D.P. VIPRA COLLEGE
BILASPUR
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1.2.1

Number of Programmes in which Choice Based Credit System (CBCS)/ elective course system has been implemented

D.P. Vipra College

Old High Court Road, Bilaspur

Chhattisgarh, India 495001

OFFICE OF THE PRINCIPAL
D. P. VIPRA COLLEGE, BILASPUR (C.G.)
Accredited "A" by NAAC, ISO-9001:2015 Certified
Phone No.- 07752-424497, Web. – *www.dpvipracollege.in*, Email- *dpvipracollege@gmail.com*

Summary-Sheet

Criteria	1.Curricular Aspects
Key Indicator	1.2: Academic Flexibility
Metric	1.2.1: Number of Programmes in which Choice Based Credit System (CBCS)/ elective course system implemented
Number of Programmes in which Choice Based Credit System (CBCS)/ elective course system implemented	**06**

Note:
Since all supporting documents for this metric exceeds the upload limit of 5Mb, hence we have hosted the scanned documents as per SOP on institutional website on the following links,

Description	**Relevant link**
1) List of the programs implementing Choice Based Credit System (CBCS)/ Elective Course System is attached **(Appendix-I)**	https://dpvipracollege.ac.in/aqar-2023-24/
2) Letter from the University stating implementation of CBCS programs is attached. **(Appendix-II)**	
3) Syllabus Scheme/ Course Structure for all programs along with credit details is attached. **(Appendix-III)**	

IQAC Co-ordinator
D.P. Vipra College
BILASPUR (C.G.)

IQAC Coordinator

PRINCIPAL
D.P. Vipra College
Bilaspur (C.G.)

Principal

D.P. VIPRA COLLEGE
BILASPUR
ACCREDITED "A" GRADE BY NAAC

2023-24

D.P. Vipra College

Old High Court Road, Bilaspur

Chhattisgarh, India 495001

D.P. VIPRA COLLEGE
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Appendix I

D.P. Vipra College

Old High Court Road, Bilaspur

Chhattisgarh, India 495001

OFFICE OF THE PRINCIPAL
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1.2.1 Percentage of programs in which Choice Based Credit System (CBCS) elective course system has been implemented

YEAR-2023-24

Programme Code	Programme Name	Status of implementation of CBCS/ elective course system (Yes/No)	Year of implemetation of CBCS/ elective course system	Link to the relevant document
NA	M.A.	Yes	2023-24	https://www.bilaspuruniversity.ac.in/PDF/Syllabus2023/M.A.%20Political%20Science%20R.pdf
NA		Yes	2023-24	https://www.bilaspuruniversity.ac.in/PDF/Syllabus2023/M.A.%20Public%20Administration%20R.pdf
NA		Yes	2023-24	https://www.bilaspuruniversity.ac.in/PDF/Syllabus2023/M.A.%20Economics%20R%20(Hindi).pdf
NA		Yes	2023-24	https://www.bilaspuruniversity.ac.in/PDF/Syllabus2023/M.A.%20Geogrphy%20R.pdf
NA		Yes	2023-24	https://www.bilaspuruniversity.ac.in/PDF/2019/MASociologyR.pdf
NA		Yes	2016-17	https://www.bilaspuruniversity.ac.in/PDF/Syllabus/2020NewCoursePGSem/M.A.ECONOMICS.pdf
NA		Yes	2016-17	https://www.bilaspuruniversity.ac.in/PDF/Syllabus/2020NewCoursePGSem/M.A.%20HISTORY001.pdf
NA		Yes	2016-17	https://www.bilaspuruniversity.ac.in/PDF/Syllabus/2020NewCoursePGSem/M.A.%20ENGLISH001.pdf
NA	M.SC	Yes	2023-24	https://www.bilaspuruniversity.ac.in/PDF/Syllabus2023/M.Sc.%20Computer%20Science.pdf
NA		Yes	2023-24	https://www.bilaspuruniversity.ac.in/PDF/Syllabus2023/M.Sc.%20Microbiology.pdf
NA		Yes	2023-24	https://www.bilaspuruniversity.ac.in/PDF/Syllabus2023/M.Sc.%20Chemistry.pdf
NA		Yes	2016-17	https://www.bilaspuruniversity.ac.in/PDF/Syllabus/2020NewCoursePGSem/M.SC.%20ZOOLOGY001.pdf
NA		Yes	2016-17	https://www.bilaspuruniversity.ac.in/PDF/Syllabus/2020NewCoursePGSem/M.SC.%20MATHS001.pdf
NA		Yes	2016-17	https://www.bilaspuruniversity.ac.in/PDF/Syllabus/2020NewCoursePGSem/M.SC.%20CHEMISTRY001.pdf
NA	M.COM	Yes	2016-17	https://www.bilaspuruniversity.ac.in/PDF/Syllabus/2020NewCoursePGSem/MCOM.pdf
NA	B.COM	Yes	2012-13	https://www.bilaspuruniversity.ac.in/PDF/Syllabus202122/BCOMPart3.pdf
NA	B.A.	Yes	2012-13	https://www.bilaspuruniversity.ac.in/PDF/2019/BA-Part-3-2021-22.pdf
NA	B.SC.	Yes	2012-13	https://www.bilaspuruniversity.ac.in/PDF/Syllabus202122/BSc-Part-3.pdf

