# Govt. Lahiri PG College Chirimiri, Dist-Koriya (C.G.)

## Programme Outcomes for UG:B.A.

After successful completion of Undergraduate Three years B.A. general Degree Programme, the Students will be able:

**PO-1.Economics:**

- To know about Micro Economics and Indian Economy.
- Macro Economics and Money, Banking and Public Finance.
- Development and Environmental Economics and Statistical Methods.

**PO-2.Geography:**

- To understand about Physical Geography and Human Geography.
- To known Economic and Resources Geography and Geography of India.
- To knowledge about Remote Sensing and GIS and Geography of Chhattisgarh.

**PO-3.Political Science:**

- To know Political Theory, Indian Govt. and Politics.
- To know the Theory and Govt. Political Thought, Comparative Governments and Politics.
- To understand International Politics and Foreign policy of India, Public administration.

**PO-4.Sociology:**

- To study Introduction to Sociology, Contemporary Indian Society.
- To learn Sociology of Tribal Society, Crime and Society.
- To understand Foundations of Sociological Thought, Methods of Social Research.

**PO-5.Ancient Indian History, Culture and Archaeology:**

- Introduction to political History of India (Harappa Culture to 319 A.D.) and political History of India (from 319 A.D.to 1300 A.D.).
- To study Ancient Indian Social and Economic Institution and Ancient Indian Polity and Administration.
- To Aware Elements of Ancient Indian Architecture and Art and Elements of Palaeography and Numismatics.

**PO-6.English Literature:**

- To familiarize Students with the representative authors and works of British English Literature.
- To make the Students understand the trends and History of English Literature.
- To create among Students an interest in the text of Literature and make them understand the Literacy devices of Poetry, Drama, Prose and Fiction.

**PO-7.Hindi Literature:**

- विद्यार्थी हिन्दी साहित्य की विविध काव्य एवं गद्य प्रवृत्तियों से परिचित हो सकेंगे।
- चयनित पाठ्य सामग्री के माध्यम से तत्कालीन काव्य संवेदना को समझ सकेंगे।
- साहित्य के विविध रूपों के माध्यम से जीवन की अनुभूतियों, संवेदनाओं तथा विविध परिस्थितियों का साक्षत्कार कर सकेंगे।
- विद्यार्थियों की सृजनात्मक क्षमता का विकास हो सकेगा।
- विद्यार्थी की मर्मग्राहिणी प्रतिभा का विकास होगा और ऐतिहासिक परिपेक्ष्य में शुद्ध साहित्यिक विवेक का सन्निवेश होगा।

**PO-8.Environmental Studies:**

- To understand the issues of Environmental Contexts and Sustainable Development.

**PO-9.English Language:**

- To equip the Students with basic communication Skills in English.
- To make them capable of Writing and Speaking in English correctly.
- To enhance their knowledge of Grammar and Vocabulary of English.

**PO-10.Hindi Bhasa:**

- छात्र–छात्रा हिन्दी भाषा की आधारभूत व्याकरणिक इकाईयों से परिचित हो सकेंगे।
- हिन्दी भाषा और उसके विविध रूपों का ज्ञान प्राप्त कर सकेंगे।
- छात्र–छात्राओं की रचनात्मक और अवबोध क्षमता का विकास हो सकेगा।
- छात्र–छात्रा व्याकरण में बुनियादी ज्ञान, संप्रेषण, कौशल सामाजिक संदेश एवं भाषायी दक्षता को विकसित कर अपने व्यवहारिक जीवन में उसका प्रयोग कर सकेंगे।

# Govt. Lahiri PG College Chirimiri, Dist-Koriya (C.G.)

## Course Outcomes for UG: Economics

After completion of three years Course of Economics the students will be able:

**CO-1:** To understand the Definitions Nature and scope of Economics, Production Decision and Production Function, Market Structure-Perfect and Imperfect Market, Marginal Productivity Theory of Distribution, Welfare Economics.

**CO-2:** To understand Pre and Post Independent Indian Economy, Population and Human Development, Indian Agriculture, Industrial Development in India, Foreign Trade of India.

**CO-3:** To know National Income, Consumption Function, Trade Cycle, International Trade, Functions and Objectives of International Monetary Fund.

**CO-4:** To acquire the knowledge Meaning and Function of Money, Commercial Banking-Meaning, Types and Functions, Definition Nature- Scope and Importance, Public Debt Sources of Public Borrowing.

**CO-5:** To learn Economics Growth and Development, Problems of Population and Growth Pattern of Population, Theory of Growth Models, Environmental use and Environmental Disruption as an Allocation Problem, Concepts of Intellectual Capital.

**CO-6:** To known about Introduction of Statistics, Measures of Central Tendency, Measures of Central Skewness, Probability, Dispersion, Correlation, Index Number, Analysis of Time-Series, Logarithm, Antilogarithm, Reciprocal Tables and Their Uses.

# Govt. Lahiri PG College Chirimiri, Dist-Koriya (C.G.)

## Course Outcomes for UG: Geography

After completion of three years Course of Geography the students will be able:

**CO-1:** To known the Nature and Scope of Physical Geography, Earth Movement, Climatology, Climatic Classification, Basic knowledge of Oceanography.

**CO-2:** To study the Definition and Scope of Human Geography, Classification of Human Races and their Distribution, Growth and Distribution of world Population, Rural and Urban Settlements, Global Emerge Environmental Issue.

**CO-3:** **To** understands the Meaning, Scope and Approaches to economic geography, Mineral Resources, Agriculture and Industrial Regions of the world and their Location, World Transportation, Conservation of resources.

**CO-4:** To Determine Physical Features, Natural Resources , Cultural Features Population , Industries Localization to Special Reference of India, Detailed study of the Region of India.

**CO-5:** To learn the Basic of Remote Sensing, Types of Remote Sensing, Remote Sensing Program of India, Introduction of GIS, Data Model and Data Analysis.

**CO-6:** To gain the knowledge about Physical Features, Natural Resources, Agriculture and Population, Industries and Transpiration to Special reference of Chhattisgarh.

# Govt. Lahiri PG College Chirimiri, Dist-Koriya (C.G.)

## Course Outcomes for UG: Political Science

After completion of three years Course of Political Science the students will be able:

**CO-1:** To know the Meaning and definition of Political Science, State and its essential elements, Sovereignty and its pluralistics, kinds of Governments, Organs of Government, public welfare state.

**CO-2:** To understand Indian National Movement, Constitution of India, Union Executive, Union Judiciary, State Legislature.

**CO-3:** To know political thought of these thinkers Plato, Aristotle, Machiavelli, Hobbes, Lock and Rousseau, Bentham , mill, Green, Marx, Idealism, individualism, socialism, Liberalism, Fascism, Manu, Kautilya, Gandhi, Ambedkar, Deen Dayal Upadhyay.

**CO-4:** To acquire the knowledge of British Constitution, Constitutions of United State of America, Constitutions of Switzerland, Constitutions of China and Comparative politics.

**CO-5:** To learn International Politics, Various Theories of International politics, Foreign policy of India, India Relations with neighboring Countries, Some Major Issue of International politics.

**CO-6:** To known about Public Administration, Principles of Organization, Development Administration, Financial Administration, Corruption in Administration.

# Govt. Lahiri PG College Chirimiri, Dist-Koriya (C.G.)

## Course Outcomes for UG: Sociology

After completion of three years Course of Sociology the students will be able:

**CO-1:** To know the Meaning of Sociology, Basic Concepts, Social Institutions, Culture and Society, Social Stratification, Social Mobility, Social Change, Social System and Process, Social Process.

**CO-2:** To understand Classical View about Indian Society, Structure and Composition of Indian Society, Basic Institution of Indian Society, Familial Problems, Social Problems.

**CO-3:** To describe the Tribes Classification of Tribal People, Socio-culture Profile, Tribal Sensitization, and Problems of Tribal People.

**CO-4:** To aware Concept of Crime, School of Crime, Structure of Crime, Social Evils and Crime, Punishment Co-Relation Process.

**CO-5:** To know about these thinkers August Comte, Durkheim, Karl Marx, Max Weber, Pareto, Spencer, Thorstein Veblen, R.K. Morton, Development of Sociological thought in India, Mahatma Gandhi, Radha Kamal Mukherjee,

**CO-6:** To describe the Social Research, Qualitative Research, Research Design, Tools and Techniques of Social Research, Social Statistics,

# Govt. Lahiri PG College Chirimiri, Dist-Koriya (C.G.)

## Course Outcomes for UG: AIH

After completion of three years Course of Ancient Indian History, Culture and Archaeology the students will be able:

**CO-1:** To elicit Sources of Ancient Indian History, Harappa and Contemporary Chalcolithic Culture, Vedic Age, Mahajanpada Age, Rise of Magadha Kingdom, Alexander's Invasion and its Impact, Rise of Mauryan Empire and its Impact, Indo-Greeks, Shungas, Satvahanas, Kharvela, Sangam Age, Kushanas, Malavas, Youdheyas, Arjunayana and Audumbara, Nagas.

**CO-2:** To acquire the knowledge of Rise of Guptas and their early History,Chandragupta-I, Ramagupta, Samudragupta, Kumargupta-I,Shandgupta,Vakataka Dynasty, Gupta Vakataka relation, Later Gupta Rulers, Maukharis, Vardhana Dynasty and Administration of Harsha, Chalukyas of Badami, Pallavas of Kanchi, Cholas and their Administration, Gurjara Pratihara, Rashtrakutas, Palas, Gahadwalas, Chandela, Parmaras ,Chahmanas, Kalachuris of Tripuri and Kalchuris of Ratanpur.

**CO-3:** To learn Varna System, Ashramas, Purushartha Chatushthaya, Pancha Mahayagya, Sanskaras, Marriage and their types, Origin of family and its significance, Joint family, Position of Father, Mother and Sons; Types of son, Postion of Women, Objective of Education, Model, Achievements and Important Education Centers, Economic Condition of Ancient India from Vedic Age to 600 B.C., Organisation and Working of Guilds, Economic Condition of Ancient India from 600 B.C. to 319 A.D., Economic Condition of Ancient India from 319 A.D. to 1200 A.D. and Domestic and International Trade Routes.

**CO-4:** To know Origin, Types, Form, and Function of State, Kingaship, Organisation and Working of Council of Ministers; Theory of Saptanga, Republics: Organisation, Government, system, Pros and Cons, International Relation, Principle of Mandala, principle of Shadgunya, Ambassadors, Espionage and Administrative system of various Dynasties: Mauryas, Gupats, Period of Harsha, Rashtrakutas and Cholas.

**CO-5:** To study Architecture of Harappan Period, Mauryan Period; Stupa Architecture(Sanchi, Bharhut and Amravati, Chaityas and Viharas of Western India (Bhaja, Karle, Konden, Ajanta and Ellora, Origin and development of Temple Architecture, Various Styles of Temple Architecture-Nagra, Vessara and Dravida , Iconography – Harappa Period, Mauryan Period, Shunga period, kushana Period(Gandhara and Mathura),Origin and Development of idol Worship in Ancient India, with special reference to Vishnu, Shiva, Jaina and Buddhist sculptures ,Pre-historic paintings, Painting of Singhanpur and Kabrapahar, Ajanta and Bagh paintings.

**CO-6:** To aware Significance of Epigraphy for Writing Ancient Indian History, Origin and development of Writing Skill, Languages, Scripts and materials used for Insriptions, Historic Significance of the following Inscription, 2$^{nd}$ rock edict of Ashoka, 12$^{th}$ rock of Ashoka, Besnagar Pillar Inscription of Heliodorus, Nasik Inscription of Gautamiputra Satkarni, Hanthigumpha Inscription of Kharvela, junagarh Inscription of Rudradaman, Allahabad Pillar Inscription of Samudragupta, Aihole Inscription of Pulakeshin-II, Banskhera Inscription of Harsha, Lakshman Temple Inscription of Queen Vasta and Ratanpur Inscription of Jajalladeva, Significance of Numismatics for Writing Ancient Indian History, Origin and Antiquity of Coins , Minting Techniques of Coins, Punch-Marked Coins, Kushana Coins, Janpada Coins, Taxila, Kaushambi, Eran, Gupta Coins, Gold, Silver and Copper Coins of Samudragupta, Chandragupta-II and Kumaragupta; Regional Coins: Sharabhpuriya, Nala and Kalachuri.

# Govt. Lahiri PG College Chirimiri, Dist-Koriya (C.G.)

## Course Outcomes for UG: English Literature

After completion of three years course of English Literature the students will be able to:

**CO-1:** Acquire knowledge of the major Elizabethan Literatures like – Shakespeare, Milton, Pope and Bacon etc. They would know about the four genres of literature and an introduction to some literary terms.

**CO-2:** Learn about the English poets and authors from 1750 to 1900, including the Romanticists like - Blake, Wordsworth, Shelley, Keats and Browning etc. They would know about the fictional world of Dickens and Jane Austen.

**CO-3:** Know the nuances of the various forms of poetry and other genres of the Modern English period. They would be introduced to the charm of Yeats, Eliot, Oscar Wilde, Shaw and Kipling etc.

**CO-4:** Learn about various literary devices like simile, metaphor, alliteration etc. They would know the trends of Modern English Literature**.**

**CO-5:** Gain knowledge of all the genres of Indian Writing in English. They would enjoy the flavour of Indian English Literature of - Tagore, Sarojini Naidu, Karnad, Tendulkar and R.K. Narayan.

**CO-6:** The students would get a chance to learn about either the American Literature or the twentieth Century Literature in English (British) as per the paper they select.

# Govt. Lahiri PG College Chirimiri, Dist-Koriya (C.G.)

## Course Outcomes for UG: English Language

After completion of three years Compulsory Course of English Language the students will be able:

### B.A/B.Com/B.Sc - I$^{st}$ Year

**CO-1:** To acquire knowledge of the basics of Indian culture, scriptures, Indian art, and fundamental duties and write correct English with knowledge of grammar and vocabulary.

### B.A/B.Com/B.Sc - II$^{nd}$ Year

**CO-2:** To know about India with special reference to Science and Technology.

**CO-3:** To understand about the major scientific discoveries, inventions and scientists of ancient and modern India.

**CO-4:** To comfortable enough to read and write English with the help of grammar and vocabulary.

### B.A/B.Com/B.Sc - III$^{rd}$ Year

**CO-5:** To acquire knowledge of the development of India and its people during the last seven decades that is from Independence until the present times.

