation

UNIT-V:

- Role of UNESCO, UNICEF, UNDP, World Bank, UNFPA as external agencies for financing education.

EARLY CHILDHOOD CARE AND EDUCATION (SPECIAL PAPER)

UNIT-I:

- Concept of pre-schooleducation
- Aims and objectives of pre-schooleducation
- Integrated Child Development Services (ICDS)scheme
- Early Childhood Care and Education (ECCE)scheme
- Contribution of Froebel and Montessori to pre-school education.

UNIT-II:

- Early childhood health careprogrammes.
- Common ailments and diseases in earlychildhood
- Identification, prevention and remediation of common diseases in earlychildhood.
- Concept and need of balanceddiet

UNIT-III:

- Types of pre-schoolcenters
- Capacity building of personnel inECCE
- Curriculum and activities at the pre-schoolstage
- Strategies for transaction of curriculum and role ofteacher.

UNIT-IV:

- Status of pre-school education in India
- Problems and issues inECCE
- Recommendations of NPE, 1986, Indian Education Commission on pre-schooleducation.

UNIT-V:

- Role of UNICEF, WHO, and CARE for Child development.
- Role of Government and Non-Government organisation in organisingECCE.

DISSERTATION (PRACTICAL)

Each student is required to submit a dissertation basing on the Research, Proposal developed in Third Semester under the supervision of a member of the staff of the department.

The dissertation shall be evaluated jointly by an External and Internal (Guide) examiner and there will be a viva-voce test. The distribution of marks shall be as follows.

25/7/22

Principal
B.B.(Auto)Mahavidyalaya
Chandikhole Jajpur