



कार्यालय प्राचार्य

शासकीय महाविद्यालय अर्जुन्दा, जिला-बालोद (छोगो)

website : www.gcarjunda.com NAAC grade B E-mail: govtcollege.arjunda1988@gmail.com

PROGRAMME OUTCOMES, PROGRAMME SPECIFIC OUTCOMES

AND

COURSE OUTCOMES (B.A)


B.A.- 3 years Undergraduate programme Programme Outcomes (PO)

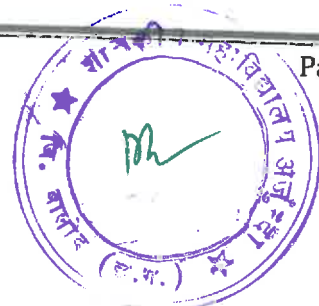
PO1. The undergraduate programme in Hindi Literature / Economics / Political Science / Sociology / Geography / Home Science is aimed at providing the students necessary inputs so as to set forth the task of bringing about new and innovative ideas/concepts so that the formulated model curricula in Hindi Literature / Economics / Political Science / Sociology / Geography / / Home Science becomes in tune with the changing scenario and incorporate new and rapid advancements and multi-disciplinary skills, societal relevance, global interface, self-sustaining and supportive learning.

PO2. The undergraduate programme in Hindi Literature / Economics / Political Science / Sociology / Geography / Home Science besides teaching the basic concepts of Hindi Literature / Economics / Political Science / Sociology / Geography / Home Science should in addition have broader vision for students so that the students therefore be exposed to societal interface of Hindi Literature / Economics / Political Science / Sociology / Geography / Home Science / and the role of Hindi Literature / Economics / Political Science / Sociology / Geography / Home Science in the development of arts and social sciences.

PO3. The students will be able to think critically and take informed decisions after identifying the accuracy and validity of their assumptions and ideas from intellectual, organizational, and personal perspectives.

PO4. The students will be able to communicate effectively through speaking, reading, writing and listening clearly in one Indian language and thereby express themselves to the world by connecting with different ideas, books, people, media and technology.


PRINCIPAL
Govt. College Arjunda
Distt. Balod (C.G.)



PO5. The students will be able to interact socially and stimulate views, reconcile disagreements and help reach consensual conclusions.

PO6. The students will be able to demonstrate compassionate social concern and act with cognizant awareness of issues to contribute in civic life by volunteering impartially towards national development and thereby deliver effective citizenship.

PO7. The students will be able to ethically recognize different value systems, understand the moral dimensions of individual decisions and accept responsibility for them.

PO8. The students will be able to recognize the issues of environmental perspectives and appreciate sustainable development for long term environmental sustainability.

PO9. The students will be able to engage themselves in life-long self-determining and learning in the comprehensive background of socio-technological changes for continued self-directed and life-long learning.

Programme Specific Outcomes (PSO)

PSO1. The students after the completion of this programme will be able to understand and apply the knowledge of Prachin Hindi Kavya.

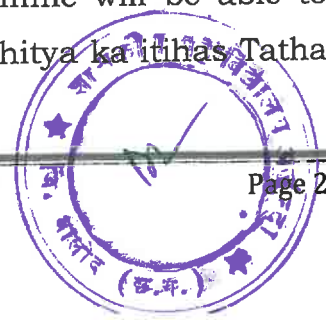
PSO2. The students after the completion of this programme will be able to understand and apply the knowledge of Hindi Katha Sahitya.

PSO3. The students after the completion of this programme will be able to understand and apply the knowledge of Arwachin Hindi Kavya.

PSO4. The students after the completion of this programme will be able to understand and apply the knowledge of Hindi Nibandha Tatha Gadya Vidhayen.

PSO5. The students after the completion of this programme will be able to understand and apply the knowledge of Janpadiya Bhasha Sahitya (CHHATTISHGARHI)

PSO6. The students after the completion of this programme will be able to understand and apply the knowledge of Hindi Bhasha Sahitya ka Itihas Tatha Kavyang vivechan.



- PSO7.** The students after the completion of this programme will be able to understand and apply the knowledge of Micro Economics.
- PSO8.** The students after the completion of this programme will be able to understand and apply the knowledge of Indian Economy.
- PSO9.** The students after the completion of this programme will be able to understand and apply the knowledge of Macro Economics.
- PSO10.** The students after the completion of this programme will be able to understand and apply the knowledge of Money, Banking and Public Finance.
- PSO11.** The students after the completion of this programme will be able to understand and apply the knowledge of Development and Environmental Economics.
- PSO12.** The students after the completion of this programme will be able to understand and apply the knowledge of Statistical Methods.
- PSO13.** The students after the completion of this programme will be able to understand and apply the knowledge of Political Theory.
- PSO14.** The students after the completion of this programme will be able to understand and apply the knowledge of Indian Government and Politics.
- PSO15.** The students after the completion of this programme will be able to understand and apply the knowledge of Western Political Thought.
- PSO16.** The students after the completion of this programme will be able to understand and apply the fundamentals of Comparative Politics and Government.
- PSO17.** The students after the completion of this programme will be able to understand and apply the knowledge of International Politics.
- PSO18.** The students after the completion of this programme will be able to understand and apply the knowledge of Public Administration.
- PSO19.** The students after the completion of this programme will be able to understand and apply the knowledge of Introduction to Sociology.
- PSO20.** The students after the completion of this programme will be able to understand and apply the knowledge of Contemporary Indian Society.
- PSO21.** The students after the completion of this programme will be able to understand and apply the knowledge of Society in India.



PSO22. The students after the completion of this programme will be able to understand and apply the knowledge of Crime and Society.

PSO23. The students after the completion of this programme will be able to understand and apply the knowledge of Sociology of Tribal Society.

PSO24. The students after the completion of this programme will be able to understand and apply the knowledge of Social Research Methods.

PSO25. The students after the completion of this programme will be able to understand and apply the knowledge of Physical Geography - Elements of Geomorphology.

PSO26. The students after the completion of this programme will be able to understand and apply the knowledge of Introduction to Geography and Human Geography.

PSO27. The students after the completion of this programme will be able to understand and apply the knowledge of Physical Geography - Climatology and Oceanography.

PSO28. The students after the completion of this programme will be able to understand and apply the knowledge of Regional Geography with Special Reference to North America.

PSO29. The students after the completion of this programme will be able to understand and apply the knowledge of Geography - Resources and Environment.

PSO30. The students after the completion of this programme will be able to understand and apply the knowledge of Geography of India (with special reference to Chhattisgarh).

PSO31. The students after the completion of this programme will be able to understand and apply the knowledge of Anatomy, Physiology & Hygiene

PSO32. The students after the completion of this programme will be able to understand and apply the knowledge of Home Science - Extension Education.

PSO33. The students after the completion of this programme will be able to understand and apply the knowledge of Fabric & Cloth Science.

PSO34. The students after the completion of this programme will be able to understand and apply the knowledge of Family Resource Management.

PSO35. The students after the completion of this programme will be able to understand and apply the knowledge of Home Science - Human Development.

PSO36. The students after the completion of this programme will be able to understand and apply the knowledge of Food & Nutrition Science.

Course outcomes(CO)

Course 1. Prachin Hindi kavya

CO1. The students after the completion of this course will be able to contemplate and comprehend --Kabir –kantikumar jain

CO2. The students after the completion of this course will be able to contemplate and comprehend-Jaysi-sankhipt Padmavat-Shyam sundardasnagmativiyog varnan.

CO3. The students after the completion of this course will be able to contemplate and comprehend –Bhramar Geetsar- Sa Acharyaramchandra

CO4. The students after the completion of this course will be able to contemplate and comprehend .-Tulsi – Ramcharitmanas.

CO5. The students after the completion of this course will be able to contemplate and comprehend.Ghananand –sa Vishvanath Prasad Mishra.

CO6. The students after the completion of this course will be able to contemplate and comprehend .-Vidyapati.

CO7. The students after the completion of this course will be able to contemplate and comprehend .Rahim.

CO8. The students after the completion of this course will be able to contemplate and comprehend -Raskhan.

Course 2. Hindi Katha Sahitya.

CO1. The students after the completion of this course will be able to contemplate and comprehend -Premchand -Gaban



CO2. The students after the completion of this course will be able to contemplate and comprehend -Premchand Kafan.

CO3. The students after the completion of this course will be able to contemplate and comprehend -Aakashdip - Jay Shankar Prasad.

CO4. The students after the completion of this course will be able to contemplate and comprehend .-Fanishwar Nath Renu.

CO5. The students after the completion of this course will be able to contemplate and comprehend.Ghananand -Malbe ka Malik -Mohan Rakesh.

CO6. The students after the completion of this course will be able to contemplate and comprehend .-Bhisham Sahini - Chief ki Davat.

CO7. The students after the completion of this course will be able to contemplate and comprehend .Rajendra Yadav-Biradari Bahar.

CO8. The students after the completion of this course will be able to contemplate and comprehend -Raghey Raghav Gadai.

CO9. The students after the completion of this course will be able to contemplate and comprehend -Upendra Nath Ashak, Reddy, Shivani.

Course 3. Arwachin Hindi Kavya.

CO1.The students after the completion of this course will be able to contemplate and comprehend -Bharat Bharti ki Kavitate- Maithili Sharan Gupta.

CO2. The students after the completion of this course will be able to contemplate and comprehend -Sakhi Basant aaya, Var de vina vadini var de, Hindi ke suman ke prati, Todti Pathar.Raje ne Aapni Rakhwali ki.

CO3. The students after the completion of this course will be able to contemplate and comprehend -Sumitranandan pant Badal, Parivartan, Kholta edhar Janma Lochan, Aaj ka dukh, kalka alhad.Taj , Jhanjha, me nim, Bharatmata.



CO4. The students after the completion of this course will be able to contemplate and comprehend-Makhan Lal Chaturvedi- Bali Panthi se , Sanjh aur Dholak ki thape, mai Dahi bech rahi hu, Ulahana, Nishashtra senani.

CO5. The students after the completion of this course will be able to contemplate and comprehend -Sachchidanand heeranand Vatsyayan Agyeya- Sabere Utha to Dhup Khili Thi, Samagri ka naivedya Dan, Ghar, Chandni ji lo, Durvachal.

CO6. The students after the completion of this course will be able to contemplate and comprehend-Ayodhya singh Upadhyaya.

Course 4. Hindi Nibandh Tatha Gadya Vidhaye

CO1.The students after the completion of this course will be able to contemplate and comprehend - Natak - Andher Nagri - Bartendu harishchandra,

CO2. The students after the completion of this course will be able to contemplate and comprehend -Nibandh - Krodh- Aacharya ramchandra shukla, Basant- Dr. Hazari Prasad dvedi, Us Amrai ne Ram-Ram kahi hai- Dr.Vidya niwas Mishra, Kavyeshunatyam, Babu Gulab rai, Beimani ki parat - Harishankar Parsai.

CO3. The students after the completion of this course will be able to contemplate and comprehend -Akanki - Aurangzeb ki Aakhri Raat- Dr. Ramkumar Varma, Strike- Bhuneshwar, Ek din - laxmi narayan Mishra, Dash hazar- Uday shankra Bhatta, Mummy Thakurain- Dr. laxmi narayan Lal.

CO4. The students after the completion of this course will be able to contemplate and comprehend-Rahul Sanskriyatan, Mahadevi Verma, Habib Tanvir.

Course 5. Janpadiya Bhasha Sahitya (CHHATTISGARHI)

CO1.The students after the completion of this course will be able to contemplate and comprehend - Rachnaye- Prachink visant, Dharmdas- Guru



Paiya lago nam Lakhadijo Nain Aage Khyal Ghanera, Bhajan karo Bhai re, Aisan tan pay ke.

CO2. The students after the completion of this course will be able to contemplate and comprehend –Lakhan lal gupra ka Gadya- senpan.

CO3. The students after the completion of this course will be able to contemplate and comprehend –Arwachin rachnakar- Dr. Satyabhama Adil Rachit Gadya-sikh sikh ke goth.

CO4. The students after the completion of this course will be able to contemplate and comprehend-Dr. vinay pathak ki Kavitaye-tai uth suruj uthe, ek kisham ke niyav.

CO5. The students after the completion of this course will be able to contemplate and comprehend –Mukund koushal-Chhattishgarh Gajal, chai bita ke mankhe dekho seMachri man lakh lethe.

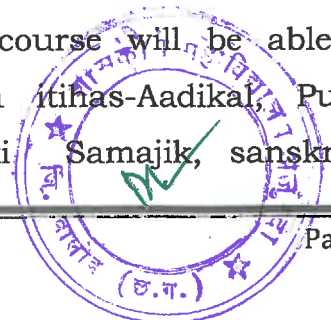
CO6. The students after the completion of this course will be able to contemplate and comprehend-Sundar lal Sharma, kavilnath Kashyap,Ramchandra Deshmuka (Rangkarmi)

See
Course 6. Hindi Bhasha Sahitya ka Itihas Tatha Kavyang Vivechan

CO1.The students after the completion of this course will be able to contemplate and comprehend – Bhasha ka Swaroop vikas- hindi ki utpatti, hindi ki mool Bhasha Tatha vibhinna Bhasao ka vikas, Hindi Bhasah ke vibhinna roop – Bolchal ki Bhasaha, Rachnatmaka Bhasha, Rashtra Bhasha, Raj Bhasha, Sampark Bhasha, sanchar Bhasha.

CO2. The students after the completion of this course will be able to contemplate and comprehend –Hindi ka Shabda Bhandar-Tatsam, Tadbhava, Deshaj, Aagat Shabdavali.

CO3. The students after the completion of this course will be able to contemplate and comprehend –Hindi Sahitya ka itihas-Aadikal, Purva Madhyakal, Uttar Madhyakal Aur Adhunik kal ki Samajik, sanskritik



Prishthabhumi, Pramukh Yug Pravritiyan, vishishta rachnakar aur unki Pratinidhi Kritiyan, Sahityik Kavitaye.

CO4. The students after the completion of this course will be able to contemplate and comprehend-Kavyang – Kavya ka swaroop aur prayojan. Rask e bhed, Vibhinna Anga, Vibhvadi tatha udaharan. Doha, Sortha, Choupai, Kundaliyan, Savaiya, Shabdalanakar- Anuprash, Yamak, shlash, Vakrokti, Punrukti prakash. Arthalanakar-upma, Rupak, Utpreksha, Aatishayokti, Bhrantiman.

Course 07:

Micro Economics

CO1. The students after the completion of this course will be able to contemplate and comprehend and recognize the definitions, nature and scope of economics.

CO2. The students after the completion of this course will be able to contemplate and comprehend and recognize the theory of production and cost.

CO3. The students after the completion of this course will be able to contemplate and comprehend and recognize the market structure.

CO4. The students after the completion of this course will be able to contemplate and comprehend and recognize factor pricing.

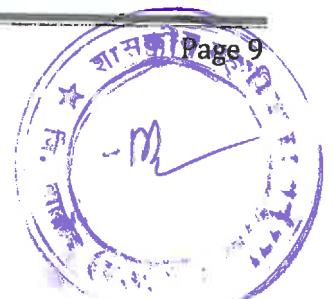
CO5. The students after the completion of this course will be able to contemplate and comprehend and recognize welfare economics.

Course 08:

Indian Economy CO1. The students after the completion of this course will be able to contemplate and comprehend and recognize pre and post independent Indian economy.

CO2. The students after the completion of this course will be able to contemplate and comprehend and recognize the role of economics in population and human development.

CO3. The students after the completion of this course will be able to contemplate and comprehend and recognize the role of economics in agriculture.



CO4. The students after the completion of this course will be able to contemplate and comprehend and recognize the role of economics in industry.

CO5. The students after the completion of this course will be able to contemplate and comprehend and recognize the role of economics in foreign external sector.

Course 09:

Macro Economics

CO1. The students after the completion of this course will be able to contemplate and comprehend and recognize national income & social accounts.

CO2. The students after the completion of this course will be able to contemplate and comprehend and recognize the role of economics in consumption function.

CO3. The students after the completion of this course will be able to contemplate and comprehend and recognize the nature and characteristics of trade cycle.

CO4. The students after the completion of this course will be able to contemplate and comprehend and recognize the role of economics in international trade.

CO5. The students after the completion of this course will be able to contemplate and comprehend and recognize the functions of IMF, World Bank and WTO.

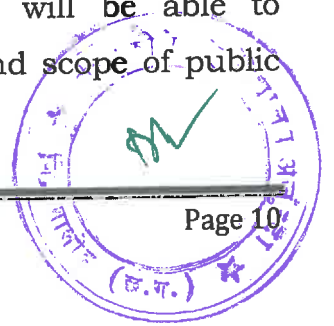
Course 10:

Money, Banking and Public Finance

CO1. The students after the completion of this course will be able to contemplate and comprehend and recognize basic concepts of money.

CO2. The students after the completion of this course will be able to contemplate and comprehend and recognize the role of economics in commercial banking.

CO3. The students after the completion of this course will be able to contemplate and comprehend and recognize the meaning and scope of public finance.



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CO4. The students after the completion of this course will be able to contemplate and comprehend and recognize the sources of public revenue and taxation.

CO5. The students after the completion of this course will be able to contemplate and comprehend and recognize public debt and financial administration.

Course 11:

Development and Environmental Economics

CO1. The students after the completion of this course will be able to contemplate and comprehend and recognize economic growth and development.

CO2. The students after the completion of this course will be able to contemplate and comprehend and recognize the relationship between economics and population problem & growth.

CO3. The students after the completion of this course will be able to contemplate and comprehend and recognize Harrods and Domar growth model.

CO4. The students after the completion of this course will be able to contemplate and comprehend and recognize the relationship between economics and environment & ecology.

CO5. The students after the completion of this course will be able to contemplate and comprehend and recognize the concept of intellectual capital.