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Appendix II

D.P. Vipra College

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Chhattisgarh, India 495001

OFFICE OF THE PRINCIPAL

D. P. VIPRA COLLEGE, BILASPUR(C.G.)

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Date: 14.02.24

Declaration

We have no CBCs implementation. Elective course system implemented to all the courses and programs offered in the institution. We have attached the syllabus copy of the elective courses in Appendix- II.

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Appendix III

D.P. Vipra College

Old High Court Road, Bilaspur

Chhattisgarh, India 495001

Atal Bihari Vajpayee Vishwavidyalaya, Bilaspur (C.G.)

Scheme and Syllabus

of

M. A. (Economics)

Program Code: MAECOR105

Semester system for affiliated college
(As per LOCF and credit system)

w.e.f. 2023-2024

(As approved by AC and EC meetings held on 16.08.2023 and 18.04.2023 respectively)

अटल बिहारी वाजपेयी विश्वविद्यालय, बिलासपुर (छ.ग.)
कोनी पुलिस थाना के सामने, बिलासपुर–रतनपुर मार्ग, कोनी, बिलासपुर (छ.ग.) 495009
Website: www.bilaspuruniversity.ac.in

सेमेस्टर प्रणाली के अंतर्गत अंक योजना
प्रोग्राम कोड : MAECOR105

सेमेस्टर	कोर्स कोड	विषय का नाम	क्रेडिट			कुल क्रेडिट	अंक			
							ESE	IA	Total	
			L	T	P				Max	Min
अनिवार्य प्रश्न पत्र										
I	ECOT101	सूक्ष्म आर्थिक विश्लेषण	3	1	–	4	80	20	100	36
	ECOT102	परिमाणात्मक पद्धतियां	3	1	–	4	80	20	100	36
	ECOT103	भारतीय आर्थिक नीति	3	1	–	4	80	20	100	36
	ECOT104	अंतर्राष्ट्रीय व्यापार और वित्त	3	1	–	4	80	20	100	36
	ऐच्छिक (वैकल्पिक)प्रश्न पत्र (किसी एक समूह का चयन करें)									
	ECOT105	समूह अ- 1 औद्योगिक शास्त्र	3	1	–	4	80	20	100	36
	ECOT106	समूह ब- 1 श्रम अर्थशास्त्र	3	1	–	4	80	20	100	36
	ECOT107	समूह स- 1 जनांकिकी	3	1	–	4	80	20	100	36
	ECOT108	समूह द- 1 कृषि अर्थशास्त्र	3	1	–	4	80	20	100	36
	ECOT109	समूह इ- 1 आर्थिक विश्लेषण में कम्प्यूटर का अनुप्रयोग	3	1	–	4	80	20	100	36
		Subtotal	**15**	**5**	**–**	**20**	–	–	**500**	–
अनिवार्य प्रश्न पत्र										
II	ECOT201	सूक्ष्म आर्थिक विश्लेषण	3	1	–	4	80	20	100	36
	ECOT202	अनुसंधान क्रिया विधि एवं कम्प्यूटर अनुप्रयोग	3	1	–	4	80	20	100	36
	ECOT203	भारतीय आर्थिक नीति	3	1	–	4	80	20	100	36
	ECOT204	अंतर्राष्ट्रीय व्यापार और वित्त	3	1	–	4	80	20	100	36
	ऐच्छिक (वैकल्पिक) प्रश्न पत्र (प्रथम सेमेस्टर में चयनित समूह के द्वितीय प्रश्न पत्र का चयन करें)									
	ECOT205	समूह अ- 2 औद्योगिक शास्त्र	3	1	–	4	80	20	100	36
	ECOT206	समूह ब- 2 श्रम अर्थशास्त्र	3	1	–	4	80	20	100	36
	ECOT207	समूह स- 2 जनांकिकी	3	1	–	4	80	20	100	36
	ECOT208	समूह द- 2 कृषि अर्थशास्त्र	3	1	–	4	80	20	100	36
	ECOT209	समूह इ- 2 आर्थिक विश्लेषण में कम्प्यूटर का अनुप्रयोग	3	1	–	4	80	20	100	36
		Subtotal	**15**	**5**	**–**	**20**	–	–	**500**	–

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Abbreviation used:

