

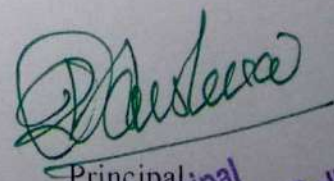
**Govt. Gramya Bharti College Hardibazar, Korba CG**  
**Email id-gbvphardibazar@gmail.com Contact No. 9425227782**

List of Departments with Programme Outcome ,Programmed Specific Outcome and Course Outcome

S.N	Name of Department
1	Hindi
2	Political Science
3	History
4	Sociology
5	English
6	Economics
7	Commerce
8	Geography
9	Mathematics
10	Physics
11	Geology
12	Botany
13	Zoology
14	Chemistry
15	Computer Science

SAMPLE



  
Principal  
Govt. G.B. College Hardibazar,  
Dist- Korba (C.G.)  
Govt. Gramya Bharti College  
Hardi Bazar, Dist. Korba (C.G.)

**PROGRAMME OUTCOMES, PROGRAMME SPECIFIC OUTCOMES AND COURSE OUTCOMES****PROGRAMME OUTCOMES**

- PO1- To impart knowledge about Economics, Particulary the basic concepts principles and to apply such knowledge to political economic and social context.
- PO2- To enable the students exhibiting their ability to developed economy of central and state govt.
- PO3- To develop in students to analyse Economic Problem.
- PO4- To enable the students to have an opportunity to serving as a Economist, Account Officer statistical officer, Bank officer Professor.
- PO5- To inculcate in student a sense of ethics and responsibilities.

**PROGRAMME SPECIFIC OUTCOMES**

The M.A. Economics Program is a four semester (2 Yrs) Integrated Program where students are taught both Economics courses as well as Environmental Courses after completion the student would be able to -

- PSO-1. Critically examine the Economical knowledge in relation to social, political, historical, environmental and scientific context and present critical approach using a wide ranges of sources.
- PSO-2. Critically assess the proposal for Economic reforms and compare it with present alternatives.
- PSO-3. Serve as a professor, bank officer, statistical officer, economist.
- PSO-4. Apply the Economical bases towards finding a economical solution to complex social and economical issues.
- PSO-5. Have a basis for advance study.
- PSO-6. Have a basis for competition exam.

**COURSE OUTCOMES****(Economics)**

<b>S. No.</b>	<b>Name of Course</b>	<b>Year/ Semester</b>	<b>Name of Subject/Paper</b>	<b>Course Outcome</b>
1	B.A. I	Paper I	Micro Economics	It enable the students to have knowledge of Nature of Economics Utility, Indifference Curve, Law of Demand, Elasticity of Demand, Isoquants curve, cost, Market, Structure, factor price determination, welfare economics.
2	B.A. I	Paper II	Indian Economy	This Enable to know the Market Economy, Indian Economy, Natural Resources, Planning, Agriculture, Industry, Industrialization, Foreign trade, Balance of payment, Poverty and equality, Unemployment Price- Rise.

3	B.A. II	Paper I	Macro Economics	It helps to understand the National Income, Keynesian theory of Income and Employment consumption function, Investment function, Trade cycle, International trade, International Monetary fund, foreign trade.
4	B.A. II	Paper II	Money Banking and Public Finance	It enable the students to have knowledge of – Money, Inflation, Deflation, Commercial Bank, Central Bank, Monetary Policy, Public Finance, Public Expenditure, public Revenue, Taxable capacity, Taxation, Classification of taxes, financial Administration Budget.
5	B.A. III	Paper I	Development and Environmental Economics	It helps to understand the Economic development, population theories of development kart Marx model, The Schumpeterian Model, Mahalanobis four sector Model, Harrods - Domar, Solow, Mead, Smt. John Robinson. Population Environment linkage Pollution control. Sustainable Development, Intellectual capital food security Globalization and Agricultural Development.
6	B.A. III	Paper II	Statistical Methods	It helps to understand the Statistics, Mean, Median, Mode Quartile Deviation, Mean Deviation, Standard, Deviation, Lorenz curve, Skewness, Karl Pearson's coefficient of correlation, spearman's coefficient of correlation fishers Ideal Index Number, Time-Series Analysis, Trends.
7	M.A. Sem-I	Paper I	Micro Economic Analysis	It enable the students to know the elasticity of demand, Elasticity of Supply, Utility, Indifference Curve, Revealed Preference Theory, Production Function – Short Period and long period Euler's theorem, production function cob-Dougllass, cast and revenue.
9	M.A. Sem- I	Paper II	Quantitative Methods	It helps the student to have the knowledge of basis of – Linear Programming, concept of game. Coefficient of Skewness – Karl Pearson's and Bowley. Karl Pearson's coefficient of correlation. Spearman's coefficient of correlation. Regression Analysis, Inter Polation and Extrapolation, Probability, Fisher's Ideal Index Number.
9	M.A. Sem- I	Paper III	Indian Economic Policy	It helps to understand the National Income, Economic development, Human Development Index, Planning, Demographic Features, Agriculture Sector.
10	M.A. Sem- I	Paper IV	International Trade & Finance	It helps to understand the International Trade, Heckscherohlin theory of International Trade The terms of trade, tariff, quotas, dumping, balance of payment devaluation.
11	M.A. Sem- II	Paper V (Optional GR-B)	Labour Economics	It gives the knowledge about labour market, rationalization, methods of recruitment, employment service organization in India. Employment and development relationship. Poverty and unemplment wage determination.
12	M.A. Sem- II	Paper I	Micro Economic Analysis	It provide the knowledge about price and output determination perfect competition, monopoly, monopolistic competition,

				Oligopoly theory of distribution theory of wages, welfare economics.
13	M.A. Sem- II	Paper II	Research Methodology and Computer Application	It extends the knowledge of Association of Attributes, Research methodology, sampling, classification, tabulation, hypothesis, computer.
14	M.A. Sem- II	Paper III	Indian Economic Policy	It gives the knowledge about Industrial sector, fiscal federalism, monetary policy of RBI, export import policy, balanced regional development, WTO and its Impact on different sector of economy. How to prepare a budget of central and state govt.
15	M.A. Sem- II	Paper IV	International Trade & Finance	It enable students to know the concept of Exchange rate, WTO, UNCTAD, IMF, SAARC, Port Folio investment and international trade. Export promotion international debt.
16	M.A. Sem- III	Paper V (Optional GR-B)	Labour Economics	It enables the student to have basic knowledge of Wage Determination, Industrial Relation, Industrial Disputes, social security social insurance, child labour, female labour.
17	M.A. Sem- III	Paper I	Macro Economic Analysis	It enhance the knowledge of National Income, consumption, investment employment theory, demand for money fundamental equation of Keynes bamaul & the money equilibrium charges in the general equalizer.
18	M.A. Sem- III	Paper II	Public Economics	This enable students to know the Taxation, Indian Tax System. Taxable capacity public expenditure, Public Debt budget process in India.
19	M.A. Sem- III	Paper III	Economics of Growth	It makes understand about the economic growth. Capital output ratio, Input-Output analysis, cost benefit analysis, theories of development-Marx, Schumpeter, Keynesian, Mahalanobis, Harroddomar, Arlher Lewis, John Robinson, mead hicks and Hayek Solow model.
20	M.A. Sem- III	Paper IV	Environmental and Welfare Economics	It gives the knowledge of basic principles of Welfare Economics, Social Welfare function, Environmental Economics Theories of Externalities, Marginal social cost. Environmental value. International carbon tax. Environment and WTO.
21	M.A. Sem- IV	Paper V (OPT) (GR-C)	Demography	This enable students of know the demography, population pyramid. Theories of population - malthus theory of optimum population, theory of demographic transition fertility, fertility rate, mortality and morbidity, mortality data.
22	M.A. Sem- IV	Paper I	Macro Economic Analysis	It gives the knowledge of basic principles of quantity theory of money. Determinates of money supply. Concept of Inflation, Business Cycle, Monetary Policy Fiscal Policy.
23	M.A. Sem- IV	Paper II	Public Economics	It enables the student to know the fiscal federalism finance commission, fiscal policy and full employment fiscal policy and economic development federal finance, center state

				financial relation, analysis of central and Chhattisgarh Govt. budget, structure and growth of public expenditure in Chhattisgarh, budget management Act, performance of Chhattisgarh Govt. budget plan and non plan expenditure in Chhattisgarh.
24	M.A. Sem- IV	Paper III	Economic Development and Planning	It enable the students to have knowledge of Economic planning. Achievements of Indian plans. Approaches to development-vicious circle of poverty. Big push theory. Theory of critical minimum efforts, balanced and unbalanced growth. Investment criteria, fiscal and monetary policy. Human capital formation, poverty Income Inequalities, Unemployment. The choice of techniques, sustainable development problem of price rise.
25	M.A. Sem- IV	Paper IV	Economics of Social Sector	It give the knowledge about concept of pollution, Air Pollution control, water pollution control environmental protection. Environment and sustainable development, global warming climate change, green house effect optimum use of resource. Social forestry economics of education. Right to education act health economics HDI, GDI, GEM, HPI.
26	M.A. Sem- IV	Paper V (OPT) (GR-C)	Demography	It provide the knowledge about Mortality, crude death rate, maternal mortality rate, life table, migration and urbanization growth of population in India. Population explosion in India. Population policy in India. Demographic characteristics of developing countries, women empowerment. Family planning strategies. The New population policy. National Population Commission.

**PROGRAMME OUTCOMES, PROGRAMME SPECIFIC OUTCOMES AND COURSE OUTCOMES****PROGRAMME OUTCOMES  
(B.A. with English Literature as an Optional Subject)**

- PO-1. To impart knowledge of English Language and English Literature among students.  
 PO-2. To enable the students to transform the knowledge of English in their day-to-day life.  
 PO-3. To develop in students the basic skills of LSRW.  
 PO-4. To inculcate in students that English is easy to learn like other languages so there is no need to be afraid of learning it.  
 PO-5. To create a rational approach among the student to face the challenges in life.  
 PO-6. To make them able to get success in various competition exams.

**PROGRAMME SPECIFIC OUTCOMES  
(B.A. with English Literature as an Optional Subject)**

- On completion of the Programme the students will be able to-
- PSO-1. Use correct English in oral as well as written form.  
 PSO-2. Use English effectively in formal and informal situations.  
 PSO-3. Understand the unique importance of English that has played a crucial role in building the modern India.  
 PSO-4. Develop language learning skills like Listening, Speaking, Reading and Writing.  
 PSO-5. Develop vocabulary and communicative skills.  
 PSO-6. Understand the real meaning and value of intellectual discipline.  
 PSO-7. Understand major and minor forms of literature.  
 PSO-8. Understand the values of literature in life.  
 PSO-9. Enjoy reading Poems, Plays, Novels and Short Stories.  
 PSO-10. Interpret the literary works by critical analysis.  
 PSO-11. Understand different cultures of the times.  
 PSO-12. Know various genres in English literature like Indian English literature, British literature and American literature.  
 PSO-13. Compare literary works of the great writers and philosophers by using their logic and literary competency.  
 PSO-14. Appear for Competitive Examinations.  
 PSO-15. Get jobs in Public and Private Sectors.  
 PSO-16. Undertake Teaching career in School level.  
 PSO-17. Inculcate the human values for one's transformation of behaviour.  
 PSO-18. Nurture themselves in Soft Skills.  
 PSO-19. Continue for their further education.

**COURSE OUTCOMES  
(B.A. with English Literature as an Optional Subject)**

S. No.	Name of Course	Year/ Semester	Name of Subject/Paper	Course Outcome
1.	B.A./ B.Sc. / B. Com.	1	Foundation Course, English Language	1. To give the Students a first-hand knowledge of Historical and Cultural Heritage of India. 2. To enrich the vocabulary of students by various exercises. 3. To develop in students the basic skills of LSRW. 4. To make them able to write a Paragraph on given topics. 5. To make them able to write Formal and Informal Letters. 6. To make them able to solve the Grammatical questions.

2.	B.A./ B.Sc. / B. Com.	2	Foundation Course, English Language	<ol style="list-style-type: none"> <li>1. To give the Students a first-hand knowledge of Major Scientists of India and their contribution in Scientific Research.</li> <li>2. To enrich the vocabulary of students by various exercises.</li> <li>3. To develop in students the basic skills of LSRW.</li> <li>4. To make them able to write Report on given topics.</li> <li>5. To make them able to write Precis of given passage.</li> <li>6. To make them able to solve the Grammatical questions.</li> </ol>
3.	B.A./ B.Sc. / B. Com.	3	Foundation Course, English Language	<ol style="list-style-type: none"> <li>1. To give the Students a first-hand knowledge of Aspects of Developments in India.</li> <li>2. To enrich the vocabulary of students by various exercises.</li> <li>3. To develop in students the basic skills of LSRW.</li> <li>4. To make them able to write Essay on given topics.</li> <li>5. To make them able to write a Precis of given passage.</li> <li>6. To make them able to solve the Grammatical questions.</li> </ol>
4.	B.A.	1	English Literature (Paper-I) Literature in English from 1550-1750	<ol style="list-style-type: none"> <li>1. To give the Students a first-hand knowledge of Major Writers and their Works of the Period.</li> <li>2. To introduce the Students about the Various Historical and Literary Topics of the period.</li> <li>3. To provide them with knowledge of the Political, Economic, Social, Intellectual and Literary background so as to enable them to study the works of representative writers of the period.</li> <li>4. To examine the works of Selected Writers of the period.</li> </ol>
5.	B.A.	1	English Literature (Paper-II) Literature in English from 1750-1900	<ol style="list-style-type: none"> <li>1. To give the Students a first-hand knowledge of Major Writers and their Works of the Period.</li> <li>2. To introduce the Students about the Various Historical and Literary Topics of the period.</li> <li>3. To provide them with knowledge of the Political, Economic, Social, Intellectual and Literary background so as to enable them to study the works of representative writers of the period.</li> <li>4. To examine the works of Selected Writers of the period.</li> </ol>
6.	B.A.	2	English Literature (Paper-I) Modern English Literatures	<ol style="list-style-type: none"> <li>1. To give the Students a first-hand knowledge of Major Writers and their Works of the Period.</li> <li>2. To introduce the Students about the Various Literary Terms.</li> <li>3. To provide them with knowledge of the Political, Economic, Social, Intellectual and Literary background so as to enable them to study the works of representative writers of the period.</li> <li>4. To examine the works of Selected Writers of the period.</li> </ol>
7.	B.A.	2	English Literature (Paper-II) Modern English Literatures	<ol style="list-style-type: none"> <li>1. To give the Students a first-hand knowledge of Major Writers and their Works of the Period.</li> <li>2. To introduce the Students about the Various Literary Terms.</li> <li>3. To provide them with knowledge of the Political, Economic, Social, Intellectual and Literary background so as to enable them to study the works of representative writers of the period.</li> <li>4. To examine the works of Selected Writers of the period.</li> </ol>
8.	B.A.	3	English Literature (Paper-I) Indian Writing in English	<ol style="list-style-type: none"> <li>1. To give the students a first-hand knowledge of Major Indian English Writers and their Works.</li> <li>2. To provide them with knowledge of the Political, Economic, Social and Intellectual background so as to enable them to study the works of Major Indian Writers in English.</li> <li>3. To examine the works of Major Indian Writers in English.</li> </ol>
9.	B.A.	3	English Literature (Paper-II Optional-A) American Literature	<ol style="list-style-type: none"> <li>1. To give the students a first-hand knowledge of Major American Writers and their Works.</li> <li>2. To provide them with knowledge of the Political, Economic, Social and Intellectual background so as to enable them to study the works of Major American Writers.</li> <li>3. To examine the works of Selected American Writers.</li> </ol>
10.	B.A.	3	English Literature (Paper-II Optional-B) 20 <sup>th</sup> Century Literature in English	<ol style="list-style-type: none"> <li>1. To give the students a first-hand knowledge of Major Writers of 20<sup>th</sup> Century.</li> <li>2. To examine and analyse the works of Selected Writers of 20<sup>th</sup> Century.</li> </ol>

**PROGRAMME OUTCOMES  
(M.A. ENGLISH)**

- PO-1. To impart knowledge of English Language and English Literature among students in advanced level.  
 PO-2. To enable the students to transform the knowledge of English in their day-to-day life.  
 PO-3. To develop in students the basic skills of LSRW.  
 PO-4. To attain good knowledge that includes the understanding of recent developments in language and literature.  
 PO-5. To motivate to make assignments, prepare and present papers and write articles.  
 PO-6. To create rational approach among the student to face the challenges in life.  
 PO-7. To make them able to get success in various competition exams.

**PROGRAMME SPECIFIC OUTCOMES  
(M.A. ENGLISH)**

- On completion of the Programme the students will be able to-
- PSO-1. Use correct English in oral as well as written form.  
 PSO-2. Use English effectively in formal and informal situations.  
 PSO-3. Develop language learning skills like Listening, Speaking, Reading and Writing.  
 PSO-4. Develop vocabulary and communicative skills.  
 PSO-5. Understand the real meaning and value of intellectual discipline.  
 PSO-6. Understand major and minor forms of literature.  
 PSO-7. Understand the values of literature in life.  
 PSO-8. Enjoy reading Poems, Plays, Novels and Short Stories.  
 PSO-9. Interpret the literary works by critical analysis.  
 PSO-10. Understand different cultures of the times.  
 PSO-11. Know various genres in English literature like Indian English literature, British literature, American literature, Post Colonial Literature, and Dalit Literature.  
 PSO-12. Compare literary works of the great writers and philosophers by using their logic and literary competency.  
 PSO-13. To understand the relations between culture, history and texts.  
 PSO-14. Appear for Competitive Examinations.  
 PSO-15. Get jobs in Public and Private Sectors.  
 PSO-16. Undertake Teaching career in College and University level.  
 PSO-17. Inculcate the human values for one's transformation of behaviour.  
 PSO-18. Nurture themselves in Soft Skills.  
 PSO-19. Develop research aptitude and to qualify for M. Phil and Ph. D. Programmes.

**COURSE OUTCOMES  
(M.A. ENGLISH)**

11.	M.A. English	Semester-I	(Paper-I) Poetry (From Chaucer to Blake)	1. To give the Students a first-hand knowledge of Major Poets and their Works of the Period. 2. To introduce the Students about the Various Forms of Poetry such as- Epic, Elegy, Ode, Sonnet, Lyric, Ballad etc. 3. To provide them with knowledge of the Political, Economic, Social, Intellectual and Literary background so as to enable them to study the works of representative poets of the period.
12.	M.A. English	Semester-I	(Paper- II) Drama	1. To give the Students a first-hand knowledge of Major Dramatists and their Works of the Period. 2. To introduce the Students about the Various Forms of Drama such as- Historical Play, Tragedy, Comedy, Tragi-comedy, Comedy of Manners etc. 3. To provide them with knowledge of the Political, Economic, Social, Intellectual and Literary background so as to enable them to study the works of representative Dramatists of the period.



13.	M.A. English	Semester-I	Prose	<ol style="list-style-type: none"> <li>1. To give the Students a first-hand knowledge of Major Essayists and their Works of the Period.</li> <li>2. To introduce the Students about the Development of English Essay from Elizabethan Age to Victorian Age.</li> <li>3. To provide them with knowledge of the Political, Economic, Social, Intellectual and Literary background so as to enable them to study the works of representative Essayists of the period.</li> </ol>
14.	M.A. English	Semester-I	(Paper- IV) Fiction	<ol style="list-style-type: none"> <li>1. To give the Students a first-hand knowledge of Major Novelists and their Works of the Period.</li> <li>2. To introduce the Students about the Development of English Fiction from Paritan Age to First Half of Twentieth Century.</li> <li>3. To provide them with knowledge of the Political, Economic, Social, Intellectual and Literary background so as to enable them to study the works of representative Novelists of the period.</li> </ol>
15.	M.A. English	Semester-II	(Paper- I) Poetry	<ol style="list-style-type: none"> <li>1. To give the Students a first-hand knowledge of Major Poets and their Works of the Period.</li> <li>2. To introduce the Students about the Development of English Poetry from Romantic Age to Victorian Age.</li> <li>3. To provide them with knowledge of the Political, Economic, Social, Intellectual and Literary background so as to enable them to study the works of representative poets of the period.</li> </ol>
16.	M.A. English	Semester-II	(Paper- II) Drama	<ol style="list-style-type: none"> <li>1. To give the Students a first-hand knowledge of Major Dramatists and their Works of the Period.</li> <li>2. To introduce the Students about the Development of English Drama from Augustan Age to First Half of Twentieth Century.</li> <li>3. To provide them with knowledge of the Political, Economic, Social, Intellectual and Literary background so as to enable them to study the works of representative Dramatists of the period.</li> </ol>
17.	M.A. English	Semester-II	Modern Literature (Paper- III) (Poetry & Prose)	<ol style="list-style-type: none"> <li>1. To give the Students a first-hand knowledge of Major Essayists and their Works of the Period.</li> <li>2. To introduce the Students about the Development of English Poetry and Prose of Modern Age.</li> <li>3. To provide them with knowledge of the Political, Economic, Social, Intellectual and Literary background so as to enable them to study the works of representative Poets and Essayists of the period.</li> </ol>
18.	M.A. English	Semester-II	(Paper- IV) Fiction and Short Stories	<ol style="list-style-type: none"> <li>1. To give the Students a first-hand knowledge of Major Novelists and their Works of the Period.</li> <li>2. To introduce the Students about the Development of English Fiction and Short Stories from Second Half of Twentieth Century to Modern Age.</li> <li>3. To provide them with knowledge of the Political, Economic, Social, Intellectual and Literary background so as to enable them to study the works of representative Novelists and Short Story Writers of the period.</li> </ol>
19.	M.A. English	Semester- III	(Paper- I) Critical Theories	<ol style="list-style-type: none"> <li>1. To give the Students a first-hand knowledge of Major Literary Critics and their Literary Theories.</li> <li>2. To examine the works of the Key Critics in this discipline.</li> <li>3. To build-up in the students the Aesthetics of English Literature.</li> <li>4. To examine the various Literary Terms and Concepts in this discipline.</li> </ol>
20.	M.A. English	Semester- III	(Paper- II) Indian Literature	<ol style="list-style-type: none"> <li>1. To give the students a first-hand knowledge of Major Indian English Writers and their Works.</li> <li>2. To provide them with knowledge of the Political, Economic, Social and Intellectual background so as to enable them to study the works of Major Indian Writers in English.</li> <li>3. To examine the works of Major Indian Writers in English.</li> </ol>
21.	M.A. English	Semester- III	(Paper- III) American Literature	<ol style="list-style-type: none"> <li>1. To give the students a first-hand knowledge of Major American Writers and their Works.</li> <li>2. To provide them with knowledge of the Political, Economic, Social and Intellectual background so as to enable them to study the works of Major American Writers.</li> <li>3. To examine the works of Major American Writers.</li> </ol>
22.	M.A. English	Semester- III	(Paper- IV) Optional (A) History of	<ol style="list-style-type: none"> <li>1. To give the students a first-hand knowledge of History and Development of English Literature.</li> <li>2. To provide them with knowledge of the Political, Economic, Social and Intellectual background so as to enable them to study the</li> </ol>

			English Literature	Chief Characteristics of the Various Ages in English Literature. 3. To examine the Various Trends in English Literature. 4. To analyse the Works of Representative Writers of the Age.
23.	M.A. English	Semester-III	(Paper- IV) Optional (B) Linguistics	1. To give the students a first-hand knowledge about the History of English Language. 2. To introduce to the students the Broad Areas of Linguistics. 3. To strengthen Linguistic Competence and Performance of the students.
24.	M.A. English	Semester-IV	(Paper- I) Literature in Translation	1. To give the students a first-hand knowledge of Literary Translation. 2. To introduce to the students about the Notable Indian Writers and their Works. 3. To examine Selected Indian Writers' works translated in English.
25.	M.A. English	Semester-IV	(Paper- II) Diaspora and Dalit Literature	1. To give the students a first-hand knowledge of Diaspora and Dalit Writers. 2. To examine and analyse the works of Selected Diaspora Writers. 2. To examine and analyse the works of Selected Dalit Writers.
26.	M.A. English	Semester-IV	(Paper- III) World Literature	1. To give the students a first-hand knowledge of World Famous Literature in English. 2. To examine and analyse the works of Selected World Famous Writers in English.
27.	M.A. English	Semester-IV	(Paper- IV) Optional (A) Colonial and Post Colonial Literature	1. To introduce to the students about the Concept of Colonialism and Post-colonialism. 2. To examine and analyse the works of Selected Colonial and Post-colonial Writers.
28.	M.A. English	Semester-IV	(Paper- IV) Optional (B) Gender Studies	1. To introduce to the students about the Concept of Gender Studies in Literature. 2. To examine and analyse the Concept of Sex and Gender, Feminist Criticism and Various Gender based Discriminations against Women in the World. 3. To examine and analyse the Works of Selected Feminist Writers. 4. To aware the students about the Social evils like Sati, Dowry, Child Marriage, Rape, Female Foeticide, Prostitution etc.
29.	M.A. English	Semester-IV	(Paper- IV) Optional (C) Contemporary Theories of Criticism	1. To introduce to the students about the Various Contemporary Theories of Criticism. 2. To analyse the theory of New Criticism, Formalism, Feminism, Marxism, Structuralism, Post-structuralism, New Historicism and Reader Response Theory.