**CO-6:** To use English language correctly in written and spoken communication.

# Govt. Lahiri PG College Chirimiri, Dist-Koriya (C.G.)

## Course Outcomes for UG: Hindi Literature

### B.A. Part I

### प्राचीन हिन्दी काव्य

- विद्यार्थियों को प्राचीन एवं मध्यकालीन कविता का ज्ञान कराना।
- हिन्दी साहित्य के स्वर्णकाल, भक्तिकाल के प्रमुख कवियों एवं उनकी काव्य प्रवृत्तियों का ज्ञान कराना।
- विद्यार्थियों में साहित्यिक अभिरूचि का विकास कर सृजनात्मक लेखन हेतु प्रेरित करना।

### हिन्दी कथा साहित्य

- विद्यार्थियों को कथा साहित्य की विविध प्रवृत्तियों का ज्ञान कराना।
- विद्यार्थियों को प्रमुख उपन्यासों एवं कहानियों के पाठ के माध्यम से कथा साहित्य के प्रति अभिरूचि का विकास कराना।
- विद्यार्थियों में भाषा के रचनात्मक पहलू की समझ का विकास कराना।
- हिन्दी कहानी और उपन्यास के विकासक्रम का ज्ञान कराना।

### B.A. Part II

### अर्वाचीन हिन्दी काव्य

- विद्यार्थियों को हिन्दी कविता के आधुनिक काल की विविध प्रवृत्तियों का ज्ञान कराना।
- विद्यार्थियों को हिन्दी साहित्य के आधुनिक काल के प्रमुख काव्य आन्दोलनों का परिचय कराना।
- विद्यार्थियों को हिन्दी के कार्यालयीन एवं व्यवहारिक स्वरूप से परिचित कराना।
- विद्यार्थियों में सृजनात्मक क्षमता का विकास कराना।

### हिन्दी निबंध तथा अन्य गद्य विधाएं

- विद्यार्थियों को हिन्दी निबंध एवं अन्य गद्य विधाओं का परिचय कराना।
- विद्यार्थियों को नाटककार, एकांकीकार तथा उनकी रचनाओं से परिचित कराना।
- विद्यार्थियों को नाटक एवं एकांकियों के माध्यम से सामाजिक समस्याओं का ज्ञान कराकर उनके समाधान हेतु प्रेरित करना।
- विद्यार्थियों में लेखकों के लेखन शैली के प्रति आलोचनात्मक दृष्टि का विकास करना।

### B.A. Part III

### छत्तीसगढ़ी भाषा एवं साहित्य

- विद्यार्थियों में छत्तीसगढ़ी भाषा एवं साहित्य के प्रति अभिरूचि का विकास करना।
- विद्यार्थियों को छत्तीसगढ़ी भाषा एवं व्याकरण का ज्ञान कराकर, छत्तीसगढ़ी में साहित्य सृजन की क्षमता का विकास करना।
- छत्तीसगढ़ी भाषा के प्रमुख रचनाकारों से परिचित कराना।
- छत्तीसगढ़ी भाषा की कविता एवं गद्य की विविध विधाओं का ज्ञान कराना।
- विद्यार्थियों में छत्तीसगढ़ी साहित्य के प्रति आलोचनात्मक दृष्टि का विकास कराना।

### हिन्दी भाषा एवं साहित्य का विकास तथा काव्यांग विवेचन

- विद्यार्थियों को हिन्दी भाषा के लेखन,पठन और वाचनकला का विकास करना।
- हिन्दी भाषा के विविध रूपों से परिचित कराना।
- विद्यार्थियों को हिन्दी साहित्य के सभी कालखण्डों (आदिकाल, भक्तिकाल, रीतिकाल एवं आधुनिक काल) की पृष्ठभूमि, परंपरा, प्रवृत्ति एवं रचनाकारों तथा उनकी प्रमुख रचनाओं से परिचित कराना।
- विद्यार्थियों में हिन्दी साहित्य के इतिहास लेखन की परंपरा और उसके प्रति आलोचनात्मक दृष्टि का विकास कराना।

# Govt. Lahiri PG College Chirimiri, Dist-Koriya (C.G.)

## Course Outcomes for UG: Hindi Bhasha

**CO-1:**
- हिन्दी के चयनित गद्य एवं काव्य का अध्ययन कराना।
- वर्ण एवं शब्द विचार से परिचित कराना।
- देवनागरी लिपि के उद्‌भव और विकास से परिचित कराना।
- कम्प्यूटर में हिन्दी के अनुप्रयोग से परिचित कराना।
- भाषा एवं समाज के विविध रूपों एवं अंतर्सम्बंधों का अध्ययन कराना।

**CO-2:**
- चयनित निबंधों के माध्यम से निबंध विधा का परिचय प्राप्त कराना।
- कार्यालयीन भाषा के रूप में हिन्दी का ज्ञान कराना।
- संज्ञा, सर्वनाम, विषेषण, क्रिया विषेषण, संधि, समास का अध्ययन कराना।
- अनुवाद (अंग्रेजी–हिन्दी) से परिचित कराना।

**CO-3:**
- चयनित कविता, कहानी, निबंध एवं पत्र का अध्ययन कराना।
- कथन की विविध शैलियों से परिचित कराना।
- विभिन्न व्याकरणिक संरचनाओं का ज्ञान कराना।
- कार्यालयीन पत्र–परिपत्र, आदेष, अधिसूचना, ज्ञापन, अनुस्मारक, पृष्ठांकन और आलेख का परिचय और अभ्यास कराना।
- प्रतिवेदन लेखन का अभ्यास कराना।

# Govt. Lahiri PG College Chirimiri, Dist-Koriya (C.G.)

## Programme Outcomes for UG:B.Sc.

After successful completion of Undergraduate three years B.Sc. general Degree Programme, the Students will be able:

### PO-1.Physics:

- To know Mechanics, Oscillations, Properties of Matter, Electricity, Magnetism and electromagnetic Theory.
- To acquaint Thermodynamics, Kinetic Theory, Statistical Physics, Waves, Acoustics and Optics.
- To understand Relativity, Quantum Mechanics, Atomic Molecular and Nuclear Physics, Solid State Physics, Solid State Devices and Electronics.

### PO-2.Chemistry:

- To impart knowledge on different topic of chemistry viz: Inorganic, Organic, and Physical chemistry the core course would help to enrich the subject knowledge of the students and increase their confidence level in the field of both Academia and Industry. This course has brought and opportunity in front of students to gain knowledge on various multi-disciplinary subjects both theoretically and practically.

### PO-3.Mathematics:

- To Explain Algebra and Trigonometry, Calculus and Vector Analysis and Geometry.
- To Describe Advanced Calculus, Differential Equations, Mechanics.
- To understand Analysis, Abstract Algebra and Discrete Mathematics.

### PO-4.Botany:

- To identify the Bacteria, Viruses and Bryophytes, Liches and Algae, Pteridophytes, Bryophytes, Gymnosperms and Palaeobotany.
- To know about Plants Taxonomy, Economic Botany, Plant Anatomy and Embryology, Plants Physiology and Ecology.
- To study the Plants Pathology, Experimental Embryology, Elementary Bio Statistics, Environmental Pollution and Genetics, Molecular Biology, Bio Technology, and Bio Chemistry.

### PO-5.Zoology:

- To acquire the knowledge of Cell biology, Non-Chordates, Chordates and Embryology.
- To understand the basic concepts of Anatomy, Physiology, Endocrinology and Reproductive biology of Vertebrates. Behavior, Evolution and applied Zoology.
- Students received knowledge of Ecology, Environmental Biology, Toxicology, Microbiology, Medical Zoology, Genetics ,Cell Physiology, Biochemistry, Biotechnology , and Biotechniques

## PO-6.Geology:

- Geodynamics and Geomorphology, Minieralogy and Crystallography.
- Petrology and Structural Geology.
- Palaeontoogy and Stratigraphy, Earth Resources and Applied Geology.

## PO-7.Environmental Studies:

- To understand the issues of Environmental Contexts and Sustainable Development.

## PO-8.English Language:

- To equip the Students with basic communication Skills in English.
- To make them capable of Writing and Speaking in English correctly.
- To enhance their knowledge of Grammar and Vocabulary of English.

## PO-9.Hindi Bhasa:

- छात्र–छात्रा हिन्दी भाषा की आधारभूत व्याकरणिक इकाईयों से परिचित हो सकेंगे।
- हिन्दी भाषा और उसके विविध रूपों का ज्ञान प्राप्त कर सकेंगे।
- छात्र–छात्राओं की रचनात्मक और अवबोध क्षमता का विकास हो सकेगा।
- छात्र–छात्रा व्याकरण में बुनियादी ज्ञान, संप्रेषण, कौशल सामाजिक संदेश एवं भाषायी दक्षता को विकसित कर अपने व्यवहारिक जीवन में उसका प्रयोग कर सकेंगे।

# Govt. Lahiri PG College Chirimiri, Dist-Koriya (C.G.)

## Course Outcomes for UG: Physics

After completion of three years Course of Physics the students will be able:

**CO-1:** To acquire the knowledge of Mechanics, Rigid Body Motion and Oscillations, Superposition of Simple Harmonic Oscillations, Motion of Charged Particles in Electric and Magnetic Fields, General Properties of Matter.

**CO-2:** To elicit Mathematical Physics and Network Theorems, Electrostatics, Dielectrics and Alternating Current Circuits, Magneto-statics, Elecrodynamics.

**CO-3:** To describe Laws of Thermodynamics, Entropy, Thermo-dynamical Potential and its Applications, Black-Body Radiation, Maxwellien Distribution of speeds in an ideal gas, Transport Phenomena in gases, Behavior of real gases, Statistical Basis of Thermodynamics, Universal laws and Quantum Statistics.

**CO-4:** To determine Waves in Medium, Geometrical Optics, Physical Optics, Diffraction, Double Refraction and Optical Rotation and LASER.

**CO-5:** To Perceive Special Relativity and Lorentz Transformation, Origin of the Quantum Mechanics and wave particles Duality, Uncertainty Principle, Schrodinger's Wave Equation and its Applications, Elements of Spectroscopy, Structure of Nuclear Models Nuclear Reactions and Nuclear Detectors.

**CO-6:** To Learn Crystal structure, Thermal Properties of Solids, Electrical Properties of Solids, Magnetic Properties of Solids, Semiconductor Diode, Transistor, Rectifiers and Filters, Application of Transistors and Digital Circuits.

# Govt. Lahiri PG College Chirimiri, Dist-Koriya (C.G.)

## Course Outcomes for UG: Chemistry

After completion of three years Course of Chemistry the students will be able:

**CO-1:** To acquire the knowledge of Atomic Structure, Periodic Properties, Chemical Bonding-I: Ionic bond, Chemical Bonding-II: Covalent bond, s-Block Elements, p- Block Elements, Chemistry of Novel Gases and Theoretical Principles in Qualitative Analysis($H_2S$).

**CO-2:** To know about the Basics of Organic Chemistry, Introduction to Stereochemistry, Conformational Analysis of Alkanes, Chemistry of Aliphatic hydrocarbons: Carbon-Carbon sigma bonds, Carbon-Carbon Pi bonds, Aromatic Hydrocarbons.

**CO-3:** To get the basic knowledge of Mathematical Concepts for Chemist, Gaseous state Chemistry, Gaseous State Chemistry, Liquid state Chemistry, Colloids and Surface Chemistry, Solid State Chemistry, Chemical Kinetics, Catalysis.

**CO-4:** To learn about the Chemistry of Transition Series Elements, Oxidation and Reduction, Co-Ordination Compounds, Co-Ordination Chemistry, Chemistry of Lanthanide Elements, Chemistry of Actinides, Acids-Bases, Non-Aqueous Solvents.

**CO-5:** To illustrate about the Chemistry of Organic Halides: Alkyl halides, Aryl halides, Alcohols: Alcohol, Trihydic alcohols, Aldehydes and Ketones, Carboxylic Acids: Di carboxylic acids, Carboxylic acid derivatives, Organic Compounds of Nitrogen.

**CO-6:** To explain about the Thermodynamics-I, Thermo Chemistry, Thermodynamics-II: Second Law of Thermodynamics, Chemical Equilibrium, Ionic Equilibrium, Phase Equilibrium, and Photochemistry

**CO-7:** To perceive about the Metal-Ligand Bonding in transition Metal Complexes, Thermodynamic and Kinetic aspects of Metal complexes, Magnetic Properties of Transition Metal Complexes, electronic Spectra of Transition Metal Complexes, Organometallic Chemistry, Catalysis by Organometallic Compounds, Bio-Inorganic Chemistry, Hard and Soft Acids and Bases(HSAB), Inorganic Polymers.

**CO-5:** To describe about the Heterocyclic Compounds, Organometallic Reagents, Organic Synthesis via Enolates, Biomolecules: Carbohydrates, amino Acids, Proteins and nucleic acids, Synthetic Polymers, Synthetic Dyes, Infra-Red Spectroscopy, UV-Visible Spectroscopy, NMR Spectroscopy,

**CO-6:** To able to designate about the Quantum Mechanics-I, Quantum Mechanics-II, Spectrocopy : Introduction, Vibrational Spectroscopy, Raman Spectroscopy, Raman Spectrum, Electronic Spectroscopy, Electrochemistry-I: Electrolytic Conductance, Theories of Strong Electrolytes, Migration of Ions, Electrochemistry-II Electrochemical cell and Galvanic Cells, single Electrode Potential, Concentration Cell.

# Govt. Lahiri PG College Chirimiri, Dist-Koriya (C.G.)

## Course Outcomes for UG: Mathematics

After completion of three years Course of Mathematics the students will be able:

**CO-1:** To Solve the Elementary Operations, Elementary Matrices and Inverse of Matrix, Rank of Matrices, Eigen Values and Eigen Vector, Applications of Matrices to System of Linear Equations, Consistency and Inconsistency, Theory of Equations, Relation and Mapping, Group, Subgroup, Cyclic Group, Coset Decomposition, Normal Subgroup, Quotient Group, Permutation Group, Homomorphism and Isomorphism of Groups, Fundamental Theorem of Homomorphism, Ring, Integral Domain, Field, De-Moiver's Theorem and its Application, Direct and Inverse Circular and Hyperbolic Functions, logarithm of Complex Quantities, Expansion of Trigonometric Functions, Gergory's Series and Summation of Trigonometric Series.

**CO-2:** To Evaluate Limit and Continuity, Differentiability, Leibnitz's Theorem, Maclaurin's and Taylor Series, Asymptotes, Curvature, Concavity and Convexity, Tracing of Curves, Integration of Transcendental Functions, Reduction Formulae, Definite Integrals, Quadratura, Length of Curve, Volumes of Surfaces of Solid of Revolutions, Differential and Exact Differential Equation, Geometrical Meaning of Differential Equation, Linear Differential Equation and Ordinary Simultaneous Differential Equation.

**CO-3:** To Find Out the Scalar and Vector Product and Its Differentiation, Gradient, Divergence, Curl, Vector Integration, Gauss's, Green's and Stoke's Theorem, General Equations of Second Degree and Tracing of Conics and Its System, Polar Equation of Conic, The Sphere, Cone, Cylinder, Central Conicoids, Paraboloid, Plane Section of Conicoids, Generating Lines, Confocal Conicoids and Reduction of Section Degree Equations.

**CO-4:** To Identify Convergence of Sequence and Series, Alternating Series, Continuity and Differentiability of One Variable Function, Darboux's Intermediate and Mean Value Theorem, Taylor's Theorem, Limit, Continuity and Tayloer's Theorem For Function of Two Variables, Partial Differentiation and Euler's Theorem on Homogeneneous Function, Change of Variables, Jacobians, Envelopes and Evolutes, Maxima, Minima and Saddle Point of Functions of Two Variables, Beta and Gamma Functions, Double and Triple Integrals, Change of Order of Integration in Double Integrals.

**CO-5:** To Determine Power Series Solution of Differential Equation, Bessel's Equation, Legender's Equation, Orthogonality of Function and Strum-Liouville Problem, Laplace and Inverse Laplace Transform, Solution of Integral Equation and System of Differential Equations Using the Laplace Transform, Partial Differential Equation of First and Second Order, Lagrange's Solution, Homogenneous and Non-Homogeneous Equation with Constant Coefficient, Monge's Method, Calculus of Variation-variational Problems with Fixed Boundaries and Moving Boundaries, Sufficient Condition for an Extremum.

**CO-6:** To Explain Analytic Conditions of Euilibrium, Stable and Unstable Equilibrium, Virtual Work, Catenary, Force in Three Dimensions, Poisot's Central Axis, Null Lines and Planes, Simple Harmonic Motion, Elastic Strings, Velocities and Accelerations Along Radial and Transverse Direction, Projectile, Central Orbits, Kepler's Laws of Motion, Tangential and Normal Velocities and Acceleration, Motion of Smooth and Rough Plane Curves, Motion in a resisting Medium, Motion of Particles of Varying Mass and Three Dimensions.

**CO-7:** To Derive Series of Arbitrary Terms and Double Series, Partial Derivation, Implicit Function, Fourier Series, Riemann Integral, Improper Integral and their Test of Convergence, Integral as a Function of a Parameter, Continuity and Differentiability of Complex Number, Analytic Function, Elementary Functions, Mapping by Elementary Function, Mobius Transformation, Conformal Mappings,Metric Spaces, Contraction Principle and Construction of Real Number From Rationals, Metric Space, Continuous Function, Compactness, Connectedness.

**CO-8:** To Find Group Automorphisms, Sylow's Theorem, Structure Theorem for Finite Abelian Groups, Ring Theory, Modulus, Vector Spaces, Linear Transformation and their Representation as Matrices, Rank and Nullity of a Linear Transformation Dual and Bidual Spaces, Eigen Values and Eigen Vectors of a Linear Transformation and Diagonalization, Bilinear, Quadratic and Hermitian Forms, Inner Product.

**CO-9:** To Explain Sets and Propositions, Relations and Functions, Graphs and Planar Graphs, Trees, Finite State Machines, Recurrence Relation and Recursive Algorithms, Boolean Algebra.

# Govt. Lahiri PG College Chirimiri, Dist-Koriya (C.G.)

## Course Outcomes for UG: Botany

After completion of three years Course of Botany the students will be able:

**CO-1:** To understand the Viruses, Bacteria, Fungi, Algae and Lichens.

**CO-2:** To illustrate of Bryophytes, Pteridophytes, General Account and Systematic Position of Pteridophytes Members, Gymnosperms and Palaeobotany.

**CO-3:** To know about Taxonomy of Angiosperms, Botanical Nomenclature, Modern Trends of Taxonomy, Herbarium Technique, Terminology for Botanical Description, Dicotyledonous Families, Economics Botany, Plant Anatomy And Embryology.

**CO-4:** To acquire the knowledge of Introduction of and Scope of Ecology, Environmental and Ecological Factors, Population and Community Ecology, Concept of Eco-System, Biogeochemical Cycles, Plant water Relation, Photosynthesis, Respiration, Plant Growth Hormones.