ESE: End Semester Exam
IA: Internal Assesstment

टीपः–

1. एम.ए. प्रथम सेमेस्टर में ऐच्छिक प्रश्नपत्र से जिस समूह का चयन करते है, एम.ए. द्वितीय सेमेस्टर में ऐच्छिक प्रश्न पत्र में उसी समूह का अनिवार्यतः चयन करना होगा। इसी तरह एम.ए. तृतीय सेमेस्टर में किसी अन्य ऐच्छिक प्रश्नपत्र से जिस समूह का चयन करते है, एम.ए. चतुर्थ प्रश्नपत्र से उसी समूह का अनिवार्यतः चयन करें।

2. पाठयक्रम का हिन्दी में भी अनुवाद किया गया है। पाठयक्रम के हिन्दी अनुवाद में विभ्रम की स्थिति में अंग्रेजी में लिखा हुआ पाठयक्रम ही मान्य होगा।

SEMESTER-III

Paper No.	Title of the Paper	Internal Assessment	Term End Exam	Total Marks
1.	Macro Economic Analysis	20	80	100
2.	Public Economics	20	80	100
3.	Economics of Growth	20	80	100
4.	Environmental and Welfare Economics	20	80	100
OPTIONAL (Choose Any one Group)				
5.	Group A 1. Industrial Economics	20	80	100
5.	Group B 1. Labour Economics	20	80	100
5.	Group C 1. Demography	20	80	100
5.	Group D 1. Agriculture Economics	20	80	100
5.	Group E 1. Computer Application in Economic analysis	20	80	100
			TOTAL	**500**

SEMESTER-IV

Paper No.	Title of the Paper	Internal Assessment	Term End Exam	Total Marks
1.	Macro Economic Analysis	20	80	100
2.	Public Economics	20	80	100
3.	Economic DeVelopment and Planning	20	80	100
4.	Economics of Social Sector	20	80	100
OPTIONAL (Choose Any one Group)				
5.	Group A 2. Industrial Economics	20	80	100
5.	Group B 2. Labour Economics	20	80	100
5.	Group C 2. Demography	20	80	100
5.	Group D 2. Agriculture Economics	20	80	100
5.	Group E 2. Computer Application in Economic analysis	20	80	100
			TOTAL	**500**
			Grand Total	**2000**

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Bilaspur (C.G.)

Atal Bihari Vajpayee Vishwavidyalaya, Bilaspur (C.G.)

Scheme and Syllabus

of

M. A. (Geography)

Program Code: MAGEOGR108

Semester system for affiliated college
(As per LOCF and credit system)

w.e.f. 2023-2024

(As approved by AC and EC meetings held on 16.08.2023 and 18.04.2023 respectively)

Scheme of M.A. (Geography) Under Semester System
PROGRAM CODE: MAGEOGR108

Semester	Course Code	Subject Name	Credit			Total Credit	Marks			
							ESE	IA	Total	
			L	T	P				Max	Min
I	GEOGT101	Geomorphology	3	1	-	4	80	20	100	36
	GEOGT102	Climatology	3	1	-	4	80	20	100	36
	GEOGT103	Evolution of Geographical thought	3	1	-	4	80	20	100	36
	GEOGT104	Geography of India	3	1	-	4	80	20	100	36
	GEOGP101	Practical: Interpretation of Topographical Sheets and Surveying	-	-	4	4	-	-	100	36
	Subtotal		**12**	**4**	**4**	**20**	-	-	**500**	-
II	GEOGT201	Oceanography	3	1	-	4	80	20	100	36
	GEOGT202	Regional Planning and Development	3	1	-	4	80	20	100	36
	GEOGT203	Geography of Chhattisgarh	3	1	-	4	80	20	100	36
	GEOGT204	Elective I : Social Geography	3	1	-	4	80	20	100	36
	GEOGT205	Elective I : Political Geography	3	1	-	4	80	20	100	36
	GEOGP201	Practical: Map Projection, Geological Maps and Surveying	-	-	4	4	-		100	36
	Subtotal		**15**	**5**	**4**	**24**	-	-	**500**	-

Abbreviatias used:

ASE: End Semester Exam
IA: Internal Assessment

Note: Dissertation (लघुशोध प्रबंध) जो विद्यार्थी प्रथम व द्वितीय सेमेस्टर परीक्षा में कुल प्राप्तांक का 60% एवं 60% से अधिक अंक प्राप्त किया है। वह चतुर्थ सेमेस्टर में किसी एक सैद्धांतिक प्रश्न पत्र के स्थान पर लघु शोध प्रबंध का चयन कर सकता है।

The student who has secured 60% and more than 60% of the total marks in the first and second semester examination He/she can opt for dissertation in place of any one theory paper in the fourth semester.

Note: Student have to opt, one paper from the pool of Elective 1st of 2nd semester, one paper from the pool of Elective 2nd of 3rd semester and Elective 3rd of 4th semester.

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M. A. GEOGRAPHY
PROGRAMME OUTCOME

PO1: Understand earth's tectonic and structural evolution, Gain knowledge about earth's interior. Develop an idea about concept of plate tectonics and resultant Landforms.