## हिन्दी विभाग

Program	Course	OutCome
एम.ए. हिन्दी प्रथम सेमेस्टर	प्रथम प्रश्न पत्र हिन्दी साहित्य का इतिहास (आदिकाल, भक्तिकाल, रीतिकाल)	विकास प्रक्रिया को साहित्य के इतिहास के माध्यम से देखा परखा जा सकता है। साहित्यक सृजन शीलता के विविध प्रवृत्तियों का ज्ञान हिन्दी साहित्य के इतिहास के माध्यम से किया जा सकता है। साहित्य के इतिहास का दर्शन, आदिकाल भक्तिकाल और रीतिकाल की पृष्ठभूमि, विभिन्न काव्य धाराओं, प्रतिनिधि रचना और रचनाकार का ज्ञानार्जन होता है।
	(द्वितीय प्रश्न पत्र) प्राचीन काव्य  विद्यापति- विद्यापति पदावली संपादक- रामकृष्ण ब्रेनीपुरी कबीर- कबीर ग्रंथावली संपादक- डॉ. श्याम सुन्दर दास जायसी- पदमावत संपादक- आचार्य रामचन्द्र शुक्ल संक्षिप्त अध्ययन- अमीर खुसरो, रसखान, मीरा, रैदास, रहीम।	पूर्व मध्यकालीन काव्य के लोक जागरण के नवीन स्वर से देश की भावात्मक एकता एवं सांस्कृतिक परम्परा से अवगत होकर छात्र-छात्राएं समाज में फैली कुश्रितियों, अंधविश्वास एवं वाह्याडम्बर आदि चुनौतियों का सामना करने में समर्थ होते हैं। सेवा, समर्पण और त्याग की भावना छात्र-छात्राओं में विकसित होती है। संत काव्य धारा के नीतिपरक कविताओं से छात्र-छात्राओं जीवनोपयोगी ज्ञान प्राप्त होता है।
	तृतीय प्रश्न पत्र आधुनिक गद्य साहित्य (नाटक एवं निबंध) नाटक-1. चन्द्रगुप्त- जयशंकर प्रसाद 2. आषाढ़ का एक दिन-मोहन राकेश निबंध-	आधुनिक काल में गद्य साहित्य को अभूतपूर्व सफलता मिली है। नाटक एवं निबंध मानव-मन एवं मस्तिष्क की अभिव्यक्ति का सशक्त माध्यम बन गया है। आधुनिक गद्य साहित्य के माध्यम से मनुष्य का राग विराग, तर्क-वितर्क तथा चिन्तन-मनन रागात्मकता के साथ कौशल पूर्ण ढंग से अभिव्यजित होता है।

<p>1.साहित्य की महत्ता- आचार्य महावीर प्रसाद द्विवेदी  2. करुणा- आचार्य रामचन्द्र शुक्ल  3. भारतीय साहित्य की प्राणशक्ति- आचार्य हजारी प्रसाद द्विवेदी  4. चन्द्रमा मनसो जात- विद्यानिवास मिश्र  5. भोलाराम का जीव- हरिशंकर परसाई</p> <p>संक्षिप्त अध्ययन  नाटककार-भारतेन्द्र हरिश्चन्द्र, डॉ. रामकुमार वर्मा, लक्ष्मीनारायण लाल, धर्मवीर भारती, जगदीश चन्द्र माथुर  निबंधकार- भारतेन्द्र हरिश्चन्द्र, प्रतापनारायण मिश्र, बाबू श्याम सुन्दर दास, सरदार पूर्ण सिंह, डॉ. नगेन्द्र</p> <p>चतुर्थ प्रश्न पत्र  भाषा विज्ञान</p> <p>पाठ्य विषय-  1.भाषा और भाषा विज्ञान  2.स्वन प्रक्रिया  3. अर्थ विज्ञान</p>	<p>आधुनिक गद्य साहित्य के अध्ययन से मनुष्य की प्रकृति, परिवेश, परिस्थिति तथा विकास प्रक्रिया को जाना जा सकता है।</p> <p>भाषा विज्ञान के अध्ययन से छात्र-छात्राओं में भाषिक व्यवस्था का सुस्पष्ट एवं सर्वांगीण ज्ञान प्राप्त होता है।</p> <p>भाषा संरचना के विभिन्न स्तरों एवं विन्यास का ज्ञान प्राप्त होता है।</p> <p>भाषा व्यवहार का ज्ञान प्राप्त होता है।</p>
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<p>एम.ए. हिन्दी द्वितीय सेमेस्टर</p>	<p>प्रथम प्रश्न पत्र हिन्दी साहित्य का इतिहास (आधुनिक काल)</p> <p>पाठ्य विषय—</p> <ol style="list-style-type: none"> <li>1. आधुनिक काल— भारतेन्दु युग, द्विवेदी युग</li> <li>2. स्वच्छंदता वादी चेतना छायावादी काव्य की विविध प्रवृत्तियां</li> <li>3. हिन्दी गद्य की प्रमुख विधाओं कहानी, उपन्यास, नाटक, एकांकी, निबंध का विकास</li> <li>4. रेखा चित्र, संस्मरण, यात्रा साहित्य, आत्मकथा, जीवनी और रिपोतीज का विकासखण्ड अध्ययन</li> </ol>	<p>जनमास की मनोवृत्ति, दशा एवं संवेदना के विविध स्वरूपों ज्ञान संचित होता है।</p> <p>साहित्यिक सृजनशीलता के विविध रूपों, प्रवृत्तियों और भाषा-शैलियों का ज्ञान हिन्दी साहित्य के इतिहास के माध्यम से किया जा सकता है।</p>
<p>द्वितीय प्रश्न पत्र मध्यकालीन काव्य</p> <p>पाठ्य विषय—</p> <ol style="list-style-type: none"> <li>1. सूरदास—भ्रमर गीत सार संपादक—आचार्य रामचन्द्र शुक्ल</li> <li>2. तुलसीदास— रामचरित मानस (गीता प्रेस) सुन्दरकाण्ड (पूर्ण)</li> <li>3. बिहारी रत्नाकर— बिहारी रत्नाकर— संपादक— जगन्नाथ प्रसाद रत्नाकर संक्षिप्त अध्ययन— धनानंद केशव दास, देव, भूषण, पदमाकर</li> </ol>	<p>मध्यकालीन काव्य के अध्ययन से समाज, संस्कृति और युग की घडकनों को समग्रता से समझा जा सकता है।</p> <p>दर्शनिक पृष्ठभूमि, भक्ति भावना, लोक जीवन एवं संस्कृति एवं काव्यकला से अवगत होकर बहुज्ञता हासिल किया जा सकता है।</p>	<p>उपन्यास कहानी तथा विविध विधाओं के रूप में जीवन में होने वाली समस्याओं की जानकारी प्राप्त कर भविष्य</p>
<p>तृतीय प्रश्न पत्र आधुनिक गद्य साहित्य</p>		

<p style="text-align: center;">(उपन्यास एवं कहानी)</p> <p>उपन्यास—</p> <ol style="list-style-type: none"> <li>1. गोदान— प्रेमचंद</li> <li>2. मैला आंचल—फणीश्वरनाथ रेणु</li> </ol> <p>कहानी—</p> <ol style="list-style-type: none"> <li>1. उसने कहा था— गुलेरी</li> <li>2. पुरस्कार— प्रसाद</li> <li>3. मंत्र —प्रेमचंद</li> <li>4. परिन्दे— निर्मल वर्मा</li> <li>5. वापसी — उषा प्रियवंदा</li> <li>6. बिरादरी बाहर—रांगेयराधय</li> </ol> <p>संक्षिप्त अध्ययन—</p> <ol style="list-style-type: none"> <li>1. उपन्यासकार— जैनेन्द्र भगवती— अमृतलाल नागर, मृणाल पाण्डेय</li> <li>2. कहानीकार— अज्ञेय, यशपाल, राजेन्द्र अवस्थी, अमरकांत पाण्डेय, बेचन शर्मा उग्र</li> </ol> <p style="text-align: center;">चतुर्थ प्रश्न पत्र हिन्दी भाषा</p> <p>पाठ्य विषय—</p> <ol style="list-style-type: none"> <li>1. हिन्दी की ऐतिहासिक पृष्ठभूमि— प्राचीन भारतीय आर्य भाषाएं</li> <li>2. हिन्दी का भौगोलिक विस्तार</li> <li>3. हिन्दी का भाषिक स्वरूप</li> <li>4. हिन्दी के विविध रूप</li> </ol>	<p>को उन्नत बनाने एवं सकारात्मक सोच विकसित करने में सहायता मिलती है।</p> <p>देश की ऐतिहासिकता, देश प्रेम की भावना बलिदान एवं त्याग के आदर्शों को छात्र-छात्राओं को परिचित कराकर उपन्यास एवं कहानी के कथ्य एवं शिल्प का आदर्श स्थापित कर सकते हैं।</p> <p>हिन्दी भाषा का ऐतिहासिक, विकासक्रम भौगोलिक विस्तार, भाषिक स्वरूप विविधरूपता तथा हिन्दी में कम्प्यूटर सुविधाओं विषयक जानकारी एवं देवनागरी लिपि की विशेषताएं, विकास और मानकीकरण का ज्ञान छात्र-छात्राओं के लिए बहुत उपयोगी है।</p>
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<p>एम.ए. हिन्दी तृतीय सेमेस्टर</p>	<p>प्रथम प्रश्न पत्र भारतीय काव्य शास्त्र</p> <p>पाठ्य विषय— 1. संस्कृत काव्य शास्त्र—रस सिद्धांत 2. अलंकार सिद्धांत, रीति सिद्धांत 3. वक्रोक्ति सिद्धांत, अभिव्यंजनावाद औचित्य सिद्धांत 4. ध्यनि सिद्धांत हिन्दी आलोचना की प्रमुख प्रवृत्तियां</p>	<p>रचना के वैशिष्ट्य और मूल्यबोध के उद्घाटन के लिए काव्य शास्त्र का ज्ञान अपरिहार्य है।</p> <p>काव्य शास्त्र के आधार पर साहित्य के मर्म और मूल्य की वास्तविक परख होती है।</p> <p>सामाजिक, सांस्कृतिक परिवेश के साथ रचना का आस्वाद प्राप्त करने रचना को उसकी समग्रता में समझने और परखने के लिए भारतीय काव्यशास्त्र का ज्ञान छात्र-छात्राओं में होना आवश्यक है।</p>
	<p>द्वितीय प्रश्न पत्र आधुनिक काव्य</p> <p>पाठ्य विषय— 1. मैथली शरण गुप्त— साकेत नवम सर्ग 2. जयशंकर प्रसाद—कामायनी— चिता, श्रद्धा, लज्जा सर्ग 3. पं. सूर्यकांत त्रिपाठी निराला— राम की शक्ति पूजा, सरोज स्मृति कुकुरमुत्ता 4. सामान्य अध्ययन— अयोध्या सिंह उपाध्याय, हरिऔध, जगन्नाथ दास रत्नाकर, महादेवी वर्मा, हरिवंश राय, बच्चन, त्रिलोचन शास्त्री</p> <p>तृतीय प्रश्न पत्र प्रयोजन मूलक हिन्दी</p> <p>पाठ्यक्रम— 1. हिन्दी के विभिन्न रूप—सर्जनात्मक भाषा</p>	<p>आधुनिकता, विश्वजनीनता एवं वैज्ञानिक दृष्टिकोण आधुनिक काव्य के अध्ययन से जागृत होता है।</p> <p>आधुनिक काव्य में संवेदनाएं, भावनाएं एवं नूतन विचार विविध धाराओं में प्रवहमान होने से विद्यार्थियों में प्रेरणा और ऊर्जा तथा ज्ञान क्षितिज का विस्तार होता है।</p> <p>प्रयोजन मूलक हिन्दी के अध्ययन से सामाजिक आवश्यकताओं और जीवन-व्यवहार का ज्ञान प्राप्त होता है।</p> <p>इसके विविध आयामों से रोजगार एवं जीविका की समस्या का समाधान होता है।</p>

	<p>संचार भाषा, राजभाषा, माध्यम भाषा, मातृभाषा, कार्यालयी हिन्दी, पत्र लेखन, संक्षेपण, पल्लवन, टिप्पण। पारिभाषित शब्दावली, विज्ञापन लेखन</p> <p>2. कम्प्यूटर- परिचय उपयोग तथा क्षेत्र</p> <p>3. अनुवाद- परिभाषा, क्षेत्र और सीमाएं</p> <p>4. जनसंचार- प्रौद्योगिकी एवं चुनौतियां</p>	<p>विभिन्न व्यवहार क्षेत्रों में उपयोग की जाने वाली प्रयोजन मूलक हिन्दी जीवन के लिए उपयोगी है।</p>
	<p>चतुर्थ प्रश्न पत्र भारतीय साहित्य</p> <p>पाठ्यक्रम-</p> <p>1. भारतीय साहित्य का स्वरूप, भारतीय साहित्य के अध्ययन की समस्याएं, भारतीय साहित्य में आज के भारत का बिंब, भारतीयता का समाजशास्त्र, हिन्दी साहित्य में भारतीय मूल्यों की अभिव्यक्ति</p> <p>2. बंगला, उडिया भाषा के साहित्य का इतिहास प्रमुख कृतिकारों का परिचय तथा महत्वपूर्ण कृतियां</p> <p>3. तुलनात्मक अध्ययन- बंगला साहित्य, उडिया साहित्य और हिन्दी साहित्य</p> <p>4. नाटक- हयवदन गिरीश कर्नाड</p>	<p>भारतीय भाषाओं के साहित्य का ज्ञान स्नातकोत्तर विद्यार्थियों के लिए अपेक्षित है।</p> <p>भारतीय साहित्य के रूप रचना का ज्ञान होता है।</p> <p>भारतीय मूल्यों की अभिव्यक्ति साहित्य के माध्यम से होती है।</p> <p>हिन्दी साहित्य के विद्यार्थियों को अन्य भाषा- साहित्य से तुलनात्मक अध्ययन का ज्ञानार्जन होता है।</p>



<p>एम.ए. हिन्दी चतुर्थ सेमेस्टर</p>	<p>प्रथम प्रश्न पत्र – प्रथम पाश्चात्य काव्य शास्त्र</p> <p>पाठ्यक्रम– 1.प्लेटो– काव्य सिद्धांत अरस्तू– अनुकरण सिद्धांत त्रासदी विवेचन 2.लांजाइनस– उदात्त की अक्धारणा– वर्ड सवर्थ– काव्य भाषा का सिद्धांत कालरिज– कल्पना सिद्धांत और ललित कल्पना 3. मैथ्यू आर्नाल्ड– आलोचना का स्वरूप और प्रकार्य टी.एस. इलियट– परम्परा की परिकल्पना और वैयक्तिक प्रज्ञा निर्वयक्तकता का सिद्धांत वस्तु निष्ठ समीकरण, संवेदनशीलता का असाहचर्य 4.आई.ए. रिचर्डस– रागात्मक अर्थ संवेगों का संतुलन, व्यावहारिक आलोचना, सिद्धांत एवं वाद– अभिजात्यवाद, स्वच्छंदतावाद, अभित्यजनावाद, मार्क्सवाद, मनोविश्लेषणवाद तथा अस्तित्ववाद 5. लघु उत्तरीय–एवं अतिलघुत्तरीय वस्तुनिष्ठ प्रश्न सम्पूर्ण पाठ्यक्रम से किया जायेगा।</p> <p>प्रथम प्रश्न पत्र – द्वितीय छायावादोत्तर काव्य</p> <p>पाठ्य विषय– 1.सच्चिदानंद हीरानंद वात्स्यायन अज्ञेय नदी</p>	<p>पाश्चात्य विद्वानों के काव्य सिद्धांत विषयक चिंतन का बोध विद्यार्थियों में होता है।</p> <p>सर्जनात्मक एवं रचनाधर्मिता में अभिवृद्धि के लिए पाश्चात्य काव्य शास्त्र का ज्ञान अपेक्षित है।</p> <p>रचना को समग्रता में समझाने और परखने के लिए पाश्चात्य काव्यशास्त्र का अध्ययन समीचीन है।</p> <p>विभिन्न सिद्धांत एवं वाद से संबंधित जानकारी हासिल कर विद्यार्थी वैश्विक साहित्य जगत से रूबरू हो सकते हैं।</p>
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<p>के दीप, असाध्यवीणा, बावराअहेरी यह दीप अकेला, कलगीबाजरे की, हरीधास पर क्षणभर, अन्तः सलिला, हिरोशिमा</p> <p>2. गजानन माधव मुक्तिबोध—अधरे में</p> <p>3. नागार्जुन—बादल को घिरते देखा है, सिन्दुर तिलकित भाल, बसंत की अंगवानी कोई आए तुमसे सीखे, तो फिर क्या हुआ यह तुम थी, कोयल आज बोली है अकाल और उसके बाद, शासन की बंदूक प्रेत का बयान</p> <p>संक्षिप्त अध्ययन—श्रीकांत वर्मा, दुष्यंत कुमार, धूमिल, रघुवीर सहाय, धर्मवीर भारती</p>	<p>साहित्य के विद्यार्थियों को छायावादोत्तर काव्य के अध्ययन से स्वतंत्रता के बाद की स्थिति का ज्ञान होता है।</p> <p>नये-नये बिम्ब, प्रतीक योजना को जानने समझने का अवसर मिलता है।</p> <p>आक्रोश और विद्रोह की प्रवृत्ति व्यापक पैमाने पर परिलक्षित छायावादोत्तर काव्यों में हुई है, जिससे विद्यार्थी परिचित होकर साहित्यिक रुझान में अभिवृद्धि करते हैं।</p> <p>वैश्विक संदर्भ की जानकारी और समझदारी के लिए छायावादोत्तर काव्य का अध्ययन आवश्यक है।</p>
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	<p style="text-align: center;"><b>प्रश्न पत्र – तृतीय पत्रकारिता</b></p> <p>पाठ्य विषय–</p> <ol style="list-style-type: none"> <li>विश्व पत्रकारिता का उदय, भारत में पत्रकारिता का आरंभ पत्रकारिता स्वरूप एवं विभिन्न प्रकार हिन्दी पत्रकारिता का उदभव विकास</li> <li>सम्पादन कला के सामान्य सिद्धांत समाचार के विभिन्न स्रोत,संवाददाता की अर्हता, श्रेणी एवं कार्य पद्धति,सम्पादकीय लेखन, फीचर, रिपोर्ताज साक्षात्कार, खोजी समाचार अनुवर्तन (फालोअप) आदि की प्रविधि</li> <li>इलेक्ट्रानिक मीडिया की पत्रकारिता प्रिंट पत्रकारिता मल्टी मीडिया, पत्रकारिता का प्रबंध, मुक्त प्रेस की अवधारणा</li> <li>लोक सम्पर्क तथा विज्ञापन, प्रसार भारती तथा सूचना प्रौद्योगिकी, प्रेस संबंधी प्रमुख कानून तथा आचार संहिता, प्रजातांत्रिक व्यवस्था में चतुर्थ स्तंभ के रूप में पत्रकारिता का दायित्व</li> </ol>	<p>साहित्यिक ज्ञान के साथ-साथ रोजगारपरकता की आकांक्षा की पूर्ति की जा सकती है।</p> <p>दैनिक समाचार पत्र से लेकर साप्ताहिक पाक्षिक, मासिक, त्रैमासिक, अर्द्धवार्षिक, वार्षिक पत्रिकाओं, प्रिंट मीडिया, इंटरनेट आदि में पत्रकारिता का विकसित स्वरूप देखा जा सकता है।</p> <p>पत्रकारिता का अध्ययन आज की अनिवार्यता बन गई है।</p> <p>पत्रकारिता संबंधी कानून तथा पत्रकारिता के दायित्व बोध की जानकारी प्राप्त की जाती है।</p> <p>पत्रकारिता विषयक ज्ञान, कार्य पद्धति से विद्यार्थी परिचित हो सकते हैं।</p>
	<p style="text-align: center;"><b>प्रश्न पत्र– चतुर्थ लोक साहित्य एवं छत्तीसगढ़ी साहित्य पाठ्य विषय–</b></p> <ol style="list-style-type: none"> <li>लोक साहित्य, लक्षण, परिभाषा, क्षेत्र लोक और लोकवार्ता, लोक विज्ञान, लोक संस्कृति अवधारणा</li> </ol>	<p>लोक साहित्य सम्पदा के माध्यम से लोक व्यवहार, नीति, संस्कृति का ज्ञान विद्यार्थियों को कराया जाता है।</p> <p>इनके संकलन, सम्पादन, प्रकाशन द्वारा मूल राष्ट्रीय संस्कृति को संरक्षित किया जा सकता है।</p>

<p>2. लोक साहित्य के प्रमुख रूपों का संक्षिप्त अध्ययन</p> <p>3. छत्तीसगढ़ी साहित्य का इतिहास, प्रवृत्तियाँ छत्तीसगढ़ी गद्य साहित्य का उद्भवविकास विधाएँ—अपन्यास, नाटक, एकांकी, निबंध कहानी, महाकाव्य</p> <p>4. दानलीला—सुन्दरलाल शर्मा</p>	<p>लोक गीत, लोक नाट्य, लोक कथा, लोक गाथा, लोक नृत्य तथा लोक संगीत का जीवन में अपना अलग महत्व है। इसका ज्ञान प्राप्त कर विद्यार्थी लोक साहित्य अन्वेषण से परिचित हो सकते हैं।</p>
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Program	Course	OutCome
बी. ए. प्रथम वर्ष	<p>आधार पाठ्यक्रम हिन्दी भाषा- पुस्तक का नाम- भारतीयता के अमर स्वर प्रो. धनंजय वर्मा</p> <p>पल्लवन, पत्राचार, अनुवाद एवं पारिभाषिक शब्दावली, मुहावरे एवं लोको, शब्द शुद्धि, शब्द ज्ञान, पर्यायवाची, विलोम शब्द, अनेकार्थी शब्द, देवनागरी लिपि की विशेषताएं, वर्तनी मानक रूप कम्प्यूटर में हिन्दी का अनुप्रयोग, हिन्दी में पदनाम हिन्दी अपभ्रंश, संक्षेपण, हिन्दी में संक्षिप्तीकरण।</p> <p>ईदगाह कहानी -प्रेमचंद भालेराम का जीव- हरिशंकर परसाई, शिकांगो से स्वामी विवेकानंद का पत्र मानक हिन्दी भाषा का अर्थ, स्वरूप- विशेषताएं, मानक अमानक भाषा, सामाजिक गतिशीलता, प्राचीनकाल, मध्यकाल, आधुनिक काल।</p>	<p>पल्लवन, पत्राचार एवं व्याकरण की जानकारी छात्र- छात्राओं की दी गई। जिससे अनेक शब्द ज्ञान की वृद्धि हुई और मानक-अमानक के द्वारा भाषा की शुद्धता का परिभ्रंजित किया गया।</p> <p>अपठित गद्यांश, संक्षिप्तीकरण एवं संक्षेपण के द्वारा छात्र-छात्राओं में 'गागर में सागर भरने की' प्रवृत्ति का विकास हुआ। ईदगाह कहानी से छात्र-छात्राओं को सम्मान, प्रेम एवं कर्तव्य निष्ठता के गुणों को विकसित किया गया।</p> <p>सामाजिक गतिशीलता के माध्यम से प्राचीन, मध्य एवं आधुनिक काल का परिचय दिया गया जिससे छात्रों में ऐतिहासिकता, मानवीयता, आदि गुणों को विकसित किया गया।</p>

Program	Course	OutCome
बी. ए. प्रथम वर्ष	<p>हिन्दी साहित्य</p> <p>प्रथम प्रश्न पत्र- प्राचीन हिन्दी काव्य- पेपर कोड डॉ. कांति कुमार जैन</p> <p>पाठ्यक्रम-</p> <ol style="list-style-type: none"> <li>1. कबीर की साखियां - साखी</li> <li>2. संक्षिप्त पदमावत- नागमति का वियोग वर्णन-30 भ्रमक गीत सार, सूरदास प्रारंभिक-5 पद</li> <li>4. रामचरित मानस के अयोध्या कोड प्रारंभिक 25 पद दोहे चौपाई-छंद</li> <li>5. घनानंद प्रारंभिक 25 छंद-द्रुत पाठ हेतु तीन कवियों का अध्ययन-विद्यापति रहीम-रसखान</li> </ol> <p>द्वितीय प्रश्न पत्र</p> <p>गबन उपन्यास प्रेमचंद-</p> <p>कथा साहित्य-</p> <p>हिन्दी कथा का विकास आकाशदीप, कफन, पर्दा, टेस, मलवे का मालिक, चीफ की दखत, बिरादरी बाहर गदल</p>	<p>कबीर के जीवनवृत्त, उनके नीतिगत उपदेशों की जानकारी छात्र-छात्राओं को उपलब्ध कराई गई। कबीर की साखियों के माध्यम से समाज में फैली कुरितियां, छूआछूत, अंधविश्वास आदि को दूर करने की शिक्षा दी गई।</p> <p>जायसी के संक्षिप्त पदमावत के द्वारा छात्र-छात्राओं को ऐतिहासिकता एवं आध्यात्मिकता की लौकिक एवं अलौकिक प्रेम की पराकाष्ठा प्रेम में समर्पण की भावना जैसे गुणों को बताया गया। तुलसी दास के काव्य से धर्म, कर्म, नीति, त्याग एवं समर्पण की भावना का संचार किया गया। घनानंद के काव्य के द्वारा प्रेम, त्याग एवं समर्पण की भावना का संचार किया गया।</p> <p>गबन उपन्यास के माध्यम से रिश्वत खोरी एवं भ्रष्टाचार की समस्याओं से अवगत कराया गया। कथा साहित्य की कहानियों के द्वारा कर्ज की समस्या, बाह्य ओज्वर एवं सामाजिक बुराईयों से दूर रहने की शिक्षा प्रदान की गई।</p>

Program	Course	OutCome
बी. ए. द्वितीय	<p>हिन्दी साहित्य प्रथम प्रश्न पत्र- अर्वाचीन हिन्दी काव्य (पेपर कोड- 0173)</p> <p>पाठ्यक्रम- 1. मैथलीशरण गुप्त- भारत भारती की कविताएं</p> <p>2.सूर्यकांत त्रिपाठी निराला- सखि बसंत आया, वर दे वीणा वादिनी, हिन्दी के सुमनों के प्रति पत्र तोड़ती पत्थर, राजे ने अपनी रखवाली की।</p> <p>3. सुमित्रानंदन पंत- बादल, परिवर्तन-2 पद, ताज झंझा में नीम, भारत भारती</p> <p>4. माखनलाल चतुर्वेदी- निशस्त्र सेनानी, बलि पंथी से उलाहना, सांझ और ढोलक की थापें, मैं बेच रही हूँ दही।</p> <p>5. अज्ञेय- सबेरे उठा तो धूप खिली थी, साम्राज्ञी का नैवेद्यदान, घर, चांदनी जी लो, दूर्वाचल।</p> <p>द्रुतपाठ-</p> <p>1. अध्यायिका सिंह उपाध्याय हरिऔध 2. सुमद्रा कुमारी चौहान 3. श्रीकांत वर्मा</p>	<p>अर्वाचीन हिन्दी काव्य का अध्ययन आधुनिकता की समस्त विशेषताओं को समेटे हुए है। साहित्य की विकास यात्रा, आधुनिक भाव बोध का ज्ञान छात्र-छात्राओं को होता है।</p> <p>स्वतंत्रता प्राप्ति के पूर्व की भाव, भाषा शिल्प की जानकारी प्राप्त होती है।</p> <p>राष्ट्रीयता एवं राष्ट्रप्रेम की भावना, त्याग, बलिदान की भावना जागृत करने में राष्ट्रीय काव्य धारा की कविताएं सक्षम हैं।</p> <p>छायावादी, प्रगतिवादी एवं प्रयोगवादी अनुचितन विद्यार्थियों के लिए उपयोगी है।</p>