**CO-5:** To learn the Structure Principle And Application of Analytical Instruments-Autoclave, Incubator, Plant tissue Culture Techniques, Growth Media, Totipotency, Somatic Hybrids, General Symptoms of Fungal Bacterial and Viral diseases, Introduction to pollution, Green House Gases, B.O.D and C.O.D, biodiversity, Phytoremediation, concepts of Sustainable Development, Elementary Biostatics.

**CO-6:** To known about Cell and Cell Organelles, Mendal's Laws, Linkage and Crossing over, Gene concepts, Nucleic acids, Operon Model, Cytoplasmic Inheritance, RNA, Mutation, Genetic Code and Protein Synthesis, Regulation of Gene Expression, Genetic Engineering, Recombinant DNA Technology, Application of Biotechnology, Protein- Composition and Structure, Carbohydrates, Fact and Fatty acids, Enzymes

# Govt. Lahiri PG College Chirimiri, Dist-Koriya (C.G.)

## Course Outcomes for UG: Zoology

After completion of three years Course of Zoology the students will be able:

**CO-1:** To acquired the knowledge of Cell, Cell division, General Characters and Classification and Type, Study of Phylum Protozoa-Paramecium, Porifera-Sycon, Coelenterata-Obelia, Platyhelminthes and Nemathelminthes-Fasciola, Ascaris, Annelida-Pheretima, Arthropoda-Palaemone and Echinodermata-Asterias.

**CO-2**: Students understands the Structure and Classification of Chordata-Balanoglossus, Amphioxus, Petromyzon and Myxine, Fish, Amphibia, Reptiles, Birds and Mammals, Embryology of Frog, Chicks and Mammals.

**CO-3:** Students will have the concepts regarding Comparative Anatomy and Physiology of Various Organ System of Vertebrates: Integument, Endoskeleton Digestive, Respiratory, Nervous, Musculature and Urinogenital System.

**CO-4:** Students are able to describe structure and function of Endocrine Glands, Reproductive cycle in Vertebrates, Animal behaviour, Culture of Prawn, Fish, Silk Insect and Honey Bee, Poultry Keeping and Pest Control.

**CO-5:** Students received the knowledge of Ecology, Pollution, Ecosystem, Toxico-logy, Heavy Metal Toxicity, Animal Poisons and Food Poisoning, Microbiology of domestic water, Sewage, Dairy and Industry, Pathogenic Microorganisms, Life history and Pathogenicity of Entamoeba, Trypanosome and Plasmodium, Nematode Parasite of Man and Insect Vector.

**CO-6:** Students will have the concepts of Linkage, Sex Linkage and Determination, Gene Interaction, Human Genetics, Cell Physiology, pH Transport and Enzymes. Amino Acid and Peptides, Carbohydrate, Lipid and Protein Metabolism, Application of Biotechnology, Gene Cloning, Hybridoma, Transgenic Animals, Principles and Techniques of pH Meter, Colorimeter, Microscope, Centrifuge and Chromatography.

# Govt. Lahiri PG College Chirimiri, Dist-Koriya (C.G.)

## Course Outcomes for UG: Geology

After completion of three years Course of Geology the students will be able:

**CO-1:** Physical Geology, Geodynamics, Earthquakes and Volcanoes, Geomorphology, Earth's heat budget and Global Climatic changes, Physiographic Divisions of India

**CO-2:** Definition of Mineral and Crystal, Unit cells, Parameters and Indices of Crystal Notation, Crystallography, Optical Mineralogy, Chemical and Physical Properties of Minerals, Minerals Group.

**CO-3:** Igneous Petrology, Sedimentary Petrology, Metamorphic Petrology, Petrographic Provinces of India.

**CO-4:** Basics of Structural Geology, Folds and Folding, Faults, Joints, Foliations and Lineations, Salt Domes, Unconformity, Concept of tectonics, Stereographic Projections.

**CO-5:** Fossil and Fossilization, Micro-Palaeontology and Palaeobotany, Invertebrate Palaeontology, Principle of Stratigraphy, Stratigraphy of Chhattisgarh and India.

**CO-6:** Economics Geology, Processes of Formation of Minral Deposits, Metalic and non-metrallic Deposits of India, Coal and Petroleum Geology, Atomic Minerals, National Mineral Policy, Engineering Geology, Hydrogeology, Mineral Exploration.

# Govt. Lahiri PG College Chirmiri, Dist-Koriya (C.G.)

## Programme Outcomes for UG: B.Com.

After successful completion of three years Undergraduate B.Com general Degree Programme, the Students will be able:

- **B.Com. - 1st Year -** To provide basic knowledge regarding financial accounting, business communication, business mathematics, business economics and business environment.
- **B.Com. - 2nd Year -** To acquaint skills regarding corporate accounting, company law, principles of business management, cost accounting business statistics and fundamentals of entrepreneurship.
- **B.Com. - 3rd Year -** To know about various kinds of taxes, Implication of management of accounting in an organization and providing basic knowledge about Auditing and Marketing.

## Course Outcomes for UG: Commerce

After completion of three years Course of Commerce, the students will be able:

### B.Com.-1st year

- **CO-1: (Financial Accounting) -** To understand basic accounting knowledge as applicable to business.
- **CO-2: (Business Communication) -** To develop effective business communication skills.
- **CO-3: (Business Mathematics) -** To have such minimum knowledge of mathematics as is applicable to business and economic situations.
- **CO-4: (Business Regulatory Framework) -**To get a brief idea about the framework of Indian business laws.
- **CO-5: (Business Environment) -** To familiarize themselves with the emerging issues in the business at the national and international level in the light of the policy of liberalization and globalization.
- **CO-6: (Business Economics) -** To enhance their understanding regarding the principles of business economics as are applicable in business.

## B.Com.-2nd Year

- **CO-7: (Corporate Accounting)** - To develop awareness about corporate accounting in compliance with the provision of Companies Act, 2013.
- **CO-8: (Company Law)** - To acquire basic knowledge of the provision of Companies Act, 2013, along with relevant case law.
- **CO-9: (Cost Accounting)** - To understand the basic concepts and the tools used in cost accounting.
- **CO-10: (Principles of Business Management)** - To familiarizes them with the basics of principles of management.
- **CO-11: (Business Statistics)** -To understand various Statistical Techniques which are applicable to business.
- **CO-12: (Fundamentals of Entrepreneurship)** -To understand the entrepreneurial culture and industrial growth so as to prepare them to set up and manage their own small units.

## B.Com. -3rd Year

- **CO-13: (Income Tax)** - To know about the basics concept of the income tax act and its implications.
- **CO-14: (Auditing)** - To acquire the knowledge about principles and methods of auditing and their applications.
- **CO-15: (Indirect Taxes)** - To acquire basic knowledge about GST and applying the provision of GST Law to various situations.
- **CO-16: (Management Accounting)** -To understand the application of the accounting techniques which are useful for the managerial decision making.
- **CO-17: (Principles of Marketing)** - To understand the concept of marketing and its applications.
- **CO-18: (International Marketing)** - To acquire the conceptual knowledge regarding the operations of marketing in an international environment.

# Govt. Lahiri PG College Chirimiri, Dist-Koriya (C.G.)

## Programme Outcomes for UG:B.C.A.

After successful completion of Undergraduate three years BCA Degree Programme, the Students will be able:

- To understand, analyze and develop computer programs in the areas related to algorithm, web designand networking for efficient design of computer based system.
- To learn design and develop various application program.
- To apply standard software engineering practices and strategies in software project development using open source programming environment to deliver a quality of product for business success.
- To learn programming language such as C, C++, Visual Basics, Java, HTML, SQL.
- To know about various computer applications and latest development in IT and communicationsystem.

# Govt. Lahiri PG College Chirimiri, Dist-Koriya (C.G.)

## Course Outcomes for UG: B.C.A.

After completion of three years Course of BCA the students will be able:

| Programme Name | Course Name | Outcomes |
|---|---|---|
| BCA 1st Year | **Calculus and Statistical Methods** | • 1. Basic Knowledge of Differentiation.<br>• 2. Familiar with Probability.<br>• 3. Know about Maxima and Minima. |
| | **Fundamental Of I.T. and O.S.** | • Understand the input and output devices.<br>• Basic ideas of Computer Hardware and Software<br>• Know the working principal of Operating System.<br>• Basic Knowledge of DOS.<br>• Overview of GUI and OS. |
| | **Introductory Electronics** | • Students learned about Semiconductors & IC.<br>• Understand the basic terminology of Integrated Circuit Fabrication.<br>• Basic Knowledge Data Representation.<br>• Know about the basic concepts Logic Gates and Boolean algebra.<br>• Understands the Combinational and logical Circuits. |
| | **Programming IN C Language** | • Understand the basic terminology used in computerprogramming.<br>• Basic Knowledge of Data Types, Array, Functions etc.<br>• Know about the basic concepts Structure and Unions<br>• Learn about C File Handling. |
| | **Programming in Visual Basics** | • Introduction to Programming in Visual Basics<br>• Learn about Arrays and Functions.<br>• Understands the MDI and SDI Applications<br>• Know about File Handling and Error Handling<br>• Gain the Knowledge about ADO Data Control. |
| | **Introduction to PC Software Package and Internet** | • **MS Word:** Menus, Shortcuts, Document types; Working with Documents: Opening Files – New & Existing, Saving Files, Formatting page and Setting Margins, Converting files to different formats- Importing, Exporting, Sending files to others, Editing text documents- Inserting, Deleting, Cut, Copy, paste, Undo, Redo, Find, Search, Replace, Using Tool bars, Ruler- UsingIcons, Using help; Formatting Documents: Setting Font Styles, Setting Paragraph style, Setting Page Style, Setting Document Styles, Creating Tables, Drawing, Tools, Printing Documents. |

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| | | • **MS Power Point:** Opening new Presentation, Different presentation templates, Arranging objects, Adding Header & Footer, Slide Background, Slide layout, Inserting pictures, movies,tables.<br><br>• **MS Excel:** Introduction: Spreadsheet & its Applications, Opening spreadsheet, Menus & Toolbars & icons, Shortcuts, Working with Spreadsheets-Opening a File, Saving Files, Setting Margins, Computing data- Setting Formula, Mathematical operations, Formulas.<br><br>• Introduction to HTML and Designing Web pages using MS-Front Page<br>• Basic Knowledge about animations and graphics |
| | **Discrete Mathematics** | • Master the basic set theory.<br>• Familiar with propositional calculus.<br>• Know about Graphs and algorithms.<br>• Basic Knowledge about Boolean Algebra<br>• Able to Solve Cartesian product, Equivalence Relations. |

| Programme Name | Course Name | Outcomes |
|---|---|---|
| BCA 2nd Year | **Part-I : Numerical Analysis**<br><br>**Part-II : Differentiation and Integration**<br><br>**Part-III : Data Structures** | • Solution of Polynomial and Transcendental Algebraic Equations.<br>• Simultaneous Equations and Matrix.<br>• Interpolation - Single Variable Functions.<br>• Numerical Differentiation and Integration.<br>• Numerical Solution of Ordinary Differential and .Integral Equation.<br>• Differentiation.<br>• Integration.<br>• Concepts of Arrays, Records and Pointers.<br>• Linked Lists, Stacks, Queues, Recursion.<br>• Trees, Sorting and Searching. |
| | **DBMS (Oracle, SQL)** | • Overview of Database Management System.<br>• Entity-Relationship Model.<br>• Structured Query Language.<br>• Relational Database Design.<br>• INTRODUCTION TO ORACLE. |
| | **Programming in C++ & Visual C++** | • Overview of Object Oriented Concepts.<br>• Object Oriented Programming.<br>• Object Oriented Design & Database.<br>• Introduction to VC++.<br>• Introduction to MFC. |
| | **Computer Networking & Internet Technology** | • Introduction to Computer Networking.<br>• The OSI Model.<br>• Transmission of Digital Data.<br>• Introduction to Internet Technology.<br>• Scripting Language for Web Design.<br>• Cascading Style Sheets & Web Server. |
| | **LINUX** | • Introduction to Linux and Linux File System.<br>• Text Processing.<br>• Shell Programming.<br>• X-windows, GNOME & KDE.<br>• System Administration of Linux. |
| | **Principles of Management** | • Nature and Scope of management.<br>• Objectives Types of Plans.<br>• Major approaches to organizational theory.<br>• Significance and issue in managing human factors.<br>• Controlling & Decision Making. |

| Programme Name | Course Name | Outcomes |
|---|---|---|
| BCA 3rd Year | **Calculus & Geometry** | • Calculus.<br>• Reimann Integral.<br>• Maxima and Minima of functions.<br>• Improper integrals.<br>• Geometry:<br>• Equation to cone with given base.<br>• Polar Coordinates. |
| | **Differential Equations & Fourier Series** | • Concept of differential equation.<br>• Geometric representation.<br>• Partial differential equations.<br>• Periodic Functions.<br>• Convergence of Fourier series. |
| | **Computer Organization and Architecture** | • Understand the fundamentals Data Representation.<br>• Learn about Digital Logic Circuits.<br>• Understand the fundamentals of different instruction set architectures and their relationship to the CPU design.<br>• Understand the principles and the implementation ofcomputer arithmetic.<br>• Learn about Primary and Secondary Storage System. |
| | **Programming In JAVA** | • Introduction to JAVA.<br>• OOP's Concept.<br>• Inheritance.<br>• Exception Handling.<br>• Multithreaded Programming.<br>• Input/output Functions, Networking, and JDBC.<br>• Applets, Introduction to AWT. |
| | **Computer Operating System** | • Learn different types of operating systems along with concept of file systems and CPU scheduling algorithmsused in operating system.<br>• Provide students' knowledge of memory managementand deadlock handling algorithms.<br>• Implement various algorithms required for management,scheduling, allocation and communication used in Operating System. |

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| | **Software Engineering** | • Select and implement different software developmentprocess models.<br>• Extract and analyze software requirements specifications for different projects.<br>• Develop some basic level of software architecture/design.<br>• Apply standard coding practices.<br>• Define the basic concepts and importance of Softwareproject management concepts like cost estimation, scheduling and reviewing the progress.<br>• Identify and implement of the software metrics.<br>• Apply different testing and debugging techniques and analyzing their effectiveness. |
| | **Multimedia Tools and Applications** | • Provide comprehensive introduction about computergraphics system.<br>• Design algorithms to generate the basic primitives.<br>• Understand 2d transformations.<br>• Familiar with techniques of clipping, three dimensionalgraphics and three dimensional transformations.<br>• Familiar with animations. |
| | **Financial Management & Accountancy** | • Financial Accounting.<br>• Preparation of Financial Accounting.<br>• Financial statement analysis.<br>• Conceptual framework of cost accounting.<br>• Cost Volume Profit.<br>• Budgeting.<br>• Cost accumulation system.<br>• Variables and absorption costing system. |

# Govt. Lahiri PG College Chirimiri, Dist-Koriya (C.G.)

## Programme Outcomes for PG Diploma in Computer Application

After successful completion of Post Graduate Diploma in Computer Application Programme, the Students will be able:

- To prepare basic computer Knowledge and Languagesin one year.
- To analyze the System and maintain the relationship.
- To understanding different hardware & software specification.
- To understanding application of Different software needed for industrialareas.
- To identify, software and hardware knowledge.
- To utilize the techniques, skills & basic programming tools, softwaredevelopment practice.
- To learn effective Computer Skills and development personality.

| Programme Name | Course Name | Outcomes |
|---|---|---|
| | **Introduction To Software Organization** | • Familiar with parts of computer<br>• Understand the Linux OS.<br>• Basic ideas of storage devices, Types of software, loaders, Assemblers etc.<br>• Clears Concept of Computer Software.<br>• How communication works in computer networks and tounderstand the basic terminology of computer networks. |
| | **Programming In 'C' & 'C++'** | • Write, compile and debug programs in C language.<br>• Use different data types in a computer program.<br>• Design programs involving decision structures, loops and functions.<br>• Analyze a given problem and develop an algorithm to solvethe problem.<br>• Improve upon a solution to a problem.<br>• Use the 'C' language constructs in the right way.<br>• Design, develop and test programs written in 'C' Understandthe basic terminology used in computer programming. |

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| **PGDCA** | **DBMS (SQL/Oracle)** | • Construct an Entity-elationship (E-R) model froms pecifications and to transform to relational model.<br>• Construct unary/binary/set/aggregate queries in relationalalgebra.<br>• Understand and apply database normalization principles.<br>• Construct SQL queries to perform CRUD operations on database. (Create, Retrieve, Update, Delete)<br>• Understand principles of database transaction management,database recovery, security.<br>• Acquire knowledge in fundamentals of Data Base management system.<br>• Analyze the difference between traditional file system andDBMS. |
| | **GUI - Programming In Visual Basic** | • Introduction to visual Basic.<br>• Overview of variables, Declaring, Scope, arrays.<br>• Controlling Program Execution Comparison and logical operator.<br>• Working with Controls Types of controls, Overview of standard controls, ComboBox and ListBox.<br>• Overview of run-time errors, error handling process.<br>• Data Access Using the ADO Data Control. |
| | **Programming In JAVA** | • Genesis of java, importance to the Internet, overview of features.<br>• OOP features, data types, control structures.<br>• Inheritance, Packages and Interfaces.<br>• Exception Handling, Multithreaded Programming.<br>• Basic Streams, Byte and Character Stream, Setting the JDBC connectivity with backend database.<br>• Applets, Introduction to AWT. |
| | **Essentials of E -Commerce** | • Introduction to Electronic Commerce.<br>• Internet, Security and E-Commerce.<br>• Business–to-Business (B2B), Business-to-Consumer (B2C); Business-to-Business-to-Consumer (B2B2C) and Consumer-to-Consumer (C2C) E- |

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| | | Commerce.<br>• HTML Basics & Web Site Design Principles.<br>• Image, Internal and External Linking between WebPages.<br>• Creating Business Websites with Dynamic Web Pages. |

# Govt. Lahiri PG College Chirmiri, Dist-Koriya (C.G.)

## Programme Outcomes for PG: M.A. (Economics)

Economics enables the learners to build up professional carriers as financial Advisors, Economics planners and policy makers. After successful completion of CBCS/Semester system Postgraduate M.A. (Economics) general Degree Programme, the Students will be able:

- To impart knowledge about Economics, Particularly the basic concepts, Principles and apply to such knowledge to political, economic and social context.
- To enable the students exhibiting their ability to developed economy of central and the state govt.
- To develop in students to analyze economic problem.
- To enable the students to have an opportunity to serving as a economist, account officer, statistical officer, bank officer professor.
- To inculcate in students a sense of ethics and responsibility.