Course 12:

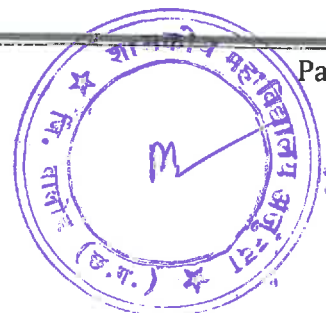
Statistical Methods

CO1. The students after the completion of this course will be able to comprehend and apply statistical methods in economics.

CO2. The students after the completion of this course will be able to comprehend and apply the measurement of central tendency in economics.

CO3. The students after the completion of this course will be able to comprehend and apply the methods & tools of dispersion in economics.

CO4. The students after the completion of this course will be able to comprehend and apply coefficient of correlation in economics.



CO5. The students after the completion of this course will be able to comprehend and apply index number and measurement of trend in economics.

Course 13:

Political Theory

CO1. The students after the completion of this course will be able to contemplate and comprehend and recognize the nature and scope of political theory.

CO2. The students after the completion of this course will be able to contemplate and comprehend and recognize the concept of state, nation and civil society.

CO3. The students after the completion of this course will be able to contemplate and comprehend and recognize the meaning of organs of government and theory of separation of power.

Course 14:

Indian Government and Politics

CO1. The students after the completion of this course will be able to contemplate and comprehend and recognize the salient features in making of Indian Constitution.

CO2. The students after the completion of this course will be able to contemplate and comprehend and recognize and appreciate the fundamental rights and duties and the directive principle of state policy.

CO3. The students after the completion of this course will be able to contemplate and comprehend and recognize and evaluate the evolution, functioning and consequences of political parties in India.

Course 15:

Western Political Thought

CO1. The students after the completion of this course will be able to contemplate and comprehend and recognize the nature, methods and significance of political thought.

CO2. The students after the completion of this course will be able to contemplate and comprehend and recognize and appreciate various social and political ideas of political thinkers.

CO3. The students after the completion of this course will be able to contemplate and comprehend and recognize and demonstrate the knowledge of political thinkers and political concepts.

Course 16: Comparative Politics and Government

CO1. The students after the completion of this course will be able to contemplate and comprehend and recognize and critically assess presidential and parliamentary system. *of developing countries*

CO2. The students after the completion of this course will be able to contemplate and comprehend and recognize the difference between federal and unitary systems of government. **Course 17:**

International Politics

CO1. The students after the completion of this course will be able to contemplate and comprehend and recognize and critically assess the international political system.

CO2. The students after the completion of this course will be able to contemplate and comprehend and recognize the relations of India with neighboring countries.

Course 18:

Public Administration

CO1. The students after the completion of this course will be able to contemplate and comprehend and recognize and critically assess the administrative system of the nation.

CO2. The students after the completion of this course will be able to contemplate and comprehend and recognize various concepts in public administration.

Course 19:

Introduction to Sociology

CO1. The students after the completion of this course will be able to contemplate and comprehend and recognize the nature and scope of sociology.

CO2. The students after the completion of this course will be able to contemplate and comprehend and recognize the basic concepts of society, community, institution, association etc.

CO3. The students after the completion of this course will be able to contemplate and comprehend and recognize different social groups.

CO4. The students after the completion of this course will be able to contemplate and comprehend and recognize various social processes.

Course 20:

Randi

Contemporary Indian Society

CO1. The students after the completion of this course will be able to contemplate and comprehend and recognize the classical view about Indian Society and Varna Vyavastha.

CO2. The students after the completion of this course will be able to contemplate and comprehend and recognize the structure and composition of Indian society.

Randi

Course 21:

Society in India

CO1. The students after the completion of this course will be able to contemplate and comprehend and recognize various social problems like Casteism, Regionalism, and Communalism etc.

CO2. The students after the completion of this course will be able to contemplate and comprehend and recognize various social problems like Dowry, Domestic Violence, Divorce etc. **CO3.** The students after the completion of this course will be able to contemplate and comprehend and recognize basic Institutions of society.

Randi

Course 22:

Crime and Society

CO1. The students after the completion of this course will be able to contemplate and comprehend and recognize social structure and anomalies.

CO2. The students after the completion of this course will be able to contemplate and comprehend and recognize meanings, causes, consequences and remedies of Terrorism.

Randi



Course 23:

Sociology of Tribal Society

CO1. The students after the completion of this course will be able to contemplate and comprehend and recognize classification of tribal people.

CO2. The students after the completion of this course will be able to contemplate and comprehend and recognize socio cultural profile of tribe.

CO3. The students after the completion of this course will be able to contemplate and comprehend and recognize various tribal problems.

CO4. The students after the completion of this course will be able to contemplate and comprehend and recognize various tribal movements.

Course 24:

By

Social Research Methods

CO1. The students after the completion of this course will be able to contemplate and comprehend and recognize & apply social survey and research.

CO2. The students after the completion of this course will be able to contemplate and comprehend and recognize & apply research design.

CO3. The students after the completion of this course will be able to contemplate and comprehend and recognize & apply techniques of data collection and statistics.

By

Course 25:

Physical Geography - Elements of Geomorphology

CO1. The students after the completion of this course will be able to contemplate and comprehend and recognize the effect of rotation and revolution the earth.

CO2. The students after the completion of this course will be able to contemplate and comprehend and recognize the interior structure of the earth.

CO3. The students after the completion of this course will be able to contemplate and comprehend and recognize theory regarding of origin of continents and oceans.

CO4. The students after the completion of this course will be able to contemplate and comprehend and recognize the formation of rocks.



CO5. The students after the completion of this course will be able to contemplate and comprehend and recognize the work of internal and external forces and their associated land forms.

Course 26:

Introduction to Geography and Human Geography

CO1. The students after the completion of this course will be able to contemplate and comprehend and recognize the relationship of man and environment.

CO2. The students after the completion of this course will be able to contemplate and comprehend and recognize the races of man kinds.

CO3. The students after the completion of this course will be able to contemplate and comprehend and recognize the modes of life of pigmy, Bushman, Eskimos, Masai, Gond and Nagar.

Course 27:

Physical Geography - Climatology and Oceanography

CO1. The students after the completion of this course will be able to contemplate and comprehend and recognize the weather and climate.

CO2. The students after the completion of this course will be able to contemplate and comprehend and recognize the atmospheric moisture.

CO3. The students after the completion of this course will be able to contemplate and comprehend and recognize the air masses and fronts.

CO4. The students after the completion of this course will be able to contemplate and comprehend and recognize the surface configuration of the ocean floor.

CO5. The students after the completion of this course will be able to contemplate and comprehend and recognize the circulation of oceanic water.

CO6. The students after the completion of this course will be able to contemplate and comprehend and recognize the marine deposits, coral reefs.



Course 28:

Regional Geography with Special Reference to North America

CO1. The students after the completion of this course will be able to contemplate and comprehend and recognize the regional concept, bases of regionalization.

CO2. The students after the completion of this course will be able to contemplate and comprehend and recognize the structure, relief, climate and soils of North America.

CO3. The students after the completion of this course will be able to contemplate and comprehend and recognize the mineral and energy resources, Forests and North America.

CO4. The students after the completion of this course will be able to contemplate and comprehend and recognize the Agriculture belts, line stock and dairy forming in North America.

CO5. The students after the completion of this course will be able to contemplate and comprehend and recognize the Industries and Regions of North America.

Course 29:

Geography - Resources and Environment

CO1. The students after the completion of this course will be able to contemplate and comprehend and recognize the resources: meaning, nature and components.

CO2. The students after the completion of this course will be able to contemplate and comprehend and recognize the distribution and utilization of resources.

CO3. The students after the completion of this course will be able to contemplate and comprehend and recognize the man environment interrelations.

CO4. The students after the completion of this course will be able to contemplate and comprehend and recognize the environmental conservation and management.



Course 30:

Geography of India (with special reference to Chhattisgarh)

- CO1.** The students after the completion of this course will be able to contemplate and comprehend and recognize the geo-physical features of India.
- CO2.** The students after the completion of this course will be able to contemplate and comprehend and recognize the drainage, climate of India.
- CO3.** The students after the completion of this course will be able to contemplate and comprehend and recognize the resources, geo-cultural features of India.
- CO4.** The students after the completion of this course will be able to contemplate and comprehend and recognize the geo-physical features, geo-cultural features of Chhattisgarh.

Course 31:

Anatomy, Physiology & Hygiene

- CO1.** The students after the completion of this course will be able to describe anatomical structure & physiological functions of cell, tissue and their functions skeletal system - Types of bones, classification general structure & functions of bones, Muscular system - General structure, types and function.
- CO2.** The students after the completion of this course will be able to describe anatomical structure & physiological functions of Circulatory system - General structure of organs and functions, composition of blood & function, Respiratory system - General structure of organs and functions.
- CO3.** The students after the completion of this course will be able to describe anatomical structure & physiological functions of Digestive system - General introduction of Nutrients, Liver and spleen organs of digestion their general structure and function, Excretory system- organs of excretion, Kidney & skin - structure & function.
- CO4.** The students after the completion of this course will be able to describe anatomical structure & physiological functions of Nervous system - Central nervous system structure and function, Senses and Sensory organs - ear and eye structure & function.



CO5. The students after the completion of this course will be able to describe and apply principles of Hygiene - Personal Hygiene, social Hygiene, Environmental and Industrial Hygiene, Water - its importance and purification, Air - its importance and purification, First aid home nursing - Principles, qualities of nurse, responsibilities, selection of sick room, care of the patient, some common accidents and their aid, poison, bleeding, burns and scalds, fracture sprain, dislocation.

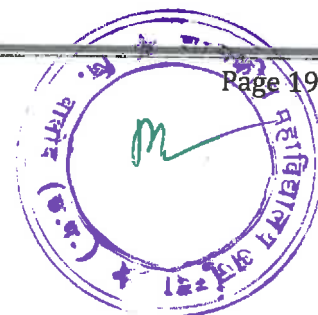
Course 32:

Home Science - Extension Education

CO1. The students after the completion of this course will be able to describe, recognize and apply in Home Science - Concepts, goals and Areas of Home Science & their inter relationship with extension, Principles and methods of home science extension education general concepts of extension work, Objectives of extension education in qualities of extension workers, extension education process.

CO2. The students after the completion of this course will be able to describe, recognize and apply principles of community development organization and function of community development, Role of home scientists in community development, programmes of extension education for community, programmes of community development at central, state, district, block and village level, Family planning programme, Community problems, child marriage, Dowry system, pardapratha, rural indebtedness unemployment.

CO3. The students after the completion of this course will be able to describe, recognize and apply methods of learning - Discussion, demonstration, observation and their application to home science teaching, Extension Methods - their scope advantages and application, Scope and use in Home Science teaching, Extension Methods - their scope advantages and application. **CO4.** The students after the completion of this course will be able to describe, recognize and apply in attitude towards Home Science, Motivation towards Home Science, Application of Home Science towards improvement in family living, Job opportunities in Home Science, National and International agencies and their collaboration with Home Science, Official organization Home Science



Association of India, W.H.O. FAG, CARE, ICAR, ICDS, ICSSR, ICMR, IRDP, Adult education.

CO5. The students after the completion of this course will be able to describe, recognize and apply basic concept of curriculum planning, components of curriculum planning, implementation, evaluation and improvement required in the existing system of H.Sc. education policy and its relevance to H.Sc. Programme planning-concept, principles, objectives and steps in programme planning.

Course 33:

Fabric & Cloth Science

CO1. The students after the completion of this course will be able to describe, recognize and apply in fabric science and its testing, cloth weaving and its styling.

CO2. The students after the completion of this course will be able to describe, recognize and apply textile ornamentation, selection of dyes and fabrics.

CO3. The students after the completion of this course will be able to describe, recognize and apply textile & cloth printing and its types, tie & dye methods.

CO4. The students after the completion of this course will be able to describe, recognize and apply laundry methods for various fabrics and cloth materials, stain removal.

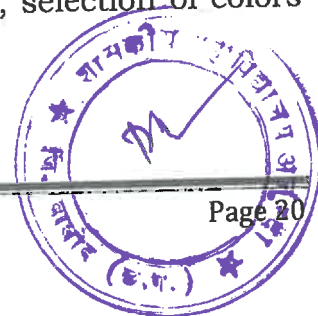
CO5. The students after the completion of this course will be able to describe, recognize and apply dress designing, fashion designing according to personality types, types of dress designing & ornamentation.

Course 34:

Family Resource Management

CO1. The students after the completion of this course will be able to describe, recognize and apply in Home management process, role of home-maker, decision making.

CO2. The students after the completion of this course will be able to describe, recognize and apply in Home decoration, interior designing, selection of colors for home, furniture selection, flower decoration.



CO3. The students after the completion of this course will be able to describe, recognize and apply in family resource management, time management, manpower management, income management, family income and budget, family savings, standard of living, account / book keeping.

CO4. The students after the completion of this course will be able to describe, recognize and apply in Kitchen planning & management, modernization of kitchen and kitchen space, use of alternative energy sources like solar, water distribution system, ventilation, lighting and storage.

CO5. The students after the completion of this course will be able to describe, recognize and apply in simplification of work, process charts, tools and methods for saving time, energy, labor and money.

Course 35:

Home Science - Human Development

CO1. The students after the completion of this course will be able to describe, recognize and apply in child growth and development, different aspects of growth, principles of development, factors affecting child development, heredity and environment.

CO2. The students after the completion of this course will be able to describe, recognize and apply in stages of development - Physiology of pregnancy, Prenatal - Reproductive system, Prenatal development, Infancy, Early infancy, Babyhood, Childhood, Early childhood, Late childhood, Adolescence, Early adolescence, Late adolescence, prenatal growth and development - Sources of studying prenatal life, Stages of growth prenatal and development, Factors affecting prenatal and development growth, Mother's food, Health of mother, Narcotics, Age of parents, Effect of season, Emotion of mother.

CO3. The students after the completion of this course will be able to describe, recognize and apply in effect of normal and caesarean delivery, Adjustment to new environment – Temperature, Respiration, Food consumption, Excretion, Physical development of infant-Physical proportion, Height, Weight, Pulse rate, Respiration rate, Bodytemperature, Frequency of hunger, Sensory development of infant – Light, Sound, Taste, Smell, Skin sensitivity, Motor activity of infants -Mass activities, Specific activities -Reflex activities, Advantages of reflex action,



Emotions of infants -Types of emotions, Significance of emotions, Characteristics of infant behavior- Dependency, Individual difference, Adjustment.

CO4. The students after the completion of this course will be able to describe, recognize and apply in childhood : Adolescence, Characteristics of this stage, Factors affecting growth and development during childhood and adolescence, Physical growth height, weight, body proportion, teeth, Growth and development of internal organs - Nervous, Mental, Circulatory system, Digestive system, Respiratory system, Tissues and muscles systems, Development of motor abilities, Types of motor abilities, importance and characteristics of motor abilities in childhood, Development of motor skills, Types of motor skills, Delayed motor development. **CO5.** The students after the completion of this course will be able to describe, recognize and apply in development of emotional behavior-characteristics special emotions (affection, anger, fear, jealousy and worries) factors affecting emotional behavior, Social developments stages - during infancy, nursery school period, elementary school period, Factor affecting social development, Development of intelligence - Types according to Thorndike, theories regarding intelligence.

CO6. The students after the completion of this course will be able to describe, recognize and apply in Play, work and play, theories of play, characteristics of children's play, types of play, factors effecting play and importance of play, Habits : Definition, Functions performed by habits, Habits and learning, Laws of habit formation-identical to laws of learning, Habit formation, Principles of habit formation, Rules for habit formation, Children delinquency-Types causes and remedial measures.



Course 36:

Food & Nutrition Science

CO1. The students after the completion of this course will be able to describe, recognize and apply the principles and components of nutrition like carbohydrates, lipids, proteins, minerals, vitamins & water and their sources, RDA, metabolism and deficiency.

CO2. The students after the completion of this course will be able to describe, recognize and apply the principles and components of foods like food groups, cereals & grains, pulses & legumes, milk & dairy products, vegetables & fruits, egg, meat, fish & poultry, sugar, jiggery & honey, beverages & spices and their types, composition, nutrition, cooking and processing.

CO3. The students after the completion of this course will be able to describe, recognize and apply the principles and components of food preservation, food spoilage, food toxicity, food adulteration, food hygiene and food storage.

CO4. The students after the completion of this course will be able to describe, recognize and apply the principles and components of dietary management & menu planning, RDA, economics of menu planning, infant nutrition, pediatric nutrition, child nutrition, student & youth nutrition, nutrition during pregnancy and lactation, geriatric nutrition.

CO5. The students after the completion of this course will be able to describe, recognize and apply the principles and components of therapeutic nutrition, therapeutic nutrition for - diabetics, under-weight & over-weight, anemic, vitamin deficiency, protein energy malnutrition, liver diseases, peptic ulcer, indigestion, diarrhea, constipation, hypertension.



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शासकीय महाविद्यालय अर्जुन्दा, जिला-बालोद (छ0ग0)

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PROGRAMME OUTCOMES, PROGRAMME SPECIFIC OUTCOMES

AND


COURSE OUTCOMES (B.A.)

B.A.– 3 years Undergraduate programme Outcomes (PO)

PO1. The undergraduate programme in Hindi Literature / Economics / Political Science / Sociology / Geography / Home Science is aimed at providing the students necessary inputs so as to set forth the task of bringing about new and innovative ideas/concepts so that the formulated model curricula in Hindi Literature / Economics / Political Science / Sociology / Geography / / Home Science becomes in tune with the changing scenario and incorporate new and rapid advancements and multi-disciplinary skills, societal relevance, global interface, self-sustaining and supportive learning.