PO2: Acquire knowledge about types of folds and faults and earthquake, volcanoes and associated, Landforms.

PO3: Student can understand the climatic phoneme- non and its impact.

PO4: Demonstrate and advanced understanding of and ability to differentiate among the various methodologies used in geographic research.

PO5: Acquire, analyse, evaluate, interpret and Critique geography data and /or research.

PO6: Identity and assess how geographic concepts apply in the workplace and in everyday life to solve real-world problem.

PO7: Most of the competitive examinations cover 15-20% questions from the subject Geography In this way PG program is a base for the students to be successful in such exams.

31.7.2023
Dr. D. D. Kashyap

As approved by academic council and executive council meetings

M. A. GEOGRAPHY
PROGRAMME SPECIFIC OUTCOME

PSO1: Acquireing Knowledge of Physical Geography: Student will gain the knowledge of physical geography. Student will have a general understanding about the geomorphological and geotechnical process and formation. They will be able to correlate the knowledge of physical geography with the human geography.

PSO2: Acquireing Knowledge of Human Geography: They will be able to acquire the knowledge of Human Geography and will correlate it with their practical life.

PSO3: Ability of Problem Analysis: Student will be able to analyse 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.

PSO4: 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.

PSO5: 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.

PSO6: 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.

PSO7: Development of Observation Power: As a student of Geography Honours Course they will be capable to develop their observation power through field experience and in future they will be able to identify the socioenvironmental problems of a locality.

PSO8: Development of Communication Skill and Interaction Power: After the completion of the project 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.

PSO9: 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.

PSO10: 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.

PSO11: Life-long learning: Identify the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of societal and environmental change.

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D.P. VIPRA COLLEGE
BILASPUR (C.G.)

As approved by academic council and executive council meetings

Atal Bihari Vajpayee Vishwavidyalaya, Bilaspur (C.G.)

Scheme and Syllabus

of

M. A.(Public Administration)

Program Code: MAPAR130

Semester system for affiliated college
(As per LOCF and credit system)

w.e.f. 2023-2024

(As approved by AC and EC meetings held on 16.08.2023 and 18.04.2023 respectively)

Scheme of M.A. (Public Administration) under Semester System
Program Code: MAPAR130

Semester	Course Code	Subject Name	Credit			Total Credit	Marks			
							ESE	IA	Total	
			L	T	P				Max	Min
First	PUBAT101	Principles of Public Administration	3	1	-	4	80	20	100	36
	PUBAT102	Theories of Public Administration	3	1	-	4	80	20	100	36
	PUBAT103	Indian Administration	3	1	-	4	80	20	100	36
	PUBAT104	Development Administration	3	1	-	4	80	20	100	36
	PUBAT105	Administrative Behavior	3	1	-	4	80	20	100	36
	Subtotal		**15**	**5**	**-**	**20**	-	-	**500**	-
Second	PUBAT201	State Administration	3	1	-	4	80	20	100	36
	PUBAT202	Municipal Government of India (with special reference to Chhattisgarh state)	3	1	-	4	80	20	100	36
	PUBAT203	Rural Development and Tribal Welfare in Chhattisgarh	3	1	-	4	80	20	100	36
	PUBAT205	Elective-I: Social Welfare Administration	3	1	-	4	80	20	100	36
	PUBAT206	Elective-I: Public Policy								
	PUBAT207	Elective-I:Economic System & Administration								
	PUBAT208	Panchayati Raj (with special reference to Chhattisgarh)	3	1	-	4	80	20	100	36
	Subtotal		**15**	**5**	**-**	**20**	-	-	**500**	

Note:-Student have to opt one paper from the pool of Elective 1 of 2nd Semester.

Abbreviations used:

ESE: End Semester Exam
IA: Internal Assessment

Dr. A.K.Shukla — **B.O.S. Expert**

Dr. Harish Thakur — **B.O.S. Expert**

Member's of B.O.S.

Dr. VandanaTiwari
Dr. S.K. Tiwari
Dr. G.S. Dhruwe
Dr. M.M. Bajpai
Dr. K.K. Mishra

M. Dubey 31.07.23

Dr. MuktaDubey — **Chairman B.O.S**

PRINCIPAL
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BILASPUR (C.G.)

PROGRAM OBJECTIVES

M. A. Public Administration objectives of the program are-

1. To fulfill contemporary societal needs of public governance and equip the learner / students with necessary knowledge, wisdom and skills relevant for local, national and international governance.

2. To develop specialized knowledge and skills among its students to engage themselves in Public governance and its related activities. There is need for well informed and proficient manpower for discharging regulatory responsibilities and delivering a set of quality services to the satisfaction of the citizens.

3. To prepare and competent the youth for civil services need and their academic development by equipping them with recent developments at national scenario, as the concerns for good Governance and citizen centric governance have become important objectives in addition to the Traditional narratives of efficiency, economy and effectiveness.