# Course Outcomes for PG: Economics

After completion of Four Semesters CBCS Postgraduate Course of Economics, the students will be able to understand:

| S.N. | NAME OF PROGRAMME | NAME OF COURSE | PAPER & CODE | COURSE OUTCOMES |
|---|---|---|---|---|
| 01 | M.A I Sem. | Micro Economics- 1 | CCC<br>ECO-101 | • Definitions, nature and scope and relation of other subject.<br>• Production functions and theory of cost.<br>• Market structure price and output determination of different market.<br>• Alternative theory of firm models |
| 02 | M.A I Sem. | Macro Economics- 1 | CCC<br>ECO-102 | • Macro Economics and National Income accounting methodology and subject matter, Micro foundation of Macro Economic policy, National Income meaning definition and measurement.<br>• Circular flow different form and National Accounting-Social accounting, problems in preparation of Social Accounting use of National Income and product accounting.<br>• Monetary theories Quantity theory of money, Cambridge school and Keynesian general theory, post Keynesian theories, new classical school recent development.<br>• Theory of Investment function, marginal efficiency of capital MEC, Inflation Impact of inflation, Multiplier and acceleration. |

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| 03 | M.A I Sem. | Public Economics- 1 | CCC<br>ECO- 103 | • Introduction Definitions, Scope similarities and dissimilarities of public finance and private finance, Market failure role of govt. in Economic Activities<br>• Inter-Sectorial allocation and public choice, types of goods characteristics principal of maximum social advantage public choice – unanimity relative unanimity the medium voter Arrow's impossible theorem.<br>• Theory of public expenditure – meaning, classification causes of increase in public expenditure, importance, Cannons and effect of public expenditure Wagner's low Wiseman-peacock hypothesis of public expenditure Prof. Samuelson's pure theory trends of public expenditure in India.<br>• Public revenue and theory of taxation meaning definition sources, classification of public revenue, tax classification, objective canon of taxation, direct indirect tax Laffer curve characteristics of good taxation tax incidence – effect of taxes.<br>• C.G. finance commission C.G. budget |
| 04 | M.A I Sem. | Research Methodology and computer Application: Basic | OSC<br>ECO-S01 | • Concept of research meaning and characteristics of research process, types of research selection of problem for research, drafting of research proposal, meaning and types |

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| | | | | of variables, meaning and types of hypothesis.<br>• Tools of research meaning and general information about constructions procedure, Questionnaire, Interview Psychological test Observation, Rating scale, Attitude scale Check list.<br>• Sampling meaning of population of sample importance and characteristics of sample techniques, 1-Probability sampling 2- Non Probability sampling.<br>• Methods of research, meaning and conducting procedure of different methods of research.<br>• Treatment of data – Level of measurement of data, steps, editing, coding classification, tabulation Analysis and interpretation of result.<br>• Writing research report – Section of report.<br>• Computer fundamental |
| 05 | M.A I Sem. | Industrial Economics-1 | ECC/CB<br>ECO-A03 | • Industrial Economics frame work and its problems, concept, types, objectives of firm behavior active and passive profit maximization scope of Industrial Economics.<br>• Market structure main components of market, seller concentration, product differentiation, entry condition exit from market Economics of scale, market structure and profitability and |

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| | | | | innovation.<br>• Market conduct –market and product pricing, pricing theories and strategies, investment expenditure its methods of evaluating , merger acquisition and collaboration its theories and empirical evidence.<br>• Market performance- growth, size, profitability of the firm its constraints, productivity efficiency and capacity utilization its concept and measurement more in context of Indian situation.<br>• Different types of industries in C.G. with reference to Sarguja |
| 06 | M.A II Sem. | Micro Economics- 2 | CCC<br>ECO-201 | • Micro Economic theory marginal productivity theory Eller's theorem, Modern Economic theory.<br>• Macro distribution theories.<br>• Welfare Economic theory old and new welfare Economics.<br>• Arrow's impossibility theorem theory of Second Best, Amartya Sen contribution in welfare Economics. |
| 07 | M.A II Sem. | Macro Economics- 2 | CCC<br>ECO-202 | • Consumption function and investment function income consumption relationship.<br>• Marginal efficiency of investment and level of investment the accelerator and investment behavior.<br>• Neo-classical and keynesian views on interest and income, the IS-LM model. |

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| | | | | • Theory of inflation Classical keynesian and Monetarist approaches to inflation structuralism, theory of inflation Philips curve analysis, policies to control inflation.<br>• Neo Macro Economics, The new Classical critique of Micro foundation Neo approach, policy implication of new classical approach of Mundell and other Economics. |
| 08 | M.A II Sem. | Public Economics- 2 | CCC<br>ECO- 202 | • Public debt – Difference, in public and private debt, classification, sources, redemption of public debt effect, Principle of trends of public debt of India.<br>• Fiscal policies objective instruments of fiscal policy in limitation and fiscal reforms in India.<br>• Budget concept, kinds of budget components of govt. budget zero base budgeting different concept of budget deficits union govt. of budget.<br>• Fiscal federalism federal finance principle of federal finance Center –State financial relations Indian federal finance commission & recommendation of latest of finance commission.<br>• Budget of C.G. |
| 09 | M.A II Sem. | Social outreach and skill development | OSC<br>ECO- 221 | • Project Work- The aim of Project Work is to acquire practical knowledge on the implementation of perception studied thought the programme, skill |

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| | | | | development.<br>• Ability to find out Identify a problem. |
| 10 | M.A II Sem. | Industrial Economics - 2 | ECC/CB<br>ECOB03 | • Industrial locations- affecting factors, theory of industrial location.<br>• Indian industrial growth classification of Indian industries role of industrial policies of India, role of public and private sectors in growth of industries role of MNCs.<br>• Regional industrial growth of India industrial imbalances, industrial Economics concentration, its remedies industrial proliferation and environmental preservation pollution control and govt. policies.<br>• Industrial finance sources of industrial finance owned and external and other sources role nature volume and types of institutional finance different institution of finance- IDBI, IFCI, SFCS, SIDC etc.<br>• Industries of surguja with reference to sugar and rice |
| 11 | M.A III Sem. | International Economics- 1 | CCC<br>ECO-301 | • Concept of Inter – regional and International trade theory of International trade Leontief Paradox International trade under imperfect completion.<br>• Terms of trade secular deterioration of terms of trade hypothesis, gains of trade foreign trade multiplier trade |

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| | | | | and labour skills theory by Donald Kessing.<br>• Measurement of gains trade terms of trade, uses and limitations, affecting factor, impact of tariffs political economy of Non- tariff barriers trade and development trade as engine of growth dual gap analysis- Prebisch, singer and Myrdal.<br>• Balance of trade and balance of payment equilibrium and disequilibrium in balance of payment.<br>• Process of adjust under system of gold standard steps to correct imbalance of payment traditional and monitory approach theory of International reserve theory of foreign exchange rate. |
| 12 | M.A III Sem. | Contemporary Issues in Indian Economy-1 | CCC<br>ECO-302 | • Concept and approaches to Economic development its measurements, determinants.<br>• Sustainable development role of state and market in Economic development.<br>• Other institutions indicators of development- PQLI,HDI, GDI and other indicator.<br>• Planning in India- importance objective strategy of planning its failure and achievement current 5 year plan, developing grass- root organization for development NGOs Panchayati raj and pressure group.<br>• Resource base infrastructure – Social and Economic infrastructure- education and |

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| | | | | health environment, regional imbalances, issues and policies in financing infra development growth and development infrastructure in India.<br>• Public finance fiscal federalism role of state and center its financial relation finance of central and state govt. parallel economy fiscal policies related problems fiscal factor reforms in India, NITI AYOG. |
| 13 | M.A III Sem. | Environmental Economics Theories | CCC<br>ECO-303 | • Environmental economics meaning nature and scope relationship between main stream economics and environmental economics and other disciplines.<br>• Market failure decision making market efficiency and Parato of optimality market failure possibility with reference to environmental resources the region for market failure.<br>• Environment and development theory of sustainable development and problem of this theory indicator rules of sustainability methods of environmental valuation integration of National and environmental accounting.<br>• Optimal use of environmental resources application of Capital theories of optimal use of environmental resource theory for the use of Non renewable and renewable |

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| 14 | M.A III Sem. | Intellectual property rights and environment basic | OSC<br>ECO-S02 | • Patents copyrights rights Human rights related life liberty equals and disable.<br>• National and State Human rights commission, high court, regional court and there procedure and function.<br>• Rights to environment as human rights International Humanitarian law and environment International organizations IEOs sustainable development, environmental governance |
| 15 | M.A III Sem. | Agriculture Economics | ECC/CB<br>ECOC02 | • Nature and scope of agriculture and rural economics traditional agriculture modernization role of economic development inter dependence between agriculture and industry.<br>• Land use policy and social infrastructure land distribution problems of small and marginal farmer's rural social infrastructure Land, water energy education and health.<br>• Agricultural production and productivity concept of production function law of diminishing return and its importance Cobwen theorem production and productivity causes of low productivity.<br>• Agricultural growth in India agricultural policies and India new strategy of agricultural development green revolution |

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| | | | | application of new technologies – Hyv, chemical fertilizer irritation PPM and farm mechanization sustainable agriculture and future challenges.<br>• Agriculture in C.G. Rice, wheat and other vegetables |
| 16 | M.A IV Sem. | International Economics- 2 | CCC 401 | • Trade policy and reforms in India's Trade policy, foreign trade in India international capital flow in India FDI, FII ect; Change in the volume, Direction and composition of India's foreign trade and their implication Export promotion Free trade Vs. Protection.<br>• Theories of Regionalism at Global level regional blocks.<br>• Multilateralism and world trading system ,international trade under condition of imperfect competition in goods market Theory of optimum currency area its impact in the developed and developing countries.<br>• Function of GAAT and WTO IMF, World Bank, Asian Development Bank –their achievement and failures, WTO and its impact on the different sector of the economy.<br>• The rise and fall of Bretton Wood emerging International system recent reforms there in Globalization and development in Exchange Market, Euro Currency Market and International Bond Market. |

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| | | | | • International debt crisis Exchange Trading, Arbitrage and market hedging.<br>• MNC's in C.G. with special reference to coal |
| 17 | M.A IV Sem. | Contemporary issues Economy- 2 | CCC<br>402 | • Agricultural sector-institutional structure land reforms India technological change in agriculture pricing of agriculture inputs and output terms and trade between agriculture and industry Agricultural finance policy, agricultural marketing, food security policy for sustainable agriculture.<br>• Industrial sector-industrial policy public sector enterprises and their performance, problems of sick units in India, privatization, and disinvestment debate growth and pattern of industrialization small scale sector, productivity in industrial sector exit policy issues in Labour market reforms. |

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| | | | | • External sector structure and direction of foreign trade, balance of payment export-import policy and FEMA exchange rate policy foreign capital and MNCs in India the progress, of trade reforms in India rationale of internal and external reforms Globalization of Indian economy W.T.O. and impact.<br>• Money banking and price Analysis and price behavior in India financial sector reforms interest policy review of monetary policy RBI money and capital market SEBI in India.<br>• Small industry with Iron industry in C.G. |
| 18 | M.A IV Sem. | Environmental Economics- issues and policies | CCC<br><br>ECO-403 | • Environmental issues of primary sector- changing land use and cropping pattern and environmental issues, the problem of grazing land, pasture and live stock , problems of conservation of forest and biodiversity , supply and quantity of ground water and its management , the conservation and management of marine fish.<br>• Industrial development and environmental issues- change in growth and structure of industry in India, growth of pollutant industries problem of air and water pollution management of solid and liquid wastes.<br>• International environmental |

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| | | | | issues the problem of Trans boundary pollution global warming and acid rain globalization International trade and environmental issues.<br>• Environmental policies in India, important environmental laws, international environmental agreements India's approach: mechanism of implementation of environment laws in India.<br>• Swachh Bharat Abhiyan in Sarguja and environment policy in C.G. |
| 19 | M.A IV Sem. | Dissertation | SSC/PRJ<br>ECO-421 | The objective of this course<br>• To develop re research interest in students and developing a research approaches in students.<br>• To develop research skill.<br>• To identify the research problem.<br>• To problems solving ability.<br>• To Introduce students to various dimensions of research |
| 20 | M.A IV Sem. | Basic statistics for Economists | ECC/CB<br>ECO-D01 | • Basic statistics applications of statistics in economics, population and sample, frequency distribution, different types of chart of graphs measurements of central tendency- mean, median mode and weighted average.<br>• Basic statistics dispersion various measure of dispersion – Range, Mean |

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| | | | | deviation, Quartile deviation standard deviation, coefficient of variation, Skewness and kurtosis.<br>• Multivariate analysis- simple correlation its application in economic study Regression analysis relationship between correlation and regression analysis use of regression analysis in economic research.<br>• Theory of probability- elementary probability theory random variable, events probability distribution functions, various large of probability conditional probability binomial and normal distribution.<br>• Planning and control definitions, types structure of planning.<br>• Control- definitions and its role of MIS.<br>• A study of computerization in different functional areas. |

# Govt. Lahiri PG College Chirmiri, Dist-Koriya (C.G.)

## Programme Outcomes for PG: M.A. (Political Science)

After successful completion of CBCS/Semester System Postgraduate M.A. (Political Science) general Degree Programme, the student will be able:

**M.A.-1st Semester -** To exchange Their Knowledge Debates in Political Theory, Comparative Analysis, Indian Government and politics, Re-search Methodology and Computer Application Basic and Contemporary Debates in Political Theory.

**M.A.-2nd Semester -** To Get in-Depth understanding of all core areas basically Administrative Theory, Principle and Approaches, Themes in Indian Political Thought, Western Political Thought, Social Out rich And Skill Developments, Social Movement And Revolution.

**M.A.-3rd Semester -** To Understand The Democracy And Political Institutions In India, Parties Elections And Political Process In India, Indian Political Thought, Intellectual Property, Right Human Right & Environmental Basic, Democracy And Human Rights In India.

**M.A.-4th Semester -** To Develop the Knowledge in Principles of International Politics Indian and the World, Political History of Chhattisgarh Dissertation, Development Process And Politics In India

## Course Outcomes for PG: Political Science

After completion of Four Semesters CBCS Postgraduate Course of Political Science the students will be able:

### M.A.-1st Semester

**CO-1: (Debates in Political Theory) -** What Is Political Theory? Disagreement and Debates in Political Theory and Political Philosophy, Decline and Resurgence Since-1970, Behaviorism and Post Behaviorism, The political Context-Understanding Power, Authority and Legitimacy End of History End of Ideology, Debates on Freedom and Justice Debates in Equality and Rights Debates on Nations.

**CO-2: (Comparative Political Analysis) -** To get depth knowledge in Evolutions of comparative politics as a discipline, Constitutionalism Form of Govt. , Organs of Governments parties system, Political Development Beau racy.