PO2. The undergraduate programme in Hindi Literature / Economics / Political Science / Sociology / Geography / Home Science besides teaching the basic concepts of Hindi Literature / Economics / Political Science / Sociology / Geography / Home Science should in addition have broader vision for students so that the students therefore be exposed to societal interface of Hindi Literature / Economics / Political Science / Sociology / Geography / Home Science / and the role of Hindi Literature / Economics / Political Science / Sociology / Geography / Home Science in the development of arts and social sciences.

PO3. The students will be able to think critically and take informed decisions after identifying the accuracy and validity of their assumptions and ideas from intellectual, organizational, and personal perspectives.


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PO4. The students will be able to communicate effectively through speaking, reading, writing and listening clearly in one Indian language and thereby express themselves to the world by connecting with different ideas, books, people, media and technology.

PO5. The students will be able to interact socially and stimulate views, reconcile disagreements and help reach consensual conclusions.

PO6. The students will be able to demonstrate compassionate social concern and act with cognizant awareness of issues to contribute in civic life by volunteering impartially towards national development and thereby deliver effective citizenship.

PO7. The students will be able to ethically recognize different value systems, understand the moral dimensions of individual decisions and accept responsibility for them.

PO8. The students will be able to recognize the issues of environmental perspectives and appreciate sustainable development for long term environmental sustainability.

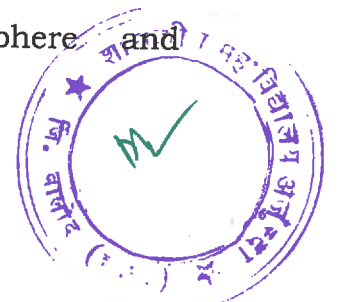
PO9. The students will be able to engage themselves in life-long self-determining and learning in the comprehensive background of socio-technological changes for continued self-directed and life-long learning.

Course outcomes(CO)

Course ----

Introduction to Physical Geography and Human Geography

CO1. The students after the completion of this course will be able to contemplate, and comprehend and recognize the Basic of Physical Geography. Primary information about Lithosphere, Hydrosphere and Atmosphere.



CO2. The students after the completion of this course will be able to contemplate and comprehend and recognize the Human Geography, man environment relationships. Understand impact of nature in Human life, economic and other activity.

Course -----

Physical Geography

CO1. The students after the completion of this course will be able to contemplate and comprehend and recognize the Area of physical Geography. Lithosphere, Atmosphere and Hydrosphere. Earth and its geological history. Geomorphology of different Geographical regions.

CO2. The students after the completion of this course will be able to contemplate and comprehend and recognize the Movements of earth weathering and erosion. Erosional work and formation of various landscapes in different regions.

CO3. The students after the completion of this course will be able to contemplate and comprehend and recognize Elements of weather and climate. Understand atmospheric Temperature, Air Pressure .World distribution of Air pressure and Temperature.

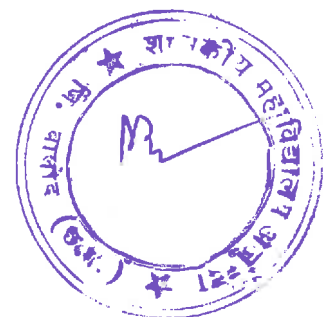
CO4. The students after the completion of this course will be able to contemplate and comprehend and recognize the Humidity and its effects. World climate regions. Characteristics of climate of different regions.

O5. The students after the completion of this course will be able to contemplate and comprehend and recognize the surface configuration of the ocean floor. circulation of oceanic water. Ocean and seas as new area of resources.

Course 28:

Human Geography

CO1. The students after the completion of this course will be able to contemplate and comprehend and recognize the different between physical and Human geography. Man environment relationship. Impact of environment on Human life and economic activity.



CO2. The students after the completion of this course will be able to contemplate and comprehend and recognize the human races, its characteristics. Human environment adjustment and adoption. Study of major races of the world.

CO3. The students after the completion of this course will be able to contemplate and comprehend and recognize the Patterns of distribution of world population. The theory of Over, Under and Optimum Population. Migration of Population and its effects.

CO4. The students after the completion of this course will be able to contemplate and comprehend and recognize the settlement patterns in urban and rural area. Rural Houses in india. Regional patterns of houses in india.

CO5. The students after the completion of this course will be able to contemplate and comprehend and recognize the emerging issue global warming and climate change, desertification, Spread of Pollution in Air, water, soil etc.





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PROGRAMME OUTCOMES, PROGRAMME SPECIFIC OUTCOMES

AND

COURSE OUTCOMES (B.Com)

Programme Outcomes (PO)

PO1. The students after the completion of this programme will be enabled to overcome the challenges and cash in the opportunities in the field of commerce.

PO2. The students after the completion of this programme will become well prepared to take up various professional assignments, engagements and jobs in medium to large scale business establishments, industries, commercial set-ups and other public/private commercial sectors like banking, stock exchange, insurance, NBFCs as accountants, investment bankers, business analysts, finance officers, business / financial advisors etc.

PO3. The students will be able to think critically and take informed decisions after identifying the accuracy and validity of their assumptions and ideas from intellectual, organizational, and personal perspectives.

PO4. The students will be able to communicate effectively through speaking, reading, writing and listening clearly in one Indian language and thereby express themselves to the world by connecting with different ideas, books, people, media and technology.

PO5. The students will be able to interact socially and stimulate views, reconcile disagreements and help reach consensual conclusions.

PO6. The students will be able to demonstrate compassionate social concern and act with cognizant awareness of issues to contribute in civic life by volunteering impartially towards national development and thereby deliver effective citizenship.



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PO7. The students will be able to ethically recognize different value systems, understand the moral dimensions of individual decisions and accept responsibility for them.

PO8. The students will be able to recognize the issues of environmental perspectives and appreciate sustainable development for long term environmental sustainability.

PO9. The students will be able to engage themselves in life-long self-determining and learning in the comprehensive background of socio-technological changes for continued self-directed and life-long learning.

Programme Specific Outcomes (PSO)

PSO1. The students after the completion of this programme will become well versed with financial accounting.

PSO2. The students after the completion of this programme will become well versed with business communication.

PSO3. The students after the completion of this programme will be able to understand business mathematics.

PSO4. The students after the completion of this programme will be able to understand business regulatory framework.

PSO5. The students after the completion of this programme will be able to identify a business environment.

PSO6. The students after the completion of this programme will be able to understand the economics of a business.

PSO7. The students after the completion of this programme will be able to understand the essentials of corporate accounting.

PSO8. The students after the completion of this programme will be able to understand the essentials of company law.

PSO9. The students after the completion of this programme will be able to understand the essentials of cost accounting.

PSO10. The students after the completion of this programme will be able to understand the principles of business management.

PSO11. The students after the completion of this programme will be able to understand the essentials of business statistics.

PSO12. The students after the completion of this programme will be able to understand the fundamentals of entrepreneurship.

PSO13. The students after the completion of this programme will be able to understand the principles of direct taxation – income tax.

PSO14. The students after the completion of this programme will be able to recognize the procedures of auditing.

PSO15. The students after the completion of this programme will be able to understand the essentials, principles and procedures of indirect taxation and GST.

PSO16. The students after the completion of this programme will be able to understand the essentials of management accounting. PSO17. The students after the completion of this programme will be able to understand the fundamentals of insurance.

PSO18. The students after the completion of this programme will be able to understand the essentials of banking and money management.

Course Outcomes (CO)

Course 1: Financial Accounting

CO1. The students after the completion of this course will be able to impart the knowledge of various accounting concepts.

CO2. The students after the completion of this course will be able to instil the knowledge about accounting procedures, methods and techniques & develop skills for computerized Accounting.

Course 2: Business Communication

CO1. The students after the completion of this course will be able to understand the concept, process and importance of communication.



CO2. The students after the completion of this course will be able to develop awareness regarding new trends in business communication.

CO3. The students after the completion of this course will be able to recognize various media of communication.

Course 3: Business Mathematics

CO1. The students after the completion of this course will be able to prepare for competitive exams.

CO2. The students after the completion of this course will be able to improve their calculating power & skills.

CO3. The students after the completion of this course will be able to understand the concept of simple interest, compound interest & concept of EMI.

Course 4: Business Regulatory Framework

CO1. The students after the completion of this course will be acquainted with the basic concepts, terms & Provisions of mercantile & Business Laws.

CO2. The students after the completion of this course will be able to develop the awareness regarding laws affecting business, trade & commerce.

Course 5: Business Environment

CO1. The students after the completion of this course will become aware about the Business Environment.

CO2. The students after the completion of this course will be able to create entrepreneurial awareness.

CO3. The students after the completion of this course will be able to motivate themselves for taking up entrepreneurship as career.

Course 6: Business Economics

CO1. The students after the completion of this course will be able to use various economic theories.

CO2. The students after the completion of this course will be able to apply economic reasoning to problems of business.



CO3. The students after the completion of this course will be able to understand the basic micro economic concepts.

Course 7: Corporate Accounting

CO1. The students after the completion of this course will be enabled to develop awareness about corporate accounting with the provisions of companies Act & Accounting as per Indian Accounting standards.

CO2. The students after the completion of this course will be enabled to develop conceptual aspect of corporate accounting & develop skills about accounting standards.

Course 8: Company Law

CO1. The students after the completion of this course will be able to impart the knowledge of fundamentals of company law.

CO2. The students after the completion of this course will be able to update the knowledge of provisions of the companies Act of 2013.

Course 9: Cost Accounting

CO1. The students after the completion of this course will be enabled with the knowledge of Basic cost concepts, Elements of cost, Ascertainment of materials & costing.

CO2. The students after the completion of this course will be able to understand various methods of costing & their applications.

Course 10: Principal of Business Management

CO1. The students after the completion of this course will be able to understand about business management concept.

CO2. The students after the completion of this course will be able to understand about various functions of business management.

Course 11: Business Statistics



CO1. The students after the completion of this course will be able to understand & apply the concepts of mean, mode & median.

CO2. The students after the completion of this course will be able to apply various methods of sampling & probability measurement.

Course 12: Fundamentals of Entrepreneurship

CO1. The students after the completion of this course will be able to create entrepreneurial temper.

CO2. The students after the completion of this course will be able to take up the cause of entrepreneurship.

Course 13: Income Tax

CO1. The students after the completion of this course will be able to understand the basic concept & acquire knowledge about computation of Income.

CO2. The students after the completion of this course will be enabled to submit Income Tax Returns, Advance Tax & Tax deducted at source

CO3. The students after the completion of this course will be able to identify the procedures of Tax collection authorities under Income Tax Act.

Course 14: Auditing

CO1. The students after the completion of this course will be able to acquaint themselves about concept & principles of Auditing, Audit process, Assurance standards & Tax Audit and Audit of computerized system.

CO2. The students after the completion of this course will be able to prepare Audit Reports.

Course 15: Indirect Taxes with GST



CO1. The students after the completion of this course will be able to understand and apply the concept of GST.

CO2. The students after the completion of this course will be able to understand and apply the concept of Excise duty, CENVAT.

CO3. The students after the completion of this course will be able to understand and apply the knowledge of Registration under GST including its procedures & the liable person for GST registration.

Course 16: Management Accounting

CO1. The students after the completion of this course will be able to understand and apply the basic knowledge of management accounting & its relevance in a business organization.

CO2. The students after the completion of this course will be able to understand and apply managerial behaviour & control structures prevalent under varied business environment.

Course 17: International Marketing

CO1. The students after the completion of this course will be able to grow our business and profits in market.

CO2. The students after the completion of this course will be able to understand and apply the knowledge of domestic and international marketing.

CO3. The students after the completion of this course will be able to understand and apply the functions marketing.

Course 18: Principal of Marketing

CO1. The students after the completion of this course will be able to understand and apply the fundamentals of marketing.

CO2. The students after the completion of this course will be able to understand and apply the marketing & practices.

CO3. The students after the completion of this course will be able to understand and apply the new concepts sale manager.





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B.Sc. 3 Years Undergraduate programme

Programme Outcomes (PO)

PO1. After successful completion of three years degree programme in science a student should be able to demonstrate, solve and can bring out the innovative ideas or concepts so that the formulated model curricula in mathematics/physics/chemistry/botany/zoology incorporate new and rapid advancements self-sustaining and supportive learning.

PO2. After the completion of this program, the students will be able to inculcate scientific temperament and also think methodically independently and draw a logical conclusion.

PO3. It is expected that undergraduate programme employ critical thinking and the scientific knowledge to design, carry out record, discuss, and analyse the results.


PO4. The students will be able to communicate effectively through speaking and writing clearly and express themselves to the world by connecting with different ideas, people, media and technology, which may develop leadership qualities in them.

PO5. The students will be able to express compassionate social concern and act with conscious awareness of issues to contribute in the society.

PO6. The students will be able to recognize and understand different value systems ethically and morally and accept responsibility of individual decisions and actions.

PO7. It is expected that the students will be able to understand global environmental issues and take appropriate actions for long-term sustainable development.

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Programme Specific Outcomes (PSO)

PSO1. The BSc programme is 3 years full time programme in order to make students more career oriented and nurturing their scientific temperaments students will get exposure to the depth of core understanding of various dimensions of science.

PSO 2. After the completion of this programme, students will gain the knowledge of mathematics/zoology/botany/physics/chemistry through theory and practical.

PSO 3. After the completion of this programme, students will develop research-oriented skills.

PSO 4. After the completion of these programme students will be able to understand and apply good laboratory practices and safety.

PSO 5. The students after the completion of this programme will be able to understand major thrust areas of the science discipline.

PSO 6. The students after the completion of this programme will develop strong understanding of fundamentals of scientific process at an advanced level.

PSO 7. The practical work in various science discipline will provide breadth and depth of scientific knowledge.

Course1: Physics

This course is aimed to provide the students with a solid understanding of all the fundamental concepts of physics necessary for the study of the more advanced or specialized courses that follow.

Course Outcomes (CO)

After the completion of this course, students will gain an understanding of





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CO1. Coordinate system and planetary motion, frames of reference and centre of mass.

CO2. Motion of inertial frame. Rigid body motion, idea of the Euler Equation and concept of oscillation.

CO3. Application of oscillation, resonator, study of LC circuit and superposition of two simple harmonic motion of the same frequency.

CO4. CRO sensitivity, accelerator, mass spectrograph and discovery of isotopes.

CO5. Elasticity, relation connecting different elastic and concept of viscosity.

Course 2: Physics

Electricity, Magnetism and Electromagnetic theory

This course is aimed to provide the students with a solid understanding of all the fundamental concepts of electricity, magnetism and electromagnetic theory necessary for the study of the more advanced or specialized courses that follow.

Course Outcomes (CO)

After the completion of this course, students will be able to-

CO1. Understand Integrals, more than one variable and vector analysis, apply various network theorems and their applications.

CO 2. Demonstrate Gauss law, Coulomb's law for the electric field, and apply it to systems of point charges as well as line, surface, and volume distributions of charges.

CO3. Study of properties of dielectric substances, polarization and Capacitors.

CO4. Understand the magnetization, various magnetic behaviour and its application.

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CO5. Electromagnetic induction, Faraday's Law and Maxwell Law and their applications.

Course 3: Physics: Thermodynamics, Kinetic theory and Statistical Physics

This course is designed to provide proper understanding of laws of thermodynamics, kinetic theory and statistical physics

Course Outcome

After the successful completion of this course, students will be able to-

CO1. Describe the basic concepts of laws of thermodynamics, the concept of entropy and the associated theorems, the thermodynamic potentials and their physical interpretations.

CO2. Explain Thermodynamic relationships and Blackbody radiation

CO3. Assess Maxwellian distribution of speeds in an ideal gas, Transport phenomena in gases, Liquefaction of gases.

CO4. The statistical basis of thermodynamics, Transition to quantum statistics.

CO5. Concept of partition function, Bose-Einstein and Fermi-Dirac Statistics

Course 4: Physics: Wave, Acoustics and Optics

This course is designed to give useful information of Wave, Acoustics and Optics.

Course Outcome

After the completion of this course student will be able to

CO1. Understand the principle of superposition of waves and thus describe the formation of standing waves.





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CO2. Understand Monochromatic aberrations and their reductions, Optical instruments arrangement.

CO3. Understand Interference of light, thin films. Hal dinger fringes.

CO4. Understand Fresnel half-period zones, plates, straight edge, rectilinear propagation, Fraunhofer diffraction, Diffraction gratings, Double refraction and optical rotation.

CO5. Understand the spontaneous and stimulated emission of radiation, optical pumping and population inversion as well as Ruby laser and laser.

Course 5: Physics:

This course is aimed to provide all the fundamental concepts of Relativity, Quantum Mechanics, Atomic, Molecular and Nuclear Physics

Course outcome

The students after the completion of this course will be able to

CO1. Understand Reference systems, inertial frames, Galilean invariance and conservation laws, propagation of light and mass-energy equivalence.

CO2. Understand the main aspects of the inadequacies of classical mechanics and understand historical development of quantum mechanics and ability to discuss and interpret experiments that reveal the dual nature of matter. CO2 the theory of quantum measurements, wave packets and uncertainty principle.

CO3. Understand the central concepts of quantum mechanics and the Schrodinger equations and Hydrogen atom.

CO4. narrate the properties of nuclei and structure of atomic nucleus and Raman spectra.





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CO5. Interaction of charged particles and neutrons with matter describe the fission and fusion as well as nuclear processes to produce nuclear energy in nuclear reactor and stellar energy in stars.

Course 6: Solid State Physics, Solid State Devices and Electronics

This course is designed to provide all the fundamental concepts of Solid State Physics, Solid State Devices and Electronics

Course outcome

The students after the completion of this course will be able to

CO1. Describe the crystalline and amorphous substances and diffraction of X-rays by crystalline materials.

CO2. Free electron model of a metal, and magnetic behaviours describe the band theory of solids and must be able to differentiate insulators, conductors and semiconductors.

CO3. Understand the N- and P- type semiconductors, P-N junctions, application of PN junction for different type of rectifiers and voltage regulators.

CO4. Understand to Compare the PNP, NPN transistors, and their applications as amplifiers and oscillators.