4. To develop students as a responsible part of civil society. In recent years, mega developments like information and communication technology, liberalization, privatization, globalization, decentralization and growing role of the civil society have impacted the role of the state and its agencies. It has changed the citizens' interface with the governance and market forces. Innovative citizen-centric practices in governance have been adopted across the world.

After successful completion of the course the learner will be competent and confident to capture and join various government opportunities such as civil service, police service and others. Besides planning career in activity area of public administration, the learners can also prepare themselves in research and teaching.

PROGRAM OUTCOMES (PO)

Learners with strong knowledge in public administration can deal with the critical issues of public and individual life including political, social, and economic aspects. The framework of the course and papers are designed in a way to develop understanding of the principles, institutions and their ecological concerns, processes and issues of local, regional, national and international levels of public governance and academics of public administration. After successful completion of Program the Learning Outcomes will be reflect:

1. Fair understanding of theories, principles, models and ideas of discipline of public Administration and its academic significance.

2. Competency to respond on contemporary societal needs of public governance and equip them with necessary knowledge, wisdom and skills relevant for local, national and International governance.

3. Knowledge about the inter-disciplinary nature and ecology of public administration in both theory and practice (activities).

4. Knowledge about public welfare administration, development administration and various schemes, programs, measures and techniques to achieve them.

5. Knowledge about the economic and finance part of the government and administration, and role-responsibilities of the citizen in their social and economic activities. 6. Knowledge about real working of administration and its personnel, and issues affecting their performance, efficiency and effectiveness.

7. Competency in communicational skill, group discussion, public speaking, academic writing and personality development through ability enhancement and skill development papers and CCE activities.

8. Familiarity with the issues of good governance, responsive governance, transparency and accountability, and the use of Information and communication technology in the field of public administration.

PROGRAMME SPECIFIC OUTCOMES (PSO)

The program specific outcomes of the M.A Public Administration program are as under-

1. Students would be able to live, perform and participate as a responsible citizen.
2. Students would be able to know about the research and development opportunities in the field of administration/policy/ governance studies.
3. Students would be able to analyze the effectiveness of governmental policies and program.
4. Students would gain confidence while dealing with administrative officials and political leaders.
5. Students would be able to develop their research aptitude and orientation.

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BILASPUR (C.G.)

		Member's of B.O.S.	M. Dubey 31-07-23
Dr. A.K.Shukla	Dr. Harish Thakur	Dr. VandanaTiwari	Dr. MuktaDubey
B.O.S. Expert	**B.O.S. Expert**	Dr. S.K. Tiwari	**Chairman B.O.S**
		Dr. G.S. Dhruwe	
		Dr. M.M. Bajpai	
		Dr. K.K. Mishra	

Atal Bihari Vajpayee Vishwavidyalaya, Bilaspur (C.G.)

Scheme and Syllabus

of

M. A. (Political Science)

Program Code: MAPSR122

Semester system for affiliated college
(As per LOCF and credit system)

w.e.f. 2023-2024

(As approved by AC and EC meetings held on 16.08.2023 and 18.04.2023 respectively)

अटल बिहारी वाजपेयी विश्वविद्यालय, बिलासपुर (छ.ग.)

कोनी पुलिस थाना के सामने, बिलासपुर–रतनपुर मार्ग, कोनी, बिलासपुर (छ.ग.) 495009

Website: www.bilaspuruniversity.ac.in

Scheme of M.A. (Political Science) under Semester System
Program Code: MAPSR122

Semester	Course Code	Subject Name	Credit			Total Credit	Marks			
							ESE	IA	Total	
			L	T	P				Max	Min
First	POLST101	Western Political Thought	3	1	-	4	80	20	100	36
	POLST102	Comparative Politics	3	1	-	4	80	20	100	36
	POLST103	Public Administration	3	1	-	4	80	20	100	36
	POLST104	International Politics	3	1	-	4	80	20	100	36
	POLST105	Chhattisgarh Government & Politics	3	1	-	4	80	20	100	36
	Subtotal		**15**	**5**	**-**	**20**	**-**	**-**	**500**	**-**
Second	POLST201	Modern Indian Political Thought	3	1	-	4	80	20	100	36
	POLST202	Contemporary Political Issues	3	1	-	4	80	20	100	36
	POLST203	Research Methodology	3	1	-	4	80	20	100	36
	POLST205	Elective-I: Party System and Election Process in India	3	1	-	4	80	20	100	36
	POLST206	Elective-I: Major Constitution of the World								
	POLST207	Elective-I: Personal Administration in India								
	POLST208	International Organization	3	1	-	4	80	20	100	36
	Subtotal		**15**	**5**	**-**	**20**	**-**	**-**	**500**	

Note:- Student have to opt one paper from the pool of Elective 1 of 2nd Semester.