**CO-3: (Indian Govt. and Politics) -** To understand Ideological bases of Indian constitutions, Structure and process**:** President Prime Minister council of ministers Federalism political Parties, Pressure Groups, Public Opinion, Challenge Before Indian Polity, Election Commission.

**CO-4: (Research Methodology) -** To understand the concept of Re-search, Tools of Research, Methods of Research, Treatment of Data and Computer Fundamentals.

**CO-5: (Contemporary Debates in Political Theory) -** Liberalism, Socialism Marxism, modernism, Feminism, Environmentalism, Multiculturalism, Fascism, Role of Ideology, End of Ideology, Theories of change – Lenin Mao and Gandhi.

## M.A.-2nd Semester

**CO-6: (Administrative Theory Principle and Approaches) -** Nature Scope and Approaches to Study of Public Administration, Theories of Organization, Development Administration, Financial administration, Corruption in public Administration.

**CO-7: (Themes in Indian Political Thought) -** Perspective Theories and Practices of Knowledge, conception and from of Community, critical perspective on Indian Society, The nation in Indian Political Thought.

**CO-8: (Western Political Thought) -** Ancient Political Thought, Medieval Political Thought, Modern Political Thought, Utilitarian and ideal Political Thought, Marxist Political Thought.

**CO-9: (Social Outreach and Skill Development) -** To develop their Potential as well as in depth knowledge for Re-search Activities by Making a Project Report in Various Fields as per their area of Interest.

**CO-10: (Social Movement and Revolution) -** To understanding The revolutions, Ideology and Politics of Liberation, Struggles in Asia and Africa, Social Movements, Ideology and Politics of Social Movements, Ideology and Politics of Liberation Struggles in India.

## M.A.-3rd Semester

**CO-11: (Democracy and Political Institutions in India) -** To Develop The Basic Knowledge of Theories and Practice of The Indian Constitutions, Governmental Institutions, Functioning and Their Relationship, federalism, Local self Governments, Rule of Law, Rights and Accountability.

**CO-12: ( Parties Elections And Political Process in India) -** To understand Typology of Political Parties in India, Party System in India, The changing Profile of national Political parties, Regional and state parties, Elections in India, Non-Party Movements, NGO and Their Impact on Political Parties.

**CO-13: (Indian Political Thought) -** To develop Their knowledge in Indian Thoughts, MANU, Kautilya, ShantiParva, MAHABHART, Raja Ram Mohan Ray, Swami Vivekananda, Dada Bhai Nauroj, Ram Manohar Lohiya, Jai Prakash Naryam, Pt. J.L Nehru, B.R. Ambedkar, Jyotiba Phule, Sarvarkar, Gandhi, Deendayal Upadhyay.

**CO-14: (Intellectual Property Rights Human Rights) -** To Develop Their knowledge Intellectual property Right, Patents and Copy Rights and Enhance the awareness about Human Rights and Rights Relating to Environments.

**CO-15: (Democracy and Human Rights in India) -** To get in Depth knowledge of Democracy and Right concept of Human Rights, Issue and challenges, Impact of **Dopried** Groups and State response to Human Rights.

## M.A.-4th Semester

**CO-16: (Principle of International Politics) -** To Develop The knowledge in International Politics, Theories of International Politics, Disarmament, Cold War and UNO and its agencies.

**CO-17: (India and The World) -** The Nature of India's foreign policy- Evolutions of India's foreign Policy, India and International Economy, India's Security Policy, perspective Problem, India-Post cold war, Relations- Indias-Regional Cooperation, India and Other Regional Blocs.

**CO-18: (Political History of Chhattisgarh) -** History of Chhattisgarh, Historical Geographical, Cultural, Role of Chhattisgarh in India's freedom Struggle, Political thinkers in Chhattisgarh.

**CO-19: (Dissertation) -** To Develop Their Skills and enhance Their Potential in context to Re-search Activity by Preparing Dissertation in any field.

**CO-20: (Development Process and Politics in India) -** Relationship between Development and Polities, Socio Economic Problems and Issue of Development, Shift in Developmental Politics and Strategies, Critiques of Development and Alternative models Non-Governmental and peoples Empowerment.

# Govt. Lahiri PG College Chirmiri, Dist-Koriya (C.G.)

## Programme Outcomes for PG: M.A.(Sociology)

After successful completion of CBCS/Semester system Postgraduate M.A. (Sociology) general Degree Programme, the Students will be able:

**M.A.-1st Semester -**To enhance their knowledge regarding Classical Sociological Tradition, Social Anthropology, Social Change In India, Research Methodology And Computer Application Basic, Urban Sociology.

**M.A.-2nd Semester -** To get in-depth understanding of Views Of Classical Sociological Thinkers, Quantitative Research Techniques In Sociology, Theoretical Perspectives In Sociology, Project Work, Indian Rural Society.

**M.A.-3rd Semester -** To understand Classical Sociological Theory, Perspective On Indian Society, Criminology 1st, Intellectual Property Human Rights And Environment: Basics, Tribal Studies.

**M.A.-4th Semester -** To develop the knowledge Modern Sociological Theories, Comparative Sociology, Criminology 2nd, Dissertation and Urban Society In India.

## Course Outcomes for PG: M.A.(Sociology)

After completion of Four Semesters CBCS Postgraduate Course of Sociology, the students will be able:

### M.A.-1st Semester

**CO-1: (Classical Sociological Tradition) -** To acquire the knowledge of the Karl Marx: Marx Theory of Social Change, Emile Durkheim: Theory of Suicide, Max Weber: Theory of Authority, Vilfredo Pareto.

**CO-2: (Social Anthropology) -** To get in-depth knowledge of To Know Concept Of Applied and Action Anthropology Problem In Issues Arising Out Of The Impact Of Modernization Industrialization Urbanization and Technological Change In Traditional Cultures, Applications Of Anthropological Knowledge, Application Of Anthropological Knowledge In Education And Social Awareness.

**CO-3: (Social Change in India) -** To understand Conceptual And Theoretical Frame Work, Factors Of Social Change, Trends And Processes Of Change In Modern India, Change In Urban And Industrial India.

**CO-4: (Research Methodology) -** To understand the concept and pace of research with various resources and tools and achieve skill in various research writings along with computer fundamentals and office software packages.

**CO-5: (Urban Sociology) -** To enhance their knowledge Definition- Origin And Scope Of Urban Sociology, Urban Ecology Definition, Growth Of Cities Pre-Industrial And Industrial Cities, Urban Problems Crime, Town Planning Meaning.

## M.A.-2nd Semester

**CO-6: (Classical Sociological Thinkers)** – To understand the concept of Auguste Comte – Positivism, Enlightenment and Conservative Reaction, Emile Durkheim – Division of Labour in the Capitalist Society, Mechanical and Organic Solidarities, Karl Marx – Theory of Social Change, Max Weber – Theory of Social Action and its Types.

**CO-7: (Quantitative Research Techniques in Sociology)** – To describe the Sampling, Quantitative Metod and Survey Research, Measurement and Scaling Techniques, Statistics in Social Research.

**CO-8: (Theoretical Perspectives in Sociology)** – To adequate Introduction and Nature of sociological Theory, Structural Functionalism, The Idea of social structure, Conflict Theory, Neo Marxism, Interactionist Perspective, Contemporary Issues, Former Movement, Naxal Problems.

**CO-10: (Project Work)** –

## M.A.-3rd Semester

**CO-11: (Classical Sociological Theories)** – To acquire the knowledge of Positivism, Functionalism, Conflict Theory, Structuralism, Exchange Theory.

**CO-12: (Perspectives on Indian Society)** – TO describe Indological/Textual (G.S. Ghure), Synthesis of Textual and Field Views (Irawati Karve, K.M. Kapadia), Structural Functionalism (M.N. Srinivas, S.C. Dube), Civilization View (N.K. Bose), Subalten Perspectives (B.R. Ambedkar)

**CO-13: (Criminology 1st)** – To understand the Conceptual and Theoretical Approaches, Types of Criminals and Crimea, Changing Profile of Crime and Criminals, Theories of Punishment, Terrorism.

**CO-14: (Intellectual Property Right, Human Rights & Environment Basics)** – To elicit the Patents, Copyright, Historical Eyolution, Human Rights, International Humanitarian Law and Environment.

**CO-15: (Tribal Studies)** – To acquire the knowledge Tribal Studies, Scheduled Tribe in India, illiteracy, Welfare Concept, Characteristics, Tribal Development Programs for Scheduled Tribes.

## M.Com.-4th Semester

**CO-16: (Modern Sociological Theories)** – To understand the Symbolic Interectionism, Phenomenology, Ethnopmethodology, Critical Theory, Post Modenism.

**CO-17: (Comparative Sociology)** – To acquire the knowledge Historical and Social Context of Emergence of Sociology in the West, Central Themes in Comparative, Theoretical Convrns in Comparative Sociology, Current Debates, Debates on "For Sociology of India"

**CO-18: (Criminology-II)** – To elicit the Roots of Correction to Prevent Crime, Correction and its Forms, Problem of Correctional Administration, Victimological Perspective, Community Policing.

**CO-19: (Urban Society in India)** – To understand the Classical Sociological Traditions as Urban and city Dimensions, Urban Sociology in India, Classification of Urban Centres, Changing Occupational Structure and its Impact on Social Stratification, Urban Planing and Problems of Urban Management of India.

**CO-20: (Dissertation)** –

# Govt. Lahiri PG College Chirmiri, Dist-Koriya (C.G.)

## Programme Outcomes for PG: M.A. ( Geography)

After successful completion of CBCS/Semester system Postgraduate M.A. (Geography) general Degree Programme, the Students will be able:

**M.A.-1st Semester -** To know Geomorphology, Climatology, Geography of India, Research Methodology and Computer Application Basic, Fluvial Geomorphology.

**M.A.-2nd Semester -** To get in-depth understanding of Environmental Geography, Geographical Thought and Methodology, Oceanography, Social outreach and Skill Development, Bio Geography.

**M.A.-3rd Semester -** To understand Rural Settlement Geography, Medical Geography, Principle of Economic Geography, Agricultural Geography, Intellectual Property, Human Right and Environment Basic.

**M.A.-4th Semester -** To develop the Regional Planning and Development, Population Geography, Urban Geography, Industrial Geography, Social Geography.

## Course Outcomes for PG: M.A. (Geography)

After completion of Four Semesters CBCS Postgraduate Course of Geography, the students will be able:

### M.A.-1st Semester

**CO-1: (Geomorphology) -** To acquire the knowledge Basic of Geomorphology, Continents and Ocean Basins, Indogenetic forces, Cycle of Erosion.

**CO-2: (Climatology) -** To get in-depth knowledge of Climate System, Applied Climatology, Air Masses and Fronts, Classification of Climate.

**CO-3: (Geography of India) -** To understand Physical and Biological elements in the Geography of India, Agriculture, Sources of Power, Regional division of India.

**CO-4: (Research Methodology & Computer Application) -** To understand the Concept of Research, Selection of Problem for Research, Tools of Research, Sampling, Methods of Research, Treatment of Data, Writing Research Report, Computers Fundamentals, Office Software package.

**CO-5: (Fluvial Geomorphology) -** To enhance their knowledge about Drainage pattern, Drainage basin Characteristics, Fluvial Erosion, Fluvial deposition.

### M.A.- 2nd Semester

**CO-6: (Environmental Geography) -** To understand Environment and its Components, Environment and their development, Environmental hazards, Environmental Management.

**CO-7: (Geographical Thought and Methodology)** -To develop their knowledge regarding the field of Geography its plays in the classification of Science. Geography and Environmentalism, Growth of Geographical knowledge, earliest times to School of thought in modern geography, Scientific Expiation, Changing paradigms, Status of Indian Geography.

**CO-8: (Oceanography)** -To understand Nature and Scope of Oceanography, Physical and chemical properties of Sea waters, Marine Sediments, Enter link between Atmospheric circulation and circulation pattern in the Ocean, Marine Biological Environment, impact of Humans on th marine environment.

**CO-9: (Social outreach and Skill Development)** - To develop their potential as well as in-depth knowledge of the aim of the project work or field work each to introduce students with the research methodology in the subject and to prepare them for the pursuing in theoretical, experimental or computational areas of the subject.

**CO-10: (Biogeography)** - To know about Essentials Biogeography, Spatial Dimensions in Biogeography, Dynamic Biogeography, Soils and Biomas.

## M.A.-3rd Semester

**CO-11: (Rural Settlement and Geography)** - To develop the basic knowledge regarding the Bases, Evolution and Models, Spatiality and Histogenesis, Rural Dwellings, Indian Villege.

**CO-12: (Medical Geography)** - To understand about Nature Scope and Significance of geography of health, Geographical factors affection human health and diseases arising from them, Classification of Diseases, Health care Planning and Policies.

**CO-13: (Principle of Economic Geography)** - To develop their understanding regarding basic concepts of Scope contents and recent trends in Economic Geography, Factors of location of economic activities, Case study of selected Industries, Modes of Transportation and Transport cost , Typology of market, Economic Development of India.

**CO-14: (Intellectual Properties, Human Rights and Environment Basics)** - To develop their knowledge regarding Intellectual Property Rights i.e., Patents and Copyrights; and enhance the awareness about human rights and rights relating to environments.

**CO-15: (Agricultural Geography)** - To get in-depth knowledge about Nature Scope Significance and development of agricultural geography, Determinates of Agricultural land use, Theories of agricultural location, agriculture in India.

## M.A.-4th Semester

**CO-16: (Regional Planning and Development)** - To enhance their knowledge relating to Regional Planning , Regional Development Theories, Approaches and Strategies of Regional Development, Regional Planning in India.

**CO-17: (Population Geography)** - To acquaint the understanding of Nature Scope and contents of Population Geography, Spatial pattern of distribution of Population, Composition of Population, Migration.

**CO-18: (Urban Geography)** - To enhance their understanding regarding Definition objective and Scope of Urban Geography, Internal Structure Morphology and Land use, Centrifugal and centripetal forces in geography, Contemporary Urban issues, Urban Planning.

**CO-19: (Social Geography)** - To develop their skills and enhance their potential in context to Concept Origin Nature and Scope of Social Geography, Peopling Process of India, Social Categories, Concepts and Components.

**CO-20: (Industrial Geography)** - To get clear understanding of Nature Scope and Recent Developments, Theories and models of Industrial location, Distribution and Spatial pattern of Manufacturing industries, Environmental Degradation Caused by manufacturing industries, Changing Industrial Policy.