CO5. Understand computer organisation, MS-office and C programming and application to simple problems.

Course 7: Physics Lab, B Sc I:

After the successful completion of this part student will be able to understand:

CO1. Experimental Study of moment of Inertia

CO 2. Various types of oscillations

CO 3. Study of rigidity and Young's modulus.

CO 4. Study of properties of Liquid such as surface tension and viscosity.





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- CO 5. Study of the bending of Cantilever of a beam.
- CO 6. Use of a vibrational magnetometer to study of magnetic field B.
- CO 7. Study of low resistance and inductance using impedance.
- CO 8. Recognize different types of electric circuits.
- CO 9. Basic of computer programme and flow chart.

Course 7: Physics Lab, B Sc II:

- CO1. Study of Brownian motion
- CO2. Study of adiabatic expansion or a gas.
- CO3. Study of conversion of mechanical energy into heat.
- CO4. Heating efficiency of electrical kettle with varying voltages.
- CO5. Study of temperature dependence of total radiation.
- CO6. Study of temperature dependence of spectral density of radiation.
- CO7. Resistance thermometry, Thermo emf thermometry.
- CO8. Conduction of heat through poor conductors of different geometries.
- CO9. Study of statistical distributions on nuclear disintegration data (GM Counter used as a black box).
- CO10. Use of Diffraction grating and its resolving limit.
- CO11. Resolving limit of a telescope system.
- CO 12. Polarization of light by reflection; also cos-squared law.
- CO13. Study of Optical rotation for any system.
- CO14. Study of lasers as a monochromatic coherent source.
- CO15. Study of a divergence of a Laser beam.





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- CO16. Calculation of days between two dates of a year.
CO17. To check if a triangle exists and the type of the triangle.
CO18. To find the sum of the sine and cosine series and print out the curve.

Course ④ Physics Lab, B Sc III:

- CO1. Determination of Planck's constant
CO 2. Determination of e/m by using Thomson's tube and Millikan's method.
CO 3. Study of spectra of hydrogen and deuterium (Rydberg constant and ratio of masses of electron proton)
CO4. Absorption spectrum of iodine vapour
CO 5. Study of alkali or alkaline earth spectra using a concave gra's
CO6. Study of Zeeman Effect for determination of Lande g-factor. Analysis of a given band spectrum.
CO7. Study of Raman spectrum using laser as an excitation source.
CO8. Study of absorption of alpha and beta rays and radioactive measurement.
CO9. Determination of dielectric constant.
CO10. Hysteresis curve of transformer core.
CO11. Hall-probe method for measurement of magnetic field.
CO12. Specific resistance and energy gap of a semiconductor.
CO13. Study of Diode and Characteristics of transistor.
CO14. Study of lissajous figures using a CRO.





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Subject Mathematics

Course 10: Algebra & Trigonometry

Course Outcome- After the completion of this course student is expected to-

CO1. Describe function relation, properties of relation, types of relations beside that students are able to understanding the unary and binary operations with Group theory, Ring theory and related some useful theorems.

CO2. Get familiar with inverse of matrix, Canonical form and apply the Cayley – Hamilton theorem. CO3. The students after the completion of this course will be able to solve higher degree equation by Carden's and Farri's method beside that the solution of complex roots by Demover's with some applications.

Course 11: Calculus

Course Outcome- After the completion of this course student is expected to-

CO1. Test the continuity and differentiability of functions of one variable, successive derivative (Leibnitz methods), expansion of function by Taylor's and Macaluries theorem and behaviour of asymptotes.

CO2. Calculate and solve the definite and indefinite integrals with application in finding length of arc, area, volume of solid revolution.

CO3. Solve first order differential equations with simple application along with being capable to solve higher order differential equations with constant coefficients and functional coefficients.

Course 12: Vector Analysis & Geometry

Course Outcome- After the completion of this course student is expected to-

CO1. Understand dot and cross product three of vector and scalar multiplication with application.





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CO2. Solve differentiation and integration of vectors and scalar with applications like Gauss, Green and Stokes theorem.

CO3. Solve Cone, Sphere, Cylinder, Generating Lines, Straight line, Plane etc. in three dimensions.

Course 13: Advanced Calculus

Course Outcome- After the completion of this course student is expected to-

CO1 identifies the convergence and divergence of a series and applies the different types of test to identify the convergence and divergence of the series.

CO2. Test continuity and differentiability of two variable problems, partial derivative, Euler theorem, Jacobian of two and three variables. With application of Maxima and minima of several, function problems.

CO3. Determine the Beta – Gamma functions and solve the double and triple integrations.

Course 14: Differential Equations

Course Outcome- After the completion of this course student is expected to-

CO1. Solve the ordinary differential equation with power series method and learn about special functions like Bessel's, Legendre's differential equation, beside that student is able to formulate partial differential equations, and solution of equations with some application.

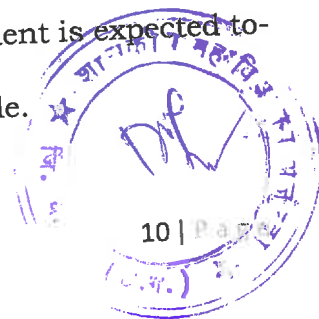
CO2. Compute the Laplace and Inverse Laplace transformation with application in solving initial and boundary value ordinary and partial differential equations.

Course 15: Mechanics

Course Outcome- After the completion of this course student is expected to-

CO1. Find the velocity and acceleration of a moving particle.

CO2. Compute the equilibrium condition of the particle.





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CO3. Describe the attraction and potential of different particles (Moving and Static)

Course 16: Analysis

Course Outcome- After the completion of this course student is expected to-

CO1. Determine the Fourier series of full and half range with application.

CO2. Apply Schwarz and Young's theorem for the function of several variables.

CO3. Learn about analytic function.

CO4. Know about the distance function of real numbers with the properties dense set, open set closed set, cantor intersection theorems.

Course 17: Abstract Algebra

Course Outcome- After the completion of this course student is expected to-

CO1. Use various forms of "Sylow theorem" Groups, Sub-groups, Normal Sub-groups, and Semi-groups etc.

CO2. Know about vector space linear transformation with some application of linear transformation.

CO3. Discuss about the inner product space and some useful theorems related it.

Course 18(A) Discrete Mathematic structure

Course Outcome- After the completion of this course student is expected to-

CO1. Describe Graphs, Trees, Spanning Trees, Circuits, finite state machines and their types.

CO2. Describe the difference between Mealy and Moore machines.

CO3. Compute the output of a finite state machine corresponding to their next state of the given input.





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Course 19 (B): Programming in C with Numerical analysis

Course Outcome- After the completion of this course student is expected to-

CO1. Know various numerical methods to approximate the solution of differential equations (like that Picard, Euler, RungeKutta).

CO2. Compute the approximate solution of Algebraic and transcendental equation by Bisection method, Newton method beside that student able to know interpolation method for equal and unequal interval.

CO3. Know programming in C language.

Course 20: Inorganic Chemistry

This course is aimed to provide the students with a solid understanding of all the fundamental concepts of inorganic chemistry. The topics discussed include atomic structure, periodic properties, S and P block elements.

Course Outcome-

After the successful completion of this course, students will be able to-

CO1. Describe and explain Atomic Structure, and Periodic Properties.

CO2, Know chemical bonding in ionic compounds and structure of ionic solids.

CO3. Understand Chemical Bonding in covalent molecule

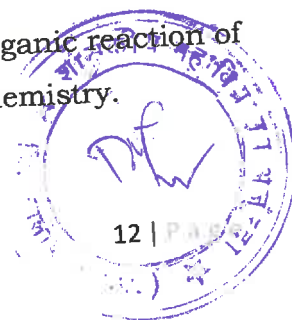
CO4. Explain chemistry of s-Block Elements, p- Block elements

CO5. Recognize principles of Inorganic Chemical Analysis and chemistry of noble gases in special reference with Xenon.

Course 21: Organic Chemistry

This programme is designed to provide a basic idea of the organic reaction of saturated and unsaturated hydrocarbons and their stereochemistry.

Course Outcome





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The students after the completion of this course will be able to

CO1. Understand basics of organic compounds towards their reactivity

CO2. Explain stereochemistry of organic compounds.

CO3. Describe conformational analysis of alkanes.

CO4. Understand nomenclature, structure and properties of alkenes, dienes and alkynes.

CO5. Describe arenes and aromaticity.

Course 22: Physical Chemistry -

Course Outcome

The students after the completion of this course will be able to

CO1. Describe Mathematical concepts that are required to understand physical properties.

CO2. Understand Molecular velocities, theory of gases, and liquefaction of gases.

CO3. Get the concept of Liquid state, colloids and surface chemistry.

CO4. Describe a solid state crystal system.

CO5. Understand and explain Chemical kinetics and catalysis.

Course 23: Inorganic Chemistry

Course Outcome

The students after the completion of this course will be able to

CO1. Understand and explain the chemistry of elements of the first transition series elements,

CO 2. Describe characteristics of Second and third transition Series elements.





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CO3. Understand Oxidation, Reduction, and chemistry of Coordination Compounds,

CO4. Describe extraction and application of Lanthanides and Actinides.

CO 5. Identify various types of acid and bases and properties of non-aqueous solvents.

Course 24: Organic Chemistry

Course Outcome

The students after the completion of this course will be able to

CO1. Describe synthesis and properties of Alcohols, phenols, epoxides.

CO2. Describe Aldehydes and ketones.

CO3. Familiar about Carboxylic acids, substituted carboxylic acids, and carboxylic acid derivatives.

CO4. Explain Organic compounds of nitrogen.

CO5. Understand Heterocyclic compounds, amino acids and peptides.

Course 25: Physical Chemistry

Course Outcome

The students after the completion of this course will be able to

CO1. Explain Laws of thermodynamics and Thermochemistry.

CO2. Understand entropy, free energy and their relations.

CO 3. Describe Phase equilibrium and distribution laws.

CO 4. Understand various galvanic cells and conductance and transport numbers.

CO5. Define electrochemical cells and pH, buffer, salt hydrolysis and corrosion.





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Course 26 : Inorganic Chemistry

Course Outcome

The students after the completion of this course will be able to

CO1. Describe Metal-Ligand Bonding in Transition Metal Complexes and their magnetic behaviour.

CO2. Understand the reactivity of metal complexes, their reactions and stability.

CO3. Understand the chemistry of organometallic compounds of Li, Hg, Zinc and magnesium

CO4. Explain Bio Inorganic Compounds.

CO 5. Get familiar with various theories of Acids and Bases and Silicones and phosphorene's.

Course 27: Organic Chemistry

Course Outcome

The students after the completion of this course will be able to

CO 1. Describe organometallic compounds, organ sulphur compounds, and organic synthesis via emulates.

CO 2. Explain Biomolecules, carbohydrates, proteins and nucleic acids.

CO 3. Describe Synthetic polymers, synthetic dyes.

CO 4. Understand Spectroscopy, mass spectroscopy, infrared spectroscopy, uv-visible spectroscopy,

CO 5. Explain and understand nmr-spectroscopy, cmr-spectroscopy, and magnetic resonance imaging (MRI).





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Course 28: Physical Chemistry

Course Outcome

The students after the completion of this course will be able to

CO 1. Understand Quantum mechanics, SWE and particle in one dimension box.

CO 2. Quantum mechanical approach of molecular orbital theory, VBT, and hybridization.

CO 3. Explain Spectroscopy, electromagnetic radiation, vibrational spectra, and Raman spectra.

CO 4. Understand Electronic spectra, photochemistry.

CO5. describe Thermodynamics, physical properties and molecular structure, magnetic properties.

Course Lab 29: B Sc I

This lab course is designed to gain practical aspects of various concepts and theories of chemistry. After the completion of this course student able to understand:

CO 1. Semi-micro qualitative analysis (using H₂S or other methods) of mixtures - not more than four ionic species (two anions and two cations, excluding interfering, insoluble salts).

CO 2. Acid base titrations, Redox Titrations, Iodo / Iodimetric Titrations

CO 3. Demonstration of laboratory Glassware and Equipment, Calibration of the thermometer.

CO 4. Purification of organic compounds by crystallization using different solvents.





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CO 5. Determination of the melting points of organic compounds. Distillation (Demonstration), Sublimation, Decolourization and crystallization.

CO 6. Qualitative Analysis Detection of elements (N, S and halogens) and functional groups.

CO 7. Surface tension measurements and viscosity measurements.

COURSE Lab 30: B Sc II

This lab course is designed to gain practical aspects of various concepts and theories of chemistry. After the completion of this course student able to understand:

CO1. Calibration of fractional weights, pipettes and burettes. Preparation of standard solutions, Dilution-0.1 M to 0.01 M. solutions.

CO2. Quantitative Analysis by Volumetric Analysis

(a) Determination of acetic acid. Alkali content, Estimation of calcium content and hardness of water, and estimation of ferrous & ferric.

CO3. Instrumentation Calorimetry Adulteration-Food Stuffs. Effluent analysis, water analysis Solvent

CO4. Extraction Separation and estimation of Mg (H) and Fe (H).

CO 5. Thin layer Chromatography Determination of R_f values and identification of organic compounds.

CO 6. Paper Chromatography: Ascending & Circular. Determination of R_f values and identification of organic compounds.

CO 7. Qualitative Analysis: Identification of an organic compound through the functional group analysis, determination of M.P. and preparation of derivatives. (Aliphatic and Aromatic)





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CO 8. Physical Chemistry Transition Temperature Determination of the transition temperature of the given substance by thermometric/ dialometric method (e.g. $MnCl_2 \cdot 4H_2O/SrBr_2 \cdot 2H_2O$).

CO 9. To construct the phase diagram of two-component system

CO 10. To determine the solubility of benzoic acid at different temperatures and to determine H of the dissolution process.

CO 11. To determine the enthalpy of neutralisation of a weak acid / weak base versus strong base / strong acid and determine the enthalpy of ionisation of the weak acid weak base.

COURSE Lab 31: B Sc III- This lab course is designed to gain practical aspects of various concepts and theories of chemistry. After the completion of these course students able to understand:

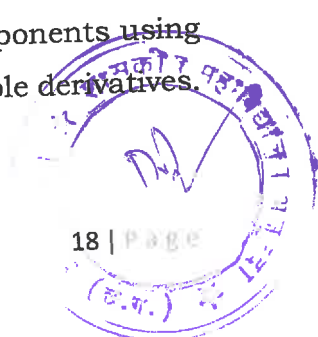
CO 1. Inorganic Chemistry Synthesis Analysis (a) Preparation of Sodium trioxalato ferrate (III), $Na_3 [Fe (C_2O_4)_3]$ and determination of its composition by permanganometry. (b) Preparation of Ni-DMG complex, $[Ni(DMG)_2]$ (c) Preparation of copper tetraammine complex, $[Cu(NH_3)_4]SO_4$. (d) Preparation of cis-and trans-bioxalato diaqua chromate (III) ion.

CO 2. Gravimetric Analysis of Cu as $CuSCN$ or CuO , Ni as $Ni(DMG)_2$, Ba as $BaSO_4$ and Fe as Fe_2O_3

CO 3. Steam Distillation Napthalene from its suspension in water Clove oil from cloves Separation of ortho and para-nitro phenols.

CO 4. Separation of fluorescein and methylene blue Separation of leaf pigments from spinach leaves Resolution of racemic mixture of (+,-) mandelic acid.

CO 5. Analysis of an organic mixture containing two solid components using water, $NaHCO_3$, $NaOH$ for separation and preparation of suitable derivatives.





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CO 6. Synthesis of Organic Compounds such as (a) Acetylation of salicylic acid, aniline, glucose and hydroquinone. Benzoylation of aniline and phenol. (b) Aliphatic electrophilic substitution- Preparation of iodoform from ethanol and acetone. (c) Aromatic electrophilic substitution-Nitration Preparation of m-dinitrobenzene, p-nitro acetanilide Halogenation- Preparation of p-bromo acetanilide, 2,4,6 tri bromo phenol (d) Diazotization/Coupling- Preparation of methyl orange and methyl red (e) Oxidation- Preparation of benzoic acid from toluene (f) Reduction- Preparation of aniline from nitrobenzene, m-nitro aniline from m-dinitrobenzene.

CO 7. To determine strength of given acid conductometrically using standard alkali solution.

CO 8. To determine solubility and solubility product of a sparingly soluble electrolyte conductometrically.

CO 9. To study saponification of ethyl acetate conductometrically. Determine the ionization constant of a weak acid conductometrically.

CO 10. To titrate potentiometrically the given ferrous ammonium sulphate using $\text{KMnO}_4/\text{K}_2\text{Cr}_2\text{O}_7$ as titrant and calculate the redox potential of $\text{Fe}^{2+}/\text{Fe}^{3+}$ system on the hydrogen scale.

CO 11. To verify the law of refraction of mixtures (e.g. of glycerol and water) using Abbe's refractometer.

CO 12. To determine the specific rotation of a given optically active compound.

CO 13. Determination of molecular weight of a non-volatile solute by Rast method/Beckmann freezing point method.

CO 14. Determination of the apparent degree of dissociation of an electrolyte.

CO 15. To verify Beer-Lambert law for $\text{KMnO}_4/\text{K}_2\text{Cr}_2\text{O}_7$ and determine the concentration of the given solution of the substance.





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Course 32: Cell Biology & Non-Chordata

Course Outcomes (CO) The students after the completion of this course will be able to

CO1. Compare between Prokaryotic & Eukaryotic Cells.

CO2. Explain Cell divisions (Mitosis & Meiosis) and about cancer cells and can describe concept of immunity, innate and acquired immunity, antigen and antigenicity, antibody structure and function, antigen-antibody reaction

CO3. Describe general characteristics & classification of Protozoa, Porifera, and Coelenterata.

CO4. Differentiate Helminths, Annelida and Arthropoda.

CO5. Identify General characters and classification of Phylum Mollusca and Echinodermata.