	<p>हिन्दी साहित्य द्वितीय प्रश्न पत्र हिन्दी निबंध तथा अन्य गद्य विधाएं पेपर कोड 0174 पाठ्यक्रम— नाटक— अंधेर नगरी—भारतेन्दु हरिश्चंद्र निबंध— क्रोध— आचार्य रामचंद्र शुक्ल बसंत— डॉ. हजारी प्रसाद द्विवेदी उस अमराई ने राम—राम कही है। डॉ. विद्यानिवास मिश्र काव्येषु नाट्यम रम्यम— बाबू गुलाबराय बेईमानी की परत— परसाई  एकांकी— औरंगजेबकी आखिरी रात डॉ. रामकुमार वर्मा स्ट्राईक— भुवनेश्वर एक दिन— लक्ष्मीनारायण मिश्र दस हजार— उदयशंकर भट्ट मम्मी ठकुराईन—डॉ. लक्ष्मीनारायण लाल  दुतपाठ— राहुल सांकृत्यायन, महादेवी वर्मा, हबीब तनवीर</p>	<p>अंधेर नगरी के माध्यम से भारतेन्दु हरिश्चन्द्र जी ने ब्रिटिश शासन की अव्यवस्था अत्याचार, रिश्वतखोरी और शोषण को प्रतीकात्मक रूप में प्रस्तुत किया है। वैचारिक निबंध ललित निबंध तथा व्यंग्य विधा की जानकारी प्राप्त होती है। भारतीय ग्राम्य परिवेश में अमराई की महत्ता और उसकी धीरे-धीरे नष्ट होती संस्कृति की ओर ध्यान आकृष्ट किया गया है। पाठ्य एकांकी के माध्यम से जीवन नश्वरता, विक्षिप्त मानसिक स्थिति, आधुनिक मानव जीवन की पद्धति, कृपणता, स्वाभिमान संस्कृति अज्ञानता आदि कलात्मकता एवं व्यंग्य से समझाने का प्रयास किया गया है जो कि विद्यार्थियों के ज्ञानवर्धन में सहायक है।</p>
<p>बी.ए., बी.एस.सी. / बी.कॉम, द्वितीय—</p>	<p>आपा हिन्दी भाषा पेपर कोड—0171 इकाई 1. चोरी और प्रायश्चित— महात्मा गांधी कायालयीन भाषा, मीडिया की भाषा इकाई 2 युवकों का समाज में स्थान— आचार्य</p>	<p>सुप्रसिद्ध लेख के माध्यम से समाज एवं राष्ट्रहित के साथ-साथ व्यक्तित्व विकास होता है। व्याकरणिक एवं भाषा विषयक पाठ्यक्रम के माध्यम से हिन्दी भाषा संबंधित ज्ञान में अभिवृद्धि होती है। प्रतियोगी परीक्षाओं की दृष्टि से ज्ञानार्जन होता है।</p>



	<p>नरेन्द्र देव— वित्त एवं याणिज्य की भाषा मशीनी भाषा</p> <p>इकाई 3. मातृभूमि—वासुदेवशरण अग्रवाल संज्ञा, सर्वनाम, विशेषण, क्रिया विशेषण</p> <p>इकाई 4. डॉ. खूबचंद बघेल हरिठाकुर/समास— सधि</p> <p>इकाई 5. संभाषण कुशलता— पं. माधव राम सप्रे अनुवाद अंग्रेजी से हिन्दी में अनुवाद संक्षिप्तियां</p>	<p>भाषा की संरचना का ज्ञान होता है।</p>
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Program	Course	OutCome
बी. ए. तृतीय वर्ष	<p>हिन्दी साहित्य- प्रथम प्रश्न पत्र- जनपदीय भाषा- साहित्य (छत्तीसगढ़ी) पाठ्य विषय</p> <ol style="list-style-type: none"> <li>1. भूमिका (अ) छत्तीसगढ़ी साहित्य की विकास यात्रा (ब) छत्तीसगढ़ी भाषा एक परिचय</li> <li>2. संत धर्मदास के पद</li> <li>3. सोनपान निबंध</li> <li>4. सीख-सीख के गोठ</li> <li>5. विनय पाठक (छत्तीसगढ़ी कविता)</li> <li>6. मुकुन्द कौशल (छत्तीसगढ़ी गजल) द्रुतपाठ</li> </ol> <ol style="list-style-type: none"> <li>1. सुन्दरलाल शर्मा</li> <li>2. रामचन्द्र देशमुख</li> <li>3. कपिलनाथ कश्यप</li> </ol>	<p>जनपदीय भाषा छत्तीसगढ़ी निरन्तर विकास की ओर अग्रसर हो रही है, अस्तु इस भाषा का और इसमें रचित साहित्य का इतिहास विकास स्पष्ट करते, इनसे संबंधित प्रमुख रचनाकारों का आलोचनात्मक अनुशीलन करना हिन्दी के वृहन्त हित में होगा।</p> <p>छत्तीसगढ़, अंचल के विविध स्वरूप, ऐतिहासिक पृष्ठभूमि, सांस्कृतिक स्थिति एवं, लोक-जीवन की विशिष्टताओं का रेखांकन, जनपदीय भाषा छत्तीसगढ़ी के अध्ययनकर्ता के भीतर एक रस का संचार करती है। लोक संस्कृति एवं लोक जीवन, की वर्तमान में प्रासंगिकता तो है ही यह भविष्य के लिए मार्गदर्शक की भूमिका का भी निर्वाह करता है।</p>

Program	Course	OutCome
बी. ए. तृतीय वर्ष	<p>हिन्दी साहित्य- (द्वितीय प्रश्न-पत्र)</p> <p>हिन्दी भाषा-साहित्य का इतिहास तथा काव्यांग विवेचन</p> <p>पाठ्य विषय-</p> <p>(क) हिन्दी भाषा का स्वरूप विकास-</p> <p>1. बोलचाल की भाषा    2. रचनात्मक भाषा</p> <p>3. राष्ट्रभाषा            4. राज भाषा</p> <p>5. सम्पर्क भाषा        6. संचार भाषा</p> <p>हिन्दी का शब्द भण्डार- तत्सम, तद्म देश आगत शब्दावली।</p> <p>(ख) हिन्दी- साहित्य का इतिहास</p> <p>(ग) काव्यांग- काव्य का स्वरूप एवं प्रयोजन। रस, छंद, अलंकार</p>	<p>हिन्दी भाषा का इतिहास जितना प्राचीन है, उतना ही गूढ़ गहन भी। इसमें रचित साहित्य ने लगभग डेढ़ हजार वर्षों का इतिहास पूरा कर लिया है। इसलिए हिन्दी भाषा और साहित्य के ऐतिहासिक विवेचन की बड़ी आवश्यकता है। इसी के साथ-साथ हिन्दी ने अपना जो स्वतंत्र साहित्य शास्त्र निर्मित किया है, उसे भी रूपायित करने की आवश्यकता है। इसके संज्ञान द्वारा विद्यार्थी की मर्मग्राहिणी प्रतिभा का विकास होगा और ऐतिहासिक प्रसिद्धि में शुद्ध साहित्यिक विवेक का सन्निवेश होगा।</p>

Program	Course	OutCome
बी. ए., बी.कॉम, बी. एस.सी. तृतीय वर्ष	<p>आधार पाठ्यक्रम- हिन्दी भाषा पाठ्य विषय-</p> <p>भारतमाता- पंत, परशुराम की प्रतीक्षा- दिनकर, बहुत बड़ा सवाल- मोहन राकेश, संस्कृति और राष्ट्रीय एकीकरण-योगेश अटल</p> <p>-कथन की शैलिया</p> <p>-विकासशील देशों की समस्यायें</p> <p>-विभिन्न संरचनायें</p> <p>-आधुनिक तकनीकी सम्यायें</p> <p>-कार्यालयीन पत्र और आलेख</p> <p>-जनसंख्या</p> <p>-अनुवाद</p> <p>-ऊर्जा और शक्तिमानता का अर्थशास्त्र</p> <p>-घटनाओं, समारोहों आदि का प्रतिवेदन और विभिन्न प्रकार के निमंत्रण-पत्र</p>	<p>राष्ट्रीय भाव बोध, को जागृत करने में सक्षम, संस्कृति, परम्परा के साथ-साथ सम-सामयिक समस्याओं को सामने लाकर, समाधान परख बुद्धि के विकास में पाठ्य- विषय सहायक है। इसके अतिरिक्त व्याकरण पक्ष पर भी ध्यानाकृष्ट करके हिन्दी के शुद्धि-लेखन को प्रोत्साहित किया गया है।</p>

PROGRAMME OUTCOME [P.O]

- I. History is a true teacher of man which shows proper path to the future.
- II. History makes us aware of various aspects of human nature and provides gradual development of civilization.
- III. The study of history is important to every nation and its citizen to remain alive, prosperous and dynamic.
- IV. Through the study of history, one gets to know the circumstances of the rise and fall of a nation.
- V. Study of history makes us understand past mistakes of our ancestor and gives a stern warning not to repeat them.
- VI. Study of history is considered to be a region of human civilization.
- VII. History provides a clear picture of all known things of ethics, religious life, economic life, cultural life, political system, governance etc. of any erstwhile society.
- VIII. Study of history as a provident fund is necessary otherwise a nation has no future.
- IX. The necessity, concept, purpose, importance and usefulness of history is very broad and far reaching.

PROGRAMME SPECIFIC OUTCOME [P.S.O]

1. Analyze relationship between past and present.
2. To develop practical skills helpful in the study and activities related to historical events.
3. Understand present existing social, political, religious and economic conditions of the people.
4. To develop interest in the study of history and activities related to history
5. Understand background of our religion, administration.
6. Critical analysis – student will produce their own historical analysis of documents and develop the ability to think critically and historically when discussing the past.
7. Student will demonstrate in written work and class discussions and the ability to recognize and articulate the diversity of human experience, including ethnicity, race language as well as political, economic, social and cultural structures are time and space.
8. Application - Student will employ full range of techniques and methods used to gain historical method to make comparison across time space and culture.
9. Student will understand and evaluate historical ideas, arguments and point of view.
10. Knowledge – An understanding of the major trends of historical knowledge.
11. Construct and communicate historical arguments in both oral and written form.

## SEMESTER ONE PAPER 1

### HISTORICAL METHOD

#### Outcome

Identify the major historiographical paradigms that have impacted on the writings of History.

- Distinguish between the major arguments of different types of historiographical interventions.
- Identify the important contexts of these historiographical interventions.
- Within each of these historiographies-like Marxism, gender or environmental history the student will be able to identify the debates and shifts amongst historians. They will be able to avoid flattening their rich complexities within rudimentary typologies of schools.
- Learn that the simple recounting of facts is always imbedded in particular historiographical narratives, subject to which they will be introduced in this course

## PAPER TWO

### HISTOGRAPHY OUTCOME

1. Understand the past and present of the disciplines of history and public history by exploring their purpose, practice, and philosophy
2. . Reflect on the purposes, goals, motives, and assumptions historians bring with them to the study of history.
3. Understand the privileges and obligations associated with a career as a professional historian.
4. Understand historical trends in theory and method and be able to identify and explain major trends and issues in historiography.

## SEMESTER 1

### PAPER 2

#### MODERN WORLD OUTCOME

- 1 Explain and analyze a key historical event or process in the area and during the period under study
2. Understand the diversity of the human experience as influenced by geographical location, race, ethnicity, cultural traditions, gender and class
3. Analyze historical processes that shape individuals and communities, drawing on detailed knowledge about the history of the area under study

4. Think critically about the varieties of experience found in the historical record of the United States, exploring diversity as a critical component of history

5. Distinguish between primary and secondary sources, and understand how each are used to make historical arguments.

#### **SEMESTER 2 PAPER 2 CONTEMPORARY WORLD**

##### **OUTCOME**

1. Students gained knowledge about political history of modern world.
- 2 Students traced and analyzed the main development of contemporary world and explored the important developments of 20th century world.
- 3 Students acquired the knowledge of the principles, forces, processes and problems of the recent times.
- 4 Students were able to explain the various political movements and growth of nationalism in different parts of the world.

#### **SEMESTER 1 PAPER 3**

##### **ANCIENT AND MEDIEVAL HISTORY OF CHHATTISGARH**

###### **Outcomes:**

- How was Chhattisgarh at the time of Kalchuri dynasty? Informs the students of the glorious history of Chhattisgarh.
- How did Chhattisgarh come under the monopoly of Maratha rule? In formulation related to the relationship between Maratha in Chhattisgarh.
- Students understood about national movement and publicity participation in Chhattisgarh
- Important topics to be told to the students about workers and tribal struggle in Chhattisgarh.
- Provide the Knowledge of the glorious tradition, history and development of Chhattisgarh to the students.

#### **SEMESTER 2 PAPER 3 MODERN CHHATTISGARH**

##### **The Early history of Chhattisgarh.**

- They would also be able to know the different dynasties ruled in Chhattisgarh.
- They would learn about the national movements in Chhattisgarh.
- They would have a comprehensive knowledge of the administration changes in Chhattisgarh through nineteenth century.

- It will help to understand the history of Chhattisgarh which became important in the course of history.

- It understands the geographical background that the characteristics of that particular place can be explained to the students.
- Students understood the local culture and art of Chhattisgarh, how it is different from other states, it is unique
- Became aware of the tribal traditions of the life of the tribals
- Studied economic development.
- Took information about archaeological site and information about tourist place

#### **[SEMESTER 1 PAPER 4 ] HISTORY OF CHINA AND JAPAN 1800- 1911**

1 Will be able to understand the political historical activities of the Far East Asia.

2 Will be able to understand the victory of Japan over the bigger countries due to his military power.

#### **SEMESTER 2 PAPER 4 HISTORY OF CHINA AND JAPAN 1911 - 1950**

- To locate these historical transitions in light of other contemporaneous trajectories into a global modernity
- Analyse significant historiographical shifts in Chinese history, especially with reference to the discourses of nationalism, imperialism, and communism
- Investigate the political, economic, social and cultural disruptions caused by the breakdown of the centuries old Chinese institutions and ideas, and the recasting of tradition to meet modernist challenges
- Describe the genesis and trace the unique trajectories of the Chinese Communist Revolution.
- Locate the rise of China in the spheres of Asian and world politics respectively.

#### **MA THIRD SEMESTER PAPER 1 HISTORY OF MODERN INDIA POLITICAL AND ADMINISTRATION 1757-1857**

Students will develop a holistic critical understanding of the social, economic, political, military and cultural conditions prevalent in India (1757-1857).

- The course will enable the students to understand the evolution of British policy in India with reference to the key concepts of modern Indian colonial history like Colonialism, Indology, Paramounty, Orientalism and Utilitarianism.
- While examining the Indian responses to the establishment of British power in India the students will learn more about the central concerns of social reform initiatives, popular protest, military organization and education.

#### **THIRD SEMESTER PAPER 2 HISTORY OF MODERN INDIA ECONOMIC SOCIAL AND CULTURAL 1757-1857**



Students will develop a holistic critical understanding of the social, economic, political, military and cultural conditions prevalent in India (1757-1857).

- The course will enable the students to understand the evolution of British policy in India with reference to the key concepts of modern Indian colonial history like Colonialism, Indology, Paramountcy, Orientalism and Utilitarianism.
- While examining the Indian responses to the establishment of British power in India the students will learn more about the central concerns of social reform initiatives, popular protest, military organization and education
- Know the objectives of Utilitarian towards Indian Society
- Know the activities of Christian missionaries during the British Period
- Know how the modern education in India was developed.
- Know the different phases of growth press in India

### **THIRD SEMESTER OPTIONAL PAPER 3 PAPER HISTORY OF NATIONAL MOVEMENT 1857-1922**

1. To developed an understanding of social religious reform movements salving British India.
2. Nationalistic approaches of National Moments.
3. Causes responsible for partition of India.

### **THIRD SEMESTER OPTIONAL PAPER 4 CULTURAL HISTORY OF INDIA BEGINING TO 1526**

- i) Sources – History as a social science – Influence of Geography on Indian History
- ii) Harappan Culture – Vedic Civilisation
- iii) Importance of 6th Century B.C. in Indian History Buddhism and Jainism.
- iv) Alexander's invasion and its effects
- v) Mauryan – Asoka's Dhamma – Mauryan Administration – Decline and Down fall – cultural conditions in the Mauryan Age.
- vi) Kushans – Kanishka – Cultural Contributions – Satavahanas – Social Economic, political and Religious conditions.
- vii) Imperial Guptas – Samudragupta – Contribution to Culture-Fahien. Harsha and his achievements- Yuan chawing Rajput Heritage.
- viii) India's Cultural contacts with neighbouring Countries – Central South East and East Asia.
- ix) Pallavas and their Contribution to culture and Arts. Western Chalukyas of Badami – Pulakesin II. Eastern Chalukyas of Vengi.
- x) Imperial Cholas – Administration – Cultural Contributions.
- xi) Turke – Afgan invasions – Arab Conquest of sind Invasions of Ghazni and Ghoris – establishment of sultanate- Alauddin.
- xii) Khilji Mohammad Bin Tugluq - Influence of Islam on Indian Culture Bhakti Movement.
- xiii) The Kakatiyas – Socio – economic condition – their cultural contributions.

- xiv) Vijayanagar Empire – Krishna devaraya - socio – economic and Cultural conditions.

#### **FOURTH SEMESTER PAPER 1 MODERN INDIA POLITICAL AND ADMINISTRATIVE 1858-1964'**

1. To understand and appreciate Indian administration properly.
2. To get some knowledge about the Indian constitution.
3. To trace the importance of Indian cabinet system in independent India.
4. To know the administrative services from the British rule to independent India.
5. State the importance and development of local self government

#### **FOURTH SEMESTER PAPER 2 MODERN INDIA ECONOMIC SOCIAL AND CULTURE 1858- 1964**

##### The Colonial State

- Consolidation of the British Rule: New Administrative Apparatus;
  - Relations with the Native States UNIT-II Economy under the British Rule -I
  - Railways, Transport & Communication;
  - Commercialization of agriculture: the Making of a Colonial Economy;
  - Famine Policy UNIT-III Economy under the British Rule -II
  - Indian Capitalist Development: Industry & Finance;
  - Changing Nature of External Trade
  - ; • Monetary Policy, Credit System and Price Movements
- ##### Socio-cultural Profile of British India
- Socio-legal Intervention by the Raj
  - Revivalist & Reform Movements;
  - Education a& the Emergence of Middle Class; & Vernacular
  - ; • Women"s Organizations & Struggle for Women"s Rights

#### **FOURTH SEMESTER OPTIONAL PAPER 3 PAPER HISTORY OF NATIONAL MOVEMENT 1922-1947**

1. Students will learn about Mahatma Gandhi, the development of nonviolent mass action, and the Indian movement for independence. Students will retain strong mental images of Gandhi and the origins of nonviolent mass action.
2. Rationale: Knowledge of nonviolent mass action and of the Indian independence movement is important for any student of modern world history.
3. describes six occasions in which nonviolent mass action changed governments or promoted social reform.

#### **FOURTH SEMESTER [ PAPER 4 ] CULTURAL HISTORY OF INDIA 1526-1950**

1. Demonstrate knowledge of the chronology, narrative, major events, personalities and turning points of the history of the United States, Europe, and at least one non-Western area.
2. Offer multi-causal explanations of major historical developments based on a contextualized analysis of interrelated political, social, economic, cultural and intellectual processes.
3. Correctly extract evidence from primary sources by analyzing and evaluating them in relation to their cultural and historical context (avoiding anachronism, ethnocentrism, and (Ethnomorphism) and use that evidence to build and support an argument.
4. Evaluate secondary historical sources by analyzing them in relation to the evidence that supports them, their theoretical frameworks, and other secondary historical literature.
5. Write an original research paper that locates and synthesizes relevant primary and secondary sources and has a clear, coherent and plausible argument, logical structure, correct grammar and proper references (footnotes and bibliography).

## **BA PART ONE**

### **HISTORY OF INDIA ( UPTO 1206 A.D.) PAPER 1**

#### **Course Outcomes**

1. Political History of ancient India. The life-Story of the Indian people in their formative stage, struggling to find happiness both here & hereafter.
2. Reconstruction of that past history through a selection of significant facts.

#### **OUTCOME**

- I- Understand the salient features of Indus valley civilization
- II- Evaluate the features of Buddhism and Jainism
- III- Visualize the administration of Mauryas and the art and architecture of Mauryas
- IV- Identify the administration of Guptas and their contribution to Nalanda University
- V- Examine the Arab conquest of Sindu and the battle of Tarain.

### **PAPER 2 WORLD HISTORY 1453 -1890 AD**

#### **OUTCOME**

- I- Describe the Geographical discoveries and the Renaissance movement in Europe.
- II- Assess the causes and effects of Reformation and Counter-Reformation movements.
- III- Narrate the enlightened despotism in Europe, especially in France ,Prussia and Austria.
- IV- Learn the causes and results of Thirty years war. V- Discuss the reforms of Peter the Great and Catherine II of Russia.

## **BA PART TWO**

### **PAPER 1 INDIAN HISTORY [MEDIEVAL HISTORY] 1206 -1761 AD**

1. Study Indian society that subjected to a variety of impacts under which the Indian people had to learn to adopt themselves to an ever changing environment.

2. Study of Social organization in India which is often remarked as the caste system.

Ancient Indian Polity: - 1. All forms of Human organization that of the state.

- I. Understand the foundation of the Delhi sultanate and the Sultanate administration.
- II. Recognise the Socio, economic and religious conditions under Vijayanagar Empire.
- III. Identify the condition of India under the Mughal Empire.
- IV. Explain the Administration and art and architecture of Mughal.
- V. Analyse the rise of the Marathas and the contribution of Shivaji.

### **PAPER TWO [WORLD HISTORY] 1890 -1964**

- Identify what is meant by the French Revolution.
- Trace short-term and long-term repercussions of revolutionary regimes and Empire-building by France.
- Explain features of revolutionary actions and reactionary politics of threatened monarchical regimes.
  - Delineate diverse patterns of industrialization in Europe and assess the social impact of capitalist industrialisation.
  - Analyse patterns of resistance to industrial capital and the emerging political assertions by new social classes.

## **BA PART 3 PAPER 1 HISTORY OF INDIA (MODERN INDIA) 1761 – 1950**

B.A.-III

1. Study the Indian art tradition which one of the oldest living art traditions in the world.

2. The art of country with its history social & economical perspective.

3. Excavation of the sites of the old towns like Harappa Mohenjo-Daro & Taxila information of the other ancient monuments.

### **OUTCOME**

- Outline key developments of the 18th century in the Indian subcontinent
- Explain the establishment of Company rule and important features of the early colonial regime
- Explain the peculiarities of evolving colonial institutions and their impact.
- Discuss the social churning on questions of tradition, reform etc, and during first century of British Colonial rule.
- Assess the issues of landed elite, and those of struggling peasants, tribals and artisans during the Company Raj.

## PAPER 2 WORLD HISTORY 1871-1945

### OUTCOME

- Identify how different regional, religious and linguistic identities developed in the late 19th and early 20th centuries.
- Outline the social and economic facets of colonial India and their influence on different trends of politics.
- Explain the various forms of anti-colonial struggles in colonial India.
- Analyse the complex developments leading to communal violence and Partition.
- Discuss the negotiations for independence, the key debates on the Constitution and need for socio-economic restructuring soon after Independence.

Course Outcome of History The main focus in the History Course at UNDERGRADUATE LEVEL is on the stages the growth of human civilizations and the evolution of social systems and on cultural and scientific development. The main aims outlined for history teaching are:

CO1. To promote an understanding of the processes of change and development through which human societies have evolved to their present stage of development.

CO2. To promote an understanding of the common routes of human civilizations and an appreciation of the basic unity of mankind.

The outcomes of this Course are as follows: Students who complete the History POST GRADUATE LEVEL might come up the following knowledge and skills:

CO 1 Learn a basic narrative of historical events in a specific region of the world in a specific time frame

CO 2 Distinguish between primary and secondary sources

CO3. Understand and evaluate different historical ideas, various arguments, and points of view.

CO4 . Evaluate competing interpretations and multiple narratives of the past.

CO 5. Gather and assess primary historical evidence.

CO 6. Compile a composite bibliography.

CO7. Present clear and compelling arguments, based on critical analysis of diverse historical sources.

CO 8. Articulate factual and contextual knowledge of specific places and times, to make careful comparisons (across time, space, and culture) and to discern how each generation (including theirs) uses the past for present purposes.

CO 9. Students should understand academic honesty, a concept presented to them in all history classes.

CO10. Students should understand the basic skills that historians use in research.

CO11. Students should understand the basic skills that historians use in writing.

CO12. Students should understand the basic tools of historical analysis.

CO13. Students should understand the value of diversity.

CO14. Students should develop a secular outlook towards society.

CO15. Students should believe in the equality of man irrespective of caste, creed, religion and colour.

CO.16 . Students should learn to believe in the ideas of religious toleration

**PROGRAMME OUTCOMES, PROGRAMME SPECIFIC OUTCOMES AND COURSE OUTCOMES****PROGRAMME OUTCOMES**

- PO1 - Developing competency with modern social science research. The innovations in social science methods and research all over the world are taught to the students so that research skills and methodological tools become easy of them to master.
- PO2 - To enable the students exhibiting their ability to developed economy of central and state govt.
- PO3 - Understanding issues of Domestic and International politics - The course is aimed at preparing students to have knowledge of the major issues and incidents that affect governments and policy making. The dynamics of decision making by the political leadership are studied and analysed in detail.
- PO4 - Comprehending basic structures and processes of Government Systems - Vaneties of government systems are studied and case studies of leadership styles are discussed who learnig about constitutions of different countries
- PO5 - Critical analysis of theories and concepts of Political Science - The students are given a worldview of the different theories and paradigms that are associated with the discipline. They are expected to test the application of those theories to real world events as and when they occupy centre stage in International affairs.