# Govt. Lahiri PG College Chirmiri, Dist-Koriya (C.G.)

## Programme Outcomes for PG: M.A. (Hindi)

01 विद्यार्थियों में साहित्य की समझ विकसित कर उनमें रचनात्मक क्षमता का विकास कराना।

02 विद्यार्थियों में साहित्य की युगीन परिस्थितियों और साहित्यिक प्रवृत्तियों के आधार पर हिन्दी साहित्य के इतिहास के काल विभाजन तथा नामकरण का परिचय देना।

03 विद्यार्थियों में समीक्षात्मक दृष्टि का विकास करना।

04 विद्यार्थियों को भाषा विज्ञान के सैद्धांतिक पक्ष से अवगत कराना।

05 विद्यार्थियों को हिन्दी की आधुनिक काव्य प्रवृत्तियों से परिचित कराना।

06 विद्यार्थियों को भारतीय एवं पाश्चात्य काव्यशास्त्र से परिचित कराना।

# Course Outcomes for PG: Hindi

## M.A. I[st] Semester

### (प्रथम प्रश्न प्रत्र–हिन्दी साहित्य का इतिहास)

01 विद्यार्थियों को हिन्दी साहित्य के इतिहास का विस्तृत ज्ञान कराना।
02 आदिकाल,भक्तिकाल,रितिकाल और आधुनिक काल की विविध प्रवृत्तियों से परिचित कराना।
03 विद्यार्थियों को हिन्दी गद्य के उदभव,विकास और विविध विधाओं का ज्ञान कराना।
04 विद्यार्थियों को आधुनिक हिन्दी कविता के विकासक्रम की जानकारी देना।

### (द्वितीय प्रश्न पत्र–प्राचीन एवं मध्यकालीन काव्य)

01 विद्यार्थियों को आदिकाल एवं भक्तिकाल की प्रवृत्तियों का ज्ञान कराना।
02 विद्यार्थियों को मध्यकाल के प्रमुख कवियों की रचनाओं से परिचित कराना।
03 विद्यार्थियों को मध्यकालीन कविता के प्रति आलोचनात्मक एवं व्यावहारात्मक दृष्टि का विकास करना।

### (तृतीय प्रश्न पत्र–हिन्दी भाषा एवं भाषा विज्ञान)

01 विद्यार्थियों को हिन्दी के विविध रूपों की जानकारी प्रदान करना।
02 साहित्य के अध्ययन में भाषा विज्ञान की उपयोगिता को विद्यार्थी समझ सकेंगे।
03 विद्यार्थी भारतीय आर्य भाषाओं के ऐतिहासिक विकासक्रम को जान सकेंगे।
04 विद्यार्थी भाषा विज्ञान के सैद्धांतिक पक्ष से अवगत हो सकेंगे।
05 विद्यार्थी हिन्दी के शब्द भेदों के विकासक्रम से परिचित हो सकेंगे।

### (चतुर्थ प्रश्न पत्र–शोध प्रविधि एवं कम्प्यूटर एप्लीकेशन की पृष्ठभूमि)

01 विद्यार्थी शोध प्रविधि की मूलभूत अवधारणा से परिचित हो सकेंगे।
02 विद्यार्थियों में शोध की अभिरूचि विकसित हो सकेंगी।
03 विद्यार्थियों में कम्प्यूटर एप्लीकेशन की समझ विकसित करना।
04 शोध के सुव्यवस्थित स्वरूप की जानकारी देना।

### (पंचम प्रश्न पत्र–महाकवि तुलसी दास)

01 विद्यार्थियों को महाकवि तुलसी दास के व्यक्तित्व एवं कृतित्व की विस्तृत जानकारी प्राप्त हो सकेंगी।
02 विद्यार्थी अन्य भक्तिकालीन कवियों के साथ तुलसीदास का तुलनात्मक अध्ययन कर सकेंगे।
03 विद्यार्थी तुलसी साहित्य की व्यापक प्रासंगिकता से अवगत हो सकेंगे।
04 विद्यार्थियों में तुलसी साहित्य के प्रति आलोचनात्मक दृष्टि विकसित हो सकेंगी।
05 विद्यार्थियों में पाठ्यकृतियों के संदर्भ में समीक्षात्मक क्षमता बढ़ाना।

# M.A. II[nd] Semester

## (प्रथम प्रश्न पत्र–आधुनिक काव्य)

01 विद्यार्थी आधुनिक हिन्दी काव्य की प्रमुख प्रवृत्तियों से परिचित हो सकेंगे।
02 विद्यार्थियों को आधुनिक काल के प्रबंध और मुक्तक काव्य के तात्विक स्वरूप की जानकारी देना।
03 विद्यार्थी आधुनिक युग के उक्त काव्य प्रकारों के विकासक्रम से परिचित हो सकेंगे।
04 विद्यार्थियों को आधुनिक काव्य प्रकारों के तात्विक स्वरूप एवं विकासक्रम के परिप्रेक्ष्य में रचनाओं के आस्वादन, अध्ययन और मूल्यांकन की दृष्टि देना।

## (द्वितीय प्रश्न पत्र–कथा साहित्य)

01 विद्यार्थी गद्य विद्याओं के तात्विक स्वरूप से परिचित हो सकेंगे।
02 विद्यार्थियों को प्रमुख गद्य विद्याओं के विकासक्रम की जानकारी हो सकेंगी।
03 विद्यार्थियों में विद्या विशेष के तात्विक स्वरूप एवं ऐतिहासिक विकास के परिप्रेक्ष्य में रचना विशेष का महत्व समझने एवं मूल्यांकन की क्षमता का विकास हो सकेगा।
04 रचना के आस्वादन एवं समीक्षण की क्षमता का विकास हो सकेगा।

## (तृतीय प्रश्न पत्र–भारतीय काव्य शास्त्र)

01 विद्यार्थियों को भारतीय साहित्यशास्त्र की मूलभूत अवधारणाओं का ज्ञान हो सकेगा।
02 विद्यार्थी भारतीय काव्यशास्त्र के विकासक्रम को समझ सकेंगे।
03 विद्यार्थी भारतीय साहित्यशास्त्र के प्रमुख सिद्धांतों एवं रचनाओं से परिचित हो सकेंगे।
04 विद्यार्थियों को भारतीय काव्यशास्त्र के सिद्धांतों में साम्य, वैसम्य एवं उसके कारणों का ज्ञान हो सकेगा।

## (चतुर्थ प्रश्न पत्र–सामाजिक अधिगम एवं कौशल विकास)

01 विद्यार्थियों को क्षेत्र आधारित कार्य के लिए प्रेरित करना।
02 विद्यार्थियों को कौशल विकास के प्रति जागरूकता पैदा करना।
03 विद्यार्थियों में पर्यावरण की चेतना विकसित करना।
04 विद्यार्थियों को सामाजिक उत्तर दायित्वों के प्रति जागरूक करना।

## (पंचम प्रश्न पत्र–छायावादी काव्य)

01 विद्यार्थियों को छायावादी काव्य आंदोलन से परिचित कराना।
02 विद्यार्थी छायावाद की प्रमुख प्रवृत्तियों को समझ सकेंगे।
03 विद्यार्थी छायावाद के प्रमुख कवि और उनकी प्रमुख कृतियों से परिचित हो सकेंगे।
04 तत्कालीन कवियों की पाठ्य कृतियों को पढ़कर विद्यार्थियों में कृतियों के प्रति आलोचनात्मक दृष्टि का विकास हो सकेगा।

# M.A. III[rd] Semester

## (प्रथम प्रश्न पत्र–हिन्दी निबंध एवं अन्य गद्य विद्याएं)

01 विद्यार्थी हिन्दी गद्य साहित्य के विकासक्रम को समझ सकेंगे।
02 विद्यार्थी हिन्दी गद्य की प्रमुख विद्याओं के तात्विक स्वरूप से परिचित हो सकेंगे।
03 गद्य विद्याओं को पढ़कर विद्यार्थियों में उसके मूल्यांकन करने की क्षमता का विकास हो सकेगा।
04 विद्यार्थियों में रचना के आस्वादन एवं सभी की क्षमता का विकास हो सकेगा।

## (द्वितीय प्रश्न पत्र–छायावादोत्तर हिन्दी काव्य)

01 विद्यार्थी छायावादोत्तर हिन्दी काव्य की प्रमुख प्रवृत्तियों से परिचित हो सकेंगे।
02 विद्यार्थी छायावादोत्तर हिन्दी काव्य के विकासक्रम को समझ सकेंगे।
03 विद्यार्थी छायावादोत्तर काव्य की प्रमुख कृतियों से परिचित हो सकेंगे।
04 विद्यार्थियों में छायावादोत्तर हिन्दी काव्य के तत्कालीन स्वरूप एवं विकासक्रम के परिप्रेक्ष्य में रचनाओं के आस्वादन अध्ययन और मूल्यांकन की दृष्टि का विकास हो सकेगा।

## (तृतीय प्रश्न पत्र–पाश्चात्य काव्य शास्त्र)

01 विद्यार्थी पाश्चात्य काव्य शास्त्र की मूल अवधारणा से परिचित हो सकेंगे।
02 विद्यार्थी पाश्चात्य काव्यशास्त्र के विकासक्रम को समझ सकेंगे।
03 विद्यार्थी नई समीक्षा के सिद्धांतों से परिचित हो सकेंगे।
04 विद्यार्थियों में आलोचना की विविध प्रणालियों एवं नई अवधारणाओं के प्रति मूल्यांकन दृष्टि का विकास हो सकेगा।

## (चतुर्थ प्रश्न पत्र–बौद्धिक सम्पदा मानवाधिकार एवं पर्यावरणः पृष्ठभूमि)

01 विद्यार्थी बौद्धिक सम्पदा की अवधारणा से परिचित हो सकेंगे।
02 विद्यार्थी मानवाधिकार से परिचित हो सकेंगे।
03 विद्यार्थियों में पर्यावरणीय चेतना का विकास हो सकेगा।
04 विद्यार्थी पर्यावरण से जुड़े विविध पहलुओं से परिचित हो सकेंगे।

## (पंचम प्रश्न पत्र–हिन्दी नाटक एवं रंगमंच)

01 विद्यार्थियों को नाटक एवं रंगमंच के तात्विक स्वरूप की जानकारी हो सकेगी।
02 विद्यार्थी नाटक एवं रंगमंच के विकासक्रम से परिचित हो सकेंगे।
03 विद्यार्थियों में विद्या विशेष की तात्विक स्वरूप एवं ऐतिहासिक विकास के परिप्रेक्ष्य में रचना विशेष का महत्व समझने एवं मूल्यांकन करने की क्षमता का विकास हो सकेगा।
04 रचना के आस्वादन एवं समीक्षण की क्षमता का विकास करना।

# M.A. IV$^{th}$ Semester

## (प्रथम प्रश्न पत्र–भारतीय साहित्य)

01 विद्यार्थी हिन्दी साहित्य के अखिल भारतीय परिप्रेक्ष्य से परिचित हो सकेंगे।
02 विद्यार्थी हिन्दी भाषाओं में लिखे साहित्य से परिचित हो सकेंगे।
03 विद्यार्थियों को भारतीय साहित्य में व्यक्त भारतीयता की पहचान कराना।
04 विद्यार्थियों में साहित्यिक अनुवाद के आस्वादन एवं मूल्यांकन की क्षमता विकसित हो सकेंगी।

## (द्वितीय प्रश्न पत्र–हिन्दी पत्रकारिता)

01 विद्यार्थियों को हिन्दी पत्रकारिता की मूल अवधारणाओं एवं मूल स्थापनाओं से परिचित कराना।
02 विद्यार्थी हिन्दी पत्रकारिता के उद्‌भव और विकासक्रम को समझ सकेंगे।
03 विद्यार्थियों को हिन्दी में कम्प्यूटर के प्रयोग की विधि की क्षमता का विकास कराना।
04 विद्यार्थियों को विभिन्न क्षेत्रों में हिन्दी के कार्य साधक प्रयोग की कुशलता से परिचित कराना।

## (तृतीय प्रश्न पत्र–प्रयोजनमूलक हिन्दी)

01 विद्यार्थियों में प्रयोजनमूलक हिन्दी के प्रति अभिरूचि का विकास करना।
02 विद्यार्थी प्रयोजन मूलक हिन्दी के विविध रूपों से परिचित हो सकेंगे।
03 विद्यार्थी कार्यालयीन हिन्दी के स्वरूप से परिचित हो सकेंगे।
04 मीडिया लेखन के विविध स्वरूपों को जानकर विद्यार्थी मीडिया लेखन के प्रति जागरूक हो सकेंगे।

## (चतुर्थ प्रश्न पत्र–लघुशोध प्रबंध)

01 विद्यार्थियों में शोध की अभिरूचि का विकास करना।
02 विद्यार्थियों में शोधपरक दृष्टिकोण का विकास करना।
03 विद्यार्थी विषय–विशेष पर शोध करते हुए उस विषय पर विस्तृत अध्ययन कर सकेंगे।
04 लघुशोध प्रबंध के माध्यम से विद्यार्थी आगे के शोध एम.फिल/पी.एच.डी. हेतु तैयार हो सकेंगे।

## (पंचम प्रश्न पत्र–भाषा शिक्षण)

01 विद्यार्थियों को भाषा शिक्षण के विविध स्वरूपों से परिचित कराना।
02 विद्यार्थियों को भाषा शिक्षण के महत्व और उपयोगिता का ज्ञान कराना।
03 विद्यार्थियों में भाषा शिक्षण के प्रति मूल्यांकन परक दृष्टि विकसित कराना।

# Govt. Lahiri PG College Chirmiri, Dist-Koriya (C.G.)

## Programme Outcomes for PG: M.Sc. (Chemistry)

After successful completion of Postgraduate CBCS/Semester M.Sc. (Chemistry) Degree Programme, the Students will be able:

- After successful completion of two year PG programme a student should be able to:
- Apply the fundamental knowledge of basic principles in various field of chemistry.
- Apply various aspects of chemistry in natural products isolations, dyes and polymers petroleum products etc and also to develop interdisciplinary approach of the subject.
- Explain environmental pollution issues and the remedies thereof.
- Determine molecular structure by using nuclear magnetic resonance spectroscopy and infrared spectroscopy.
- Improve the skills of students in research area.

# Course Outcomes for PG: Chemistry

After completion of Four Semesters CBCS Postgraduate Course of M.Sc. (Chemistry), the students will be able:

## SEMESTER-I

### Course: Inorganic Chemistry – I (MSC101)

**CO-1:** Describe group theory impart various symmetry dependent spectroscopic features of transition metal complexes.

**CO- 2:** Explain evolution of bonding theories in transition metal complexes.

**CO-3:** Write role of transition metal complexes to rationalize various physical phenomena including magnetic and spectral properties.

**CO-4:** Discus metal ligand equilibria in solution.

### Course: Organic Chemistry – I (MSC102)

**CO-1:** Understand the concept of aromaticity and properties of aromatic compounds.

**CO-2:** Describe nucleophile, properties and mechanism of substitution reactions.

**CO-3:** Explain neighboring group participation in organic synthesis and how it plays role in organic reactions.

**CO-3:** Describe basic ideas of generation of various reactive intermediates and role in organic synthesis and the basic concepts, importance, and applications of asymmetric synthesis.

### Course: Physical Chemistry – I (MSC103)

**CO-1:** Write concept of mathematics in quantum chemistry and basics of quantum chemistry.

**CO-2:** Explain basics of thermodynamics.

**CO-3:** Explain of various types of specialized chemical reactions and their kinetics.

**CO-4:** Describe concepts of surface chemistry and catalysis including homogenous and heterogeneous catalysis.

### Course: Theory and Application of Spectroscopy- I (MSC104)

**CO-1:** Explain basic concepts of spectroscopy and mechanism involved in various spectroscopic techniques.

**CO-2:** Explain basic concepts and application of microwave spectroscopy.

**CO-3:** Describe basic concepts and application of infrared spectroscopy.

**CO4:** Explain basic concepts and application of Raman and scattering spectroscopy.

## SEMESTER-II

### Course: Inorganic Chemistry – II (MSC201)

**CO-1:** Understand basic concepts of mechanism involved in substitution reactions of transition metal complexes.

**CO- 2:** Explain electron transfer reactions of transition metal complexes.

**CO-3:** Write structural features of metal carbonyls, Inorganic rings, chains

**CO-4:** Discus clusters especially boranes and heteroboranes.

### Course: Organic Chemistry – II (MSC202)

**CO-1:** Understand various addition reactions to carbon-carbon double bonds.

**CO-2:** Understand various elimination reactions with mechanism.

**CO-3:** Explain theoretical basis for pericyclic reactions and skills for the utilization of these reactions in the organic synthesis.

**CO-4:** Describe basics of photochemistry and various photochemical reactions.

### Course: Physical Chemistry – II (MSC203)

**CO-1:** Write concept of angular momentum in quantum mechanics, variation and perturbation theory.

**CO-2:** Explain basics of statistical thermodynamics and semiconductor-electrolyte interfaces, Butler-Volmer equation.

**CO-3:** Explain chemical dynamics-study of fast reactions, theory of unimolecular reaction

**CO-4:** Describe corrosion and cyclic voltammetry.

### Course: Theory and Application of Spectroscopy- II (MSC204)

**CO-1:** Explain basic concepts and application of UV and Visible spectroscopy

**CO-2:** Explain basic concepts and application of infrared spectroscopy.

**CO-3:** Describe basic concepts and application of Mass spectroscopy.

**CO4:** Explain basic concepts and application of NMR spectroscopy.

## SEMESTER-III

### Course: Catalysis, Solid State & Surface Chemistry (MSC301)

**CO-1:** Understand basic concepts of acids, bases, electrophiles, nucleophiles and catalysis.

**CO- 2:** Explain micelles formation, surfactant and adsorption process.

**CO-3:** Explain theoretical basis for solid state chemistry

**CO-4:** Discus polymers, kinetics of polymerization, mechanism of polymerization.

### Course: Reagents & Organic Synthesis (MSC302)

**CO-1:** Understand various oxidation reactions along with the reagents.

**CO-2:** Understand various reduction reactions along with the reagents.

**CO-3:** Explain reagents having the synthetic importance.

**CO-4:** Describe basic of retrosynthetic approach and retrosynthetic analysis.

### Course: Analytical Chemistry (MSC303)

**CO-1:** Write concept of analytical chemistry, chemical analysis and analytical methods used in chemistry.

**CO-2:** Explain instrumentation and application of polarography.

**CO-3:** Explain basics of absorption and emission spectroscopy.

**CO-4:** Describe basic application of chromatography and thermal method.

### Course: Chemistry of Natural Products (MSC304B)

**CO-1:** Write ooccurrence, classification, nomenclature, isolation, structure elucidation and synthesis of terpenoids and carotenoids.