Course 33: Chordata and Embryology

Course Outcomes (CO) The students after the completion of this course will be able to

CO1. Understand the origin and classification of Hemichordata and Chordates.

CO2. Describe scale and skin of Fishes, parental care in Fishes and Amphibia & identification of poisonous Snake and study of extinct reptiles.

CO3. Study flight adaptation in birds, aquatic adaptation in mammals and comparative study of various mammals.

CO4 Understand various stages of fertilization in frog and about parthenogenesis.

CO5. Describe embryonic induction and development of Chick and Placenta in mammals.





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Course 34: Anatomy & Physiology

Course Outcomes (CO) The students after the completion of this course will be able to

CO1. Understand anatomy of various organ systems of vertebrates.

CO2. Explain endoskeleton, Circulatory System; Urogenital System.

CO3. Describe nervous system, Endocrine glands, Gonads and genital ducts.

CO4. Understand physiology of digestion, heart blood coagulation; respiration mechanism.

CO5. Describe physiology of excretion, osmoregulation; muscle contraction, nerve impulse; ear and eye - structure and function.

Course 35: Vertebrate Endocrinology, Reproductive Biology Behaviour, Evolution and Applied Zoology

Course Outcomes (CO) The students after the completion of this course will be able to describe

CO1. General characters of hormones, biosynthesis and endocrine disorder due to hormones and other glands.

CO2. Reproductive cycle in vertebrates, menstruation, lactation and pregnancy, parturition, hormonal regulation of gametogenesis, extra embryonic membrane.

CO3. Evidences and theories of organic evolution, variation, mutation, isolation and natural selection, evolution of horse.

CO4. Ethology, patterns of taxes, reflexes, drives and stereotyped behaviour, reproductive behavioural patterns, hormones, drugs and behaviour.

CO5. Aquaculture, sericulture, apiculture, pisciculture, poultry keeping, elements of pest control - chemical control & biological control.





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Course 36: Ecology, Environmental biology; Toxicology; Microbiology and Medical Zoology

Course Outcomes (CO) The students after the completion of this course will be able to describe

CO1. Aims and scopes of ecology, population, communities and ecosystems, biogeochemical cycles, air and water pollution, ecological succession.

CO2. Environmental biology, laws of limiting factors, food chain and energy flow in ecosystem. Conservation of natural resources, environmental impact assessment.

CO3. Understand toxicology, toxicity, classification and principle, toxic agents metallic and inorganic agents, animal poisons - snake-venom, scorpion and bee poisoning, food poisoning.

CO4. Differentiate between microbiology of domestic water and sewage, milk and milk products and industrial microbiology.

CO5. Medical microbiology, pathogenic microorganisms, rickettsia, spirochetes and bacteria, pathogenicity of the pathogenic protozoans and helminths, vector insects.

Course 37: Genetics, Cell Physiology, Biochemistry, Biotechnology and Bio-techniques

Course Outcomes (CO) The students after the completion of this course will be able to describe

CO1. Genetics, linkage and linkage maps, varieties of gene expression, sex-chromosome systems, and sex linkage, mutation and chromosomal alterations; meiotic consequences, human genetics - chromosomal and single gene disorders (somatic cell genetics).





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CO2. cell physiology, pH and buffer, transport across the membrane, active transport and its mechanism; active transport in mitochondria and endoplasmic reticulum, hydrolytic enzymes - their chemical nature, activation and specificity.

CO3. Basic structure and biological function of carbohydrate, lipid and protein and their metabolism.

CO4. Biotechnology, Recombinant DNA, Gene cloning, and its Applications.

CO5. Principles and techniques of pH meter, Colorimeter, Microscopy Centrifugation, Separation of biomolecules by chromatography, and Electrophoresis. Histochemical methods for determination of Protein, Lipids, and carbohydrate

Course Lab 38: Zoology (B Sc I)

On completion of Lab, work of this course student will be able to understand:

CO 1. Dissection of Earthworm, Cockroach, Palaemon and Pila

CO 2. Minor dissection—appendages of Prawn & hastate plate, mouthparts of insects, radula of Pila. (Alternative methods: By Clay/Thermacol/drawing/Model etc.)

CO 3. Adaptive characters of aquatic, terrestrial, aerial and desert animals.

CO 4. Museum specimen invertebrate

CO 5. Slides- Invertebrates, frog embryology, Chick embryology and cytology.

Course Lab 39: Zoology (B Sc II):

After the successful completion of lab course student will be able to show the knowledge of the following:

CO 1. Study of the representative examples of the different chordates (Classification and character)





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CO 2. Dissection of various systems of scoliodon-Afferent and Efferent branchial vessels, cranial nerves, internal ear.

CO 3. Simple microscopic technique through unstained or stained permanent mounts.

CO 4. Study of prepared slides histological, as per theory papers.

CO 5. Study of limb girdles and vertebrae of frog, varanus, fowl and Rabbit.

CO 6. Identification of species and individuals of honeybee.

CO7. Life cycle of honeybee and silkworm.

Course Lab 40: Zoology (B Sc III)

After the completion of this part, of course students can understand:

CO 1. Estimation of population density, Percentage frequency, Relative density. Analysis of Producers and consumers in grassland.

CO 2. Detection of gram-negative and gram-positive bacteria, Mitosis in onion root tip.

CO 3. Blood group detection (A, B, AB & O) and R.B.C., W.B.C. count, Blood coagulation time. Preparation of Hematin crystals from blood of rat.

CO4. Observation of Drosophila, wild and mutant.

CO 5. Biochemical detection of Carbohydrate, Protein and Lipid.

CO 6. Study of Permanent slides of Parasites based on theory paper.

CO7. Working Principles of pH meter, Colorimeter, centrifuge and microscopes, Chromatography-Paper or gel, Colorimetric estimation of haemoglobin.





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Subject: Botany

Course 41: General Diversity of Microbes and Cryptogams

Course Outcomes (CO) The students after the completion of this course will be able to describe

CO1. Viruses and Bacteria: General account of viruses and mycoplasma; bacteria, cyanobacteria.

CO2. Algae: Chlorophyceae-Volvox, Oedogonim, Coleochaete; Xanthophyceae- Vaucheria; Phaeophyceae- Ectocarpus, Sargassum; Rhodophyceae- Polysiphonia.

CO3. Fungi: Mastigomycotina Pythium, Phytophthora; Zygomycotina- Mucor, Ascomycotina- Saccharomyces, Eurotium, Chaetomium, Peziza; Basidiomycotina- Puccinia, Agaricus; Deuteromycotina- Cercospora, Colletotrichum; Lichens.

CO4. Bryophyta: structure, reproduction and classification of Hepaticopsida (e.g. Riccia, Marchantia); Anthocerotopsida (e.g. Anthoceros), Bryopsida (e.g. Funaria)

CO5. Pteridophyta: Psilopsida, Lycopsida, Sphenopsida and Pteropsida; structure, Reproduction in Rhynia, Lycopodium Selaginella, Equisetum, Pteris and Marsilea

CO6: Gymnosperm: pinus, Cycus, ephedra.

CO7: Palaeobotany: Geological time scale, fossil and fossilisation of rhynia, lyginopteris.

Course 42: Diversity of Seed Plants and their Systematics

Course Outcomes (CO) The students after the completion of this course will

CO1: Angiosperms: origin and evolution, some examples of primitive angiosperms.





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CO2: Angiosperms taxonomy: fundamental components; identification, keys taxonomic literature. Botanical nomenclature: taxonomic ranks; type concept;

CO3: Classification of angiosperms: Bentham and Hooker, Engler and Prantl. Major contributions of cytology, phytochemistry and taxometrics to taxonomy

CO4: Diversity of flowering Plants: Ranunculaceae, Brassicaceae, Malvaceae, Rutaceae, Fabaceae, Apiaceae, Acanthaceae, Apocynaceae, Asclepiadaceae, Solanaceae, Lamiaceae, Chenopodiaceae, Euphorbiaceae, Liliaceae and Poaceae.

Course 43: Structure Development and Reproduction in Flowering Plants

Course Outcomes (CO) The students after the completion of this course will be able to describe

CO1. Shoot system: apical meristem, histological organization; vascularization of primary shoot in monocotyledons and dicotyledons; conduction of water and minerals;

CO2. Root system: apical meristem; differentiation of primary and secondary tissues and their roles; structural modification for storage, respiration, reproduction and for interaction with microbes.

CO3. Describe leaf: origin, development, arrangement and diversity in size and shape;

CO4. Flower; structure, development, varieties, functions, structure of male and female gametophytes; pollination; and Embryology

CO5. Seed: suspended animation adaptation; replenishment, dispersal strategies, vegetative reproduction: vegetative propagation,

Course 44: Plant Physiology, Biochemistry and Biotechnology Course

Outcomes (CO) The students after the completion of this course will be able to describe





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CO1. Plant-water relations: diffusion, osmosis; absorption, transport, transpiration; Toxicity.

CO2. Transport of organic substances: phloem transport; Enzymology: and concept, regulation,

CO3 Photosynthesis: photosynthetic pigments; Calvin cycle; C4 pathway; CAM plants; photorespiration.

CO4. Respiration: ATP - aerobic and anaerobic, Kreb's cycle, ETC, fatty acid biosynthesis; saturated and unsaturated fatty acids;

CO5. Growth and development: phases, seed dormancy, seed germination; plant movements; photoperiodism; photomorphogenesis; phytochromes, cryptochromes,

CO6. Genetic engineering: recombinant DNA technology; transposable elements; gene mapping, chromosome walking, biotechnology: plant tissue culture; cellular totipotency, differentiation and morphogenesis; biology of Agrobacterium;

Course 45: Ecology and Utilization of Plants

Course Outcomes (CO) The students after the completion of this course will be able to describe

CO1. Plants and environment: atmosphere water, light, temperature, soil and biota, hydrophytes and xerophytes, thermoperiodicity, photoperiodism, heliophytes, sciophyte

CO2. Community ecology: frequency, density, biological spectrum; ecological succession, ecosystems: food chain, food web, ecological pyramids, energy flow; biogeochemical cycles

CO3. Population ecology: growth curves; ecotypes; cads, biogeographical regions of India, Vegetation types of India: Forests and grasslands





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CO2: Angiosperms taxonomy: fundamental components; identification, keys taxonomic literature. Botanical nomenclature: taxonomic ranks; type concept;

CO3: Classification of angiosperms: Bentham and Hooker, Engler and Prantl. Major contributions of cytology, phytochemistry and taxometrics to taxonomy

CO4: Diversity of flowering Plants: Ranunculaceae, Brassicaceae, Malvaceae, Rutaceae, Fabaceae, Apiaceae, Acanthaceae, Apocynaceae, Asclepiadaceae, Solanaceae, Lamiaceae, Chenopodiaceae, Euphorbiaceae, Liliaceae and Poaceae.

Course 43: Structure Development and Reproduction in Flowering Plants

Course Outcomes (CO) The students after the completion of this course will be able to describe

CO1. Shoot system: apical meristem, histological organization; vascularization of primary shoot in monocotyledons and dicotyledons; conduction of water and minerals;

CO2. Root system: apical meristem; differentiation of primary and secondary tissues and their roles; structural modification for storage, respiration, reproduction and for interaction with microbes.

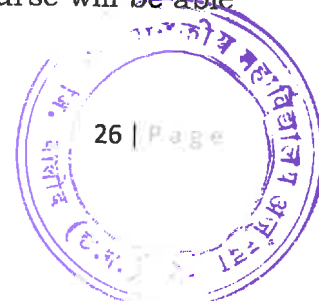
CO3. Describe leaf: origin, development, arrangement and diversity in size and shape;

CO4. Flower; structure, development, varieties, functions, structure of male and female gametophytes; pollination; and Embryology

CO5. Seed: suspended animation adaptation; replenishment, dispersal strategies, vegetative reproduction: vegetative propagation,

Course 44: Plant Physiology, Biochemistry and Biotechnology Course

Outcomes (CO) The students after the completion of this course will be able to describe





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CO4. Economical botany: food plant, vegetable oils, firewood, Spices, Medicinal plants, Beverages.

Course Lab 46: Botany (B Sc I)

After the successful completion of lab course student will be able to show the knowledge of the following:

CO1. Algae: gloeopocapsa, scytonema, gloeotrichia, volvox, oedogonium, vaucheria, chara, ectocarpus, batrachosperrnum, sargassum.

CO2. Gram staining

CO3. Fungi: albugo, aspergillus, peziza, agaricus, puccinia, alternaria, cercospora.

CO4. Bryophyta: Riccia, Marchantia, Pellia, Anthoceros, Sphangnum, Funaria.

CO5. Pteridophyta. Lycopodium, Selaginella, Equisetum, Marsilea

CO6. Gymnosperm. Cycas, Pinus, Ephedra.

Course Lab 47: Botany (B Sc II)

After the successful completion of lab course student will be able to show the knowledge of the following:

CO1: Plant description: Ranunculaceae, Brassicaceae, Malvaceae, Rutaceae, Fabaceae, Apiaceae, Acanthaceae, Apocynaceae, Asclepiadaceae, Solanaceae, Lamiaceae, Chenopodiaceae, Euphorbiaceae, Liliaceae and Poaceae.

CO2: Gymnosperm: Cycas, Pinus, Ephedra.

CO3: Anatomy: anatomy of Monocot and Dicot (stem, leaves, root)

CO4: Embryology: Nuclear and cellular endosperm, embryo development in monocots and dicots, Structure of anther, microsporogenesis (using slides) and pollen grains

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CO5: self-incompatibility, in vitro pollen germination, vegetative propagation, Germination of non-dormant and dormant seeds.

Course Lab 48 Botany (B Sc III) After the successful completion of lab course student will be able to show the knowledge of the following:

CO1: Physiology: demonstration of osmosis, diffusion, respiration,

CO2: photosynthesis, Separation of chloroplast pigment, osmotic potential of vacuolar sap, Bioassay of auxin, cytokinin, GA, ABA and ethylene.

CO3: Ecology: Estimation of population density, Percentage frequency, Relative density. Analysis of Producers and consumers in grassland.

CO4: To determine diversity indices (richness, Simpson, Shannon-Wiener) in grazed and protected grassland.

CO5: Estimate transparency, pH and temperature of different water bodies.

CO6: Utilization of plants: Food Plants, Fibres Yielding plants, Vegetable oil, firewood, timber yielding plants, medicinal plants, Beverages and Rubber yielding plant.

CO7: Biochemistry / Biotechnology: protein, carbohydrate, lipid test, plant tissue culture technique, protoplast isolation, anther and ovary culture.





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PROGRAMME OUTCOMES, PROGRAMME SPECIFIC OUTCOMES

AND


COURSE OUTCOMES

M.A. SOCIOLOGY – 4 Semesters Postgraduate programme

Programme Outcomes (PO)

- PO1. Students would be able to think critically on societal issues and its national & global implications.
- PO2. Students would be able to shoulder social and ethical responsibilities in its true form and hence develop into a better citizen.
- PO3. Students would be able to perceive social issues both objectively and subjectively.
- PO4. Students would be able to develop better social interaction skills for greater exchange of thoughts and ideas.
- PO5. The students will be able to think critically and take informed decisions after identifying the accuracy and validity of their assumptions and ideas from intellectual, organizational, and personal perspectives.
- PO6. The students will be able to communicate effectively through speaking, reading, writing and listening clearly in one Indian language and thereby express themselves to the world by connecting with different ideas, books, people, media and technology.
- PO7. The students will be able to interact socially and stimulate views, reconcile disagreements and help reach consensual conclusions.
- PO8. The students will be able to demonstrate compassionate social concern and act with a cognizant awareness of issues to contribute in civic life by volunteering impartially towards national development and thereby deliver effective citizenship.

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PO9. The students will be able to ethically recognize different value systems, understand the moral dimensions of individual decisions and accept responsibility for them.

PO10. The students will be able to recognize the issues of environmental perspectives and appreciate sustainable development for long term environmental sustainability.

PO11. The students will be able to engage themselves in life-long self-determining and learning in the comprehensive background of socio-technological changes for continued self-directed and life-long learning.

Programme Specific Outcomes (PSO)

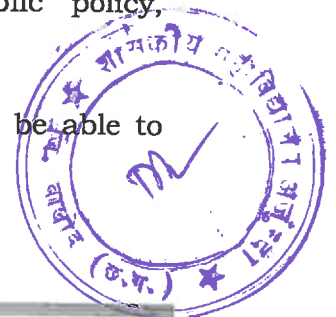
PSO1. The students after the completion of this programme will be able to contemplate and comprehend Classical Sociological Tradition. Students would be able to understand sociological phenomena of individuals, socio-ethnic structures, socio-cultural institutions and socio-economic inequality.

PSO2. The students after the completion of this programme will be able to contemplate and comprehend Philosophical and Conceptual Foundation of Social Research. Students would be able to effectively communicate and draft sociological concepts and theories associated with real life situations.

PSO3. The students after the completion of this programme will be able to contemplate and comprehend Social Change in India. Students would be able to perform analytical thinking on the basis of survey, census & research of qualitative and quantitative data & information.

PSO4. The students after the completion of this programme will be able to contemplate and comprehend Rural Sociology. Students would be able to become a thorough professional with social intellect so as to have career opportunities galore social welfare, rural development, public policy, governance, business, social foundations, NGO and academia.

PSO5. The students after the completion of this programme will be able to contemplate and comprehend Classical Sociological Thinkers.



PSO6.The students after the completion of this programme will be able to contemplate and comprehend and apply Quantitative Research Techniques in Sociology.

PSO7.The students after the completion of this programme will be able to contemplate and comprehend Sociology of Development.

PSO8.The students after the completion of this programme will be able to contemplate and comprehend Indian Rural Society.

PSO9.The students after the completion of this programme will be able to contemplate and comprehend Classical Sociological Theories.

PSO10.The students after the completion of this programme will be able to contemplate and comprehend Social Movements in India.