**PROGRAMME SPECIFIC OUTCOMES**

The M.A. Program is a four semester (2 Yrs) Integrated Program where students are taught both Political Science courses as well as Environmental Courses after completion the student would be able to -

- PSO-1. Understanding and interpreting political behaviour and facts.
- PSO-2. Assessing actions and decisions of political actors.
- PSO-3. Serve as a professor, bank officer, statistical officer, economist.
- PSO-4. Apply the Economical bases towards finding a economical solution to complex social and economical issues.
- PSO-5. Have a basis for advance study
- PSO-6. Have a basis for competition exam

**COURSE OUTCOMES****(Political Science)**

<b>S. No.</b>	<b>Name of Course</b>	<b>Year/ Semester</b>	<b>Name of Subject/Paper</b>	<b>Course Outcome</b>
1	B.A. I	Paper I	Political Theory	It enable the students to have knowledge of Nature of Political Science Utility, Indifference Curve, Law of Demand, Elasticity of Demand, Isoquants curve, cost, Market, Structure.

				factor price determination, welfare Political Science.
2	B.A. I	Paper II	Political Science	This Enable to know the Market Economy, Indian Economy, Natural Resources, Planning, Agriculture, Industry, Industrialization, Foreign trade, Balance of payment, Poverty and equality, Unemployment Price- Rise
3	B.A. II	Paper I	Political Thought	It helps to understand the National Income, Keynesian theory of Income and Employment consumption function, Investment function, Trade cycle, International trade, International Monetary fund, foreign trade.
4	B.A. II	Paper II	Comparative Government & Politics	It enable the students to have knowledge of – Money, Inflation, Deflation, Commercial Bank, Central Bank, Monetary Policy, Public Finance, Public Expenditure, public Revenue, Taxable capacity, Taxation, Classification of taxes, financial Administration Budget.
5	B.A. III	Paper I	International Politics	It helps to understand the Economic development, population theories of development kart Marx model, The Schumpeterian Model, Mahalanobis four sector Model, Harrods - Domar, Solow, Mead, Smt. John Robinson. Population Environment linkage. Pollution control. Sustainable Development, Intellectual capital food security Globalization and Agricultural Development.
6	B.A. III	Paper II	Public Administration	It helps to understand the Statistics, Mean, Median, Mode Quartile Deviation, Mean Deviation, Standard, Deviation, Lorenz curve, Skewness, Karl Pearson's coefficient of correlation, spearman's coefficient of correlation fishers Ideal Index Number, Time-Series Analysis, Trends.
7	M.A. Sem-I	Paper I	Western politics	It enable the students to know the elasticity of demand, Elasticity of Supply, Utility, Indifference Curve, Revealed Preference Theory, Production Function – Short Period and long period Euler's theorem, production function cob-Douglass, cast and revenue.
9	M.A. Sem- I	Paper II	comparative Politics	It helps the student to have the knowledge of basis of – Linear Programming, concept of game. Coefficient of Skewness – Karl Pearson's and Bowley. Karl Pearson's coefficient of correlation. Spearman's coefficient of correlation. Regression Analysis, Inter Polation and Extrapolation, Probability, Fisher's Ideal Index Number.
9	M.A. Sem- I	Paper III	Public Administration	It helps to understand the National Income, Economic development, Human Development Index, Planning, Demographic Features, Agriculture Sector.
10	M.A. Sem- I	Paper IV	International Politics	It helps to understand the International Trade, Heckscherohlin theory of International Trade. The terms of trade, tariff, quotas, dumping, balance of payment devaluation.
12	M.A.	Paper I	Modern Indian	It provide the knowledge about price and output determination

	Sem- II		Politics	perfect competition, monopoly, monopolistic competition, Oligopoly theory of distribution theory of wages, welfare Political Science.
13	M.A. Sem- II	Paper II	Contemporary Politics Issues	It extends the knowledge of Association of Attributes, Research methodology, sampling, classification, tabulation, hypothesis, computer.
14	M.A. Sem- II	Paper III	Understanding method	It gives the knowledge about Industrial sector, fiscal federalism, monetary policy of RBI, export import policy, balanced regional development, WTO and its Impact on different sector of economy. How to prepare a budget of central and state govt.
15	M.A. Sem- II	Paper IV	International Group	It enable students to know the concept of Exchange rate, WTO, UNCTAD, IMF, SAARC, Port Folio investment and international trade. Export promotion international debt.
17	M.A. Sem- III	Paper I	Indian Government & Politics	It enhance the knowledge of National Income, consumption, investment employment theory, demand for money fundamental equation of Keynes bamaul& the money equilibrium charges in the general equalizer.
18	M.A. Sem- III	Paper II	India's Foreign Policy Principles and Practices	This enable students to know the Taxation, Indian Tax System. Taxable capacity public expenditure, Public Debt budget process in India.
19	M.A. Sem- III	Paper III	International Law	It makes understand about the economic growth. Capital output ratio, Input-Output analysis, cost benefit analysis, theories of development-Marx, Schumpeter, Keynesian, Mahalanobis, Harroddomar, Arlher Lewis, John Robinson, mead hicks and Hayek Solow model.
20	M.A. Sem- III	Paper IV	Federal system in india	It gives the knowledge of basic principles of Welfare Political Science, Social Welfare function, Environmental Political Science Theories of Externalities, Marginal social cost. Environmental value. International carbon tax. Environment and WTO.
22	M.A. Sem- IV	Paper I	State Politics in India	It gives the knowledge of basic principles of quantity theory of money. Determinates of money supply. Concept of Inflation, Business Cycle, Monetary Policy Fiscal Policy.
23	M.A. Sem- IV	Paper II	Principles and Practices of Diplomacy	It enables the student to know the fiscal federalism finance commission, fiscal policy and full employment fiscal policy and economic development federal finance, center state financial relation, analysis of central and Chhattisgarh Govt. budget, structure and growth of public expenditure in Chhattisgarh, budget management Act. performance of Chhattisgarh Govt. budget plan and non plan expenditure in Chhattisgarh.
24	M.A.	Paper III	Human Rights	It enable the students to have knowledge of Economic



	Sem- IV		Problems and Prospects	<p>planning. Achievements of Indian plans. Approaches to development-vicious circle of poverty. Big push theory. Theory of critical minimum efforts, balanced and unbalanced growth. Investment criteria, fiscal and monetary policy. Human capital formation, poverty Income Inequalities, Unemployment. The choice of techniques, sustainable development problem of price rise</p>
25	M.A. Sem- IV	Paper IV	Local Self-Government in India	<p>It give the knowledge about concept of pollution, Air Pollution control, water pollution control environmental protection. Environment and sustainable development, global warming climate change, green house effect optimum use of resource. Social forestry Political Science of education. Right to education act health Political Science.</p>

Department Of Sociology

B.A. (Graduate)

Programme Specification Outcomes

On Completion Of The Student Will Be Able To –

- PS01- Provide Basic knowledge Of Sociology-Indian Society Tribes Society, Crime And research Methodology
- PS02- Understand Deferent problem Of Society- Alcoholism, Drug, Addiction, Poverty , Illiteracy.
- PS03- Understand deferent Research Of Society-Tribes Study Woman Study Village Study Industrial Study and cultural study
- PS04- Appear for Competitive Exam- PSC , Labour officer Women And Child Development Family and health Welfare, voluntary Welfare Institution Management Welfare officer
- PS05- Use For Teaching In School And College Level
- PS06- Helps The Study In higher Education And Ph.D. Work

## PROGRAMME OUTCOMES, PROGRAMME SPECIFIC OUTCOMES AND COURSE OUTCOMES

### Program outcome

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

## PROGRAMME SPECIFIC OUTCOMES

- The students can get the knowledge, skills and attitudes during the end of the B.com degree course.
- By goodness of the preparation they can turn into a Manager, Accountant , Management Accountant, cost Accountant, Bank Manager, Auditor, Company Secretary, Teacher, Professor, Stock Agents, Government employments and so on.,
- Students will prove themselves in different professional exams like C.A. , C S, CMA, MPSC, UPSC. As well as other courses.
- The students will acquire the knowledge, skill in different areas of communication, decision making, innovations and problem solving in day to day business activities.
- Students will gain thorough systematic and subject skills within various disciplines of finance, auditing and taxation, accounting, management, communication.
- Students can also get the practical skills to work as accountant, audit assistant, tax consultant, and computer operator. As well as other financial supporting services.
- Students will learn relevant Advanced accounting career skills, applying both quantitative and qualitative knowledge to their future careers in business.
- Students will be able to do their higher education and can make research in the field of finance and commerce.

Department of Botany

Sr. No.	Class	Program Outcomes	Program Specific Outcomes
1	B.Sc. Botany	<p><b>PO1. Critical Thinking:</b> Think logically and organize tasks into a structured form. Understand the evolving state of knowledge in a rapidly developing field. Plan, Conduct and write a report on an independent term project.</p> <p><b>PO2. Practical skills:</b> Students learn to carry out practical work, in the field and in the laboratory, with minimal risk.</p> <p><b>PO3. Scientific knowledge:</b> Apply the knowledge of basic science, life sciences and fundamental processes of plants to study and analyze any plant form.</p> <p><b>PO4. Social Interaction.</b> Due to continuous field visits in the fields students interact with the social activities for their study.</p> <p><b>PO5. The Botanists and society:</b> Apply reasoning informed by the contextual knowledge to assess</p>	<p><b>PSO1.</b> Understand occurrence, morphology, anatomy, reproduction and life cycles of lower group and higher group of plants.</p> <p><b>PSO2.</b> Identify affinities among different groups of plants.</p> <p><b>PSO3.</b> Gain the knowledge of evolution of plants.</p> <p><b>PSO4.</b> To get introduced with fossils, fossilization and some primitive plants.</p> <p><b>PSO5.</b> Understand different plant physiological processes i.e. photosynthesis, respiration, nitrogen metabolism, water absorption, mechanism of flowering, mineral nutrition, plant movements, etc.</p> <p><b>PSO6.</b> Understand the application of genetic engineering and plant tissue culture.</p> <p><b>PSO7.</b> Understand the basic concepts of ecology.</p> <p><b>PSO8.</b> To explore the plants of economic importance.</p> <p><b>PSO9.</b> Perform the laboratory techniques in anatomy, physiology, biochemistry, biotechnology, ecology and utilization of plants.</p>

		<p>plant diversity, its importance for society, health, safety, legal and environmental issues and the consequent responsibilities relevant to the biodiversity and conservation practice</p> <p><b>PO6. Ethics:</b> The subject teaches students about the ethical approach, not to cut the plants.</p> <p><b>PO7. Environment and sustainability:</b> Conservation practices are studied for sustainable development.</p> <p><b>PO8. Self-directed and Life-long learning:</b> Each and every aspect of the syllabus teaches life- long learning.</p>	
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Sr. No.	Class	Paper	Course Outcomes
1	B.Sc. I	Ist: Bacteria, Viruses, Fungi, Lichens and Algae	<p>On completion of this course students will be able</p> <ul style="list-style-type: none"> <li>➤ To gain knowledge about microbial diversity.</li> <li>➤ To understand about range of thallus structure of algae, fungi and lichen and their occurrence.</li> <li>➤ To know about life cycles of different algal and fungal spp.</li> <li>➤ To gain knowledge about economic importance of bacteria, viruses, algae, fungi and lichens.</li> </ul>
		2nd: Bryophytes, Pteridophytes, Gymnosperms and Palaeobotany	<ul style="list-style-type: none"> <li>➤ To understand about occurrence, structure and reproduction in bryophytes.</li> <li>➤ To know the evolution of sporophytes in bryophytes.</li> <li>➤ To gain knowledge about stellar evolution and seed formation habit in pteridophytes.</li> <li>➤ To understand about occurrence, structure and life cycles of pteridophytes.</li> <li>➤ To gain knowledge about distribution, structure and life cycles of gymnosperms.</li> <li>➤ To know about economic importance of bryophytes, pteridophytes and gymnosperms.</li> <li>➤ To understand about</li> </ul>

			geological time scale, fossils and fossilization.
		Practical	<ul style="list-style-type: none"> <li>➤ To have the knowledge of study of morphology, anatomy of algae, fungi, bryophyte, gymnosperm.</li> <li>➤ To know the technique of identification of plant disease symptoms.</li> <li>➤ Gain knowledge of anatomy of some gymnosperms.</li> </ul>
2.	<b>B.Sc. II</b>	Ist: Plant Taxonomy, Economic Botany, Plant Anatomy and embryology	<ul style="list-style-type: none"> <li>➤ To know about Bentham and Hooker's system of Classification</li> <li>➤ To understand about IUCN, Typification, numerical taxonomy chemotaxonomy, Herbaria and Botanical gardens.</li> <li>➤ To gain knowledge about some important plant families.</li> <li>➤ To explore the uses of plants as cereal, vegetable, oil, timber, spices, medicines, beverages, biodiesel plants. Also know about cultivation of important flowers and Ethnobotany of CG.</li> <li>➤ To understand about plant root and stem structure, RAM, SAM organization, secondary growth and anatomical anomalies.</li> <li>➤ To know the structure of a flower and its different parts.</li> <li>➤ To get introduced to male</li> </ul>



			<p>and female gametophyte development, pollination, self-incompatibility, fertilization, endosperm and embryo development, polyembryony, apomixes and parthenocarpy.</p>
		<p>2<sup>nd</sup> Ecology and Plant Physiology</p>	<ul style="list-style-type: none"> <li>➤ To have knowledge of Ecology and its scope, understand different ecological factors, soil formation and soil profile.</li> <li>➤ To understand Liebig's law of minimum, Shelford's law of tolerance, morphological and anatomical adaptations in hydrophytes, xerophytes and epiphytes.</li> <li>➤ To know about population and community characteristics, population interactions.</li> <li>➤ To understand about succession, ecotone, edge effect, ecotypes, ecads keystone species.</li> <li>➤ To have knowledge of energy flow in ecosystem, food chain, food web and ecological pyramids and biogeochemical cycles.</li> <li>➤ To understand osmosis, water absorption, mineral nutrition, transpiration photosynthesis and respiration.</li> <li>➤ To gain knowledge of Plant growth hormone and</li> </ul>

			<p>mechanism of flowering.</p> <ul style="list-style-type: none"> <li>➤ To know photoperiodism, vernalization, seed dormancy, germination and plant movement.</li> </ul>
		Practical	<ul style="list-style-type: none"> <li>➤ To get knowledge of study of some important plants in semi-technical language with their classification and identification.</li> <li>➤ To know about morphology and anatomy of root, stem, and leaves with the help of prepared slides.</li> <li>➤ To know the structure of flower. To know the technique of study of ovules, placentation, embryo with the help of slides.</li> <li>➤ To know about some experiments of osmosis, transpiration, photosynthesis, respiration.</li> <li>➤ To have knowledge of studying of a community by quadrat method.</li> <li>➤ To know about structure of ecosystem.</li> <li>➤ Study of some economically important plants.</li> </ul>
3	B.Sc. III	Ist: Plant Physiology, Biochemistry and Biotechnology	<ul style="list-style-type: none"> <li>➤ To understand osmosis, water absorption, mineral nutrition in plants.</li> <li>➤ To have knowledge about photosynthesis and respiration.</li> <li>➤ To gain knowledge of how light and temperature affects</li> </ul>

			<p>flowering in plants.</p> <ul style="list-style-type: none"> <li>➤ To get introduced to the structure of phytochrome, cryptochrome and phototropin.</li> <li>➤ To know the mechanism of nitrogen fixation in plants.</li> <li>➤ To understand about different types of plant movements.</li> <li>➤ To gain knowledge of mechanism of action of enzymes.</li> <li>➤ To have knowledge about seed dormancy.</li> <li>➤ To know the main techniques of genetic manipulation and plant tissue culture.</li> </ul>
		2 <sup>nd</sup> : Ecology and Utilization of plants	<ul style="list-style-type: none"> <li>➤ To understand different ecological factors.</li> <li>➤ To understand ecological relationship between organisms and their environment.</li> <li>➤ To know about plant community and its development.</li> <li>➤ To have knowledge of ecosystem, food chain, food web and ecological pyramids.</li> <li>➤ To know about different biogeographical regions of India.</li> <li>➤ To explore the uses of plants as cereal, vegetable, oil, timber, spices and medicines.</li> </ul>
		Practical	<ul style="list-style-type: none"> <li>➤ To know about some</li> </ul>

			<p>experiments of osmosis, transpiration, photosynthesis, respiration.</p> <ul style="list-style-type: none"><li>➤ To know the technique of identification of carbohydrates, lipids and proteins.</li><li>➤ To have knowledge of studying of a community by quadrat method.</li><li>➤ To know about structure of ecosystem.</li><li>➤ Study of some economically important plants.</li></ul>
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Department of Botany

Sr. No.	Class	Program Outcomes	Program Specific Outcomes
1	B.Sc. Botany	<p><b>PO1. Critical Thinking:</b> Think logically and organize tasks into a structured form. Understand the evolving state of knowledge in a rapidly developing field. Plan, Conduct and write a report on an independent term project.</p> <p><b>PO2. Practical skills:</b> Students learn to carry out practical work, in the field and in the laboratory, with minimal risk.</p> <p><b>PO3. Scientific knowledge:</b> Apply the knowledge of basic science, life sciences and fundamental processes of plants to study and analyze any plant form.</p> <p><b>PO4. Social Interaction.</b> Due to continuous field visits in the fields students interact with the social activities for their study.</p> <p><b>PO5. The Botanists and society:</b> Apply reasoning informed by the contextual knowledge to assess</p>	<p><b>PSO1.</b> Understand occurrence, morphology, anatomy, reproduction and life cycles of lower group and higher group of plants.</p> <p><b>PSO2.</b> Identify affinities among different groups of plants.</p> <p><b>PSO3.</b> Gain the knowledge of evolution of plants.</p> <p><b>PSO4.</b> To get introduced with fossils, fossilization and some primitive plants.</p> <p><b>PSO5.</b> Understand different plant physiological processes i.e. photosynthesis, respiration, nitrogen metabolism, water absorption, mechanism of flowering, mineral nutrition, plant movements, etc.</p> <p><b>PSO6.</b> Understand the application of genetic engineering and plant tissue culture.</p> <p><b>PSO7.</b> Understand the basic concepts of ecology.</p> <p><b>PSO8.</b> To explore the plants of economic importance.</p> <p><b>PSO9.</b> Perform the laboratory techniques in anatomy, physiology, biochemistry, biotechnology, ecology and utilization of plants.</p>

		<p>plant diversity, its importance for society, health, safety, legal and environmental issues and the consequent responsibilities relevant to the biodiversity and conservation practice</p> <p><b>PO6. Ethics:</b> The subject teaches students about the ethical approach, not to cut the plants.</p> <p><b>PO7. Environment and sustainability:</b> Conservation practices are studied for sustainable development.</p> <p><b>PO8. Self-directed and Life-long learning:</b> Each and every aspect of the syllabus teaches life-long learning.</p>	
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Sr. No.	Class	Paper	Course Outcomes
1	B.Sc. I	1st: Bacteria, Viruses, Fungi, Lichens and Algae	<p>On completion of this course students will be able</p> <ul style="list-style-type: none"> <li>➤ To gain knowledge about microbial diversity.</li> <li>➤ To understand about range of thallus structure of algae, fungi and lichen and their occurrence.</li> <li>➤ To know about life cycles of different algal and fungal spp.</li> <li>➤ To gain knowledge about economic importance of bacteria, viruses, algae, fungi and lichens.</li> </ul>
		2nd: Bryophytes, Pteridophytes, Gymnosperms and Palaeobotany	<ul style="list-style-type: none"> <li>➤ To understand about occurrence, structure and reproduction in bryophytes.</li> <li>➤ To know the evolution of sporophytes in bryophytes.</li> <li>➤ To gain knowledge about stellar evolution and seed formation habit in pteridophytes.</li> <li>➤ To understand about occurrence, structure and life cycles of pteridophytes.</li> <li>➤ To gain knowledge about distribution, structure and life cycles of gymnosperms.</li> <li>➤ To know about economic importance of bryophytes, pteridophytes and gymnosperms.</li> <li>➤ To understand about</li> </ul>

			geological time scale, fossils and fossilization.
		Practical	<ul style="list-style-type: none"> <li>➤ To have the knowledge of study of morphology, anatomy of algae, fungi, bryophyte, gymnosperm.</li> <li>➤ To know the technique of identification of plant disease symptoms.</li> <li>➤ Gain knowledge of anatomy of some gymnosperms.</li> </ul>
2.	<b>B.Sc. II</b>	Ist: Plant Taxonomy, Economic Botany, Plant Anatomy and embryology	<ul style="list-style-type: none"> <li>➤ To know about Bentham and Hooker's system of Classification</li> <li>➤ To understand about IUCN, Typification, numerical taxonomy chemotaxonomy, Herbaria and Botanical gardens.</li> <li>➤ To gain knowledge about some important plant families.</li> <li>➤ To explore the uses of plants as cereal, vegetable, oil, timber, spices, medicines, beverages, biodiesel plants. Also know about cultivation of important flowers and Ethnobotany of CG.</li> <li>➤ To understand about plant root and stem structure, RAM, SAM organization, secondary growth and anatomical anomalies.</li> <li>➤ To know the structure of a flower and its different parts.</li> <li>➤ To get introduced to male</li> </ul>



			<p>and female gametophyte development, pollination, self-incompatibility, fertilization, endosperm and embryo development, polyembryony, apomixes and parthenocarpy.</p>
		<p>2<sup>nd</sup> Ecology and Plant Physiology</p>	<ul style="list-style-type: none"> <li>➤ To have knowledge of Ecology and its scope, understand different ecological factors, soil formation and soil profile.</li> <li>➤ To understand Liebig's law of minimum, Shelford's law of tolerance, morphological and anatomical adaptations in hydrophytes, xerophytes and epiphytes.</li> <li>➤ To know about population and community characteristics, population interactions.</li> <li>➤ To understand about succession, ecotone, edge effect, ecotypes, ecads keystone species.</li> <li>➤ To have knowledge of energy flow in ecosystem, food chain, food web and ecological pyramids and biogeochemical cycles.</li> <li>➤ To understand osmosis, water absorption, mineral nutrition, transpiration photosynthesis and respiration.</li> <li>➤ To gain knowledge of Plant growth hormone and</li> </ul>

			<p>mechanism of flowering.</p> <ul style="list-style-type: none"> <li>➤ To know photoperiodism, vernalization, seed dormancy, germination and plant movement.</li> </ul>
		Practical	<ul style="list-style-type: none"> <li>➤ To get knowledge of study of some important plants in semi-technical language with their classification and identification.</li> <li>➤ To know about morphology and anatomy of root, stem, and leaves with the help of prepared slides.</li> <li>➤ To know the structure of flower. To know the technique of study of ovules, placentation, embryo with the help of slides.</li> <li>➤ To know about some experiments of osmosis, transpiration, photosynthesis, respiration.</li> <li>➤ To have knowledge of studying of a community by quadrat method.</li> <li>➤ To know about structure of ecosystem.</li> <li>➤ Study of some economically important plants.</li> </ul>
3	B.Sc. III	Ist: Plant Physiology, Biochemistry and Biotechnology	<ul style="list-style-type: none"> <li>➤ To understand osmosis, water absorption, mineral nutrition in plants.</li> <li>➤ To have knowledge about photosynthesis and respiration.</li> <li>➤ To gain knowledge of how light and temperature affects</li> </ul>

			<p>flowering in plants.</p> <ul style="list-style-type: none"> <li>➤ To get introduced to the structure of phytochrome, cryptochrome and phototropin.</li> <li>➤ To know the mechanism of nitrogen fixation in plants.</li> <li>➤ To understand about different types of plant movements.</li> <li>➤ To gain knowledge of mechanism of action of enzymes.</li> <li>➤ To have knowledge about seed dormancy.</li> <li>➤ To know the main techniques of genetic manipulation and plant tissue culture.</li> </ul>
		2 <sup>nd</sup> : Ecology and Utilization of plants	<ul style="list-style-type: none"> <li>➤ To understand different ecological factors.</li> <li>➤ To understand ecological relationship between organisms and their environment.</li> <li>➤ To know about plant community and its development.</li> <li>➤ To have knowledge of ecosystem, food chain, food web and ecological pyramids.</li> <li>➤ To know about different biogeographical regions of India.</li> <li>➤ To explore the uses of plants as cereal, vegetable, oil, timber, spices and medicines.</li> </ul>
		Practical	<ul style="list-style-type: none"> <li>➤ To know about some</li> </ul>

			<p>experiments of osmosis, transpiration, photosynthesis, respiration.</p> <ul style="list-style-type: none"><li>➤ To know the technique of identification of carbohydrates, lipids and proteins.</li><li>➤ To have knowledge of studying of a community by quadrat method.</li><li>➤ To know about structure of ecosystem.</li><li>➤ Study of some economically important plants.</li></ul>
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## Department of Botany

S.N.	Class	Program Outcomes	Program Specific Outcomes
	M.Sc. Botany	<b>PO1. Critical Thinking:</b> Apply the knowledge of biology to make scientific queries and enhance the comprehension potential.	<b>PSO1.</b> They become focused to take up research and teaching opportunities.
		<b>PO2. Effective communication:</b> Successful transfer of scientific knowledge both by orally and writing.	<b>PSO2.</b> Procure the knowledge of importance of plants to human being and all other organisms.
		<b>PO3. Social interaction:</b> Function as an individual, as a member or a leader to perform a task in class room situation or during field study.	<b>PSO3.</b> The students will be qualified to face CSIR-NET, GATE, ICMR-NET, ICAR-NET.
		<b>PO4. Effective Citizenship:</b> Responsible for learning, develop honesty in work and respect for self and others.	<b>PSO4.</b> Obtain strong foundation in classical Botany, interdisciplinary subjects such as Agriculture Microbiology, Bioinformatics, Botanical Pharmacy, Organic farming and advance topics in Plant Biotechnology, Cell and Molecular biology, Biochemistry and Bioinstrumentation.
		<b>PO5. Ethics:</b> Convey and practice social, environmental and biological ethics.	<b>PSO5.</b> Enable the students to be resourceful in identifying the plants.
		<b>PO6. Environment and sustainability:</b> Insist the significance of conserving a	<b>PSO6.</b> Find opportunities for higher studies in top ranking universities.

		clean environment for perpetuation and sustainable development.	
		<b>PO7. Self-directed and Life-long Learning:</b> Study incessantly to cope with growing competition for higher studies and employment.	