**CO-2:** Write ooccurrence, classification, nomenclature, isolation, structure elucidation and synthesis of alkaloids.

**CO-3:** Write ooccurrence, classification, nomenclature, isolation, structure elucidation and synthesis of steroids and plant pigments.

**CO4:** Write ooccurrence, classification, nomenclature, isolation, structure elucidation and synthesis of prostaglandins and thromboxanes.

## SEMESTER-IV

### Course: Biological Chemistry (MSC401)

**CO-1:** Understand basic concepts of amino acids and proteins, carbohydrates.

**CO- 2:** Explain protein structure, DNA/RNA structures.

**CO-3:** Write metabolic process, enzymes, co-enzymes and their mechanism of action

**CO-4:** Discus molecular organization, chiral recognition and role of sugar in biological recognition.

### Course: Electrochemical Energy, Material and Nuclear Chemistry (MSC402)

**CO-1:** Understand various concept of electrochemical energy, material chemistry.

**CO-2:** Understand supramolecular chemistry.

**CO-3:** Explain nuclear chemistry, nuclear fission, and nuclear fission.

**CO-4:** Describe radioactive isotopes, purity and strength of radioisotopes.

### Course: Heterocyclic Compounds and Medicinal Chemistry (MSC403A)

**CO-1:** Understand fundamentals reactions of heterocyclic compounds.

**CO-2:** Explain the effect of structural modification of the drug on their activities.

**CO-3:** Explain various synthetic and reterosynthetic approaches adopted in the synthesis of diverse range of drugs.

**CO-4:** Describe importance of the different drugs.

### Course: Intellectual Property Rights, Human Rights & Environment: Basics (MSC403H)

**CO-1:** Understands the concept and place of research in concerned subject.

**CO-2:** Gets acquainted with various resources for research.

**CO-3:** Becomes familiar with various tools of research.

**CO4:** Gets conversant with sampling techniques, methods of research and techniques of analysis of data.

# Govt. Lahiri PG College Chirmiri, Dist-Koriya (C.G.)

## Programme Outcomes for PG: M.Sc. (Botany)

After successful completion of CBCS/Semester system Postgraduate M.Sc. (Botany) general Degree Programme, the Students will be able:

- **M.Sc.-1st Semester -**To enhance their knowledge regarding Microbiology, Phycology, Mycology, Research Methodology and Computer Application and Bryophytes and Pteridophytes.
- **M.Sc.-2nd Semester -** To get in-depth understanding of all core areas of Gymnosperms and Palaeobotany, Angiosperms, Plant Physiology, Social Outreach and Skill Development and Environmental Biology and Conservation.
- **M.Sc.-3rd Semester –** To enhance their knowledge regarding Cell Biology, Genetics and Plant Breeding, Plant Biology and Genetic Engineering, Intellectual Properties, Human rights and Environment basics and Plant Anatomy and Economic Botany.
- **M.Sc.-4th Semester -** To develop the knowledge regarding Plant Biochemistry, Plant Pathology, Instrumentation, Molecular Techniques and Bioinformatics and Plant Resource Utilization and Conservation. It also includes dissertations which help to enhance their research capabilities in various areas/fields.

# Course Outcomes for PG: Botany

After completion of Four Semesters CBCS Postgraduate Course of Botany, the students will be able:

## M.Sc. Botany-1st Semester

- **CO-1: (Microbiology) -** To acquire fundamental knowledge, concepts and dimensions of importance and applications of Microbes.
- **CO-2: (Phycology) -** To get in-depth knowledge, concepts and dimensions of importance and applications of Algae.
- **CO-3: (Mycology) -** To understand the fundamental concept and dimensions of importance and applications of Fungi.
- **CO-4: (Research Methodology) -** To understand the concept and place of research with different kinds of resources and tools to achieve skills in various research writings along with computer fundamentals and office software packages.
- **CO-5: (Bryophytes and Pteridophytes) -** To develop their fundamental knowledge, concepts and dimensions of importance and applications of Bryophytes and Pteridophytes.

## M.Sc. Botany-2nd Semester

- **CO-6: (Gymnosperms and Palaeobotany) -** To develop their understanding regarding concepts and dimensions of importance and applications of Gymnosperms and Fossil plants.
- **CO-7: (Angiosperms: Taxonomy and Embryology) -**To enhance their knowledge regarding concept and dimensions of identifications, importance and applications of higher plants.
- **CO-8: (Plant Physiology) -**To get in depth knowledge regarding vital life processes of plants.
- **CO-9: (Social Outreach and Skill Development) -** To develop their potential as well as in-depth knowledge for research activities by making a project report in various fields as per their area of interest.
- **CO-10: (Environmental Biology and Conservation) -**To develop their understanding related to Environmental Science and its conservation.

## M.Sc. Botany-3rd Semester

- **CO-11: (Cell Biology)** - To enhance their basic concept as well as practical knowledge regarding importance and applications of Cell and Plant Science.

- **CO-12: (Genetics and Plant Breeding)** - To enhance their fundamental knowledge, concepts and dimensions of importance and applications of Genetics of plants and Breeding in plants.

- **CO-13: (Plant Biology and Genetic Engineering)** - To develop their understanding regarding concepts and dimensions of importance and applications of Plant Biotechnology and Genetic Modified Organisms.

- **CO-14: (Intellectual Properties, Human Rights and Environment Basics)** - To develop their knowledge regarding Intellectual Property Rights i.e., Patents and Copyrights; and enhance the awareness about human rights and rights relating to environments.

- **CO-15: (Plant Anatomy and Economic Botany)** - To get in-depth knowledge regarding dimensions of importance and applications of plant for society.

## M.Sc. Botany-4th Semester

- **CO-16: (Plant Biochemistry)** - To acquire basic concept as well as practical knowledge regarding importance and applications of biochemical compounds of plants.

- **CO-17: (Plant Pathology)** – To enhance their fundamental knowledge regarding concepts and dimensions of Plant diseases and its control.

- **CO-18: (Instrumentation, Molecular Techniques and Bioinformatics)** - To develop their understanding regarding basics concepts and dimensions of importance & applications of modern techniques in Plant Science.

- **CO-19: (Dissertation)** - To develop their skills and enhance their potential in context to research Activities by preparing dissertation in any field.

- **CO-20: (Plant Resource Utilization and Conservations)** - To enhance their knowledge regarding basic concepts as well as importance and applications of Plant Resource Utilization and its conservation.

# Govt. Lahiri PG College Chirmiri, Dist-Koriya (C.G.)

## Programme Outcomes for PG: M.Sc. (Zoology)

After successful completion of Postgraduate CBCS/Semester M.Sc. (Zoology) Degree Programme, the Students will be able:

- **M.Sc.-1st Semester -**To enhance their knowledge regarding Systematics, Biodiversity and Evolution, Principles of Ecology, Computational Biology, Biostatistics and Bioinformatics, Constitutionalism and Indian political system, Insect Diversity, Society and Evolution, Entomology - Insect Physiology, Toxicology& Vector Biology, Entomology - Pest Ecology & Agricultural Entomology.

- **M.Sc.-2nd Semester -** To get in-depth understanding of all core areas of Genetics and Cytogenetics Principles of Gene Manipulation, Structure and function of genes, Social outreach and Skill development, Environmental and Forest laws, Fish Biology Evolution and functional Anatomy of fish, Aquatic Resources and Their Conservation, Aquaculture.

- **M.Sc.-3rd Semester –** To enhance their knowledge regarding Comparative Animal Physiology Developmental Biology, Immunology, Molecular Endocrinology and Reproduction-Neuroendocrinology, Molecular Endocrinology and Reproduction-Molecular Endocrinology, Molecular Endocrinology and Reproduction-Biology of Reproduction.

- **M.Sc.-4th Semester -** To develop the knowledge regarding Animal Behavior, Biology of Parasitism, Comparative Endocrine Physiology, Genomics, Metagenomics and Epigenetics-Genomics, Metagenomics-Epigenetics and Chromatin Biology. It also includes dissertations which help to enhance their research capabilities in various areas/fields

# Course Outcomes for PG: Zoology

After completion of Four Semesters CBCS Postgraduate Course of M.Sc. (Zoology), the students will be able:

## SEMESTER-I

**Course ZOO (101): Systematics, Biodiversity and Evolution:**

**CO-1:** An insight to the overview of evolutionary biology, concept of organic evolution during pre- and post- Darwin era evolution and molecular biology- a new synthesis.

**CO- 2:** Understanding of the universal common ancestor and tree of life, three domain concept of living kingdom.

**CO-3:** Conceptualization of mode of speciation, evolution,and rules of zoological nomenclature

**CO-4:** Understanding the current status and future of biodiversity.

**CO-5:** Description of molecular clocks and molecular drive, origin and diversification of eukaryotes and evolution of man.

**Course ZOO (102): Principles of Ecology:**

**CO-1:** Understanding the environmental concepts, characteristics of population and population dynamics and prey predator interactions

**CO-2:** Description of nature of ecosystem, production, food webs, energy flow and biogeochemical cycles,

**CO-3:** Understanding the concept of stress physiology and homeostasis.

**Course ZOO (103): Computational Biology, Biostatistics and Bioinformatics**:

**CO-1:** Introduction to basic components of computers, Software (operating systems) and application software used in biological and statistical studies.

**CO-2:** To get an insight into the advancement in computerized biology information, introduction to genomics and proteomics databases.

**CO-3:** An introduction to Gene bank, UCSC, ENSEMBL, EMBL, DDBJ, protein sequence databases: Swissprot, PDB, BLAST, PSI- BLAST (steps involved in use and interpretation of results) and HMMER, BLAST vs. FASTA, file formats- FASTA, GCG and ClustalW.

**CO-4:** An overview of databank search- data mining, data management and interpretation, multiple sequence alignment, genes, primer designing; Protein modeling, protein structure analysis, docking, ligplot interactions, phylogenetic analysis with the program PHYLIP, DISTANCES, GROWTREE etc.

**CO-5:** An introduction and learning of computational genomics and proteomics, designing a microarray, image analysis and normalization, annotations, protein prediction tools- protein secondary structure, molecular modeling, identification and characterization of protein mass fingerprint, world- wide biological databases.

**CO-6:** Learning to programming languages such as "C".

**Course ZOO (A01): Constitutionalism and Indian political system**:

**CO-1:** To understand the philosophy of Indian constitutions.

**CO-2:** To appreciate the various phases of Indian national movement.

**CO-3:** To create value in young youth regarding the patriotism.

**CO4:** To understand the various Government of Indian acts their provision and reforms.

**CO-5:** To know the salient features in making of Indian constitution

**CO-6:** To appreciate the socio-economic political factors which lead to the freedomstruggle.

**CO-7:** To appreciate the fundamental rights and duties and the directive principle of statepolicy

**CO-8:** To evaluate the evolution, functioning and consequences of political parties inIndia.

**CO-9:** To identify how electoral rules and procedure in India effect election outcomes.

**Course ZOO (A02): Entomology – Insect Diversity, Society and Evolution:**

**CO-1:** Identifying beneficial and harmful insects based on comparative study of morphology and their articulation.

**CO-2:** Assisting with criminal investigation by evaluating forensically important insects, collection of data from cadaver site, interpretation of data for predicting time and cause of death.

**CO-3:** Identifying potential disease vectors.

**CO-4:** Identifying potential biocontrol agents.

**Course ZOO (A03): Entomology - Insect Physiology, Toxicology& Vector Biology:**

**CO-1:** Learning methods to effectively restrict insect growth.

**CO-2:** Devise chemical methods to effectively eliminate harmful insectsby mode of action of insecticide.

**CO-3:** Usage of methods to effectively restrict multiplication of disease causing agents within the insect vector by elucidating mode of action of insecticide, carcinogenic, mutagenic and teratogenic effects, and evaluation of toxicity.

**CO-4:** Learning the methods to control the spread of vectors, their economic importance and control of fleas, lice, bugs, mosquitoes, flies and parasitoids.

**Course ZOO (A04): Entomology - Pest Ecology & Agricultural Entomology:**

**CO1.** Identifying pests of agricultural crops by analyzing ecology, pest status, features responsible for evolutionary success of insect species, factors responsible for achieving the status of pest.

**CO-2:** An overview of identification, seasonal history, biology, nature of damage and control measures of pests, of cereals, pulse crops, cotton, vegetables, oil seeds, fruit crops, sugarcane and stored grains.

**CO-3:** To devise cropping pattern to minimize crop loss by a detailed understanding of agro-ecosystem, phases of population fluctuation, models of population growth, population size and regulatory mechanisms.

**CO-4:** A detailed understanding of plant resistance to insects, transgenic plants, development of Bt plant by recombinant DNA technology, resistance management of Bt crop.

## SEMESTER-II

**Course ZOO (201): Genetics and Cytogenetics:**

**CO-1:** Understanding of Mendel's principle, its extension and chromosomal basis.

**CO-2:** Determination of gene action from genotype to phenotype including penetrance and expressivity, gene interaction, epistasis, pleiotropy; nature of the gene and its functions.

**CO-3:** Evolution of the concept of the gene and fine structure of gene using r II locus.

**CO-4:** Capability to perform gene mapping using 3- point test cross in Drosophila, gene mapping in humans by linkage analysis in pedigrees.

**CO-5:** Imparting knowledge regarding gene mutation, types of gene mutations, methods for detection of induced mutations, P- element insertional mutagenesis in Drosophila, DNA damage andrepair.

**CO-6:** Developing concept of regulation of gene activity in prokaryotes and eukaryotes at transcriptional and posttranscriptional level.

**CO-7:** Describing structural and functional organization of a typical eukaryotic gene, transcription factors, enhancers and silencers, and non-coding genes.

**CO-8:** Depicting the mechanism of sex determination and dosage compensation in human and other model organisms.

**CO-9:** Developing skills in human genetics with capability for karyotyping and nomenclature of metaphase chromosome bands.

**CO-10:** Understanding the chromosome anomalies and associated diseases.

**CO-11:** Capability to perform basic geneticanalysis of complex traits - complex pattern of inheritance, quantitative traits, thresholdtraits.

**CO-12:** Description of human genome and mapping.

**CO-13:** Identify link between genetics and cancer with emphasis on oncogenes, chromosome rearrangement and cancer, tumor suppressor genes and genetic pathways to cancer.

**Course ZOO (202): Principles of Gene Manipulation:**

**CO-1:** Imparting knowledge of basic recombinant DNA techniques, preparation of restriction maps and mapping techniques.

**CO-2:** Understanding of method and applications of nucleic acid probes, blotting techniques, DNA fingerprinting, DNA foot printing, methyl interference assay and polymerase chain reaction.

**CO-3:** Developing skill to understand biology of cloning and expression vectors.

**CO-4:** Description of gene cloning strategies by transformation of E. coli and other cells with r DNA; methods of selection and screening of transformed cells; construction of genomic and cDNA libraries.

**CO-5:** Defining key strategies to express cloned genes including phage display.

**CO-6:** Exposure to principles of DNA sequencing, automated sequencing methods; synthesis of oligonucleotides, primer design.

**CO-7:** Micro-arrays and confocal microscopy techniques with application.

**CO-8:** Understanding a concept of changing genes- directedevolution, protein engineering in microbes.

**CO-9:** Introduction to gene manipulation methods in animals, transgenic technology, application of recombinant DNA technology; gene knockouts, gene silencing,mouse disease models, somatic and germ- line therapy.

**Course ZOO (203): Structure and function of genes:**

**CO-1:** Imparting knowledge of structure of nucleic acid and super coiling of DNA, Genetic material and its evolution.

**CO-2:** Understanding the method of DNA replication ,recombination and DNA repair mechanism.

**CO-3:** Description of transcriptional control of gene expression, regulation of transcription.

**CO-4:** Exposure to principles of post transcriptional gene control and nuclear transport, RNA and other non coding RNAs degradation of RNA.

**CO-5:** Introduction to transport across the nuclear envelop and stability of RNA, translational machinery and translational control.

**Course ZOO (221): Social outreach and Skill development:**

**CO-1:** This course will help students to enhance the academic skills, leadership qualities, self confidence, communication skills, managerial skills and responsibilities towards the rural community.