PSO11.The students after the completion of this programme will be able to contemplate and comprehend Perspectives of Study to Indian Society.

PSO12.The students after the completion of this programme will be able to contemplate and comprehend Industry and Society in India.

PSO13.The students after the completion of this programme will be able to contemplate and comprehend Criminology.

PSO14.The students after the completion of this programme will be able to contemplate and comprehend Modern Sociological Theories.

PSO15.The students after the completion of this programme will be able to contemplate and comprehend Comparative Sociology.

PSO16.The students after the completion of this programme will be able to contemplate and comprehend Contemporary issues in Industry.

Course Outcomes (CO)

Course 1: Classical Sociological Tradition

CO1.Students will be able to make sense of modernity by identifying the emergence of sociology as a discipline.



CO2. Students will be able to understand critically and comparatively the methodological preferences of the founders of sociology.

Course 2: Philosophical and Conceptual Foundation of Social Research

CO1. Students will be able to recognize various issues in social research.

CO2. Students will be able to undertake research by selectively choosing and formulating a social research problem.

Course 3: Social Change in India

CO1. Students will be able to perceive disciplinary & inter-disciplinary ideas about the sociology and social change in India.

CO2. Students will be able to recognize the various factors of sociology and social change in India.

Course 4: Rural Sociology

CO1. Students will be able to assimilate the theoretical and empirical knowledge of the past and present rural scenario and approach in rural sociology.

CO2. Students will be able to identify with the various changes and development in rural sociology.

Course 5: Classical Sociological Thinkers

CO1. Students will be able to explain the major themes of Marxian and Weberian perspectives on the social world.

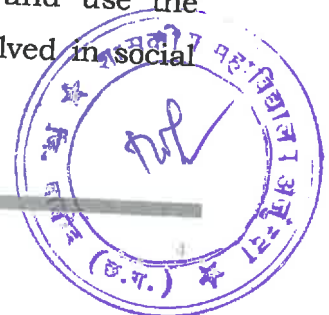
CO2. Students will be able to compare and differentiate between Marxian and Weberian perspectives on the social world.

Course 6: Quantitative Research Techniques in Sociology

CO1. Students will be able to assess, interlink, correlate and use the measures of central tendency and measures of variation involved in social research.

Course 7: Sociology of Development

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CO1. Students will be able to distinguish development theory from development as project and relate project development to environmental degradation and social use/abuse.

Course 8: Indian Rural Society

CO1. Students will be able to absorb the theoretical and empirical knowledge of the past and present rural scenario and intricacies of social fabric in India.

Course 9: Classical Sociological Theories

CO1. Students will be able to recognize the role of a sociological theory in the application of conceptual frameworks in a social research progress.

CO2. Students will be able to comprehend various sociological theories like structuralism and exchange theory.

Course 10: Social Movements in India

CO1. Students will be able to understand the nature and types of social movements in India.

CO2. Students will be able to comprehend the theoretical perspectives of social movements in India.

Course 11: Perspectives of Study to Indian Society

CO1. Students will be able to explain the major methods and concepts used in the systematic study of Indian society, its social classes, its social fabric and its sociological issues.

Course 12: Industry and Society in India

CO1. Students will be able to identify the trends of Industrial disputes in Indian society and their impacts on Indian social classes & sociology.

Course 13: Criminology

CO1. Students will be able to familiarize with mainstream criminological theories.



CO2. Students will be able to apply theories of crime and criminal justice to explain actual and hypothetical scenarios, behaviours and trends.

Course 14: Modern Sociological Theories

CO1. Students will be able to debate on modern sociological theories.

CO2. Students will be able to identify the origin and development of modern sociological theories.

Course 15: Comparative Sociology

CO1. Students will be able to compare the historical and social context of emergence of sociology.

CO2. Students will be able to identify various theoretical concerns in comparative sociology.

Course 16: Contemporary issues in Industry

CO1. Students will be able to ascertain the history, objectives and functions of trade unionism in India.

CO2. Students will be able to contemplate on Industrialization in the third world countries.

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PROGRAMME OUTCOMES, PROGRAMME SPECIFIC OUTCOMES

AND

COURSE OUTCOMES

M.A. Political Science – 4 Semesters Postgraduate

programme Outcomes (PO)

PO1. Students would be able to think critically on political issues and its national & global implications.

PO2. Students would be able to shoulder socio-political responsibilities in its true form and hence develop into a better citizen.

PO3. Students would be able to perceive political issues both objectively and subjectively.

PO4. Students would be able to develop better socio-political awareness and interaction skills for greater exchange of political thoughts and socio-political ideas.

PO5. The students will be able to think critically and take informed decisions after identifying the accuracy and validity of their assumptions and ideas from intellectual, organizational, and personal perspectives.

PO6. The students will be able to communicate effectively through speaking, reading, writing and listening clearly in one Indian language and thereby express themselves to the world by connecting with different ideas, books, people, media and technology.

PO7. The students will be able to interact socially and stimulate views, reconcile disagreements and help reach consensual conclusions.

PO8. The students will be able to demonstrate compassionate social concern and act with a cognizant awareness of issues to contribute in civic life by

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volunteering impartially towards national development and thereby deliver effective citizenship.

PO9. The students will be able to ethically recognize different value systems, understand the moral dimensions of individual decisions and accept responsibility for them.

PO10. The students will be able to recognize the issues of environmental perspectives and appreciate sustainable development for long term environmental sustainability.

PO11. The students will be able to engage themselves in life-long self-determining and learning in the comprehensive background of socio-technological changes for continued self-directed and life-long learning.

Programme Specific Outcomes (PSO)

PSO1. The students after the completion of this programme will be able to proactively contemplate and comprehend Indian Political Thought.

PSO2. The students after the completion of this programme will be able to proactively contemplate and comprehend Indian Government and Politics.

PSO3. The students after the completion of this programme will be able to proactively contemplate and comprehend Comparative Politics.

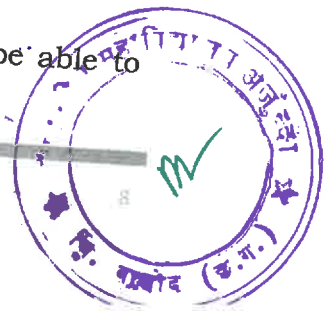
PSO4. The students after the completion of this programme will be able to proactively contemplate and comprehend International Organization.

PSO5. The students after the completion of this programme will be able to critically contemplate and comprehend Western Political Thought.

PSO6. The students after the completion of this programme will be able to proactively contemplate and comprehend and actively participate in state Politics in India.

PSO7. The students after the completion of this programme will be able to critically contemplate and comprehend Comparative Politics of Developing Countries.

PSO8. The students after the completion of this programme will be able to critically contemplate and comprehend Indian Foreign Policy.



PSO9.The students after the completion of this programme will be able to deeply contemplate and comprehend Principles of International Politics.
PSO10.The students after the completion of this programme will be able to proactively contemplate and comprehend and critically gauge Public Administration – I.

PSO11.The students after the completion of this programme will be able to proactively contemplate and comprehend and apply the principles of Research Methodology - I in political issues.

PSO12.The students after the completion of this programme will be able to proactively and critically contemplate and comprehend and perform a participatory role in Government and Politics of Chhattisgarh.

PSO13.The students after the completion of this programme will be able to critically contemplate and comprehend Contemporary of International Politics.

PSO14.The students after the completion of this programme will be able to proactively contemplate and comprehend and critically gauge Public Administration – II.

PSO15.The students after the completion of this programme will be able to proactively contemplate and comprehend and apply the principles of Research Methodology - II in political issues.

PSO16.The students after the completion of this programme will be able to critically and proactively contemplate and comprehend Political Ideologies and Modern Political Thought and choose the best suitable one for individual's, society's, state's and nation's uprising.

Course Outcomes (CO)

Course 1: Indian Political Thought

CO1.The students will be able to critically contemplate and comprehend on Indian Political thought and philosophical thinkers. CO2.The students will



be able to critically contemplate and comprehend about the new thinkers like Nehru, Deendayal Upadhyay, AbdulKalam etc.

Course 2: Indian Government and Politics

CO1.The students will be able to critically explain the politics, governance and authority of India.

CO2.The students will be able to critically assess the information about racism, regionalism, communalism, criminalization and corruption and be refrained from such politics and politicians.

Course 3: Comparative Politics

CO1.The students will be able to critically judge the useful information about the probable consequences of different political order.

CO2.The students will be able to critically assess the constitutions or party systems of different countries and voluntarily participate to bring positive changes in Indian political atmosphere.

Course 4: International Organization

CO1.The students will be able to critically decide upon the scope and subject matter of International relation.

CO2.The students will be able to critically assess the basic concepts like Globalization in contemporary world order.

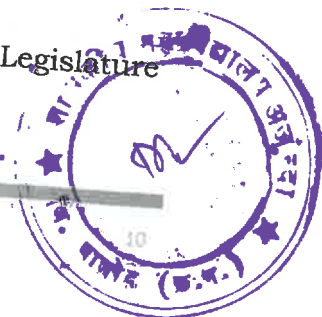
Course 5: Western Political Thought

CO1.The students will be able to critically understand the dominant feature of ancient western political thought.

CO2.The students will be able to critically assess features of medieval political thought.

Course 6: State Politics in India

CO1.The students will be able to critically understand the State Legislature and State Executives.



CO2.The students will be able to critically assess the demand for State Autonomy.

Course 7: Comparative Politics of Developing Countries

CO1.The students will be able to critically understand the classification of Government.

CO2.The students will be able to critically assess the political development, political Elites, Political socialization, Political Modernization.

Course 8: Indian Foreign Policy

CO1.The students will be able to critically ascertain the increasing India's influence in the international platform.

CO2.The students will be able to critically assess India's foreign policy and India's engagement with the rest of the world.

CO3.The students will be able to critically examine India's foreign relations with her neighbours.

Course 9: Principles of International Politics

CO1.The students will be able to critically assess the evolution of International politics.

CO2.The students will be able to critically contemplate the theories of International politics.

CO3.The students will be able to critically examine the nature and developments in International politics.

Course 10: Public Administration – I

CO1.The students will be able to critically ascertain the concept of administration in India.

CO2.The students will be able to critically compare traditional approach and new approaches.



CO3.The students will be able to critically examine the structure and operation of public organizations.

Course 11: Research Methodology – I

CO1.The students will be able to critically ascertain and apply various research methods used in social science by drawing upon a range of theoretical and empirical research in survey studies of political science.

CO2.The students will be able to critically examine the theoretical aspects comprising an exploration of various theories, concepts and term that are part of the research methodology in survey studies of political science.

Course 12: Government and Politics of Chhattisgarh

1.The students will be able to critically ascertain and comprehend the main determining factors and features of state politics in Chhattisgarh.

CO2.The students will be able to critically assess the various national movements in Chhattisgarh and major social reformist and political leaders.

Course 13: Contemporary of International Politics

CO1.The students will be able to critically ascertain and comprehend the fundamental theories and themes of contemporary International politics.

CO2.The students will be able to critically think, analyze information, and express their ideas clearly in the practice of International politics.

Course 14: Public Administration – II

CO1.The students will be able to critically ascertain the importance of public administration in India.

CO2.The students will be able to critically examine the characteristics of public administration in India.

CO3.The students will be able to critically assess the operations of public organizations in India.



Course 15: Research Methodology – II

CO1.The students will be able to perform the critical review of published political science literature and research for advancement of new research and development in political science.

CO2.The students will be able to critically examine the research methodology used in survey studies of political science.

CO3.The students will be able to critically analyse the data used in survey studies of political science and comprehend the data based conclusive interpretations for political survey studies in India.

Course 16: Political Ideologies and Modern Political Thought

CO1.The students will be able to perform the critical comprehension, review and assessment of various concepts like Individualism, Existentialism, Feminism, Liberalism, Socialism etc prevalent in national and international political scene.

CO2.The students will be able to critically contemplate, assess and review of political thinkers like Antonio Gramsci, Jean Paul Sartre and their political views and opinions.







PROGRAMME OUTCOMES, PROGRAMME SPECIFIC OUTCOMES

AND

COURSE OUTCOMES

M.Com. – 4 Semesters Postgraduate programme**Programme Outcomes (PO)**

PO1. The Master of Commerce (M.Com.) semester wise programme offered by the College accomplishes the students to cash in on the opportunities and overcome the challenges in the field of commerce by providing systematic learning of managerial economics, advance accounting, income tax law & account, statistical analysis, corporate legal framework, business economics, specialized accounting, tax planning & management, advanced statistics, business law, management concept, organizational behaviour, advanced cost accounting, management accounting, accounting for managerial decisions, principles of marketing, advertising & sales management, marketing research, international marketing and research project work. The students after the completion of this programme become well prepared to take up various professional assignments, engagements and jobs in medium to large scale business establishments, industries, commercial set-ups and other public/private commercial sectors like banking, stock-exchange, insurance, NBFCs as accountants, investment bankers, business analysts, finance officers, business / financial advisors etc.

PO2. The students after the completion of this programme will be enabled to overcome the challenges and cash in the opportunities in the field of commerce.

PO3. The students after the completion of this programme will become well prepared to take up various professional assignments, engagements and jobs in medium to large scale business establishments, industries,



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commercial set-ups and other public/private commercial sectors like banking, stock exchange, insurance, NBFCs as accountants, investment bankers, business analysts, finance officers, business / financial advisors etc.

PO4. The students will be able to think critically and take informed decisions after identifying the accuracy and validity of their assumptions and ideas from intellectual, organizational, and personal perspectives.

PO5. The students will be able to communicate effectively through speaking, reading, writing and listening clearly in one Indian language and thereby express themselves to the world by connecting with different ideas, books, people, media and technology.

PO6. The students will be able to interact socially and stimulate views, reconcile disagreements and help reach consensual conclusions.

PO7. The students will be able to demonstrate compassionate social concern and act with cognizant awareness of issues to contribute in civic life by volunteering impartially towards national development and thereby deliver effective citizenship.

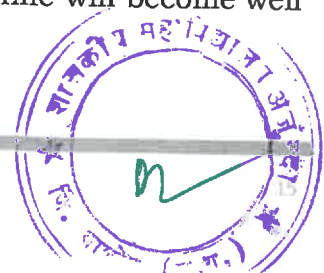
PO8. The students will be able to ethically recognize different value systems, understand the moral dimensions of individual decisions and accept responsibility for them.

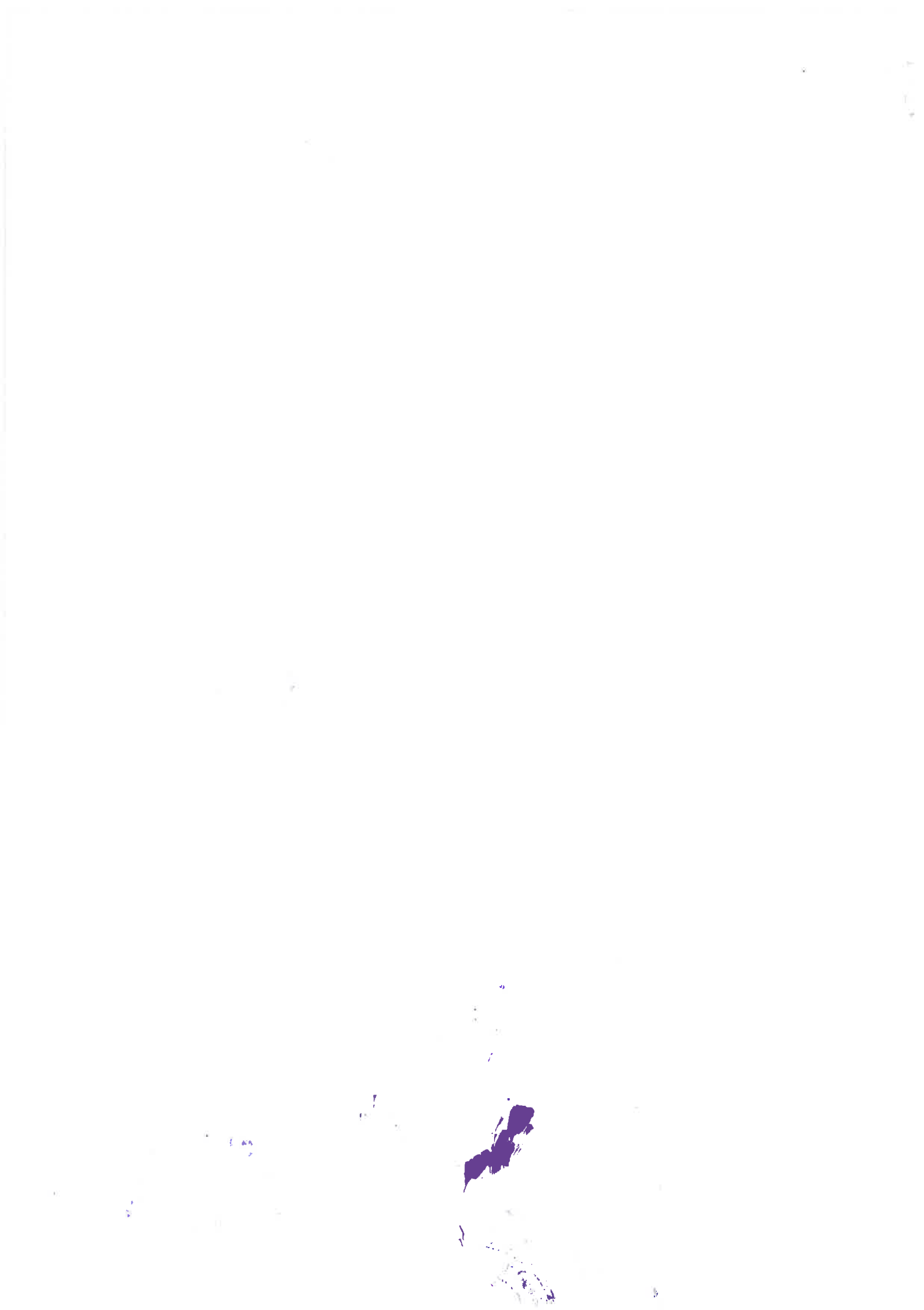
PO9. The students will be able to recognize the issues of environmental perspectives and appreciate sustainable development for long term environmental sustainability.