S.N.	Class	Paper	Course Outcomes
1	M.Sc. Semester-I	1st: Biology and Diversity of Virus, Bacteria and Fungi	<p>On completion of this course students will be able to</p> <ul style="list-style-type: none"> <li>• Acquire the knowledge of history and development of Virology, Bacteriology and Mycology.</li> <li>• Develop an understanding of classification, nomenclature, distribution of microbes.</li> <li>• Understand the life cycle pattern and economic importance of microorganisms.</li> <li>• Learn the phylogeny and evolutionary concepts in lower group of organisms.</li> </ul>
		2nd: Biology and Diversity of Algae, Bryophytes and Pteridophytes	<ul style="list-style-type: none"> <li>• Acquire the knowledge of history and development of Phycology and Bryology.</li> <li>• Learn about the occurrence, distribution, structure and life history of lower plants.</li> <li>• Gain adequate knowledge of evolutionary concepts in Algae, Bryophytes and Pteridophytes.</li> <li>• Acquire knowledge of life cycle patterns and economic importance of Algae, Bryophytes and Pteridophytes.</li> </ul>
		3rd: Cell and Molecular Biology of Plants	<ul style="list-style-type: none"> <li>• It brings fundamental concepts as well as recent developments of cell structure and ultrastructure of organelles.</li> </ul>

			<ul style="list-style-type: none"> <li>• Acquire the knowledge about mechanism of translation, DNA replication, DNA damage and repair, splicing of mRNA.</li> <li>• Understand about cytoskeleton, flagellar and other movements.</li> <li>• Get knowledge about mitosis and meiosis, cyclins and PCD.</li> </ul>
		4th: Taxonomy of Angiosperms	<ul style="list-style-type: none"> <li>• Prepare the botanical excursion report.</li> <li>• Understand classical and modern system of classification.</li> <li>• Acquire knowledge on molecular tools for classification.</li> <li>• Impart knowledge on taxonomic evidences.</li> <li>• Acquire knowledge about Plant conservation, sustainable utilization of bio-resource and ecosystem research.</li> <li>• Know about endemism, hot spots and local plant diversity.</li> </ul>
		Lab-1: Based on Paper I&II	<ul style="list-style-type: none"> <li>• Identify cyanobacteria and algae.</li> <li>• Prepare and identify the fungal culture.</li> <li>• Know the symptoms of diseased specimens.</li> <li>• Identify Bryophytes and Pteridophytes.</li> </ul>



		Lab-2: Based on Paper III&IV	<ul style="list-style-type: none"> <li>• Know the technique of isolation of DNA, preparation of Karyotype.</li> <li>• Study of different stages of mitosis.</li> <li>• Obtained skill to identify the plants according to the rules.</li> <li>• Know the technique of preparation of Herbarium sheets.</li> <li>• Know about similarity coefficient and preparation of dendrograms.</li> <li>• Know the economic importance of plants.</li> </ul>
2	M.Sc. Semester-II	Ist: Cytology, Genetics and Cytogenetics	<ul style="list-style-type: none"> <li>• To gain knowledge about DNA packaging.</li> <li>• To understand about structural and numerical alterations in chromosomes.</li> <li>• To know about mapping, genetic recombination in phages and bacteria.</li> <li>• To gain knowledge about gene structure.</li> <li>• Understand about mutation, transposable elements, oncogenes.</li> <li>• To understand about cytogenetics of aneuploids and heterozygotes, C value paradox, alien gene transfer.</li> </ul>
		2nd: Biology and Diversity of Gymnosperm species	<ul style="list-style-type: none"> <li>• To know about evolution of Gymnosperm and their characteristics.</li> <li>• To understand about classification and</li> </ul>

			<p>distribution of Gymnosperm.</p> <ul style="list-style-type: none"> <li>• To get acquainted with comparative study of Cycadeoidales, Cordaitales, Cycadales, Ginkgoales.</li> <li>• To know about comparative structure and reproduction in Cycadales, Ginkgoales, Coniferales, Ephedrales, Welwitschia and Gnetales.</li> </ul>
		3rd: Plant Physiology	<ul style="list-style-type: none"> <li>• To get knowledge about Plant-water relations, nutrient uptake, phloem loading and unloading.</li> <li>• To understand about nodule formation, nitrogen fixation, sulphate uptake and assimilation.</li> <li>• To get knowledge of mechanism of Photosynthesis.</li> <li>• To know about different biotic and abiotic stresses.</li> </ul>
		4th: Plant Biochemistry and Bioenergetics	<ul style="list-style-type: none"> <li>• To get knowledge of thermodynamic principles, structure and function of ATP.</li> <li>• To learn about plant respiration and lipid metabolism.</li> <li>• To know about enzyme action, its regulation and kinetics of enzyme catalysis.</li> <li>• To study about photomorphogenesis and</li> </ul>

			<p>phytochromes, cryptochromes, signaling and gene expression.</p> <ul style="list-style-type: none"> <li>• To know about physiological effects, signal transduction and gene expression of different plant hormones.</li> <li>• Study about photoperiodism, genetic and molecular analysis of floral induction and vernalization.</li> </ul>
		Lab-1: Based on Paper I&II	<ul style="list-style-type: none"> <li>• To know the technique of chromosome banding.</li> <li>• Study of effect of monosomy and trisomy on phenotype of plants.</li> <li>• To know the technique of induction of polyploidy.</li> <li>• Gain skill about isolation of DNA and their estimation.</li> <li>• Comparative study of different gymnosperms.</li> <li>• Collection of various Gymnospermic plant material.</li> </ul>
		Lab-2: Based on Paper III&IV	<ul style="list-style-type: none"> <li>• Know the technique of measurement of catalytic activity of catalase and diastase.</li> <li>• Gain skill to determine R.Q. of different respiratory substrates.</li> <li>• Know the technique of separation of protein by PAGE.</li> <li>• Study of the effects of</li> </ul>

			<p>differernt factors on seed dormancy.</p> <ul style="list-style-type: none"> <li>• Study of Phototropic and Geotropic movements.</li> <li>• Know the technique of plasmolysis and deplasmolysis.</li> <li>• Study about transpiration.</li> <li>• Know the technique of extraction of chloroplast pigment and their separation.</li> <li>• Preparation of absorption spectrum of chlorophyll a.</li> <li>• To know the technique of colorimetry, spectrometry and fluorimetry.</li> </ul>
3	M.Sc. Semester- III	Ist: Plant Development	<ul style="list-style-type: none"> <li>• To get knowledge about important features of plant development.</li> <li>• To know different aspects of seed germination and seedling growth.</li> <li>• Study of organization of SAM, control of differentiation of tissues and wood development.</li> <li>• To know about organization of RAM, vascular tissue differentiation and root-microbe interaction.</li> <li>• Understand about phyllotaxy, control of leaf formation.</li> <li>• Study of origin, structure and differentiation of</li> </ul>

			<p>different plant tissues.</p> <ul style="list-style-type: none"> <li>• To gain knowledge of secondary growth and abnormal secondary growth in various plants.</li> </ul>
		2nd: Plant Reproduction	<ul style="list-style-type: none"> <li>• To know about flower structure and genetics of floral organ differentiation.</li> <li>• Study of microspore and development of male gametophyte.</li> <li>• Understand about megasporogenesis, organization of female gametophytes, GSI and SSI, fertilization.</li> <li>• Know about embryogenesis, endosperm development, storage proteins, dynamics of fruit growth.</li> <li>• Understand about PCD, senescence.</li> </ul>
		3rd: Plant Ecology	<ul style="list-style-type: none"> <li>• Gain knowledge of different types of climatic, edaphic, biotic factors and their interrelationships.</li> <li>• To know about primary production in ecosystem, energy flow, trophic organization, litter fall and decomposition, different biogeochemical cycles.</li> <li>• Study of different biomes and vegetation of the world, analytical and synthetic characteristics of a community, ordination,</li> </ul>

			<p>concept of ecological niche.</p> <ul style="list-style-type: none"> <li>• Study of air, water and soil pollution and Climate change.</li> <li>• To know about resistance, resilience, ecological perturbations, EIA and ecosystem restoration, ecological management.</li> </ul>
		4th: Plant Pathology	<ul style="list-style-type: none"> <li>• Study of history of plant pathology, its development and trends in 21st century.</li> <li>• Understand about parasitic and non-parasitic diseases.</li> <li>• To know about parasitic ability and virulence, mode of infection.</li> <li>• Understand about role of enzymes in pathogenesis, resistance and susceptibility, phytoalexins.</li> </ul>
		Lab-1: Based on Paper I&II	<ul style="list-style-type: none"> <li>• To study the effect of different factors on seed germination and seedling growth.</li> <li>• Gain knowledge of SAM, phyllotaxy and internal structure of leaves.</li> <li>• Study of whole root and internal structure of roots.</li> <li>• Study of different types of tissues and secondary growth.</li> <li>• To know the technique of study of microspore, microsporogenesis, megaspores,</li> </ul>

			<p>megasporogenesis, pollen viability, pollen germination, pollen tube growth.</p> <ul style="list-style-type: none"> <li>• Field study of different types of pollination mechanism.</li> <li>• Study of emasculation, and isolation of embryos at different stages.</li> </ul>
		Lab-2: Based on Paper III&IV	<ul style="list-style-type: none"> <li>• Understand to calculate mean, variance, standard deviation, standard error, coefficient of variation and t-test.</li> <li>• To know about community characteristics by quadrat method.</li> <li>• Gain skill of determination of productivity of ecosystem.</li> <li>• To know the technique of determination of organic matter.</li> <li>• To know about calibration of microscope.</li> <li>• Gain skill of determination of dimensions of microbes and their isolation on media.</li> <li>• Study of symptoms of plant diseases, effects of various biopesticides and artificial pathogenesis.</li> </ul>
	M.Sc. Semester-IV	Ist: Plant Cell, Tissue and Organ Culture	<ul style="list-style-type: none"> <li>• To understand about basic concepts and scope of Biotechnology.</li> <li>• To get acquainted with cellular differentiation, totipotency, organogenesis and adventive</li> </ul>

			<p>embryogenesis.</p> <ul style="list-style-type: none"> <li>To understand about somatic hybridization, artificial seed, protoplast fusion, production of secondary metabolites, cryopreservation.</li> </ul>
		2nd: Plant Resource Utilization and Conservation	<ul style="list-style-type: none"> <li>To gain knowledge of biodiversity of ecosystem, IUCN categories of threats, hot spots, utilization of plants.</li> <li>To get acquainted with world centers of primary diversity of domesticated Plants.</li> <li>Understand about origin, evolution, botany, cultivation and uses of some important plants.</li> <li>To have knowledge of <i>in situ</i> and <i>ex situ</i> conservation, BSI, NBPGR, ICAR, CSIR, DBT.</li> </ul>
		3rd: Genetic Engineering of Plants and Microbes and Biostatistics	<ul style="list-style-type: none"> <li>To understand about gene cloning, DNA synthesis and sequencing, PCR, DNA fingerprinting.</li> <li>To have knowledge of strategies for development of transgenics, <i>Agrobacterium</i>, gene tagging, chloroplast transformation, IPR, ecological risk.</li> <li>Understand about bacterial transformation, selection of</li> </ul>



			<p>recombinants, nitrogen fixer's, fermentation technology.</p> <ul style="list-style-type: none"> <li>• To have knowledge of mapping of genes, molecular markers, genome projects, bioinformatics, microarrays and protein profiling.</li> <li>• To understand about dispersion, standard deviation, standard error, comparison of data by chi-square test.</li> </ul>
		4th: Plant Pathology-II	<ul style="list-style-type: none"> <li>• To get knowledge of effect of environment on disease development.</li> <li>• Regulatory, chemical, biological and breeding for disease resistant varieties.</li> <li>• Crop loss estimate and recommended control for important plant diseases caused by bacteria, viruses, mycoplasma and nematodes.</li> </ul>
		Lab-1: Based on Paper I&II	<ul style="list-style-type: none"> <li>• To know the technique of preparation of Tissue Culture medium and method of transfer of explants on culture media.</li> <li>• Study of isolation of protoplast.</li> <li>• Initiation of organogenesis and embryogenesis using appropriate explants.</li> <li>• Study of some economically important plants.</li> </ul>

			<ul style="list-style-type: none"> <li>• To have knowledge of herbarium, field survey and scientific visit to a protected area.</li> </ul>
		Lab-2: Based on Paper III&IV	<ul style="list-style-type: none"> <li>• Study of bacterial culture media.</li> <li>• To know the technique of isolation of total DNA and plasmid DNA.</li> <li>• Isolation of Rhizobium and Agrobacterium from plant.</li> <li>• Study of various bacterial/fungal plant pathogens.</li> <li>• To know about antibiosis.</li> <li>• To gain skill of technique of isolation of cellulose.</li> </ul>

## Department of Chemistry

### Programme Outcomes: B.Sc. Chemistry

Department of Chemistry	After successful completion of three year degree program in Chemistry a student should be able to-
Programme Outcomes	<p>PO-1. Demonstrate, solve and an understanding of major concepts in all disciplines of chemistry.</p> <p>PO-2. Solve the problem and also think methodically, independently and draw a logical conclusion.</p> <p>PO-3. Employ critical thinking and the scientific knowledge to design, carry out, record and analyze the results of chemical reactions.</p> <p>PO-4. Create an awareness of the impact of chemistry on the environment, society, and development outside the scientific community.</p> <p>PO-5. Find out the green route for chemical reaction for sustainable development.</p> <p>PO-6. To inculcate the scientific temperament in the students and outside the scientific community.</p> <p>PO-7. Use modern techniques, decent equipments and Chemistry softwares.</p>

<p>Programme Specific Outcome</p>	<p>PSO1. Have sound knowledge about the fundamentals and applications of chemical and Scientific theories.</p> <p>PSO2. Every branch of Science and Technology is related to Chemistry</p> <p>PSO3. Easily assesses the properties of all elements discovered.</p> <p>PSO4. Apply appropriate techniques for the qualitative and quantitative analysis of chemicals in laboratories and in industries.</p> <p>PSO5. Will become familiar with the different branches of chemistry like analytical, organic, inorganic, physical, environmental, polymer and biochemistry</p> <p>PSO6. Helps in understanding the causes of environmental pollution and can open up new Methods for environmental pollution control.</p> <p>PSO7. Develops analytical skills and problem solving skills requiring application of chemical principles.</p> <p>PSO8. Acquires the ability to synthesise, separate and characterize compounds using laboratory and instrumentation techniques.</p>
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#### Course outcome of B.Sc. Part-I

Course	Outcomes
<p>INORGANIC CHEMISTRY Paper Code- 0795 Total Hours: 60 hrs. M.M. 33</p>	<p>After successful completion of these courses students should be able to;</p> <p>CO1. Knowledge of atomic structure and periodic properties of elements.</p> <p>CO2. Understand various types of bonding in covalent molecules and ions.</p> <p>CO3. Understand various types of bonding in ionic solids.</p>

	<p>CO4. Comparative knowledge of s-block elements of periodic table and there compounds. Chemistry of noble gases.</p> <p>CO5. Comparative knowledge of s-block elements of periodic table and there compounds. Chemical principles involve in inorganic chemical analysis.</p>
<p>Paper- II: ORGANIC CHEMISTRY Paper Code- 0796 Total Hours: 60 hrs. M.M. 33</p>	<p>CO1. Knowledge of electronic structure, bonding and mechanism of organic reactions.</p> <p>CO2. Knowledge of stereochemistry of organic compounds.</p> <p>CO3. Understand Chemistry of aliphatic and aromatic ring compounds.</p> <p>CO4. Understand Chemistry of alkenes, dienes and alkynes.</p> <p>CO5. Understand Chemistry of arenes and aromaticity.</p>
<p>Paper- III: PHYSICAL CHEMISTRY Paper Code- 0797 Total Hours: 60 hrs. M.M. 34</p>	<p>CO1. Understand the idea of mathematical concepts for chemists and basic knowledge of computer.</p> <p>CO2. Knowledge of various types of molecular velocities and their effect on properties. Understand behaviour of ideal gases.</p> <p>CO3. Understand intermolecular forces in liquid state, ideal and non ideal solutions, properties of dilute solutions.</p> <p>CO4. Understand structure, properties and uses of liquid crystals. Colloidal states and its properties and uses.</p> <p>CO5. Understand chemical kinetics rate constant and order of reactions and various theories. Characteristics types and industrial applications of catalysis.</p>
<p>Practical work Total Hours: 180 hrs. M.M. 50</p>	<p>CO1. Analyse qualitatively acid and basic radicals by semi-micro analysis method.</p> <p>CO2. Calibration of thermometers.</p> <p>CO3. Determination of melting point and boiling point of organic compounds.</p> <p>CO3. Mixed melting point determination.</p> <p>CO4 Crystallization</p> <p>CO5. Decolourisation and crystallization using charcoal.</p>

	<p>CO6. Sublimation.</p> <p>CO7. Detection of Nitrogen, Sulphur and Halogens and detection of functional group present in organic compounds.</p> <p>CO8. To determine specific rate of hydrolysis of methyl/ethyl acetate catalysed by hydrogen ion at room temperature.</p> <p>CO9. To study distribution of iodide between water and carbon tetra chloride.</p> <p>CO10. To determine the % composition of a given mixture by viscosity method.</p>
<b>Course Outcomes B.Sc. Part Two</b>	
<b>Course</b>	<b>Outcomes</b>
	After successful completion of these courses students should be able to:
<p>Paper- I : INORGANIC CHEMISTRY Paper Code- 0845 Total Hours: 60 hrs. M.M. 33</p>	<p>CO1. Understand chemistry of first transition series elements.</p> <p>CO2. Understand chemistry of second and third transition series elements.</p> <p>CO3. Understand Oxidation and reduction. Coordination compounds.</p> <p>CO4. Understand chemistry of lanthanides and actinides.</p> <p>CO5. Understand Acid and bases and non-aqueous solvents.</p>
<p>Paper- II : ORGANIC CHEMISTRY Paper Code- 0846 Total Hours: 60 hrs. M.M. 33</p>	<p>CO1. Understand chemistry of alcohols, phenols and epoxides.</p> <p>CO2. Understand chemistry of aldehydes and Ketons and its uses.</p> <p>CO3. Understand chemistry of carboxylic acid, substituted carboxylic acids and there derivatives.</p> <p>CO4. Understand Chemistry of organic compound of nitrogen.</p> <p>CO5. Understand Chemistry of heterocyclic compounds and amino acids &amp; peptides.</p>
<p>Paper- III: PHYSICAL CHEMISTRY Paper Code- 0847</p>	<p>CO1. Understand first law of thermodynamics and thermo chemistry.</p> <p>CO2. Understand second law of thermo chemistry, efficiency of a</p>

<p>Total Hours: 60 hrs. M.M. 34</p>	<p>heat engine and concept of entropy.</p> <p>CO3. Understand phase equilibrium, Gibbs rule, and application of phase rule to two component systems and three component systems and Nernst distribution law.</p> <p>CO4. Understand electrolytic conductance, theories of strong electrolytes and migration of ions.</p> <p>CO5. Understand electrochemical cell or galvanic cell, single electrode potential, concentration cell, pH and its determination and corrosion.</p>
<p>Practical work Total Hours: 180 hrs. M.M. 50</p>	<p>CO1. Calibration of fractional weights, pipettes and burettes.</p> <p>CO2. Preparation of standard solutions</p> <p>CO3. Quantitative volumetric estimation of vinegar, antacid tablets, chalk, hardness of water, ferrous &amp; ferric and copper.</p> <p>CO3. Colorimetry; Jobs method and mol ratio method.</p> <p>CO4. Adulteration in food stuffs.</p> <p>CO5. Effluent analysis.</p> <p>CO6. Water analysis.</p> <p>CO7. Solvent extraction- separation and estimation of Mg and Fe.</p> <p>CO8. Ion exchange method; separation and estimation of Mg and Zn.</p> <p>CO9. Thin layer chromatography; Determination of R<sub>f</sub> value and identification of organic compounds.</p> <p>CO10. Paper chromatography Ascending and circular, Determination of R<sub>f</sub> value and identification of organic compounds</p> <p>CO11. Qualitative analysis: identification of an organic compound.</p> <p>CO12. Determination of the transition temperature of given substance by thermometric/ dilatometric method.</p> <p>CO13. To study of a solute on the critical solution temperature of two partially miscible liquids</p> <p>CO14. Construct the phase diagram of two component system by cooling curve method.</p>

	<p>CO15. Determine the solubility of benzoic acid at different temperature.</p> <p>CO16. Determine the enthalpy of neutralization and ionization.</p>
<b>Course Outcomes B.Sc. Part-III</b>	
<b>Course</b>	<b>Outcomes</b> After successful completion of these courses students should be able to;
<p>Paper- I : INORGANIC CHEMISTRY - I Paper Code- 0895 Total Hours: 60 hrs. M.M. 33</p>	<p>CO1. Understand metal ligand bonding in transition metal complexes. Thermodynamics and kinetic aspects of metal complexes.</p> <p>CO2. Understand magnetic properties of transition metal complexes and electronic spectra of complexes.</p> <p>CO3. Understand chemistry of organometallic compounds.</p> <p>CO4. Understand bioinorganic chemistry.</p> <p>CO5. Understand hard and soft acids and bases and silicones and phosphazenes.</p>
<p>Paper- II : ORGANIC CHEMISTRY Paper Code- 0896 Total Hours: 60 hrs. M.M. 33</p>	<p>CO1. Understand chemistry of organometallic compounds, organosulphur compounds and organic synthesis via enolates.</p> <p>CO2. Understand biomolecules carbohydrates, proteins and nucleic acid.</p> <p>CO3. Understand Chemistry of synthetic polymers and synthetic dyes.</p> <p>CO4. Understand mass spectroscopy, infrared spectroscopy, UV-Visible spectroscopy and application of mass, IR, UV-Visible spectroscopy to organic molecules.</p> <p>CO5. Understand NMR spectroscopy and <sup>13</sup>CMR spectroscopy and magnetic resonance imaging.</p>
<p>Paper- III: PHYSICAL CHEMISTRY Paper Code- 0897 Total Hours: 60 hrs. M.M. 34</p>	<p>CO1. Understand Quantum Mechanics black body radiation, DeBroglie's idea of matter waves, Schrödinger time independent wave equation and its applications.</p> <p>CO2. Understand quantum mechanical approach to molecular orbital theory, Orbitals and their characteristics.</p> <p>CO3. Understand Vibrational and Raman spectra.</p>



	<p>CO4. Understand Third law of thermodynamics, Nernst theorem and its application. Physical property and molecular structure, Magnetic properties.</p> <p>CO5. Understand of chemical kinetics rate constant and order of reactions and various theories. Characteristics types and industrial applications of catalysis.</p>
<p>Practical work Total Hours: 180 hrs. M.M. 50</p>	<p>CO1. Synthesis analysis of sodium trioxalato ferrate(III).</p> <p>CO2. Preparation of Ni-DMG.</p> <p>CO3. Preparation of Copper tetra ammine complex.</p> <p>CO3. Preparation of cis- and trans-bioxalato diaqua chromate(III).</p> <p>CO4. Gravimetric analysis of Cu as CuSCN, Ni as Ni(DMG), Ba as BaSO<sub>4</sub> and Fe as Fe<sub>2</sub>O<sub>3</sub></p> <p>CO5. Steam distillation: Naphthalene from its suspension in water, Clove oils from clove, Separation of ortho and para-nitrophenols.</p> <p>CO6. Separation of fluorescein and methelene blue by column chromatography.</p> <p>CO7. Separation of leaf pigments from Spinach leave by column chromatography.</p> <p>CO8. Resolution of recemic mixture of (+,-) maleic acid by column chromatography.</p> <p>CO9. Analysis of an organic mixture containing two solid components.</p> <p>CO10 Acetylation of salicylic acid, aniline, glucose and hydroquinone.</p> <p>CO11. Benzoylation of aniline and phenol.</p> <p>CO 12. Preparation of m-dinitrobenzene, p-nitroacetanilide.</p> <p>CO13. Preparation of p-bromoacetanilide, 2,4,6-tribromophenol.</p> <p>CO14. Preparation of methyl orange and methyl red.</p> <p>CO15. Preparation of benzoic acid from toluene.</p> <p>CO16. Preparation of aniline from nitrobenzene, preparation of m-nitro aniline from m-dinitrobenzene.</p>

	<p>CO17, Determine strength of given acid conductometrically using standard alkali solution.</p> <p>CO18, Study of saponification of ethyl acetate conductometrically.</p> <p>CO19, Determine the specific rotation of a given optically active compound.</p> <p>CO20, Determination of molecular weight of a non-volatile solute by Rast method/ Beckmann freezing point method.</p> <p>CO21, Verify Beer-Lambert law for <math>\text{KMnO}_4</math> / <math>\text{K}_2\text{Cr}_2\text{O}_7</math> and determination of concentration of the given solution of the solution.</p>
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### Post Graduate M.Sc. Chemistry

<b>Department of Chemistry</b>	After successful completion of two year degree programme in chemistry a student should be able to:
Programme Outcomes	<p>PO-1. Demonstrate, solve and an understanding of major concepts in all disciplines of Chemistry.</p> <p>PO-2. Solve the problem and also think methodically, independently and draw a logical conclusion.</p> <p>PO-3. Create an awareness of the impact of chemistry on the society, and development outside the scientific community.</p> <p>PO-4. Become professionally trained in the area of Industry, material science, lasers and Nano-Technology.</p> <p>PO-5. Employ critical thinking and the scientific knowledge to design, carry out, record and analyze the results of Chemistry experiments.</p> <p>PO-6. To inculcate the scientific temperament in the students and outside the scientific community.</p> <p>PO-7. Apply modern methods of analysis to chemical systems in a laboratory setting.</p>
<b>M.Sc. Chemistry Semester- I</b>	
Programme Specific Outcome	PSO1 Provide theoretical background and develop practical skills for analysing materials using modern analytical methods and

	<p>instruments,</p> <p>PSO2 Inculcate a problem solving approach by coordinating the different branches of chemistry.</p> <p>PSO3 Becomes professionally skilled for higher studies in research institutions and to work in chemical industries.</p> <p>PSO4 In-depth knowledge helps to qualify in competitive exams.</p>
<p><b>Course Outcomes M.Sc. Chemistry Semester-I</b></p>	
<p>Paper- I : INORGANIC CHEMISTRY M.M. 100</p>	<p>CO1. Understand stereochemistry and bonding in main group compounds.</p> <p>CO2. Understand metal ligand bonding.</p> <p>CO3. Understand electronic spectra of transition metal complexes.</p> <p>CO4. Understand magnetic properties of transition metal complexes.</p> <p>CO5. Understand symmetry and matrix representation.</p> <p>CO6. Understand group theory in chemistry.</p>
<p>Paper- II : ORGANIC CHEMISTRY M.M. 100</p>	<p>CO1. Understand reaction intermediates.</p> <p>CO2. Understand nature of bonding in organic molecules.</p> <p>CO3. Understand stereochemistry.</p> <p>CO4. Understand reaction mechanism: structure and reactivity.</p> <p>CO5. Understand pericyclic reactions.</p> <p>CO6. Understand molecular rearrangement</p>
<p>Paper- III : PHYSICAL CHEMISTRY M.M. 100</p>	<p>CO1. Understand Introduction to exact quantum mechanical results.</p> <p>CO2. Understand approximate methods and angular momentum.</p> <p>CO3. Understand electronic structure of atom.</p> <p>CO4. Understand molecular orbital theory.</p> <p>CO5. Understand chemical dynamics.</p> <p>CO6. Understand surface chemistry.</p>

	CO7. Understand macromolecules
Laboratory Course-I : ORGANIC CHEMISTRY M.M. 100	CO1. Separation, purification and identification of binary organic mixture.  CO2. Organic synthesis based on various reactions.  CO3. Quantitative estimation of various organic compounds.
<b>Course Outcomes M.Sc. Chemistry Semester- II</b>	
Paper- I : INORGANIC CHEMISTRY M.M. 100	CO1. Understand metal ligand equilibrium in solution.  CO2. Understand reaction mechanism of transition metal complexes.  CO3. Understand metal clusters.  CO4. Understand metal carbonyls and metal nitrosyls.  CO5. Understand isopoly and heteropoly acid and salts.
Paper- II : ORGANIC CHEMISTRY (REACTION MECHANISM) M.M. 100	CO1. Understand aliphatic electrophilic substitution.  CO2. Understand aliphatic nucleophilic substitution.  CO3. Understand aromatic nucleophilic substitution.  CO4. Understand free radical reaction.  CO5. Understand addition to carbon-carbon multiple bond.  CO6. Understand addition to carbon-hetero multiple bonds.  CO7. Understand elimination reactions.
Paper- III: PHYSICALCHEMIS TRY (KINETICS AND ENERGETICS) M.M. 100	CO1. Understand classical thermodynamics.  CO2. Understand statistical thermodynamics.  CO3. Understand non equilibrium thermodynamics.  CO4. Understand electrochemistry.  CO5. Understand electro catalysis.  CO6. Understand electron diffraction and neutron diffraction.
Paper- IV : SPECROSCOPY,	CO1. Understand atomic spectroscopy.