Abbreviations used:

ESE: End Semester Exam
IA: Internal Assessment

Member's of B.O.S.

Dr. A.K.Shukla	Dr. Harish Thakur	Dr. Vandana Tiwari	Dr. Mukta Dubey
B.O.S. Expert	**B.O.S. Expert**	Dr. S.K. Tiwari	**Chairman B.O.S**
		Dr. G.S. Dhruwe	
		Dr. M.M. Bajpai	
		Dr. K.K. Mishra	

M. Dubey 31-07-23

PRINCIPAL
D.P. VIPRA COLLEGE
BILASPUR (C.G.)

Program Objectives

1. To develop comprehensive understanding of the subject by teaching both conventional and new areas of relevance in the domain of Political Theory and Philosophy, Indian Politics , Comparative Politics, Public Administration , International Politics, Political thinkers .
2. To develop comprehensive and interdisciplinary knowledge by emphasizing enter ages between various Political, Economics and Social issues and Challenges.
3. The studies will provide theoretical and practical knowledge to the student.
4. To motivate and inform student about the opportunities and futures prospects in the field.
5. To develop the overall personality of the student and prepare them to compete and succeed in their areas.
6. To provide aknowledge for the educational upliftment to the marginalised through papers like Human Rights , Political Ideas in Modern India , Women and Politics in India

Program Outcome:

On successful completion of the program, student should be able to

1. Demonstrate knowledge and understanding of the key theories and concepts in Political Science.
2. Evaluate theories in the light of empirical evidence or normative propositions.
3. To apply appropriate theories to analyzes social and political happenings.
4. To demonstrate the intellectual ability by undertaking inters disciplinary research.
5. To achieve and demonstrate the ability to communicate their ideas effectively using appropriate languages of the discipline.
6. To apply critical thinking, communication and analytical skills to address significant issues.
7. To Demonstrate understanding of the philosophical dimensions of the Political system, processes and movements at the local national and trans national labels .

Programme Specific Outcomes (P.S.O.)

1. Students will excel as responsible national and global citizens, actively participating in societal matters.
2. Students will acquire knowledge in Politics, Consulting, Competitive exams, and Administration Studies, exploring various research and development opportunities.
3. Students will proficiently analyse and discuss the effectiveness of government policies, constitution, thinkers, International Law, and International Politics.
4. Students will develop self-assurance while engaging with Administration, NGOs, and Political Leaders.
5. Students will cultivate a deep understanding of political issues, enhancing their conceptual clarity.
6. Students will master the art of research paper writing and delivering presentations in seminars and conferences.

		Member's of B.O.S.	M.Dubey 31-07-23
Dr. A.K.Shukla	Dr. Harish Thakur	Dr. Vandana Tiwari	Dr. Mukta Dubey
B.O.S. Expert	**B.O.S. Expert**	Dr. S.K. Tiwari	**Chairman B.O.S**
		Dr. G.S. Dhruwe	
		Dr. M.M. Bajpai 31.07.23	
		Dr.K.K.Mishra	

PRINCIPAL
D.P. VIPRA COLLEGE
BILASPUR (C.G.)

Atal Bihari Vajpayee Vishwavidyalaya, Bilaspur (C.G.)

Scheme and Syllabus

of

M. A. (Sociology)

Program Code: MASOCIOR126

Semester system for affiliated college
(As per LOCF and credit system)

w.e.f. 2023-2024

(As approved by AC and EC meetings held on 16.08.2023 and 18.04.2023 respectively)

Sample Scheme of Sociology under Semester System

Program Code: MASOCIOR126

Semester	Course Code	Subject Name	Credit			Total Credit	Marks			
							ESE	IA	Total	
			L	T	P				Max	Min
First	SOCIOR101	Subject 1	3	1	-	4	80	20	100	36
	SOCIOR102	Subject 2	3	1	-	4	80	20	100	36
	SOCIOR 103	Subject 3	3	1	-	4	80	20	100	36
	SOCIOR 104	Subject 4	3	1	-	4	80	20	100	36
	SOCIOR 105	Subject 5	3	1	-	4	80	20	100	36
	Subtotal		**15**	**5**	**-**	**20**	-	-	**500**	-
Second	SOCIOR 201	Subject 6	3	1	-	4	80	20	100	36
	SOCIOR 202	Subject 7	3	1	-	4	80	20	100	36
	SOCIOR 203	Subject 8	3	1	-	4	80	20	100	36
	SOCIOR 204	Elective-I: Subject 9	3	1	-	4	80	20	100	36
	SOCIOR 205	Elective-I: Subject 10								
	SOCIOR 206	Elective-I: Subject 11								
	SOCIOR 207	Subject 12	3	1	-	4	80	20	100	36
	Subtotal		**15**	**5**	**-**	**20**	-	-	**500**	

Note: *Students have to opt one paper from the pool of Elective I of 2nd Semester , one paper from the pool of Elective II of 3rd Semester and Elective III of 4th Semester.*

Abbreviations used:

ESE: End Semester Exam **IA:** Internal Assessment

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BILASPUR (C.G.)