PO10. The students will be able to engage themselves in life-long self-determining and learning in the comprehensive background of socio-technological changes for continued self-directed and life-long learning.

Programme Specific Outcomes (PSO)

PSO1. The students after the completion of this programme will become well versed with Managerial Economics.





PSO2. The students after the completion of this programme will become well versed with Advance Accounting.

PSO3. The students after the completion of this programme will be able to understand Income Tax Law and Account.

PSO4. The students after the completion of this programme will be able to understand Statistical Analysis.

PSO5. The students after the completion of this programme will be able to identify a Corporate Legal Framework.

PSO6. The students after the completion of this programme will be able to understand the Business Economics.

PSO7. The students after the completion of this programme will be able to understand the essentials of Specialized Accounting. PSO8. The students after the completion of this programme will be able to understand the essentials of Tax Planning and Management.

PSO9. The students after the completion of this programme will be able to understand the essentials of Advanced Statistics.

PSO10. The students after the completion of this programme will be able to understand the principles of Business Law.

PSO11. The students after the completion of this programme will be able to understand the essentials of Management Concept.

PSO12. The students after the completion of this programme will be able to understand the fundamentals of Organizational Behaviour.

PSO13. The students after the completion of this programme will be able to understand the principles of Advance Cost Accounting.

PSO14. The students after the completion of this programme will be able to recognize the procedures of Management Accounting.

PSO15. The students after the completion of this programme will be able to understand the essentials, principles and procedures of Accounting for





Managerial Decisions. PSO16. The students after the completion of this programme will be able to understand the Principles of Marketing.

PSO17. The students after the completion of this programme will be able to understand the procedures of Advertising and Sales Management.

PSO18. The students after the completion of this programme will be able to understand the essentials and fundamentals of Marketing Research.

PSO19. The students after the completion of this programme will be able to understand the essentials and fundamentals of International Marketing.

PSO20. The students after the completion of this programme will be able to do Project Work in various fields of commerce studies.

Course Outcomes (CO)

Course 1: Managerial Economics

CO1. The students after the completion of this course will be able to comprehend with the basic concepts, terms & provisions of managerial economics.

CO2. The students after the completion of this course will be able to determine the prices under different market forms.

CO3. The students after the completion of this course will be able to comprehend with the concepts of inflation, slowdown, deflation, stagflation and recession in an economy.

Course 2: Advance Accounting

CO1. The students after the completion of this course will be able to comprehend with the basic accounting structure of companies.

CO2. The students after the completion of this course will be able to find out how a company can dissolve by liquidating its assets or through bankruptcy and insolvency.



100

CO3. The students after the completion of this course will be able to comprehend with the viable and operational accounting format of companies.

Course 3: Income Tax Law and Account

CO1. The students after the completion of this course will be able to compute total income and define tax compliances & strictures.

CO2. The students after the completion of this course will be able to file IT return on individual basis.

CO3. The students after the completion of this course will be able to comprehend with the amendments made from time to time in finance Act.

Course 4: Statistical Analysis

CO1. The students after the completion of this course will be able to independently calculate basic statistical parameters applied in commerce and accounting.

CO2. The students after the completion of this course will be able to comprehend probability theory and probability distributions in relation to general statistical analysis done in commerce and accounting.

Course 5: Corporate Legal Framework

CO1. The students after the completion of this course will be able to comprehend the commercial and accounting concepts of a company and its shares for public listings.

CO2. The students after the completion of this course will be able to comprehend the use of M/A and prospectus in a company of commerce and accounting.

CO3. The students after the completion of this course will be able to get acquainted with the negotiable instruments (Cheque, Holder and Holder in due course).

Course 6: Business Economics



1000

CO1. The students after the completion of this course will be able to comprehend the causes and consequences of business cycle.

CO2. The students after the completion of this course will be able to comprehend the factors in commerce and accounting that contribute to and detract from long-term economic growth.

Course 7: Specialized Accounting

CO1. The students after the completion of this course will be able to ascertain the knowledge of Banking and insurance companies accounts.

CO2. The students after the completion of this course will be able to comprehend the systems of double account system and maintenance accounts.

CO3. The students after the completion of this course will be able to get acquainted with the basic concepts of royalty and Investments account.

Course 8: Tax Planning and Management

CO1. The students after the completion of this course will be able to ascertain the concepts of TDS and advance payment of tax.

CO2. The students after the completion of this course will be able to comprehend the provisions of various taxes rebates & reliefs and procedure to file IT return.

CO3. The students after the completion of this course will be able to get acquainted with the concept of recovery and refund of tax.

Course 9: Advanced Statistics

CO1. The students after the completion of this course will be able to ascertain the concepts of the statistical decision theory & statistical estimations in commerce and accounting.

CO2. The students after the completion of this course will be able to comprehend the provisions of statistical quality control & the procedures of sampling Methodism commerce and accounting.





CO3. The students after the completion of this course will be able to interpret the meaning of the calculated statistical indicators in commerce and accounting.

Course 10: Business Law

CO1. The students after the completion of this course will be able to ascertain the consumer rights under consumer protection Act 1986.

CO2. The students after the completion of this course will be able to comprehend the international trade concepts used in global market decisions.

CO3. The students after the completion of this course will be able to comprehend and interpret the legal environments for security markets.

Course 11: Management Concept

CO1. The students after the completion of this course will be able to ascertain the objectives of managerial reporting.

CO2. The students after the completion of this course will be able to fulfill the reporting requirements at different levels of management.

CO3. The students after the completion of this course will be able to get acquainted with the objectives of managerial reporting and reporting requirements.

CO4. The students after the completion of this course will be able to comprehend and interpret the requirements of management.

Course 12: Organizational Behaviour

CO1. The students after the completion of this course will be able to develop an understanding regarding the role of leaders in decision making process.

CO2. The students after the completion of this course will be able to fulfil the requirements of communication skills at different levels of leadership.

CO3. The students after the completion of this course will be able to analyse the challenges and opportunities in the field of organizational behaviour.





Course 13: Advance Cost Accounting

CO1. The students after the completion of this course will be able to develop the impact knowledge of basic cost concepts, elements of cost, ascertainment of materials and labour cost.

CO2. The students after the completion of this course will be able to analyse the various methods of costing and their applications.

CO3. The students after the completion of this course will be able to determine various levels of material cost i.e. – reorder level, minimum level, EOQ for managing working capital.

Course 14: Management Accounting

CO1. The students after the completion of this course will be able to get acquainted with a separate branch of accounting.

CO2. The students after the completion of this course will be able to analyse the management accounting and its relevance in a business organization.

CO3. The students after the completion of this course will be able to familiarize with the management control system.

CO4. The students after the completion of this course will be able to fulfill the requirements of management sense and responsibilities.

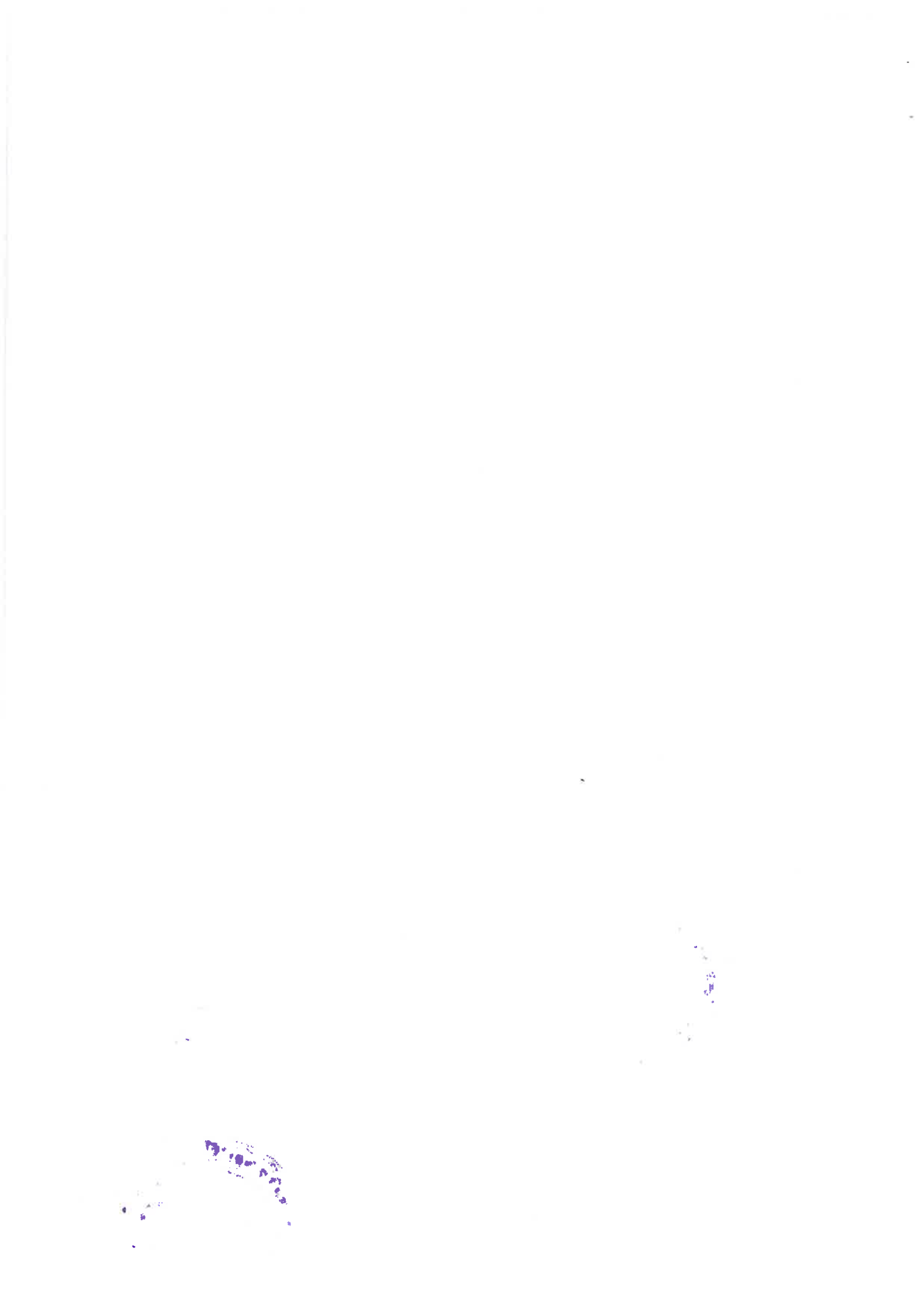
Course 15: Accounting For Managerial Decisions

CO1. The students after the completion of this course will be able to ascertain the applicability of certain techniques of management i.e. – Target costing, ABC costing, Value chain analysis.

CO2. The students after the completion of this course will be able to analyse the essentials of capital budgeting and use different techniques of capital budgeting.

CO3. The students after the completion of this course will be able to familiarize with contemporary issues in management.





CO4. The students after the completion of this course will be able to fulfil the requirements of accounting management sense and responsibilities.

Course 16: Principles of Marketing

CO1. The students after the completion of this course will be able to ascertain the applicability of certain principle techniques and fundamentals of marketing.

CO2. The students after the completion of this course will be able to analyse product life-aide.

CO3. The students after the completion of this course will be able to familiarize with the significance & contribution of marketing to the business enterprise.

Course 17: Advertising and Sales Management

CO1. The students after the completion of this course will be able to ascertain the applicability of concepts of advertising, media of advertising & its influence on buying habits of consumers.

CO2. The students after the completion of this course will be able to promote sales by applying the methods and techniques of sales promotion.

Course 18: Marketing Research

CO1. The students after the completion of this course will be able to ascertain the applicability of concepts of marketing research.

CO2. The students after the completion of this course will be able to apply & promote marketing research procedures, methods & techniques.

CO3. The students after the completion of this course will be able to ascertain the significance, importance and requirements for introduction of new products and new markets.

Course 19: International Marketing



CO1. The students after the completion of this course will be able to ascertain the applicability of concepts of EXIM policy, International transport system & International product life cycle.

CO2. The students after the completion of this course will be able to apply & promote themselves for employment as well as self-employment in international businesses dealing with variety of innovative products & services.

Course 20: Project Work

CO1. The students after the completion of this course will be able to ascertain the applicability of concepts of Research and Research Methodology.

CO2. The students after the completion of this course will be able to represent data in tabular and graphic manner for convenient interpretation.

CO3. The students after the completion of this course will be able to familiarize with Research and Research problems.

CO4. The students after the completion of this course will be able to develop skills to write Research papers.

CO5. The students after the completion of this course will be able to comprehend and apply the quantitative methods of Research.





कार्यालय प्राचार्य

शासकीय महाविद्यालय अर्जुन्दा, जिला-बालोद (छ0ग0)

website : www.gcarjunda.com NAAC grade B E-mail: govtcollege.arjunda1988@gmail.com

PROGRAMME OUTCOMES, PROGRAMME SPECIFIC OUTCOMES

AND

COURSE OUTCOMES

M.A. Economics – 4 Semesters Postgraduate programme**Programme Outcomes (PO)**

PO1. The M.A. Economics semester wise programme offered by the College accomplishes the students to cash in on the opportunities and overcome the challenges in the field of economics by providing systematic learning of Economics – Micro, Macro, Quantitative, Indian, Industrial, Research, Indian policy, Labour, Growth, International, Public, Environmental, Demography, Development & Planning, Social sector and Viva-Voce. The students after the completion of this programme become well prepared to take up various professional assignments, engagements and jobs in medium to large scale business establishments, industries, commercial set-ups and other public/private commercial sectors like banking, stock-exchange, insurance, NBFCs as accountants, investment bankers, business analysts, finance officers, business / financial advisors, policy making etc.

PO2. The students after the completion of this programme will be enabled to overcome the challenges and cash in the opportunities in the field of economics.

PO3. The students after the completion of this programme will become well prepared to take up various professional assignments, engagements and jobs in medium to large scale business establishments, industries, commercial set-ups and other public/private commercial sectors like banking, stockex change, insurance, NBFCs as accountants, investment bankers, business analysts, finance officers, business / financial advisors, policy making etc.

GOVT. COLLEGE ARJUNDA (L.G.)

Dr. Sharmada Sahu
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PRINCIPAL
Govt. College, Arjunda
Distt. Balod (C.G.)



PO4. The students will be able to think critically and take informed decisions after identifying the accuracy and validity of their assumptions and ideas from intellectual, organizational, and personal perspectives.

PO5. The students will be able to communicate effectively through speaking, reading, writing and listening clearly in one Indian language and thereby express themselves to the world by connecting with different ideas, books, people, media and technology.

PO6. The students will be able to interact socially and stimulate views, reconcile disagreements and help reach consensual conclusions.

PO7. The students will be able to demonstrate compassionate social concern and act with cognizant awareness of issues to contribute in civic life by volunteering impartially towards national development and thereby deliver effective citizenship.

PO8. The students will be able to ethically recognize different value systems, understand the moral dimensions of individual decisions and accept responsibility for them.

PO9. The students will be able to recognize the issues of environmental perspectives and appreciate sustainable development for long term environmental sustainability.

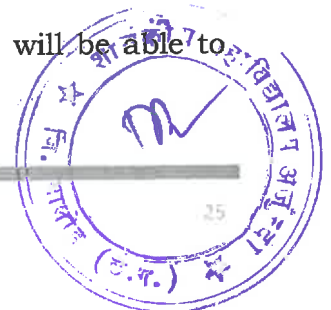
PO10. The students will be able to engage themselves in life-long self-determining and learning in the comprehensive background of socio-technological changes for continued self-directed and life-long learning.

Programme Specific Outcomes (PSO)

PSO1. The students after the completion of this programme will become well versed with Micro Economics-I.

PSO2. The students after the completion of this programme will become well versed with Macro Economics-I.

PSO3. The students after the completion of this programme will be able to understand Quantitative Methods.



PSO4. The students after the completion of this programme will be able to understand Indian Economy.

PSO5. The students after the completion of this programme will be able to identify Industrial Economics.

PSO6. The students after the completion of this programme will be able to understand the Micro Economics-II.

PSO7. The students after the completion of this programme will be able to understand the essentials of Macro Economics-II.

PSO8. The students after the completion of this programme will be able to understand the essentials of Research Methodology and Computer Application.

PSO9. The students after the completion of this programme will be able to understand the essentials of Indian Economic Policy.

PSO10. The students after the completion of this programme will be able to understand the principles of Labour Economics.

PSO11. The students after the completion of this programme will be able to understand the essentials of Economics of Growth.

PSO12. The students after the completion of this programme will be able to understand the fundamentals of International Trade.

PSO13. The students after the completion of this programme will be able to understand the principles of Public Finance.

PSO14. The students after the completion of this programme will be able to recognize the procedures of Environmental Economics.

PSO15. The students after the completion of this programme will be able to understand the essentials, principles and procedures of Demography.

PSO16. The students after the completion of this programme will be able to understand the principles of Economics of Development and Planning.

PSO17. The students after the completion of this programme will be able to understand the procedures of International Economics.



PSO18. The students after the completion of this programme will be able to understand the essentials and fundamentals of Public Economics.

PSO19. The students after the completion of this programme will be able to understand the essentials and fundamentals of Economics of Social Sector.

PSO20. The students after the completion of this programme will be able to do Viva-Voce in various fields of commerce studies.