<p>DIFFRACTION METHODS &amp; COMPUTER FOR CHEMISTS M.M. 100</p>	<p>CO2. Understand molecular spectroscopy.</p> <p>CO3. Understand photo electric spectroscopy.</p> <p>CO4. Understand Nuclear magnetic resonance spectroscopy.</p> <p>CO5. Understand Electron spin resonance spectroscopy.</p> <p>CO6. Understand photo acoustic spectroscopy.</p> <p>CO7. Understand X-ray diffraction.</p> <p>CO8. Understand computer fundamental.</p> <p>CO9. Understand programming in C.</p> <p>CO10. Understand programming in chemistry and use of computer programmes.</p>
<p>Laboratory Course-I: INORGANIC CHEMISTRY M.M. 100</p>	<p>CO1. Qualitative analysis of mixture containing eight radicals including some less common metal ions.</p> <p>CO2. Quantitative analysis involving two ions in alloys or mixture in solution- one by volumetric and other by gravimetric method.</p> <p>CO3. Quantitative Analysis:-involving two of following in ores, alloys or mixture in solution- one by volumetric and other by gravimetric method Ag, Cu, Fe, Cr, Mn, Ni, Zn, Ca, Mg, Chloride, Sulphate.</p> <p>CO4. Estimation of:- (A) Phosphoric acid in Commercial ortho phosphoric acid. (B) Boric Acid in Borax. (C) Ammonium ion in Ammonium Salt. (D) MnO in pyrolusite (E) Available Chlorine, in bleaching powder. (F) H<sub>2</sub>O<sub>2</sub> in commercial sample.</p> <p>CO5. Preparation of selected inorganic compounds and study of their properties by various method including IR, Electronic Spectra, Mossbauer, ESR. Spectra, Magnetic susceptibility etc. (i) V(acac)<sub>3</sub> (ii) cis K[Cr(C<sub>2</sub>O<sub>4</sub>)<sub>2</sub>(H<sub>2</sub>O)<sub>2</sub>], (iii) [Co(NH<sub>3</sub>)<sub>6</sub>]Cl<sub>3</sub>, trans K[Cr(C<sub>2</sub>O<sub>4</sub>)<sub>2</sub>(H<sub>2</sub>O)<sub>2</sub>].2H<sub>2</sub>O (iv) Na [Cr(NH<sub>3</sub>)<sub>2</sub> (SCN)<sub>4</sub>] (v) Mn (acac)<sub>3</sub> (vi) K<sub>4</sub> [Fe(C<sub>2</sub>O<sub>4</sub>)<sub>3</sub>] (vii) Prussian Blue, Turnbull's Blue.</p>

	<p>(viii) <math>[\text{Co}(\text{NH}_3)_4][\text{Co}(\text{NO}_2)_6]</math>          (ix) <math>\text{Hg}[\text{Co}(\text{SCN})_4]</math>          (x) <math>[\text{Ni}(\text{NH}_3)_4]\text{Cl}_2</math>          (xi) <math>\text{Ni}(\text{DMG})_2</math>, (xii) <math>[\text{Cu}(\text{NH}_3)_4]\text{SO}_4</math>          (xii) <math>\text{K}_3[\text{Cr}(\text{C}_2\text{O}_4)_3] \cdot 3\text{H}_2\text{O}</math>          (xiii) <math>[\text{Cu}(\text{NH}_3)_4]\text{SO}_4</math></p>
<p>Laboratory Course-II:  <b>PHYSICAL          CHEMISTRY</b>          M.M. 100</p>	<p>CO1. Verification of Freundlich's Adsorption isotherm.</p> <p>CO2. To study surface tension - concentration relationship for solutions (Gibbs equation).</p> <p>CO3. Determination of congruent composition and temperature of binary system e.g. diphenylamine - benzophenone system.</p> <p>CO4. Determination of glass transition temperature of given salt e.g. <math>\text{CaCl}_2</math> conductometrically.</p> <p>CO5. To construct the phase diagram for three component system e.g. chloroform, acetic acid and water.</p> <p>CO6. Hydrolysis of an ester/ ionic reactions.</p> <p>CO7. Determination of the velocity constant of hydrolysis of an ester. Determination of effect of (a) change of temperatures, (b) change of concentration of reactants and catalyst and (c) ionic strength of the media on the velocity constant of media.</p> <p>CO8. Determination of the rate constant for the oxidation of iodide ions by hydrogen peroxide.</p> <p>CO9. Determination of the primary salt effect on the kinetics of ionic reaction and Testing of the Bronsted relationship (iodide ions oxidized by persulphate ion).</p> <p>CO10. Determination of solubility of sparingly soluble salt (e.g. <math>\text{PbSO}_4</math>, <math>\text{BaSO}_4</math>) Conductometrically.</p> <p>CO11. Determination of the strength of strong and weak acids in a given mixture conductometrically.</p> <p>CO12. Determination of dissociation constant of weak electrolyte by conductometer.</p> <p>CO13. Determination of velocity constant, Order of reaction and energy of activation for Saponification of ethyl acetate by sodium hydroxide.</p> <p>CO14. Determination of the strength of strong and weak acid in a given mixture using pH meter/potentiometer.</p>

	<p>CO15. Determination of dissociation constant of weak acid by pH meter.</p> <p>CO16. Determination of concentration of acid in given buffer solution by pH meter.</p> <p>CO17. Determination of strength of halides in a mixture potentiometrically.</p> <p>CO18. Determination of the valency of mercurous ions potentiometrically.</p> <p>CO19. Determination of the strength of strong acid, weak acids in a given mixture using a potentiometer/ pH meter.</p> <p>CO20. Determination of temperature dependence of EMF of a cell.</p> <p>CO21. Determination of the formation constant of silver- ammonia complex and stoichiometry of the complex potentiometrically.</p> <p>CO22. Determination of activity and activity coefficient of electrolytes.</p> <p>CO24. Determination of thermodynamic constant. <math>\Delta G</math>, <math>\Delta S</math> and <math>\Delta H</math> for the reaction by e.m.f. method. <math>Zn + H_2SO_4 = ZnSO_4 + H_2</math></p> <p>CO25. Determination of the dissociation constant of monobasic / dibasic acid.</p> <p>CO26. Determination of rate constant for hydrolysis/inversion of sugar using a polarimeter, Enzyme kinetic - inversion of sucrose.</p> <p>CO27. Determination of molecular weight of non-volatile and non-electrolyte/electrolytes by cryoscopy method and to determine the activity coefficient of an electrolyte.</p> <p>CO28. Determination of the degree of dissociation of weak electrolyte and to study the deviation from ideal behaviour that occurs with a strong electrolyte.</p>
<b>Course Outcomes M.Sc. Chemistry Semester- III</b>	
<p>Paper- I : APPLICATIONS OF SPECTROSCOPY (COMPULSORY) M.M. 100</p>	<p>CO1. Understand Vibrational spectroscopy.</p> <p>CO2. Understand Electron spin resonance spectroscopy.</p> <p>CO3. Understand Nuclear Magnetic Resonance of Paramagnetic substances in solution</p>

	<p>CO4. Understand Ultraviolet and Visible Spectroscopy.</p> <p>CO5. Understand Nuclear Magnetic Resonance Spectroscopy.</p> <p>CO6. Understand Carbon-13 NMR Spectroscopy.</p> <p>CO7. Understand mass Spectrometry.</p>
<p>Paper- II: CHEMISTRY OF BIO-INORGANIC &amp; BIO.ORGANIC (COMPULSORY) M.M. 100</p>	<p>CO1. Understand Metal ions in Biological Systems.</p> <p>CO2. Understand transport and storage of dioxygen.</p> <p>CO3. Understand introduction of bioorganic chemistry.</p> <p>CO4. Understand enzymes.</p> <p>CO5. Understand kind of reactions catalysed by enzymes.</p> <p>CO6. Understand Co-enzyme chemistry.</p> <p>CO7. Understand enzyme models.</p> <p>CO8. Understand biotechnological application of enzymes.</p>
<p>Paper- III: ORGANOTRANSITION METAL CHEMISTRY (Optional for group- A, Inorganic Chemistry) M.M. 100</p>	<p>CO1. Understand Alkyls and Aryls of Transition Metals.</p> <p>CO2. Understand Compounds of transition Metal-Carbon multiple bond.</p> <p>CO3. Transition Metal <math>\pi</math>-complexes.</p> <p>CO4. Understand Transition Metal Compounds with Bonds to Hydrogen.</p> <p>CO5. Understand Fluxional Organometallic Compounds.</p> <p>CO5. Understand homogeneous catalysis.</p>



<p>Paper- IV: PHOTOINORGANIC CHEMISTRY (Optional for group- A, Inorganic Chemistry) M.M. 100</p>	<p>CO1. Understand basics of photochemistry.</p> <p>CO2. Understand properties of excited states.</p> <p>CO3. Understand excited states of metal complexes.</p> <p>CO4. Understand ligand field photochemistry.</p> <p>CO5. Understand metal complex sensitizers.</p> <p>CO6. Understand redox reactions by excited metal molecules.</p>
<p><b>Course Outcomes M.Sc. Chemistry Semester- IV</b></p>	
<p>Paper- I: PHOTOCHEMISTRY &amp; SOLID STATE CHEMISTRY (Optional for group-A, Inorganic Chemistry) M.M. 100</p>	<p>CO1. Understand photochemistry reaction.</p> <p>CO2. Understand determination of reaction mechanism.</p> <p>CO3. Understand photochemistry of alkenes.</p> <p>CO4. Understand photochemistry of carbonyl compounds.</p> <p>CO5. Understand photochemistry of aromatic compound.</p> <p>CO6. Understand miscellaneous photochemical reactions.</p> <p>CO7. Understand solid state reactions.</p> <p>CO8. Understand crystal defects and non-stoichiometry.</p> <p>CO9. Understand electronic property and band theory.</p>
<p>Paper- II: BIO-PHYSICAL &amp; ENVIRONMENTAL CHEMISTRY (Optional for group-A, Inorganic Chemistry) M.M. 100</p>	<p>CO1. Understand Biological cell and its constituents.</p> <p>CO2. Understand Statistical mechanics in biopolymers.</p> <p>CO3. Understand Biopolymer interactions.</p> <p>CO4. Understand Thermodynamics of biopolymer solutions.</p> <p>CO5. Understand Cell Membrane and Transport of Ion.</p> <p>CO6. Understand Biopolymer and their Molecular Weights.</p>

	<p>CO7. Understand diffraction method.</p> <p>CO8. Understand Environment.</p> <p>CO9. Understand Hydrosphere.</p> <p>CO10. Understand water quality parameter.</p> <p>CO11. Understand industrial pollution</p>
<p>Paper- III: BIOINORGANIC CHEMISTRY &amp; SUPRAMOLECULAR CHEMISTRY (Optional for group-A, Inorganic Chemistry) M.M. 100</p>	<p>CO1. Understand Metal Storage Transport and Bio-mineralization.</p> <p>CO2. Understand Metalloenzymes</p> <p>CO3. Understand Peroxidase and cytochrome p-450, Copper enzymes.</p> <p>CO4. Understand Metal-Nucleic Acid Interactions</p> <p>CO5. Understand Metals in Medicine.</p> <p>CO6. Understand Molecular recognition.</p> <p>CO7. Understand Transport processes and carrier designs. Understand supra-molecular chemistry.</p>
<p>Paper- IV: ANALYTICAL CHEMISTRY (Optional for group-A, Inorganic Chemistry) M.M. 100</p>	<p>CO1. Understand Introduction, classification and various technique of analytical chemistry.</p> <p>CO2. Understand Error and Evaluation.</p> <p>CO3. Understand Food Analysis.</p> <p>CO4. Understand Analysis of Water Pollution.</p> <p>CO5. Understand Analysis of Soil Fuel.</p> <p>CO6. Understand Fuel analysis.</p>
<p>Laboratory Course-: (SPECIAL CHEMISTRY ) PHOTO INORGANIC &amp; ORGANO-TRANSITION CHEMISTRY M.M. 100</p>	<p>CO1. Preparation of selected inorganic compounds and their study by IR, electronic spectra, Mossbauer, ESR, and magnetic susceptibility measurements. Handling of air and moisture sensitive compounds involving vacuum lines.</p> <p>CO2. Kinetics and mechanism of following reactions: i. Substitution reactions in octahedral complexes (acid hydrolysis and base hydrolysis). ii. Redox reaction in octahedral iii. Isomerisation reaction of octahedral.</p> <p>CO3. Extraction of chlorophyll from green leaves of</p>

	<p>student's choice. Separation of chlorophylls and their electronics spectral study.</p> <p>CO4. Complexation study of Cu (II) ion with biologically important amino acids.</p> <p>CO5. Synthesis of potassium ferrioxalate and determination of the intensity of radiation, ii. Photo-oxidation of oxalic by UO2 sensitization, iii. Photodecomposition of HI and Determinant of its quantum yield.</p>
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# Department Of Mathematics

## B.Sc. Maths(Graduate)

### Programme Specification Outcomes

#### On Completion Of The Student Will Be Able To -

- PS01 - Provide The Basic Knowledge Of Maths.
- PS02 - Understand Different Problem Of Maths.
- PS03 - Measure The Height Of a Building Or Mountain.
- PS04 - Appear For Competitive Examination.
- PS05 - Use For Teaching In School Level.
- PS06 - Use In Engineering and Medical Fields.
- PS07 - Use In Banking and Railway Areas.
- PS08 - Helps The Study in Higher Education.
- PS09 - Thinking a Critical Manners.
- PS10 - Calculate The Motion Of Body and Various Oscilators.
- PS11 - Develop Self Confidence, Skill and Reasoning.

S.N.	Name Of Course	Name Of Sub./Paper	Course Outcome
1	B.Sc. 1st	Algebra & Trigonometry - 1	1. To Give The Student Of First-Hand Knowledge Of Matrix.
			2. To Develop In Students Application Of Linear Equation .
			3. To Give Knowledge Of Major Mathematicians Of Their Contribution.
			4. To Give The Students On Knowledge Of Mappings And Homomorphism.
			5.To Understand Permutation Group.
			6. Knowledge Of Trigonometrical Functions.
			7. Understand Group And Its Properties.
2	B.Sc. 1st	Elementary Calculus - 2	1. Knowledge Of Limit Of Function Asymptotes.
			2. Understand Of Curvature & Tracing Of Curves.
			3. Understand Of Integration Of Transcendental Functions.
			4. Knowledge Of Degree And Order Offer Differential Equation.
			5. Knowledge Of Linear Differential Equation.
3	B.Sc. 1st	Vector Analysis & Geometry - 3	1. Knowledge Of Is Scalar And Vector Product.
			2. Understand Vector Integration In Theorem Of Gauss And Green Stocks.
			3. Understand System Of Conics And Polar Equation Of Conic.
			4. Understand Plane, Sphere And Cone.
4	B.Sc. 2nd	Advanced Calculus - 1	1. Understand Sequence And Series.
			2. Understand Continuity Of Function And It's Properties.
			3. Understand Beta And Gamma Functions And Its Theorem.
			4. Understand The Euler Theorem On Homogeneous Function.
			5. Understand Envelops Maxima And Minima Lagrange's Multiplier Method.
5	B.Sc. 2nd	Differential Equation - 2	1. Understand The Power Series Method Bessel And Legendre Functions.
			2. Understand Laplace Transformation And It's Existence Theorem.

			3. Understand The Lagrange's Solution And Charpit Method.
			4. Understand Variational Problem With Fixed Boundaries Eulers Equation For Functional Containing First Order Derivatives.
6	B.Sc. 2nd	Mechanics - 3	1. Understand Equilibrium Of Coplanar Forces Stable And Unstable Equilibrium And Virtual Work.
			2. Understand Forces In Three Dimensions Poinot's Central Axis And Null Lines And Planes.
			3. Knowledge Of Simole Harmonic Motion And Hooke's Law.
			4. Understand Velocities And Acceleration Along Radial And Transverse Directions.
			5. Knowledge Of Kepler's Law Of Motion (Planetary Motion).
7	B.Sc. 3rd	Analysis - 1	1. To Give The Student A First Hand Knowledge Of Series Of Arbitrary Term Double Series And Implicit Function.
			2. Understand The Riemann Integral And The Fundamental Theorem Of Integral Calculus.
			3. Knowledge Of Matric Space And Limit Points.
			4. Understand Complex Numbers As Ordered Pair And Analytic Function.
			5. Understand Baire Category Theorem And Extension Theorem.
8	B.Sc. 3rd	Abstract Algebra - 2	1. To Give The Student A Knowledge Of Group Automorphism A Normalizer.
			2. Understand Ring Theory And Homomorphism And Isomorphism Theorem.
			3. To Give The Student A Knowledge Of Vector Space And Their Basic Properties Basis.
			4. To Give The Student A Knowledge Of Linear Transformation And Diagonalization.
			5. Understand Inner Product Space And Cauchy Schwarz Inequality.
9	B.Sc. 3rd	Discrete Mathematics - 3	1. Understand Phrase Structure Grammars And Langauges.
			2. Knowledge Of Relation And Function Graph.
			3. Understand Finite State Machine And Equivalent Machine.

			4. Understand Recurrence Relation And Homogeneous.
			5. Understand Boolean Algebra (Lattice) And Boolean Function
			6. Knowledge Of Switching Circuits.

S.N.	Name Of Course	Name Of Sub./Paper	Course Outcome
1	B.Sc. 1st	Algebra & Trigonometry - 1	1. To Give The Student Of First-Hand Knowledge Of Matrix.
			2. To Develop In Students Application Of Linear Equation .
			3. To Give Knowledge Of Major Mathematicians Of Their Contribution.
			4. To Give The Students On Knowledge Of Mappings And Homomorphism.
			5.To Understand Permutation Group.
			6. Knowledge Of Trigonometrical Functions.
			7. Understand Group And Its Properties.
2	B.Sc. 1st	Elementary Calculus - 2	1. Knowledge Of Limit Of Function Asymptotes.
			2. Understand Of Curvature & Tracing Of Curves.
			3. Understand Of Integration Of Transcendental Functions.
			4. Knowledge Of Degree And Order Order Differential Equation.
			5. Knowledge Of Linear Differential Equation.
3	B.Sc. 1st	Vector Analysis & Geometry - 3	1. Knowledge Of Is Scalar And Vector Product.
			2. Understand Vector Integration In Theorem Of Gauss And Green Stocks.
			3. Understand System Of Conics And Polar Equation Of Conic.
			4. Understand Plane, Sphere And Cone.
4	B.Sc. 2nd	Advanced Calculus - 1	1. Understand Sequence And Series.
			2. Understand Continuity Of Function And It's Properties.
			3. Understand Beta And Gamma Functions And Its Theorem.
			4. Understand The Euler Theorem On Homogeneous Function.
			5. Understand Envelops Maxima And Minima Lagrange's Multiplier Method.
S.N.	Name Of Course	Name Of Sub./Paper	Course Outcome
5	B.Sc. 2nd	Differential Equation - 2	1. Understand The Power Series Method Bessel And Legendre Functions.
			2. Understand Laplace Transformation And It's Existence Theorem.



			3. Understand The Lagrange's Solution And Charpit Method.
			4. Understand Variational Problem With Fixed Boundaries Eulers Equation For Functional Containing First Order Derivatives.
6	B.Sc. 2nd	Mechanics - 3	1. Understand Equilibrium Of Coplanar Forces Stable And Unstable Equilibrium And Virtual Work.
			2. Understand Forces In Three Dimensions Poinot's Central Axis And Null Lines And Planes.
			3. Knowledge Of Simole Harmonic Motion And Hooke's Law.
			4. Understand Velocities And Acceleration Along Radial And Transverse Directions.
			5. Knowledge Of Kepler's Law Of Motion (Planetary Motion).
7	B.Sc. 3rd	Analysis - 1	1. To Give The Student A First Hand Knowledge Of Series Of Arbitrary Term Double Series And Implicit Function.
			2. Understand The Riemann Integral And The Fundamental Theorem Of Integral Calculus.
			3. Knowledge Of Matric Space And Limit Points.
			4. Understand Complex Numbers As Ordered Pair And Analytic Function.
			5. Understand Baire Category Theorem And Extension Theorem.
8	B.Sc. 3rd	Abstract Algebra - 2	1. To Give The Student A Knowledge Of Group Automorphism A Normalizer.
			2. Understand Ring Theory And Homomorphism And Isomorphism Theorem.
			3. To Give The Student A Knowledge Of Vector Space And Their Basic Properties Basis.
			4. To Give The Student A Knowledge Of Linear Transformation And Diagonalization.
			5. Understand Inner Product Space And Cauchy Schwarz Inequality.
9	B.Sc. 3rd	Discrete Mathematics - 3	1. Understand Phrase Structure Grammars And Langauges.
			2. Knowledge Of Relation And Function Graph.
			3. Understand Finite State Machine And Equivalent Machine.

			4. Understand Recurrence Relation And Homogeneous.
			5. Understand Boolean Algebra (Lattice) And Boolean Function
			6. Knowledge Of Switching Circuits.

**Department Of Mathematics**  
**M.Sc. Maths(Post Graduate)**  
**Programme Specification Outcomes**

**On completion of the student will be able to -**

- PS01 - Understand All Branches Of Maths.
- PS02 - Know The Computer Language and Computer Software.
- PS03 - Appear For Competitive Examination.
- PS04 - Understand For Electrical and Engineering Technique.
- PS05 - Develop Research and Development Management.  
Understand Teaching Career In School and College, University
- PS06 - Level.
- PS07 - In Depth Knowledge Helps To Quality In Competative Exams.
- PS08 - Understand The Signal Analysis.