Atal Bihari Vajpayee Vishwavidyalaya, Bilaspur (C.G.)

Scheme and Syllabus

of

M. A. (History)

Program Code: MAHISR111

Semester system for affiliated college
(As per LOCF and credit system)

w.e.f. 2023-2024

(As approved by AC and EC meetings held on 16.08.2023 and 18.04.2023 respectively)

अटल बिहारी वाजपेयी विश्वविद्यालय,बिलासपुर(छ.ग.)
कोनी पुलिस थाना के सामने, बिलासपुर–रतनपुर मार्ग, कोनी, बिलासपुर(छ.ग.) 495009
Website :www.bilaspuruniversity.ac.in

M.A. History Under Semester System

Program Code:MAHISR111

History, as we all know, is a vital source to obtain knowledge about a nation's soul. Of late, this has been argued and established that there can't be a nation without a past. Today, more than ever before, the challenges of globalization obligate historians and researchers to go beyond the local, national, and even continental frontiers of their knowledge. However, competing and keeping pace with the ever expanding horizon of history, one has to be sensitive in understanding the issues of nations history on larger canvas, absorbing polemics and not only create a belief of continuity by exploring nation's past, which lie in abundance. This certainly will further a dialog between past and present and a new narrative may emerge.

Program outcomes

Po1- Give requisite information about different aspects of the past to students
Po2- To teach them how to use this information for a better of society.
Po3- This also gives an idea about how historians research, frame an argument and debate details that have significance to understand the past and the present.
Po4- The expected outcome is to provide students with a sense of how interconnected our present is with the past and how learning about the past provides them with the skills to understand the present.
Po5- The idea is to equip the student so that their ability to think and analyze is enhanced also, they develop good research oriented perspective.

Program Specific Outcomes

Pso1- To learn a basic narrative of historical events in a specific region of the world in a specific time frame.
Pso2- To articulate factual & contextual knowledge of specific places & times, to make careful comparisons (across time, space & culture),
Pso3- The ability to use bibliographical tools for the advanced study of history.
Pso4- To understand & evaluate different historical ideas, various arguments and point of view.
Pso5- To develop an appreciation of themselves & of other through the study of the past in local, regional, national and global context
Pso6- It instills an appreciation of the uniqueness of visual evidence and cultivate the particular skill of using visual evidence to understand human activity of the recent and distant past.

अटल बिहारी वाजपेयी विश्वविद्यालय, बिलासपुर (छत्तीसगढ़)
कोनी पुलिस थाना के समाने, बिलासपुर–रतनपुर मार्ग, कोनी जिला– बिलासपुर (छ.ग.) 495009,
फोन : 07752–220031, फैक्स 07752–260294, ई–मेल : registrar@bilaspuruniversity.ac.in
website: www.bilaspuruniversity.ac.in

Scheme of M.A. (History) under Semester System

Program Code: MAHISR111

Semester	Course Code	Subject Name	Credit			Total Credit	Marks			
			L	P	T		ESE	IA	Total Max	Total Min
First	HISTT101	इतिहास पद्धति : अवधारणा, पद्धति एवं उपकरण (Historiographical Method: Concept, Method and Tools)	3	-	1	4	80	20	100	36
	HISTT102	प्राचीन भारतीय सभ्यता एवं संस्कृति (Ancient Indian Civilisation and Culture)	3	-	1	4	80	20	100	36
	HISTT103	छत्तीसगढ़ का प्रारंभिक इतिहास (Early History of Chhattisgarh)	3	-	1	4	80	20	100	36
	HISTT104	प्राचीन भारत में राजनीतिक विचार एवं संस्थाएं (Political thought and institutions in Ancient India)	3	-	1	4	80	20	100	36
	HISTT105 HISTT106	Elective Papers - अभिलेखागार एवं संग्रहालय का इतिहास (History of Archives and Museum) विज्ञान एवं प्रौद्योगिकी का इतिहास (History of Science and Technology)	3	-	1	4	80	20	100	36
		Sub Total	**15**	**-**	**5**	**20**			**500**	
Second	HISTT201	इतिहास लेखन (Historiography)	3	-	1	4	80	20	100	36
	HISTT202	मध्यकालीन भारतीय सभ्यता एवं संस्कृति (Medieval Indian Civilisation and Culture)	3	-	1	4	80	20	100	36
	HISTT203	आधुनिक छत्तीसगढ़ का इतिहास (History of Modern Chhattisgarh)	3	-	1	4	80	20	100	36
	HISTT204	पूर्व मध्यकालीन भारत में राजनीतिक विचार एवं संस्थाएं (8वीं से 15वीं शताब्दी) (Political thought and institutions in Pre Medieval India) (8th to 15th A.D.)	3	-	1	4	80	20	100	36
	HISTT205 HISTT206	Elective Papers - राजपूतों का इतिहास (History of Rajputs) मराठों का इतिहास (History of Marathas)	3	-	1	4	80	20	100	36
		Sub Total	**15**		**5**	**20**			**500**	

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D.P. VIPRA COLLEGE
BILASPUR (C.G.)