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कार्यालय प्राचार्य
शासकीय महाविद्यालय अर्जुन्दा, जिला-बालोद (छ0ग0)

website : www.gcarijunda.com NAAC grade B E-mail: govtcollege.arjunda1988@gmail.com

PROGRAMME OUTCOMES, PROGRAMME SPECIFIC OUTCOMES
AND
COURSE OUTCOMES

Department of Mathematics

Master of Science (Mathematics)

OBJECTIVES OF THE PROGRAMME:

The college follows Hemchand Yadav University, Durg syllabus for M.Sc. course.

The objectives of the prescribed course are:


1. In their fields and the ability to apply their expertise to novel and emerging problems.
2. Able to state a research problem, apply research methods, tools for data collection, analyze and interpret research data.
3. Student can communicate their research clearly and professionally in both written and oral forms appropriate to the field through publications, conference papers, seminars etc.

COURSE OUTCOME:

On completion of this course, the students will be able to: -

- Identify the concept of Normal groups and Quotients groups.
- Concentrate on a particular Euclidean ring and other forms of Polynomial rings.
- Study in detail the Mean value theorem and Taylor's theorem.
- Locate Sequence and Series comprising convergence sequences, upper and lower limits.
- Understand Local properties of Analytic functions.
- Analyze Analytic functions and exponential functions.
- Discuss and understand the importance of the concepts Graph and Lattice, Algebraic Structure.

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- Study the properties of trees and connectivity.
- Understand the elements of Galois Theory.
- Discuss connected spaces, the components of a space and totally disconnected spaces.
- Study Continuous linear transformations and the Hahn-Banach theorem.
- Understand the Open Mapping Theorem and its applications.
- Apply Duality to solve problems in Linear Programming.
- Study Assignment Problem and its applications.

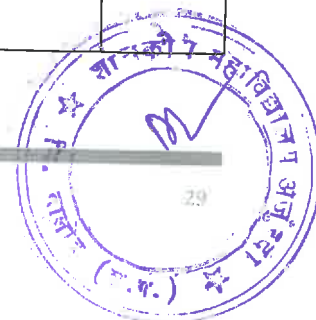
M.Sc. (Mathematics) Semester-I

There shall be five papers. Each paper shall have 100 marks. Overall tally of marks will be 500. Papers

Paper	Description	Theory	Sessional	Practical	Total Marks
I	Advance Algebra (I)	80	20	-	100
II	Real Analysis (I)	80	20	-	100
III	Topology	80	20	-	100
IV	Advance Complex Analysis	80	20	-	100
V	Advance Discrete Mathematics (I)	80	20	-	100

M.Sc. (Mathematics) Semester -II

Paper	Description	Theory	Sessional	Practical	Total Marks
I	Advance Algebra (II)	80	20	-	100
II	Real Analysis (II)	80	20	-	100
III	General Algebraic and Topology	80	20	-	100
IV	Advance Complex Analysis-II	80	20	-	100
V	Advance Discrete Mathematics (I)	80	20	-	100



M.Sc. (Mathematics) Semester-III

There shall be five papers. Two compulsory and three optional papers. Each paper shall have 100 marks. The paper which has theory and practical both, the theory part shall have 70 marks and practical part shall have 30 marks. Overall tally of marks in theory and practical will be 500

Paper	Description	Theory	Sessional	Practical	Total Marks
Compulsory papers					
I	Integration theory and Functional analysis (I)	80	20	-	100
II	Partial Differential equation and Mechanics (I)	80	20	-	100
Optional Papers					
III (C)	Fuzzy Set theory & its applications	80	20	-	100
IV (A)	Operation Research (I)	80	20	-	100
V (A)	Programming in C (with ANSI Features) (I)	70	-	30	100

M.Sc. (Mathematics) Semester-IV

There shall be five papers. Two compulsory and three optional papers. Each paper shall have 100 marks. The paper which has theory and practical both, the theory part shall have 70 marks and practical part shall have 30 marks. Overall tally of marks in theory and practical will be 500.

Paper	Description	Theory	Sessional	Practical	Total Marks
Compulsory papers					
I	Functional Analysis (II)	80	20	-	100
II	Partial Differential equation and Mechanics (I)	80	20	-	100
Optional Papers					
III (C)	Fuzzy Set theory & its applications	80	20	-	100



IV (A)	Operation Research (II)	80	20	-	100
V (A)	Programming in C (with ANSI Features) (II)	70	-	30	100

PROGRAMME OUTCOME

On completion of the programme, the student will be able to:-

- Investigate and solve unacquainted mathematics problem.
- Develop the Knowledge of create Mathematical models to solve real world problem.
- Apply mathematical problems and solutions in a variety of contexts related to science, technology, business and industry, and illustrate these solutions using symbolic, numeric, or graphical methods.
- Demonstrate basic manipulative skills in algebra, operation Research, real analysis and functional analysis.
- Develop mathematical skill to solve problems
- Develop research skill.

PROGRAMME SPECIFIC OUTCOMES

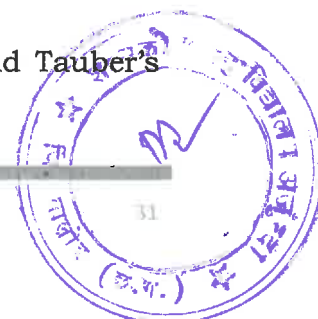
The course of M.Sc.(Mathematics) Semester-I has been divided into five papers.

PSO-01: Advanced Abstract Algebra (I) paper code 309

- Gain Knowledge in Groups - Normal and Subnormal series.
- Study about Field theory- Extension fields, Algebraic and transcendental extensions.
- Gain Knowledge about Perfect fields, Finite fields and algebraically closed fields.
- Study about Automorphisms of extensions and Galois extensions.
- Solve polynomial equations by radicals and Insolvability of the general equation of degree 5 by radicals.

PSO-02: Real Analysis (I), paper code 310

- Gain knowledge regarding Sequences and series and uniform convergence.
- Study the uniqueness theorem for power series, Abel's and Tauber's theorems.



- Solve functions of several variables and linear transformations.
- Learn the concept Jacobians, extremum problems with constraints and Lagrange's multiplier method.
- Solve Partitions of unity, Differential forms and Stoke's theorem.

PSO-03: Topology (I), paper code 311

- Understand Bases and sub-bases, Subspaces and relative topology.
- Gains knowledge regarding First and Second Countable spaces.
- Study Separation axiom their Characterizations and basic properties.
- Gain knowledge in the concept of Local compactness and one point compactification.
- Study Compactness in metric spaces and Equivalence of compactness.

PSO-04: Complex Analysis (I), paper code 312

- Understand Complex integration, Cauchy-Goursat and Higher order derivatives, Morera's Theorem.
- Learns about the Maximum modulus principle, Schwarz lemma and the argument principle, Rouché's theorem Inverse function theorem.
- Study will be Cauchy's residue theorem, Evaluation of integrals and branches of many valued functions.
- Knowledge gain about the bilinear transformations, their properties and classifications, Definitions and examples of conformal mappings.
- Solve Spaces of analytic functions, Hurwitz's theorem and Montel's theorem Riemann mapping theorem.

PSO-05: Advanced Discrete Mathematics (I) paper code 313.

- Students about the concept of Formal Logic-Statements and Symbolic Representation and Tautologies.
- Gains knowledge in the concepts of Homomorphism of semigroups and monoids, Congruence relation and Quotient Semigroups.
- Identify types of Lattices-Lattices as partially ordered sets, their properties, Lattices as Algebraic Systems, Sub lattices, Direct products, and Homomorphisms.



- Solve Applications of Boolean Algebra to Switching Theory (using AND, OR and NOT gates) and The Karnaugh Map Method.
- Learns about the Grammars and Languages-Phrase-Structure Grammars and Rewriting Rules, Derivations, Sentential Forms, Language generated by a Grammar.

The course of M.Sc. (Mathematics) Semester-II has been divided into five papers:

PSO-06: Advanced Abstract Algebra (II), paper code 459

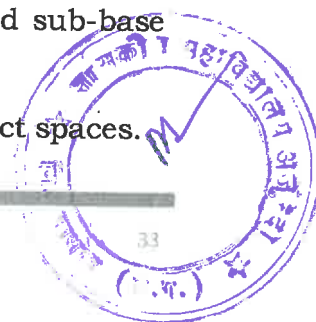
- Gain knowledge Modules - Cyclic modules, Simple modules, Semi-simple modules and Schuler's Lemma.
- Study about the concept of Linear Transformations - Algebra of linear transformation.
- Learns the Canonical Forms - Similarity of linear transformations and Invariant subspaces.
- Understand Fundamental structure theorem for finitely generated modules over a Principal ideal domain.
- Study about the concept Rational canonical form and generalised Jordan form over any field.

PSO-07: Real Analysis (II), paper code 460

- Learns about the definition and existence of Riemann-Stieltjes integral and Properties of the Integral.
- Learns about the Lebesgue outer measure.
- Solve uniqueness of Extension, Integration with respect to a measure, Reimann and Lebesgue Integrals.
- Solve the four derivatives, Lebesgue Differentiation Theorem and Differentiation and Integration.
- Study the Functions of Bounded variation. The L -spaces. Convex functions.

PSO-08: General and Algebraic Topology (II), paper code 461

- Study the Tychonoff product topology in terms of standard sub-base and its characterizations.
- Gain Knowledge Product spaces, Connectedness and product spaces.



- Study about the Embedding and metrization, The Nagata-Smirnov metrization theorem.
- Identify types of Nets and filter. Topology and convergence of nets. Hausdorffness and nets.
- Learns the concept of the fundamental group and covering spaces-Homotopy of paths.

PSO-09: Advanced Complex Analysis (II), paper code 462

- Study about the Weierstrass' factorisation theorem, Gamma function and its properties and Riemann Zeta function.
- Learns the methods and properties analytic Continuation, Uniqueness of direct analytic continuation and Uniqueness of analytic continuation along a curve.
- Solve Harmonic functions on a disk, Harnack's inequality and theorem and Dirichlet Problem.
- Learns the concept of Canonical products, Jensen's formula and Poisson-Jensen formula.
- Student will be the range of an analytic function, Bloch's theorem and The Little Picard theorem.

PSO-10: Advanced Discrete Mathematics (II), paper code 463

- Gain knowledge Graph Theory-Definition of (Undirected) Graphs, Paths, Circuits, Cycles, and Subgraphs and Induced Subgraphs.
- Verify the Spanning Trees, Cut-sets, Fundamental Cut -sets, Cycle. Minimal Spanning Trees and Kruskal's Algorithm.
- Solve directed Graphs, In degree and Out degree of a Vertex, Weighted undirected Graphs and Dijkstra's Traversals.
- Understand Introductory Computability Theory-Finite State Machines and their Transition Table Diagrams.
- Able to solve finite Automata, Acceptors, Non-deterministic Finite Automata and equivalence of its power to that of Deterministic Finite Automata.

The course of M.Sc. (Mathematics) Semester-III has been divided into five papers:



PSO-11: Integration Theory and Functional Analysis (I), paper code 612

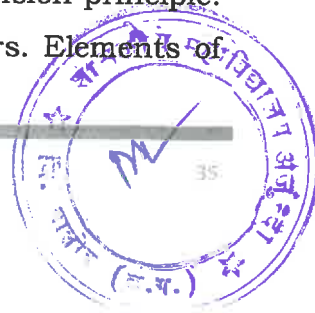
- Solve Signed measure, Hahn decomposition theorem, mutually singular measures. Radon-Nikodym theorem.
- Study about the Lebesgue-Stieltjes integral, product measures, Fubini's theorem, Differentiation and Integration.
- Identify types of Baire sets, Baire measure, continuous functions with compact support.
- Learns the method Riesz Lemma, basic properties of finite dimensional normed linear spaces and compactness.
- Gain knowledge normed linear spaces of bounded linear transformations, dual spaces with examples.

PSO-12: Partial Differential Equations and Mechanics (I), paper code 613

- Study about the concept of Mean Value Formulas, Properties of Harmonic Functions, Green's Function, energy Methods.
- Gain knowledge Heat Equation-Fundamental Solution, Mean Value Formula, Properties of Solutions and Energy Methods.
- Solve Energy equation for conservative fields and Hamilton's variables.
- Solve Poisson's Bracket, Poisson's Identity and Jacobi-Poisson Theorem.
- Solve Laplace and Poisson equations, Work done by self attracting systems.

PSO-13: Fuzzy Set theory and its applications(I), Optional paper code 616 (C)

- Study of Fuzzy sets-Basic definitions, α -level sets. Convex fuzzy sets. Basic operations on fuzzy sets. Types of fuzzy sets. Cartesian products, Algebraic products. Bounded sum and difference, t-norms and t-conorms.
- To study of the Extension Principle- The Zadeh's extension principle. Image and inverse image of fuzzy sets. Fuzzy numbers. Elements of fuzzy arithmetic.



- To study of Fuzzy Relations on Fuzzy sets, Composition of Fuzzy relations. MinMax composition and its properties.
- To study of Fuzzy equivalence relations. Fuzzy compatibility relations. Fuzzy relation equations. Fuzzy graphs, Similarity relation.
- Possibility Theory-Fuzzy measures. Evidence theory. Necessity measure. Possibility measure. Possibility distribution. Possibility theory and fuzzy sets. Possibility theory versus probability theory.

PSO-14: Operations Research (I), Optional paper(A), paper code 618

- Gain knowledge in advance Operations Research and its Scope, Necessity of Operations Research in Industry and Linear Programming-Simplex Method.
- Solve Other Algorithms for Linear Programming-Dual Simplex Method.
- Students will be familiar with the techniques Parametric Linear Programming.
- Solve Transportation and Assignment Problems.
- Study about the Minimum Cost Flow Problem, Network Simplex Method, Project Planning and Control I with PERT and CPM.

PSO-15: Programming in C (with ANSI features) Theory and Practical (I), optional paper(A), paper code 620.

- Solve Expressions, Assignment Statements, Formatting Source Files, Continuation Character and The Pre-processor.
- Study about Scalar Data Types-Declarations, Different Types of Integers and Different kinds of Integer Constants.
- Gain knowledge the break and continue Statements. The goto statement. Infinite Loops.
- Understand basic notions Binary Arithmetic Operators, Arithmetic Assignment Operators, Increment and Decrement Operators.
- Identify types Arrays -Declaring an Array, Arrays and Memory, Initializing Arrays, Encryption and Decryption.



The course of M.Sc. (Mathematics) Semester-IV has been divided into five papers: -

PSO-16: Functional Analysis (II), paper code 762

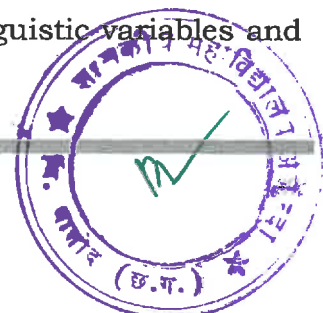
- Gain Knowledge Uniform boundedness theorem and some its consequences, Open mapping and closed graph theorems.
- Develop the knowledge Solvability of linear equations in Banach spaces and the closed Range Theorem.
- Learns the method Complete orthonormal sets and Parseval's identity.
- Identify types of Adjoint of an operator on a Hilbert space and Reflexivity of Hilbert spaces.
- Abstract variational boundary-value problem and the generalized Lax-Milgram theorem.

PSO-17: Partial Differential Equations and Mechanics (II), paper code 763

- Understand Non-linear First Order PDE-Complete Integrals, Envelopes, Characteristics, Hamilton Jacobi Equations.
- Solve Fourier and Laplace Transform, Hopf-Cole Transform, Hodograph and Legendre Transforms, Potential Functions.
- Learns about Asymptotics (Singular Perturbations, Laplace's Method, Geometric Optics, Stationary Phase, Homogenization).
- Solve Jacobi's equations, Lee Hwa Chung's theorem, canonical transformations and properties of generating functions.
- Gain Knowledge Lagrange Brackets, and Condition of canonical character of a transformation in terms of Lagrange brackets and Poisson brackets.

PSO-18: Fuzzy Set theory and its applications(II), Optional paper code 763 (C)

- Study about the Fuzzy Logic, overview of classical logic, Multivalued logics, Fuzzy propositions. Fuzzy quantifiers. Linguistic variables and



hedges. Inference from conditional fuzzy propositions, the compositional rule of inference.

- Approximate Reasoning-An overview of Fuzzy expert system. Fuzzy implications and their selection. Multiconditional approximate reasoning. The role of fuzzy relation equation.
- Study of Fuzzy Control-Fuzzy controllers. Fuzzy rule base. Fuzzy inference engine. Fuzzification.
- Defuzzification and the various defuzzification methods (the centre of area, the centre of maxima, and the mean of maxima methods).
- Decision Making in Fuzzy Environment-Individual decision making. Multiperson decision making. Multicriteria decision making. Multistage decision making. Fuzzy ranking methods. Fuzzy linear programming.

PSO-19: Operations Research (II), Optional Paper, paper code 768

- Understand Dynamic Programming-Deterministic and Probabilistic Dynamic programming. • Solve Game Theory-Two-Person, Zero-Sum Games. Games with Mixed Strategies.
- Gain knowledge about Integer Programming-Branch and Bound Technique.
- Learns the basic concept of Applications to Industrial Problems-Optimal product mix and activity levels.
- Study Nonlinear Programming-One/and Multi-Variable Unconstrained Optimization, KuhnTucker Conditions for Constrained Optimization.

PSO-20: Programming in C (with ANSI features) (II) Theory and Practical optional paper, paper code 770.

- Study Storage Classes-Fixed vs, Automatic Duration, Scope, Global variables.
- Learns the basic concept of Pointers Pointer Arithmetic. Passing Pointers as Function Arguments
- Gain knowledge in Functions-Passing Arguments. Declarations and Calls. Pointers to Functions.



- Students learns about Structures and Unions-Structures, Dynamic Memory Allocation, Linked Lists.
- Gain knowledge in the concept of Input and Output-Streams, Buffering. The Header File, Error Handling, Opening and Closing a File, Reading and Writing Data, Selecting an I/O Method.