S.N.	Name Of Course	Name Of Sub./Paper	Course Outcome
1	M.Sc. 1st, 2nd Sem.	Advanced Abstract Algebra - 1	<ol style="list-style-type: none"> <li>1. Understand Permutation Group, Isomorphism Theory.</li> <li>2. Understand Normal Series, Solvable Group And Jordan-Holder Theorem.</li> <li>3. Understand Rings and Modules Zorn's Lemma.</li> <li>4. Understand Modules, Vector Space and Rank Nullity Theorem .</li> <li>5. Understand Field Theory, Noetherian and Artinian Modules.</li> </ol>
2	M.Sc. 1st, 2nd Sem.	Real Analysis - 2	<ol style="list-style-type: none"> <li>1. Understand The Riemann Stieljes Integral and Fundamental Theory Of Calculus.</li> <li>2. Understand Function Of Several Variable (Linear Transformation).</li> <li>3. Understand Sequence and Series Of Function and Its Theorem .</li> <li>4. Understand Power Series and Abel's Theorem.</li> <li>5. Understand Measurable Sets and Functions Riesz Theorem.</li> <li>6. Understand Lebesgue Integral and Lebesgue LP Spaces.</li> </ol>
3	M.Sc. 1st, 2nd Sem.	Topology - 3	<ol style="list-style-type: none"> <li>1. Understand Topological Spaces, Closed Sets.</li> <li>2. Understand Separation Axioms and Its Basic Properties.</li> <li>3. Understand Countable Spaces and Tietz Extension Theory.</li> <li>4. Understand Compactness and Its Basic Properties.</li> <li>5. Understand Connected Spaces and Connectedness (Tychonoff's Theorem).</li> </ol>
4	M.Sc. 1st, 2nd Sem	Complex Analysis - 4	<ol style="list-style-type: none"> <li>1. Understand Complex Integration, Cauchy Goursat Theorem And Cauchy's Integral Formula.</li> <li>2. Understand Meromorphic Functions and Inverse Function Theorem.</li> <li>3. Understand Residues and Cauchy Residue Theorem.</li> <li>4. Understand Bilinear Transformation, Their Properties and Classification.</li> <li>5. Understand Entire Functions, Gamma Function and Its Properties.</li> <li>6. Understand Canonical Product and Jensen's Formula.</li> </ol>
5	M.Sc. 1st, 2nd Sem	Advanced Discrete Mathematics - 5	<ol style="list-style-type: none"> <li>1. Knowledge Connectives, Truth Table and Tautology.</li> <li>2. Knowledge Algebraic Structure and Basic Homomorphism Theorem.</li> <li>3. Understand Lattices(Posets) and It's Properties .</li> <li>4. Understand The Karnaugh Map Method.</li> </ol>

			<p>5. Understand Grammar and Language Finite State Machines.</p> <p>6. Knowledge Graph Theory, Degree Of Vertex and Trees.</p>
6	M.Sc. 3rd, 4th Sem.	Integration Theory & Functional Analysis - 1	<p>1. To Give The Student a First-Hand Knowledge Of Signed Measure, Hahn Decomposition Theory.</p> <p>2. To Provide Them With Knowledge Of Inner Product Spaces, Orthonormal Sets, Bessel's Inequality .</p> <p>3. To Develop In Student The Basic Knowledge Of Uniform Boundedness Theorem .</p> <p>4. To Give The Students a Knowledge Of Lebesgue Stieltjes Integral, Product Measure and Hausdroff Measure .</p>
7	M.Sc. 3rd, 4th Sem	Partial Differential Equation	<p>1. Understand Fundamental Solution Of Laplace's Equation, Mean Value Theorem and Properties Of Harmonic Function.</p> <p>2. Understand Heat Equation, Mean Value Formulae and Properties Of Solution.</p> <p>3. Understand Laplace and Fourier Transforms and Their Application .</p> <p>4. Understand Hamilton Canonical Equations and Routh's Equations.</p> <p>5. To Give The Students Knowledge Of Potential Of Rod, Spherical Shell, Surface and Solid Harmonics .</p>
8	M.Sc. 3rd, 4th Sem	Fuzzy Sets & Their Application - 3	<p>1. Understand Fuzzy Sets <math>\alpha</math> - Cut and Basic Properties On Fuzzy Sets .</p> <p>2. To Give The Student a First-Hand Knowledge Of Fuzzy Numbers and Fuzzy Equation .</p> <p>3. Knowledge Of Fuzzy Relation Of Fuzzy Sets and Fuzzy Morphism.</p> <p>4. Understand Possibility Theory - Fuzzy Measure.</p> <p>5. Knowledge Of Fuzzy Control Controllers Fuzzyfication.</p> <p>6. To Develop In Students Decision Making In Fuzzy Environment, Individual Decision Making.</p>
9	M.Sc. 3rd, 4th Sem	Operation Research - 4	<p>1. Understand Operation Research and Its Scope .</p> <p>2. Knowledge Of Simplex Method and Big M Method Of Solution To LPP.</p> <p>3. Understand Network Analysis - Shortest Path Problem and Maximum Flow / Problem.</p> <p>4. Knowledge Of Game Theory - Two Person and Games With Mix Strategies.</p> <p>5. Understand Of Quequeing System Deterministic Quequeing System.</p>
10	M.Sc. 3rd, 4th Sem	Fluid Mechanics	<p>1. Understand Kinematics - Lagrangian and Eulerian Method.</p> <p>2. Understand Equation Of Motion - Euler's Dynamical Equation and Incompressible Fluids.</p> <p>3. Understand Languages Stream Function and Stoke's Stream Function.</p>

			4. Understand Vortex Motion and Its Properties Energy Of Progressive Waves.
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# PROGRAMME OUTCOMES, PROGRAMME SPECIFIC OUTCOMES AND COURSE OUTCOMES

## PROGRAMME OUTCOMES (Under Graduate)

PO-1. Students will demonstrate proficiency in mathematics and the mathematical concepts needed for a proper understanding of physics.

PO-2. Students will demonstrate knowledge of classical mechanics, electromagnetism, quantum mechanics, and thermal physics, and be able to apply this knowledge to analyze a variety of physical phenomena.

PO-3. Students will show that they have learned laboratory skills, enabling them to take measurements in a physics laboratory and analyze the measurements to draw valid conclusions.

PO-4. Students will be capable of oral and written scientific communication, and will prove that they can think critically and work independently.

## PROGRAMME SPECIFIC OUTCOMES (Under Graduate)

- PSO-1. Understand the core concept of Physics subjects.
- PSO-2. Acquire analytical and logical skill for higher Education.
- PSO-3. Excel in Experimental and Theoretical Physics.
- PSO-4. Trained to take up jobs in applied fields.
- PSO-5. Confident to take up competitive exams.

## COURSE OUTCOMES

(Under Graduate)

S. No.	Name of Course	Year/ Semester	Name of Subject/Paper	Course Outcome ( After going through the course, the student should be able to)
1.	B.Sc.	Part-I (Paper-I)	Mechanics, Oscillations and Properties of Matter	<ul style="list-style-type: none"><li>*Understand laws of motion and their application to various dynamical situations, motion of inertial frames and concept of Galilean invariance.</li><li>*Understand the analogy between translational and rotational dynamics.</li><li>*Understand the phenomena of collisions and idea about centre of mass and laboratory frames and their correlation.</li><li>*Understand the principles of elasticity through the study of modulus of rigidity.</li><li>*Understand simple principles of fluid flow and the equations governing fluid dynamics and the phenomena of simple harmonic motion and the</li></ul>

			properties of systems executing such motions.
			<ul style="list-style-type: none"> <li>*In the laboratory course, the student shall perform experiments related to mechanics (compound pendulum), rotational dynamics (Flywheel), elastic properties (Young Modulus and Modulus of Rigidity) and fluid dynamics (verification of Stokes law, Searle method) etc.</li> <li>*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.</li> <li>*Articulate knowledge of electric current, resistance and capacitance in terms of electric field and electric potential.</li> <li>*Understand the dielectric properties, magnetic properties of materials and the phenomena of electromagnetic induction.</li> <li>*Apply Kirchhoff's rules to analyze AC circuits consisting of parallel and/or series combinations of voltage sources and resistors and to describe the graphical relationship of resistance, capacitor and inductor.</li> <li>*In the laboratory course the student will get an opportunity to verify various laws in electricity and magnetism such as Lenz's law, Faraday's law and learn about the construction, working of various measuring instruments.</li> <li>*Comprehend the basic concepts of thermodynamics, the first and the second law of thermodynamics, the concept of entropy and the thermodynamic potentials and their physical interpretations.</li> <li>*Learn about Maxwell's thermodynamic relations.</li> <li>*Learn the basic aspects of kinetic theory of gases, Maxwell-Boltzmann distribution law, equation of energies, mean free path of molecular collisions, viscosity, thermal conductivity, diffusion.</li> <li>*Learn to calculate the Maxwell, Bose Einstein, and Fermi Dirac Statistics.</li> <li>*In the laboratory course, the students are expected to do some basic experiments in thermal Physics, viz., determinations of Stefan's constant, coefficient of thermal conductivity, temperature coefficient of resistant etc.</li> <li>*Recognize and use a mathematical oscillator equation and wave equation, and derive these equations for certain systems</li> </ul>
2.	B.Sc.	Part-I (Paper-II)	Electricity, Magnetism and electromagnetic theory
3.	B.Sc.	Part-II (Paper-I)	Thermodynamics, Kinetic theory and Statistical Physics
4.	B.Sc.	Part-II (Paper-II)	Waves, Acoustic and Optics



			<p>and diffraction.</p> <ul style="list-style-type: none"> <li>*Understand the working of selected optical instruments like biprism, interferometer, diffraction grating.</li> <li>*Distinguish the different types of aberrations and achromatism.</li> <li>*Use different types of eyepieces according to their application.</li> <li>*Familiar with Basics of Laser Physics.</li> <li>*In the laboratory course, student will gain hands-on experience of using various optical instruments and making finer measurements of wavelength of light using Laser Beam. Resolving power of prism and grating etc.</li> <li>*Understand the basic concept of Reference System.</li> <li>*To get familiar with inadequacies of classical mechanics in explaining microscopic phenomena, quantum theory formulation is introduced through Schrodinger equation</li> <li>*Through understanding the behavior of quantum particle encountering a i) barrier, ii) potential, the student gets exposed to solving non-relativistic hydrogen atom, for its spectrum and eigen functions.</li> <li>*Learn the ground state properties of nucleus and know about the nuclear model, nuclear reaction and the process of radioactivity.</li> <li>*A brief idea about crystalline and amorphous substances, about lattice, unit cell, miller indices, reciprocal lattice, concept of Brillouin zones and diffraction of X-rays by crystalline materials</li> <li>*Basic knowledge of N- and P- type semiconductors, mobility, drift velocity, fabrication of P-N junctions; forward and reverse biased junctions.</li> <li>*Application of PN junction for different type of rectifiers and voltage regulators.</li> <li>*NPN and PNP transistors and basic configurations namely common base, common emitter and common collector, and also about current and voltage gain.</li> <li>*Biasing and equivalent circuits, coupled amplifiers and feedback in amplifiers and oscillators.</li> <li>*To characterize various devices namely PN junction diodes, LEDs, Zener diode, solar cells, PNP and NPN transistors. Also construct amplifiers and oscillators using discrete components.</li> </ul>
5.	B.Sc.	Part-III (Paper-I)	<p>Relativity, Quantum Mechanics, Atomic Molecular and Nuclear Physics</p>
6.	B.Sc.	Part-III (Paper-II)	<p>Solid State Physics and Electronics</p>

**PROGRAMME OUTCOMES  
( POST GRADUATE)**

PO-1. Demonstrate, solve and an understanding of major concepts in all disciplines of

- physics.
- PO-2. Solve the problem and also think methodically, independently and draw a logical conclusion.
- PO-3. Employ critical thinking and the scientific knowledge to design, carry out, record and analyze the results of Physics experiments.
- PO-4. Create an awareness of the impact of Physics on the society, and development outside the scientific community.
- PO-5. To inculcate the scientific temperament in the students and outside the scientific community.
- PO-6. Use modern techniques, decent equipments and Phonics software's

#### PROGRAMME SPECIFIC OUTCOMES (POST GRADUATE)

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

#### COURSE OUTCOMES (POST GRADUATE)

On completion of programme the student will able to:

7.	M.Sc. Physics	Semester- I	(Paper-I) Mathematical Method-1	<ul style="list-style-type: none"> <li>*To understand the vector spaces and matrices</li> <li>*To obtain the series solution by Legendre and Laguerre polynomial.</li> <li>* Study the Generating function for Bessels and Hermite polynomials.</li> <li>*To obtain the solution of integral transform and fourier series.</li> <li>*Understand Mechanics of system of particles.</li> <li>*Understand the concept of D'Alembert principle.</li> <li>*Solve Lagrangian and Hamiltonian formulation.</li> <li>*Learn Canonical Transformation and Poisson's Bracket.</li> </ul>
8.	M.Sc. Physics	Semester- I	(Paper- II) Classical Mechanics	<ul style="list-style-type: none"> <li>*Identify methods to solve numerical algebraic and transcendental equations.</li> <li>*Computes solutions to simultaneous linear algebraic equations.</li> <li>* Understands the concepts of finite differences intervals and unequal intervals.</li> <li>* Gains knowledge about to interpolation for equal intervals and unequal intervals.</li> <li>* Understand the Computer fundamentals and the C programming language concepts.</li> <li>*Study the concept of C character set, identifiers and keywords, variable names.</li> <li>*Choose the Loops and Decision Making Statements to solve the problem.</li> <li>*Use Functions to solve the given problem.</li> <li>*Know the special purpose of Diode like MIS, MOS CCD.</li> </ul>
9.	M.Sc. Physics	Semester- I	(Paper-- III) Numerical Method and C- Programming	
10.	M.Sc. Physics	Semester- I	(Paper- IV) Electronics-I	<ul style="list-style-type: none"> <li>*To study the Microwae devices.</li> <li>*To understand the FET, JFET, MOSFET.</li> <li>*To understand the process of modulation and demodulation.</li> </ul>

11.	M.Sc. Physics	Semester II	(Paper-I) Mathematical Method—II	<ul style="list-style-type: none"> <li>*Understand the Tensor and their transformation law.</li> <li>*Solve the problem using Green's Function and Boundary value problem.</li> <li>*Understand the Cauchy integral theorem and their evaluation.</li> <li>*Understand the behavior of quantum particle through schrodinger equation and their applications.</li> <li>*Understand the Uncertainty relation and Learn the matrix representation of an operator.</li> <li>*Know the motion in Central force problem.</li> <li>*Study the Time independent perturbation theory and its application such as Zeeman effect and Stark effect.</li> <li>*Derive Maxwell equation and wave equation.</li> <li>*Study the Frensel equation and propogation of EW through different media.</li> <li>*Study the Special theory of relativity and Lorentz transformation.</li> <li>*Get extended knowledge of Electromagnetic scalar and vector potential.</li> <li>*Know the principle of LDR and LED.</li> <li>*Know the purpose of Photo detector and Bipolar transistor.</li> <li>*Study the OP-AMP and their types.</li> <li>*Study the Multivibrators.</li> </ul>
12.	M.Sc. Physics	Semester II	(Paper-II) Quantum Mechanics—I	<ul style="list-style-type: none"> <li>*To study the application of Time-dependent Perturbation Theory.</li> <li>*To understand the WKB approximation.</li> <li>*Know the application and validity of Born Approximation.</li> <li>*To study the Symmetry in Quantum Mechanics.</li> <li>*To learn Postulates of statistical mechanics.</li> <li>*To learn statistical interpretation of thermodynamics micro canonical, canonical and grand canonical ensembles</li> <li>*To study the methods of statistical mechanics are used to develop the statistics for Bose-Einstein and Fermi-Dirac statistics.</li> <li>*To understand cluster expansion and Thermodynamic fluctuation.</li> </ul>
13.	M.Sc. Physics	Semester II	(Paper-III) Electrodynamics	<ul style="list-style-type: none"> <li>*Study the Crystaline and Amorphous solids.</li> <li>*Understanding the concept of Defects or imperfection in crystal.</li> <li>*Study the Band theory and hall effect.</li> <li>*Get Knowledge of Weiss theory of ferromagnetism.</li> <li>*Understand different Number systems, Codes, Logic Gates, Boolean laws &amp; Theorems.</li> <li>*Simplify the Boolean functions to the minimum number of literals using Karnaugh Map.</li> <li>*Gain knowledge about combinational circuits and sequential circuits.</li> <li>*Can design various synchronous and asynchronous circuits using flip flop.</li> <li>*Design Counters, Shift Registers using J-K / D Flip Flop.</li> <li>*Understand the A to D and D to A converter.</li> <li>*Study the Superconductivity.</li> <li>*Understand the Polarization.</li> </ul>
14.	M.Sc. Physics	Semester II	(Paper-IV) Electronics--II	
15.	M.Sc. Physics	Semester III	(Paper-I) Quantum Mechanics-II	
16.	M.Sc. Physics	Semester III	(Paper-II) Statistical Mechanics	
17.	M.Sc. Physics	Semester III	(Paper-III) Condensed Matter Physics-I	
18.	M.Sc. Physics	Semester III	(Paper-IV) Electronics-III	
19.	M.Sc. Physics	Semester IV	(Paper-I) Condensed	

20.	M.Sc. Physics Semester-IV	matter Physics-II  (Paper-II) Nuclear Physics	<ul style="list-style-type: none"> <li>*Study the Semiconductor and its types.</li> <li>*Understand the Nano-structure and their classification.</li> <li>*Know the properties of nucleus likes binding energy, magnetic dipole moment and electrical quadrupole moment.</li> <li>*To study achievement of Nuclear Models of Physics and its limitations.</li> <li>*To give an extended knowledge about nuclear reactions such as nuclear fission and fusion.</li> <li>*To understand the basic concept of Particle Physics.</li> <li>*Know the Spectra of hydrogen, helium, alkali, and alkaline earth metal.</li> <li>*Understand the complete description of Continuous X-ray spectra.</li> <li>*Study the Types of molecules.</li> <li>*Study the Diatomic molecule and principle of Frank Condon.</li> </ul>
21.	M.Sc. Physics Semester-IV	(Paper-III) Atomic and Molecular Physics	<ul style="list-style-type: none"> <li>*Explain Microcontroller Architecture</li> <li>*Write simple programs for addition, subtraction, multiplication and division.</li> <li>*Understand the basic concepts of memory interfacing and circuit.</li> <li>*Comprehend a suitable Input and Output peripheral.</li> </ul> <p>Study the Optical fibres.</p>
22.	M.Sc. Physics Semester-IV	(Paper-IV) Electronics-IV	

## What is Zoology?

Zoology is one of the most popular branches in Science that involves the study of animals and their biological processes. Zoology courses are offered at the graduate and postgraduate levels. Candidates in this discipline are basically taught regarding animal anatomy, physiology, biochemistry, genetics, evolution, ecology, behavior, and conservation.

Career options after pursuing a BSc, MSc in Zoology are varied. Candidates find opportunities in government departments, environmental agencies, universities, colleges, biotechnological, pharmaceutical, environmental/ecological fields.

## Zoology Courses– Eligibility & Entrance Exams

**The eligibility criteria for Zoology courses are given below –**

- **UG Courses** – The minimum eligibility for admission in BSc in Zoology is Class 12 pass in Science Stream. Candidates must have studied Physics, Chemistry, and Biology in Class 12.
- **PG Courses** – Candidates must have passed BSc/BSc (Hons) in Zoology. Candidates who have passed BSc/BA in medical and allied medical sciences/biosciences/life sciences are also eligible to apply.

## Top Entrance Exams for Zoology courses

The admission for BSc courses in Zoology is based on the cutoff list released by college. Candidates are offered admission in MSc courses based on their marks.

## Zoology Syllabus

The syllabus for Zoology is different for different courses and is divided into various semesters. The course teaches candidates regarding the function, structure, and evolution of animals. Candidates also study the beginning, origin, and development of species, their behaviors, their habits, and interactions. The subjects taught in Zoology are as follows –

Morphology	Biochemistry
Physiology	Immunology
Cell and Molecular Biology	Embryology
Biotechnology	Genomics
Genetics Evolution	Ecology
Biosystematics, Structure, and Functions of Invertebrates	Biosystematics, Structure, and Functions of Invertebrates
Tools and Techniques in Biology	Animal Physiology and Ethology
Genetics and Evolution	Structure and Function of Vertebrates
Environmental Biology	Biology of Parasitism
Chronobiology	Proteins- Structure, Functions, and Evolution
Structure and Function of Genes	Animal Behaviour

## **Zoology Courses – Career Prospects**

There are numerous career opportunities for candidates completing their BSc, MSc, and Ph.D. in Zoology in the public and private sectors. Candidates find jobs as Animal Behaviourist, Conservationist, Wildlife Biologist, Zoo Curator, Wildlife Educator, Zoology faculty, Forensic experts, lab technicians, Veterinarians. The salary offered to these posts are given below.

<b>Job Profile</b>	<b>Salary (Per Annum)</b>
Veterinarians	Rs 5 lakh and above
Wildlife Biologist	Rs 5 lakh and above
Conservationist	Rs 5 lakh and above
Wildlife Educator	Rs 4 lakh and above
Zoology faculty	Rs 4 lakh and above
Forensic experts	Rs 4 lakh and above

## B.Sc. ZOOLOGY

After successfully completing **M. Sc. Zoology** Programme students will be able to:

1. **PSO1.** Ability to connect and apply biological knowledge to other disciplines and to integrate knowledge into their personal and professional lives.
2. **PSO2.** Explain the origin of life with context to the origin of eukaryotic cell and endosymbiotic theory of origin., fossil records, Darwinism and Neo-Darwinism, experimental evidences. And evolution of horse.
3. **PSO3.** Illustrate zoological science for its application in branches like medical entomology, apiculture, aquaculture and agriculture etc
4. **PSO4.** Understand animal interactions with the environment and identify the major groups of organisms with an emphasis on animals and classify them within a phylogenetic framework.

## M.Sc. ZOOLOGY

After successfully completing **M. Sc. Zoology** Programme students will be able to:

1. **PSO1.** Explain how organisms function at the level of the gene, genome, cell, tissue, organ and organ-system and develop theoretical and practical knowledge in handling the animals and using them as model organism
2. **PSO2.** Illustrate physiological adaptations, development, reproduction and behaviour of different forms of life.
3. **PSO3.** Illustrate zoological science for its application in branches like medical entomology, apiculture, aquaculture and etc.
4. **PSO4.** Develop proficiency in the experimental techniques and methods of analysis appropriate for their area of specialization and relate concepts of comparative biology to explain evolution and success to live in varied environment
5. **PSO5.** To know the detail knowledge about fish and fisheries. The structure and function, adaptation, reproduction, development, special organs like luminous, poison organs of different types of fishes.

## **B.Sc. Part-I**

### **Cell Biology: -**

1. On completion of the course, students are able to:
2. Understand the Scope of cell biology, because cell is the basic unit of life.
3. Understand the Main distinguishing characters between plant cell and animal cell.
4. To study and understand the whole cell organelles with their structure and function.
5. Understand the cell cycle and know the importance of various cells in body of organisms.
6. Understand the various applications of cells by using cell biology like study of various types of tumour.

### **Non-Chordates: -**

On completion of the course, students are able to:

1. Understand about the Non-Chordate animals.
2. To study the external as well as internal characters of non-chordates.
3. To study the distinguishing characters of non-chordates.
4. Understand the economical importance of Molluscs.
5. Understand the Characters of class Asteroidea with help of animal Sea star.
6. Understand the internal as well as external morphology of that animal.
7. To study and understand the concepts-Metamorphosis, regeneration and autotomy.
8. Understand the Mouthparts of insects.
9. Understand the Canal system in sponges.
10. Understand the Locomotion in Protozoa.
11. To observe and study the Foot in Mollusca.

### **Chordate: -**

On completion of the course, students are able to:

1. Understand the phylum Chordate.
2. Understand the evolution, history of phylum
3. Understand the evolution, history of phylum.
4. Understand the basic concepts about chordates.
5. Understand the external morphology and sexual dimorphism in chordates.
6. Study and understand the various systems, adaptation and dentition in Mammals.

### **General Embryology: -**

After successfully completing this course, students will be able to:

1. Identify the developmental stages
2. Describe the key events in early and systematic embryological development.
3. Describe the process of gametogenesis.



4. Describe the chick development up to 96 hours of incubation and extra embryonic membranes.
5. Explain the theories of preformation, and concepts like growth, differentiation and reproduction.
6. Explain the principles and process of fertilization and cleavage.
7. Prepare the flow chart of gametogenesis process.

**Practical Paper: -**

After successfully completing this course, students will be able to:

1. Identify the life cycle stages of few parasites.
2. Identify and explain the cleavage blastulae and gastrulae
3. Identify the age of chick embryo.
4. Identify the phases of cell division.
5. List the household Pest and social insects.
6. Explain the pathogenicity and morphology of few ectoparasites.
7. Explain the diseases spread by vectors.
8. Explain the interrelationship of insects and human with examples.
9. Explain the effects of household insects on human health.
10. Demonstrate rectal parasites in cockroach.
11. Demonstrate Mitochondria/ mitotic and meiotic stages by stained preparations.
12. Illustrate the social organization in insects.
13. Prepare temporary slide of chick embryo to identify the stage and age.
14. Prepare mounting of mouth parts of few common insects

**B.Sc. Part-II**

**Structure and Function of Vertebrates:-**

After successfully completing this course, students will be able to:

1. Understand the classes of vertebrates: fishes, Amphibia, Reptilia, Aves and Mammals.
2. Study of endoskeleton of vertebrates.
3. Comparative Study of skin of vertebrates.
4. Understand the comparative account of urogenital system, nervous system, digestive system heart and aortic arches and its evolution in vertebrates.

5. Understand the physiology of nerve impulse and signalling mechanism and digestion.

#### **Vertebrate endocrinology and reproductive biology:-**

After successfully completing this course, students will be able to:

1. define endocrine glands and hormone.
2. Understand the general idea about hormone roles in animal body.
3. Understand the types of hormone, synthesis, secretion and its function.
4. Understand the mechanism of hormone action and its termination.
5. Understand the reproductive system of animal and its function.
6. Understand the role of hormone in animal reproduction and reproductive cycle.
7. Understand the disease and disorder of imbalance of hormones.
8. Reproductive behaviour in animal like courtship pattern.

#### **Ethology:-**

After successfully completing this course, students will be able to:

Define the term ethology/animal behaviour.

Understand the reproductive behaviour in animals.

Understand about orientation behaviour in animal, like taxis, reflexes.

Understand about drugs, hormones and behaviour.

#### **Organic Evolution:-**

After successfully completing this course, students will be able to:

1. Define organic evolution.
2. Explain the theories of organic evolution.
3. Describe the concept of origin of life and theories of origin of life.
4. Describe evolution of horse .
5. Illustrate the presence of organisms at various geological time scale.
6. Apply the knowledge in relevant experimentations.
7. Categorize different zoogeographical realms.
8. Compare animal distribution in different zoogeographical realms.

#### **Applied Zoology:-**

After successfully completing this course, students will be able to:

1. Introduce the term apiculture to the students.
2. To aware the students and provides the economical importance of Apiculture.
3. Understand the Bee keeping equipments and apiary management.
4. To study and understand the various species of Bees.