**Course ZOO (B01): Environmental and Forest laws:**

**CO-1:** To understand the evolution and importance of forest and wild life laws and policies.

**CO-2:** To know the forest and wild life protection act , laws and policies.

**CO-3:** To understand the basic concept of ecology, environment and ecosystem.

**CO-4:** To appreciate the legislative framework for environment protection.

**CO-5:** To appreciate the fundamental rights and environment.

**Course ZOO (B02): Fish Biology Evolution and functional Anatomy of fish:**

**CO-1:** To know the origin, diversity and distribution major groups of fishes.

**CO-2:** To understand the phylogenetic studies and fish identification, fish barcoding.

**CO-3:** Students to learn fish as a research model swimming mechanisms and buoyancy regulation.

**CO-4:** To know the gas exchange respiration, cardiovascular excretion physiology of fishes.

**CO-5:** Description ofsensory systems of fishes,Adaptations to environmental extremes.

**CO-6:** To acquire the knowledge of digestive physiology and nutrient digestibility in fishes.

**CO-7:** To learn defense mechanism integument and immune system,reproduction in fishes.

**CO-8:** To elicit piscine endocrine system,migration and parental care in fishes.

**Course ZOO (B03): Aquatic Resources and Their Conservation:**

**CO-1:** To know the riverine, cold water,locustrine fisheries.

**CO-2:** To understand the Esturine and marine fisheries.

**CO-3:** Students to learn integrated resources, fishing

**CO-4:** To know the natural markers, applied markers,fish conservation

**CO-5:** To learn defense mechanism integument and immune system, reproduction in fishes.

**CO-6:** To elicit piscine endocrine system, migration in fishes.

**Course ZOO (BO4): Aquaculture:**

**CO-1:** Learning aquaculture technology for fresh and marine fishes.

**CO-2:** Culturing of fish food organisms like algae; Artemia; zooplankton for improving nutritive quality.

**CO-3:** Management of water quality requirements for aquaculture.

**CO-4:** Learning integrated farming by fish-cum-live stock farming, paddy-cum-fish farming, and aquaculture engineering-aquahouse.

**CO-5:** A detailed learning of transportation of finfish and shellfish, eggs, fry, fingerlings and adults.

**CO-6:** Managing improvement in the Nutrition of aquatic animals by leaning feed types, manufacture and ingredients, anti- nutritional factors in fish feed ingredients. CO6: Understanding environmental impact of aquaculture,aquacultural wastes and future developments in waste minimization, environmental consequences of hypernutrification.

**CO-7:** Learning about fish vaccines- strategy and use in aquaculture.

## SEMESTER – III

### Course ZOO (301): Comparative Animal Physiology:

**CO-1:** Description of internal transport and gas exchange

**CO-2:** Regulation of heart-beat and blood pressure, neural and chemical regulation of respiration, Gas transfer in air and water.

**CO-3:** Perception of circulatory and respiratory responses to extreme conditions

**CO-4:** Discerning acid –base balance, Regulation of body pH.

**CO-5:** Developing the concept of animal adaptation by exploring the diversity of functional characteristics of various kinds of organisms which is closely related to evolutionary processes and environmental changes.

**CO-6:** Perception of Osmoregulation, Kidney functions and diversity, Extra-renal osmoregulatory organs, Patterns of nitrogen excretion.

**CO-7:** Concept of thermoregulation - Heat balance in animals, Adaptations to temperature extremes, torpor, Aestivation and hibernation, Counter current heat exchangers.

**CO-8:** Understanding of adaptations to Stress- basic concept of environmental stress, acclimatization, avoidance and tolerance, stress and hormones.

**CO-9:** Description of sensing the environment- photoreception, chemoreception, mechano-reception, echolocation, endogenous and exogenous biological rhythms, chromatophores and bioluminescence.

**CO-10:** Understanding of feeding mechanisms and their control, effect of starvation.

**CO-11:** Description of muscle physiology – striated and smooth muscle, adaptations of muscles for various activities, neuronal control of muscle contraction, electric organs.

### Course ZOO (302): Developmental Biology:

**CO-1:** Information about history and basic concepts of developmental biology.

**CO-2:** Illustration of model systems: invertebrate and vertebrate model organisms.

**CO-3:** Identification of developmental genes: spontaneous and induced mutation, mutant screening, And developmental mutations in Drosophila.

**CO-4:** Elucidation of early embryonic development of invertebrates and vertebrates.

**CO-5:** Concept of axis specification in Drosophila, role of maternal genes, patterning of early embryo by zygotic genes and the homeotic selector genes.

**CO-6:** Concepts of organogenesis in invertebrates and vertebrates: the homeotic selector genes for segmental identity, insect compound eye, kidney development– development of ureteric bud and mesenchymal tubules.

**CO-7:** Illustration of postembryonic development: growth- cell proliferation, growth hormones; aginggenes involved in alteration in timing of senescence.

**CO-8:** Understanding of process of regeneration in Hydra and salamander.

**CO-9:** Explanation of embryonic stem cells and their applications.

**CO-10:** Description of medical implications of developmental biology, genetic errors of human development, the nature of human syndromes

**CO-11:** Study of gene expression and human disease– inborn errors of nuclear RNA processing, inborn errors of translation.

**Course ZOO (303): Immunology:**

**CO-1:** An overview of the immune system, principles of innate and adaptive immunity, Evolution of innate and adaptive immune system.

**CO-2:** Understanding of antigen recognition by immune cells,role of TLRs.

**CO-3:** Conceptualization of generation of diversity in immunoglobulins and T- cell receptor gene rearrangement.

**CO-4:** Illustration of antigen processing and presentation to T lymphocytes by antigen presenting cells and understanding the role of MHC complex.

**CO-5:** An overview of development and survival of lymphocytes, humoral immune response, production of effector T- cells and effector mechanisms.

**CO-6:** Description of effector mechanisms, NK and NKT cell functions.

**CO-7:** Conceptualization of regulation of immune response, mucosal immunity, immunological memory, cytokines and chemokines. T- cell mediated regulation of immune response, Immunological tolerance and anergy.

**CO-8:** Importance of immunity in health and disease: introduction to infectious disease, innate immunity to infection, adaptive immunity to infection, evasion of the immune response by pathogens.

**CO-9:** Description of consequence of immunodeficiency leading to diseases such as inherited acquired immunodeficiency diseases.

**CO-10:** Illustration of allergy and hypersensitivity diseases, autoimmunity, transplant rejection and responses to alloantigens.

**CO-11:** An understanding of manipulation of immune responses for the benefit of mankind, vaccines.

**Course ZOO (C02): Molecular Endocrinology and Reproduction-Neuroendocrinology**

**CO-1:** General understanding of anatomical and structural organization of neuroendocrine organs and nervous system.

**CO-2:** Imparting knowledge regarding neurophysiology, electrical properties of neurons and propagation of nerve impulses.

**CO-3:** Description of Synapse, neurotransmition and neuromodulation

**CO-4:** Detailed understanding of the hypothalamo- hypophyseal axis, hypothalamo- vascular system and role of hormones.

**CO-5:** Knowledge of regulation of hypothalamic and pituitary hormone secretion.

**CO-6:** Imparting knowledge on physiological and mechanistic role of neurohypophysis and regulation of neurohypophyseal hormones.

**CO-7:** Conceptualization of feed-back inhibition and feed-forward activation of neurohypophyseal hormones.

**CO-8:** Understanding of the link between environment and reproduction.

**CO-9:** Illustration of neuroendocrine regulation of immune system with principles and application of related.

**Course ZOO (C03): Molecular Endocrinology and Reproduction-Molecular Endocrinology:**

**CO-1:** Description of discovery of hormones as chemical signals for control and regulation of physiological processes.

**CO-2:** Understanding the nature of hormonal action and its experimental methods of evaluation.

**CO-3:** Elucidation of biosynthesis of protein hormones and molecular mechanisms of regulation.

**CO-4:** Knowledge of signal discrimination, signal transduction and signal amplification in hormone regulated physiological processes.

**CO-5:** Acquaintance with receptor antagonists and their applications.

**CO-6:** Developing knowhow of pharmacokinetics of hormones and behavior.

**CO-7:** Proficiency in using hormones as therapeutic agentsin regulation of fertility, and hormonal contraceptives.

**CO-8:** To develop expertise in recombinant protein hormones-production and application in farm animals and humans.

**Course ZOO (C04): Molecular Endocrinology and Reproduction-Biology of Reproduction:**

**CO-1:** Understanding of sex determination and differentiation and its mechanism.

**CO-2:** Elucidation of stem cell renewal in testis during spermatogenesis, structural and molecular events, and respective experimental approaches

**CO-3:** Description of regulation of testicular functions.

**CO-4:** Epididymal maturation of spermatozoa; Capacitation, Signal transduction pathway in acrosome reaction;

**CO-5:** Illustration of different types of male sterility includingazoospermia, oligozoospermia,asthenozoospermia, and varicocele with specific emphasis on the genetic and molecular basis

**CO-6:** Understanding of detailed follicular development and selection evaluating the role of extra-and intra-gonadal factors in folliculogenesis.

**CO-7:** Description of oocyte maturation its regulationand follicular atresia.

**CO-8:** Knowledge of regulation of reproductive cycle in female: menstrual cycle in human, estrous cycle in rat, estrous behavior in cycling animals.

**CO-9:** Development of mechanistic understanding of female reproductive disorder: amenorrhea, polycystic ovary.

**CO-10:** Familiarity with the process of fertilization with a comparative account of different events involved.

**CO-11:** Generating awareness on contraception leading to prevention of polyspermy: surgical, hormonal and immunocontraception.

## SEMESTER-IV

### Course ZOO (401): Animal Behavior:

**CO-1:** An overview of animal behavior, orientation to primary and secondary orientation; kinesis – orthokinesis, klinokinesis; taxis – different kinds of taxis; sun-compass orientation, dorsal-light reaction.

**CO-2:** Devising conservation strategies for different animal species. Learning and instincts: conditioning, habituation, sensitization, reasoning.

**CO-3:** Developing compassion towards other animals as well as other individuals, group selection, kin selection and inclusive fitness, cooperation, and alarm call. CO4. Evaluating other individuals of the society and taking decisions.

### Course ZOO (402): Biology of Parasitism

**CO-1:** An overview to the parasitology, animal associations and host – parasite relationship.

**CO-2:** Understanding the mode of infection of parasite, molecular biology of parasite and drug targets, mechanism of drug resistance, vaccine strategies and proteomic approaches, vaccine strategies.

**CO-3:** A study of the immune response to parasite and self-defense mechanisms, immune evasion and biochemical adaptations of parasites.

**CO-4:** A detailed understanding of parasites of veterinary importance and their management.

**CO-5:** Description of parasites of insects and their significance, nematode parasites of plants and host parasite interactions.

**Course ZOO(403):Comparative Endocrine Physiology**

**CO-1:** Developing a concept of endocrine system, its function and phylogeny.

**CO-2:** Description of evolution and comparative aspects of endocrine physiology in vertebrates.

**CO-3:** An overview of synthesis of corticosteroid, structural diversity of glucocorticoids among vertebrates. Importance of adrenocortical and adrenomedullary interaction.

**CO-4:** Illustration of evolution of thyroid gland, thyroid hormone synthesis and its regulation, hormonal regulation of calcium and phosphate homeostasis.

**CO-5:** Conceptualization of hormonal control of feeding behaviour and gastrointestinal tract functioning, Pancreatic hormones and glucose homeostasis,,vitellogenesis and the evolution of viviparity.

**Course ZOO(D01):Genomics,Metagenomics and Epigenetics-Genomics**

**CO-1:** Detailed understanding of structure and organization of genomes along with their comparative account.

**CO-2:** Knowledge of transposable elements, retro-transposons, SINE, LINE, Alu and other repeat elements, pseudogenes, segmental duplications.

**CO-3:** Developing skills in how to map genomes and to integrate physical and genetic maps.

**CO-4:** To develop technical knowhow on sequencing genomes including high-throughput sequencing, strategies of sequencing and assessment of quality of genome-sequence data.

**CO-5:** Detailed exposure to bioinformatics tools and techniques for genomic analysis

**CO-6:** Elucidation of comparative genomics methods

**CO-7:** Development of skill to perform large scale mutagenesis and interference for genome wide gene targeting with different experimental approach

**CO-8:** Making detailed understanding of the procedures and importance oftranscriptome analysis, profiling, proteomics - expression analysis, protein structure analysis, protein-protein interaction.

**Course ZOO (D02):Metagenomics-Epigenetics and Chromatin Biology:**

**CO-1:** Detailed understanding of chromatin structure and different levels of its organization.

**CO-2:** Description of higher order structure of chromatin, chromatin-territories; intra-nuclear spatial organization of chromatin into MARs and SARs.

**CO-3:** Awareness of brief history of epigenetics and key concepts.

**CO-4:** Detailed knowledge chromatin modifications and their mechanism of action, concept of 'histonecode' hypothesis inthe phenomenon of epigenetics.

**CO-5:** Understanding of RNA and heterochromatin assembly, role of noncoding RNAs in epigenetic regulation.

**CO-6:** Developing skill in describing chromatin structure and epigenetics marks, dosage compensation and mechanism of chromatin remodeling.

**CO-7:** Learning of epigenetics and genome imprinting and the reprogramming of the genome.

**CO-8:** Elucidation of epigenetic contribution to human diseases including cancer.

# Govt. Lahiri PG College Chirmiri, Dist-Koriya (C.G.)

## Programme Outcomes for PG: M.Com.

After successful completion of CBCS/Semester system Postgraduate M.Com general Degree Programme, the Students will be able:

- **M.Com-1st Semester** -To enhance their knowledge regarding basic principles of Managerial Economics, Advanced Accounting, Management Accounting, Research Methodology and Principles of Marketing.
- **M.Com-2nd Semester** - To get in-depth understanding of all core areas basically business economics, specialized accounting, accounting for managerial decision and advertising and sales management. This Programme also includes project reports related to social outreach and skill development.
- **M.Com-3rd Semester** - To understand the management concepts, organizational behavior, advanced cost accounting, Intellectual Properties, Human rights and Environment basics and Strategic management.
- **M.Com-4th Semester** - To develop the knowledge regarding corporate legal framework, marketing research, investment management and industrial law. It also includes dissertations which help to enhance their research capabilities in various areas/fields.

## Course Outcomes for PG: Commerce

After completion of Four Semesters CBCS Postgraduate Course of Commerce, the students will be able:

### M.Com. – 1st Semester

- **CO-1: (Managerial Economics) -** To acquire the knowledge of the basic principles of micro and macro-economics for developing the understanding of theory of the firm, markets and the macro environment, which would help them in managerial decision making processes.
- **CO-2: (Advanced Accounting) -** To get in-depth knowledge of accounting issues and practices such as maintenance of company accounts and handling accounting adjustments.
- **CO-3: (Management Accounting) -** To understand various accounting concepts and its applications as well as the tools and techniques which are helpful in managerial decision processes.
- **CO-4: (Research Methodology) -** To understand the concept and place of research with different kinds of resources and tools to achieve skills in various research writings along with computer fundamentals and office software packages.
- **CO-5: (Principles of Marketing) -** To enhance their knowledge regarding conceptual framework of marketing and its applications in decision making under various environmental constraints.

## M.Com. 2nd Semester

- **CO-6: (Business Economics)** - To develop their managerial perspective to economic fundamentals as aids to decision making under given environmental constraints.
- **CO-7: (Specialized Accounting)** -To develop their knowledge regarding accounting issues and practices such as maintenance of company accounts and specialized accounting adjustments.
- **CO-8: (Accounting for Managerial Decisions)** -To understand various accounting concepts, tools and techniques for managerial decisions.
- **CO-9: (Social Outreach and Skill Development)** - To develop their potential as well as in-depth knowledge for research activities by making a project report in various fields as per their area of interest.
- **CO-10: (Advertising and Sales Management)** -To develop their understanding related to advertising and sales management for conceptual framework.

## M.Com.3rd Semester

- **CO-11: (Management Concept)** - To develop the basic knowledge regarding the various concepts of management and their theories.
- **CO-12: (Organizational Behavior)** - To understand about organizational behavior and its importance in an organization as well as in management.
- **CO-13: (Advanced Cost Accounting)** - To develop their understanding regarding basic concepts and the tools used in cost accounting and its importance in decision making.
- **CO-14: (Intellectual Properties, Human Rights and Environment Basics)** - To develop their knowledge regarding Intellectual Property Rights i.e., Patents and Copyrights; and enhance the awareness about human rights and rights relating to environments.
- **CO-15: (Strategic Management)** - To get in-depth knowledge about strategic management and able to learn about application of strategic management.

## M.Com. 4th Semester

- **CO-16: (Corporate Legal Framework)** - To enhance their knowledge relating to legal frameworks of corporate. It includes- Companies Act 2013, Negotiable instruments Act 1881, MRTP Act 1969 and SEBI Act 1992.
- **CO-17: (Marketing Research)** - To acquaint the understanding of the marketing research concepts, tools and techniques for marketing research.
- **CO-18: (Investment Management)** - To enhance their understanding regarding investment management concepts and its techniques.
- **CO-19: (Dissertation)** - To develop their skills and enhance their potential in context to research activities by preparing dissertation in any field.
- **CO-20: (Industrial Law)** - To get clear understanding of certain industrial legislation in the context of the Indian socio-economic conditions.