#### **Practical Paper:-**

After successfully completing this course, students will be able to:

1. Identify the organs by studying the histological slides.
2. Identify hormonal disorders using pictures.
3. Explain the anatomical features of brain, heart, kidney and skin of vertebrates.
4. Explain the anatomical features of brain, heart, kidney and skin of vertebrates.
5. : Identify the fossil types/ adaptations in animals.
6. Explain the evidences of evolution

7. Identify the age of chick embryo.
8. Illustrate the social organization in insects.

**Environmental Biology & Toxicology:-**

After successfully completing this course, students will be able to:

1. List the environmental challenges and their remedies.
2. Describe the nature of ecosystem, productivity, food webs, energy flow.
3. Describe the resilience of ecosystem and ecosystem management.
4. Explain Biosphere, biomes and impact of climate on biomes.
5. Explain wildlife management in India and conservation of wildlife.
6. Explain the three necessary and sufficient conditions i.e. struggle for existence; variation; and inheritance.
7. Illustrate the toxic effects of chemicals in the environment on human and his
8. livestock.
9. Discuss natural resources, causes of their depletion and their conservation.

**Microbiology:-**

After successfully completing this course, students will be able to:

1. Understand about general and applied microbiology.
2. Uses of microbes to making for useful product in industries.
3. Microbiology of domestic water and sewage.

**Medical microbiology:-**

After successfully completing this course, students will be able to:

1. Define the basic terms in parasitology.
2. List common ectoparasites and endoparasites.
3. Explain animal associations and their types.
4. Discuss the life cycle and importance of major parasites.
5. Illustrate transmission routes of animal and zoonotic parasites
6. Classify parasites.
7. Justify the control measures of arthropod vectors.
8. Convince the importance of hygiene with respect to epidemic diseases.

**Genetics & Molecular biology:-**

After successfully completing this course, students will be able to:

1. Define the basic terms in genetics.
2. Discuss the linkage groups and gene frequency.
3. Explain the concept of mutation.
4. Paraphrase the Central dogma of molecular biology.
5. Illustrate the mechanism of replication, transcription and translation.

**Biological Chemistry:-**

After successfully completing this course, students will be able to:

1. Define the basic terms in biochemistry.
2. Explain the structure, functions and reactions of the various biomolecules.
3. Give examples of each group type of biomolecules.
4. Correlate the changes in the levels of these biomolecules with the diseases in human
5. Calculate pH and pOH of buffer solution.
6. Classify the biomolecules. And enzyme.
7. Draw the structures of major biomolecules.

**Biological techniques:-**

After successfully completing this course, students will be able to:

1. Describe the techniques used in hematology.
2. Explain the principle of separation techniques.
3. Illustrate the working of microscopes.
4. List the separation techniques.
5. Demonstrate the principle, working, applications of centrifugation.

**Practical Paper:-**

After successfully completing this course, students will be able to:

1. Count total leucocytes from blood samples.
2. Estimate the Hb. level in blood samples.
3. Measure the pH of given samples.
4. Identify the life cycle stages of few parasites.
5. Explain the pathogenicity and morphology of few ectoparasites.
6. Explain the importance and applications of techniques in biochemistry

## **M.Sc. zoology-I sem.**

### **Non-chordate: -**

After successfully completing this course, students will be able to:

- 1) Understand about the Non-Chordate animals.
- 2) To study the external as well as internal characters of non-chordates.
- 3) To study the distinguishing characters of non-chordates.
- 4) Understand the economical importance of Molluscs.
- 5) Understand the Characters of class Asterozoa with help of animal Sea star.
- 6) Understand the internal as well as external morphology of that animal.
- 7) To study and understand the concepts-Metamorphosis, regeneration and autotomy.
- 8) Understand the Mouthparts of insects.
- 9) Understand the Canal system in sponges.
- 10) Understand the Locomotion in Protozoa.
- 11) To observe and study the Foot in Mollusca.

### **Animal behaviour: -**

After successfully completing this course, students will be able to:

- 1) Define the term ethology/animal behaviour.
- 2) Understand the reproductive behaviour in animals.
- 3) Understand about orientation behaviour in animal, like taxis, reflexes.
- 4) Understand about drugs, hormones and behaviour.

### **Biostatistics:**

After successfully completing this course, students will be able to:

1. Explain the application of sampling in biological sciences.
2. Explain standard Probability distributions.
3. Understand the Applications and uses of Statistics.
4. Understand the Data Classification: Frequency, Relative frequency, class limits, class width, inclusive and exclusive method of classification.
5. Understand the mean, mode and median.
6. Understand the Computation of Variation.
7. Understand the Correlation and Regression.
8. Understand the testing of hypothesis.
9. Understand the Statistical hypothesis, Null Hypothesis, Alternative hypothesis etc.
10. Understand the t-test, F-test.
11. Understand the analysis of variance, meaning of ANOVA. One way and two way classification.
12. Explain the concept and types of central tendency.
13. Explain the concept of correlation and regression with their properties.
14. Classify the given data.
15. Graphically represent the given data.
16. Illustrate the measures of dispersion with examples.
17. Solve statistical problems.

### **Environmental Biology & Toxicology:-**

After successfully completing this course, students will be able to:

1. List the environmental challenges and their remedies.
2. Describe the nature of ecosystem, productivity, food webs, energy flow,

3. Describe the resilience of ecosystem and ecosystem management.
4. Explain Biosphere, biomes and impact of climate on biomes.
5. Explain wildlife management in India and conservation of wildlife.
6. Explain the three necessary and sufficient conditions i.e. struggle for existence; variation; and inheritance.
7. Illustrate the toxic effects of chemicals in the environment on human and his livestock.
8. Discuss natural resources, causes of their depletion and their conservation.

**Practical I sem. zoology :-**

After successfully completing this course, students will be able to:

- 1) Identify the adaptations in animal.
- 2) Demonstrate physical and chemical properties of water and soil samples.
- 3) Explain the interrelationship of insects and human with examples.
- 4) Explain the effects of household insects on human health.
- 5) Demonstrate rectal parasites in cockroach.
- 6) Understand the various internal systems like Digestive system, nervous system with the help of charts.
- 7) Understand the functions of Gemmules and spicules.
- 8) Understand the economical importance of Molluscan shells.
- 9) To study and understand the classification of whole phyla includes in Non chordates
- 10) with the help of charts/models/pictures.
- 11) Understand the evolutionary history of Non chordates.

**M.Sc. II sem.**

**Endocrinology and reproductive physiology :-**

After successfully completing this course, students will be able to:

1. Discuss the roles of Pituitary gland and pineal body.
2. Explain hormonal regulation of biomolecules and mineral metabolism.
3. Describe the role of osmoregulatory and gastrointestinal hormones.
4. Explain the role of hormones in moulting, change in body colour of crustaceans; yolk synthesis in amphibians; insect development.
5. Illustrate the mechanism of hormone action and role of hormone receptors.
6. Justify hormones as coordination molecules
7. Sex determination in animals
8. Reproductive cycle and maturity in human being
9. Compare and contrast spermatogenesis and oogenesis.
10. Illustrate the histology of endocrine glands.

**Cell and Molecular Biology:**

After successfully completing this course, students will be able to:

1. Explain the DNA structure & types, topology, Physical properties; chromatin structure and organization.
2. Discuss genome organization.
3. explain the mobile DNA elements.
4. Explain mechanism of DNA damage and repair.

5. Illustrate the process of DNA replication, transcription, translation and their regulations.
6. Schematically represent the processes of central dogma.
7. Justify the post translational and post transcriptional modifications.
8. Aware the students for Cancer.
9. Understand the Aging, Apoptosis

**Tools and techniques :-**

After successfully completing this course, students will be able to:

1. Explain the importance and applications of techniques in biochemistry.
2. Explain the principle and applications of various chromatographic techniques with examples.
3. Explain the principle, working, materials used and applications of electrophoresis
4. Demonstrate the principle, working, applications of centrifugation.
5. Understand about cryopreservation, and cell culture.
6. Understand about media for cell and tissue culture method.

**Practical II sem. Zoology:-**

On completion of the course, students are able to:

1. Understand the Animal cells and various cell organelles by using microphotographs.
2. Understand the concept vital staining , distinguishing points between nuclear stain and cytoplasmic stain.
3. Understand the techniques using for the study of blood corpuscles.
4. Understand the meaning of Osmotic pressure, isotonic, hypotonic, hypertonic.
5. explain the principle of Colorimetry and Spectrophotometry.
6. Use the basic equipment in biochemistry lab.

**M.Sc. III sem. Zoology**

**Vertebrate structure and function:-**

On completion of the course, students are able to:

1. Understand the terms Histology and Physiology
2. Understand the cell, tissue, organ, system and organisms.
3. Study the derivatives of skin- horns, nails, hairs.
4. Understand the General Topics like Accessory respiratory organs in fishes.
5. Understand and study the various systems like Digestive systems
6. To study and understand the Scales, Fins, Arial adaptation and Dental formula.
7. Understand the Classification various classes of phylum Chordate i.e.Pisces, Reptiles,
8. Aves and Mammals.

**Biosystematics and biodiversity:-**

After successfully completing this course, students will be able to:

1. State the outline of chordate classification.
2. Classify the higher vertebrate groups,
3. Categorize the diversity found in the vertebrate groups of animals like reptiles,birds and mammals.



4. To know the Biodiversity.
5. Understand the principles and methods of taxonomy.

#### **Immunology and developmental biology:-**

After successfully completing this course, students will be able to:

1. List the primary and secondary immune organs.
2. Explain the concepts of immunity, self-nonsel immune response, autoimmune disease.
3. disease.
4. Explain the theories of antibody synthesis and generation of antibody diversity.
5. Illustrate the events and dynamics of inflammation
6. Compare the MHC molecules and diseases associated with HLA.
7. Differentiate between active and passive immunization.
8. Compare the three pathways of complement fixation pathway.
9. Define the terms in developmental biology
10. Explain model organism for developmental studies.
11. Explain the concept of fertilization.
12. Explain the concept of mesoderm induction and pattern formation with examples.
13. Explain the concept of growth and differentiation.
14. Illustrate the types of eggs and cleavage pattern.

#### **Population Genetics and evolution:-**

After successfully completing this course, students will be able to:

1. To know about evolutionary forces.
2. Can construct a phylogenetic tree.
3. To know about inbreeding.
4. Explain the principles of Population genetics.
5. Illustrate the modified Mendelian laws of inheritance.
6. Justify the inheritance of qualitative and quantitative traits.
7. Solve the problems based on gene frequency.
8. Solve the problems based on Hardy-Weinberg law.

#### **Practical III sem. zoology:-**

After successfully completing this course, students will be able to:

1. Identify the pattern of identity of antigen- antibody reaction.
2. Identify the microscopic structure of the lymphoid organs.
3. Demonstrate immunoelectrophoresis technique.
4. Detect the human blood groups by antigen -antibody reactions.
5. Understand the classification of Pisces, and tetrapodes .
6. Understand the classification of Amphibia, Reptilia , Aves, Mammals.
7. Understand the Axial skeleton of mammal.
8. Understand the urinogenital system of vertebrates.
9. Understand the cell culture techniques and separation techniques in biology.
10. Understand the function of Biosensors.
11. Understand the locomotory and respiratory adaptations in amphibians and reptiles.
12. Explain the principle and application of the common techniques used in Immunology.

**Neurophysiology Physiology and general physiology :-**

After successfully completing this course, students will be able to:

1. Demonstrate the effect of body size and salinity on oxygen consumption in given animal.
2. Understand the nervous system its part and structure with significant function.
3. Understand the synapse , receptor , nerve ending, and synaptic transmission.
4. EEG and ECG.
5. Demonstrate the effect of starvation on liver and muscle glycogen in given animal.
6. Detect the normal and abnormal constituents in human urine.
7. Find the absorption spectra of blood pigment.
8. Estimate serum uric acid from given sample.

**Biochemistry :-**

After successfully completing this course, students will be able to:

1. Define basic terms in biochemistry.
2. Explain the chemistry of life.
3. Explain the structure and functions of various biomolecules.
4. Explain the importance of vitamins and coenzymes and disorders related to them.
5. Illustrate the importance of pH, buffer and water in living systems.
6. Draw the structures of various carbohydrates and amino acids.
7. Classify enzymes with examples.
8. Define basic terminologies of metabolic pathways.
9. Explain the laws of thermodynamics, concept of free energy and ATP as currency molecule.
10. Describe the Concepts and regulation of metabolism.
11. Discuss the oxidation of fatty acids and its significance.
12. Illustrate the electron transport chain and oxidative phosphorylation.
13. Illustrate the reactions, energetics and regulation of glycolysis, glycogen biosynthesis,
14. TCA cycle, Purine and Pyrimidine metabolism
15. Write the general reactions of various metabolic pathways.
16. Justify the role of enzymes in metabolism

**Ichthyology (specialization):-**

After successfully completing this course, students will be able to:

1. Know all about fishes and there general as well as special characters.
2. Understand the classification of fishes
3. Understand the adaptation in stress condition.
4. Structure and function of fishes special organs
5. Understand the reproduction and growth of fishes
6. Understand the behaviour of fishes
7. Understand the distribution fishes in the world .
8. To know the indigenous and exogenous fishes.
9. Understand the diseases of fishes due to different parasites.

**Practical IV semester zoology :-**

After successfully completing this course, students will be able to:

1. Identify the organs by studying the histological slides.
2. Demonstrate the structure of tissues by making temporary slides.

3. Use techniques like chromatography,
4. Prepare blood smear and identify the various cells.
5. Process animal tissues and prepare permanent histological slides.
6. Count total leucocytes from blood samples.
7. Estimate the Hb.level in blood samples.
8. Identify commercially important freshwater fish.
9. Separate biomolecules by chromatographic methods.
10. Use the basic equipment in biochemistry lab.

### **PROGRAMME OUTCOMES**

PO1 It will equip the students with skills required for designing, developing applications in Information Technology

PO2 Students will be able to learn the latest trends in various subjects of computers & information technology

PO3 The PG Diploma is aimed at graduates with a computing background and provides a detailed coverage of the key concepts and challenges in data and resource protection and computer software security.

PO4 To give hands on to students while developing real life IT application as part of the study

PO5 To train graduate students in basic computer technology concepts and information technology applications.

PO6 Design and develop applications to analyze and solve all computer science related problems.

### **PROGRAMME SPECIFIC OUTCOMES**

PSO1: Understand Basic concept and Programming language like procedure oriented language, Object oriented programming, event driven programming

PSO2: To expose the students to open Source technologies so that they become familiar with it and can seek appropriate opportunity in trade and industry.

PSO3: Able to provide socially acceptable technical solutions to real world problems with the application of modern and appropriate programming techniques.

PSO4: Design applications for any desired needs with appropriate considerations for any specific need on societal and industrial aspects.

### **COURSE OUTCOME**

#### **Fundamentals of Computers and Introduction to Information Technology**

##### **(Paper-I)**

CO1: This course helps students to understand fundamentals of computer.

CO2: The course also gives students an idea about various components of computer hardware and its working.

CO3: Students will also be able to learn about Internet and popular internet services like e-mail.

## **PC PACKAGES AND COMPUTERIZED ACCOUNTING SYSTEM**

**(Paper-II)**

- CO1:** To make students understand the importance and use of operating systems.
- CO2:** To make students understand about MS Word, MS Excel and MS Power Point.
- CO3:** After studying this course, students will be able to understand procedure of financial accounting for any organization and able to interact with accounting or information system.

## **DATA COMMUNICATION AND COMPUTER SYSTEM**

**(Paper-III)**

- CO1:** Study the basic taxonomy and terminology of the computer networking and enumerate the layers of OSI model and TCP/IP model.
- CO2:** Gain core knowledge of Network layer routing protocols and IP addressing.
- CO3:** Understand the concept of Analog and Digital signal and Multiplexing.

## **SYSTEM ANALYSIS AND DESIGN**

**(Paper-IV)**

- CO1:** Understand the concept of system.
- CO2:** Gain basic knowledge of system planning and investigation.
- CO3:** Learn about implementing and maintenance software.

## **PROGRAMMING IN C AND C++**

**(Paper-V)**

- CO1:** Students can develop programming knowledge
- CO2:** Students can solve any kind of problems using C++ language.
- CO3:** Data Structure based problems can be solved based on c++ programming.

## **RELATIONAL DATABASE MANAGEMENT SYSTEM (ORACLE)**

**(Paper-VI)**

- CO1:** To make student understand basic concepts of Database management systems, especially relational database.

CO2: To make student able to design good database design with implementation of various constrains.  
CO3: To make student effectively using database for storing, managing and retrieving data from DBMS like MS-ACCESS, MySQL, Oracle and DB2 via SQL statements.

### **PROJECT**

CO1: To help students develop their practical ability and knowledge about practical tools/techniques in order to develop software.

CO2: Prerequisite Knowledge of programming methodology and GUI tools.

CO3: Student will be able to develop software applications.

# PROGRAMME OUTCOMES, PROGRAMME SPECIFIC OUTCOMES AND COURSE OUTCOMES

## PROGRAMME OUTCOMES

PO1: To work effectively both as an individual and a team leader on multi disciplinary projects.

PO2: Inculcates the ability to analyze, identify, formulate and develop computer applications using modern computing tools and techniques.

PO3: Improves communication skills so that they can effectively present technical information in oral and written reports.

PO4: Prepares to create design innovative methodologies for solving complex/ real life problems for the betterment of the society.

PO4: To integrate ethics and values in designing computer application

## Program Specific Outcomes (PSO)

PSO1: To shape the students to meet the requirement of Corporate world and Industry standard.



PSO2: To engage in professional development and to pursue post graduate education in the fields of Information Technology and Computer Applications.

PSO3: To provide the students about computing principles and business Practices in software solutions, outsourcing services, public and private sectors.

PSO4: Develop practical skills to provide solutions to industry, society and business. Understand the concepts of key areas in computer science

### **Course Outcomes (CO)**

CO1: The curriculum prepares students for a career in software industry by equipping the students with the latest revolution in technology.

CO2: The program aims to educate students in Computer Science and Information Technology with emphasis on hands-on practical training in software development.

CO3: Creates the ability to design a computer application by considering realistic constraints such as safety, security and applicability.

CO3: Prepares students to work professionally.



# COMPUTER SCIENCE

## Program Outcomes - BSc Computer science / ~~POCA-DEF~~

1. Scientific knowledge: Apply the knowledge of mathematics, science, and computing to the solution of complex scientific problems.
2. Design/development of solutions: Design solutions for complex problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
3. Environment and sustainability: Understand the impact of the professional software engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
4. Communication: Communicate effectively on complex activities with the scientific community and with the society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
5. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change

## Course Outcomes - BSc Computer Science / ~~POCA-DEF~~

1. Programming Principles And Abstraction Using C and Object Oriented System Design.
  - a. Manipulate values of variables, arrays, pointers, structures, unions and files.
  - b. Create the function that can receive variables, arrays, pointers and structures.
  - c. Define functions that can receive variables, arrays, pointers and structures.
  - d. Create open, read, manipulate, write and close files
2. Fundamentals Of Information Technology
  - a. Understand different Computer Peripherals
  - b. Understand and apply different Software components
  - c. Learn WWW & Browsers
3. Project Implementation
  - Develop a functional application based on the software design
  - Apply coding, debugging and testing tools to enhance the quality of the software
  - Construct new software system based on the theory and practice gained through this exercise
  - Prepare the proper documentation of software projects following the standard guidelines
  - Learn technical report and oral presentation skills

## Programme Specific Outcomes - BSc Computer Science / ~~POCA-DEF~~

1. Demonstrate mastery of Computer Science in the following core knowledge areas
  - Data Structures and Programming Languages
  - Databases, Software Engineering and Development
  - Computer Hardware and Architecture PSQ2.

# GEOGRAPHY

## Programme specific Outcome

1. Students can familiarize with the geographical facts of earth surface.
2. Student can understand the latest concept of physical geography, geomorphology and human & environment relationship.
3. Study of skill development programme helps to grow the competence in the students.
4. It provides a knowledge of various subjects so that students may be able to get basic jobs.
5. After completion of the UG program students have minimum qualification for appearing in various competitive examinations.

## Course Outcome

### B A I : Physical Geography

- 1 This is the introductory semester for student .The paper taught in this semester gives the knowledge of Physical Properties of the earth surface as it is the basic concept of the geography to acquire the knowledge of Lithosphere and Student, with the study of this paper familiarize with the understanding of geomorphology with relevance to certain Fundamental concept s earth and landform formation, Water, winds and climate features of the earth.

### Human Geography

1. Students get the knowledge of man –environment relationship and human capabilities to adopt and modify the environment under its various conditions from primitive lifestyle to modern living.
2. This Course is helpful to identify and understand environment and population in terms of their quality and spatial distribution pattern and to comprehend the contemporary issues facing the global community.

### B A II : Climatology

1. This course provides an understanding of weather phenomena, Dynamics of global climates, and generation of climatic information and its application.

### Oceanography

1. Students can identify the facets of oceans, such as evaluation of the ocean, physical and chemical properties of the sea water, atmospheric and oceanographic circulation.

2. The study of oceanography helps the students to acquaint with the marine environment, its characteristics and its impact on costal economy. knowledge of Hydrosphere & Atmosphere.

### **B A III : Geography of india**

1. The course is framed in such a way the student can understand the comprehensive, integrated and empirically based profile of India with the regional characteristics.
2. The study of India helps the student for the preparation of competitive examination as most of the questions of GK paper covers geography of India.

### **Geography of Chhattisgarh**

1. The regional feature of the state Chhattisgarh a fundamental requirement for the students of the CG, as in many of the state level competitive examination geography of Chhattisgarh is the core subject. Thus the study of the Geography of Chhattisgarh not only connect the students with their local scenario, geographical aspects of various issues of developments but also helpful for them in the preparation of competitive examination.

### **B A I/II/III Practical Geography**

1. Student can learn the fundamentals of the surveying, Map cartography, and scale

Today is the era of technology and remote sensing & GIS is the basic tools for the analysis of resource appraisal and many more application .Student get the fundamental knowledge of remote sensing technology so that they may be able to get admission for the higher studies in the RS-GIS.

## **PROGRAM OUTCOMES( GEOGRAPHY)**

A geography degree will provide you with the knowledge and skills you need to begin a variety of rewarding careers. Geographers work as urban planners, GIS technicians and analysts, disaster preparedness planners, teachers, environmental scientists, remote sensing analysts, transportation planners, demographers, hydrologists and in a variety of other areas

Students who complete Geography courses will examine the spatial organization of physical features and human activities at a variety of spatial scales from local to global. Students will be able to locate features on the surface of the earth, explain why they are located where they are, and describe how places are similar and/or different. Students will also examine human interactions with the environment and describe how physical and cultural landscapes change through time. Students completing physical geography courses will be able to describe the processes that drive earth's climate, create landforms, and govern the distribution of plants and animals. Students completing human geography will analyze and describe cultural phenomenon such as population, development, agriculture, language, and religion.

**PO.1. Ability of Problem Analysis:** Student will be able to analyses the problems of physical as well as cultural environments of both rural and urban areas. Moreover, they will try to find out the possible measures to solve those problems.

**PO.2. Conduct Social Survey Project:** They will be eligible for conducting social survey project, which is needed for measuring the status of development of a particular group or section of the society.

**PO.3. Individual and teamwork:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

**PO.4. Application of modern instruments:** Students will be able to learn the application of various modern instruments and by these; they will be able to collect primary data.

**PO.5. Application of GIS and modern Geographical Map Making Techniques:** They will learn how to prepare map based on GIS by using the modern geographical map-making techniques.

**PO.6. Critical Thinking:** Take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions from different perspectives.

**PO.7. Development of Observation Power:** As a student of Geography Course, they will be capable to develop their observation power through field experience and in future, they will be able to identify the socio-environmental problems of a locality.

**PO.8. Development of Communication Skill and Interaction Power:** After the completion of the course, they will be efficient in their communication skill as well as power of social interaction. Some of the students are being able to understand and write effective reports and design credentials, make effective demonstrations, and give and receive clear instructions.

**PO.9. Effective Citizenship:** Demonstrate empathetic social concern and equity centred national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.

**PO.10. Enhancement of the ability of Management:** Demonstrate knowledge and understanding of the management principles and apply these to theirs own work, as a member and leader in a team, to manage projects. They will perform effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

**PO.11. Ethics:** Recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them.

**PO.12. Understand Environmental Ethics and Sustainability:** Understand the impact of the acquired knowledge in societal and environmental contexts, and demonstrate the knowledge of need for sustainable development.

**PO.13. Self-directed and Life-long Learning:** Acquire the ability to engage in independent and life-long learning in the broadest context social, environmental and technological changes

## **PROGRAMME SPECIFIC OUTCOME (GEOGRAPHY)**

The M.A.in geography program offers students the opportunity to advance their career aspirations through advanced study in the classroom and in the field. The programme in geography is tailored to meet the students' specific educational, research and professional goals in mind. It focuses on spatial studies, qualitative as well as quantitative, and emphasizes on human-environment relationship.

**PSO.1.** Design and conduct independent research in their chosen field in the discipline

**PSO.2.** Demonstrate knowledge of concepts, methods, and theories designed to enhance understanding of the natural world and human society.

**PSO.3.** Communicate the results and significance of their research in both written and oral form

**PSO.4.** Evaluate how historical events have been influenced by, and have influenced, physical and human geographic factors in local, regional, national, and global settings.

**PSO.5.** Examine social and environmental processes, with a particular focus on space and place, critical theory, practical application, analysis and intervention in chosen field within the discipline of Geography

**PSO.6.** Evaluate causes, consequences, and possible solutions to persistent, contemporary, and emerging global issues.

**PSO.7.** Follow established ethical guidelines for research and teaching

**PSO.8.** Have an in-depth understanding of and mastery of the literature in, at least one particular geographic subfield.

**PSO.9.** Classify processes of environmental change and evaluate the relationship between human beings and their surroundings, bringing to bear knowledge from many disciplines.

**PSO.10.** A geographer has better job opportunities in government departments, Cartographer, Researcher, Teacher/Professor, Competitive Examinations, Government employer, GIS specialist, Climatologist, Transportation Manager, Surveyor, GPS Surveyors.