अटल बिहारी वाजपेयी विश्वविद्यालय, बिलासपुर(छत्तीसगढ़)

सेमेस्टर पाठ्यक्रम

एम.ए. इतिहास

टीप :– एम.ए. इतिहास सेमेस्टर पद्धति में सेमेस्टर III एवं IV में परीक्षार्थियों को निम्नलिखित खण्ड–अ एवं खण्ड–ब में से किसी एक खण्ड का चयन कर उसके दोनों प्रश्न पत्रों को हल करना होगा। उपरोक्त 4 वैकल्पिक प्रश्न पत्रों में से परीक्षार्थियों को सरल क्रमांक 1, 3 में से कोई एक एवं 2, 4 में से कोई एक वैकल्पिक प्रश्न पत्रों का चयन करना होगा। सभी प्रश्न पत्रों में 100–100 अंक होंगे। 100 अंकों में 80 अंक सैद्धांतिक एवं 20 अंक आंतरिक मूल्यांकन के होंगे।

तृतीय सेमेस्टर SEMESTER III

प्रश्न पत्र	प्रश्न पत्र का नाम	पूर्णांक	सैद्धांतिक	आंतरिक मूल्यांकन
खण्ड अ : मध्यकालीन भारत **SECTION A : MEDIEVAL INDIA**				
I	सल्तनतकालीन भारतीय राजनय एवं अर्थव्यवस्था (1200 से 1526 ई. तक) Indian polity and economy in Sultanate period (1200-1526 A.D.)	100	80	20
II	सल्तनत कालीन समाज एवं संस्कृति (1200 से 1526 ई.) Society and culture in Sultanate Period (1200-1526 A.D.)	100	80	20
खण्ड ब : आधुनिक भारत **SECTION B : MODERN INDIA**				
I	आधुनिक भारत 1757 ई. से 1857 ईतक (राजनीतिक, प्रशासनिक) Modern India 1757 A.D. to 1857 A.D. (Political, Administrative)	100	80	20
II	आधुनिक भारत 1757 ई. से 1857 ई. तक (आर्थिक, सामाजिक, सांस्कृतिक) Modern India 1757 A.D. to 1857 A.D. (Economic, Social, Cultural)	100	80	20
वैकल्पिक प्रश्न पत्र **(OPTIONAL PAPER)**				
OPTIONAL I	भारतीय राष्ट्रीय आंदोलन का इतिहास (1857 से 1922 ई. तक) History of National Movement (1857 to 1922 A.D.)	100	80	20
OPTIONAL II	भारत का सांस्कृतिक इतिहास (प्रारंभ से 1526 ई. तक) Cultural History of India (Begining to 1526 A.D.)	100	80	20
OPTIONAL III	भारतीय संविधान और शासन व्यवस्था Indian Constitution and Administrative System	100	80	20
OPTIONAL IV	पर्यटन सिद्धांत Tourism Theory	100	80	20

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TOTAL	400

टीप :– एम.ए. इतिहास सेमेस्टर पद्धति में सेमेस्टर III एवं IV में परीक्षार्थियों को निम्नलिखित खण्ड–अ एवं खण्ड–ब में से किसी एक खण्ड का चयन कर उसके दोनों प्रश्न पत्रों को हल करना होगा। उपरोक्त 4 वैकल्पिक प्रश्न पत्रों में से परीक्षार्थियों को सरल क्रमांक 1, 3 में से कोई एक एवं 2, 4 में से कोई एक वैकल्पिक प्रश्न पत्रों का चयन करना होगा। सभी प्रश्न पत्रों में 100–100 अंक होंगे। 100 अंकों में 80 अंक सैद्धांतिक एवं 20 अंक आंतरिक मूल्यांकन के होंगे।

चतुर्थ सेमेस्टर SEMESTER IV

प्रश्न पत्र	प्रश्न पत्र का नाम	पूर्णांक	सैद्धांतिक	आंतरिक मूल्यांकन
खण्ड अ : मध्यकालीन भारत **SECTION A : MEDIEVAL INDIA**				
I	मुगलकालीन भारतीय राजनय एवं अर्थव्यवस्था (1526 से 1750 ई. तक) Indian polity and economy in Mughal period (1526-1750 A.D.)	100	80	20
II	मुगलकालीन समाज एवं संस्कृति (1526 से 1750 ई.) Society and culture in Mughal period (1526-1750 A.D.)	100	80	20
खण्ड ब : आधुनिक भारत **SECTION B : MODERN INDIA**				
I	आधुनिक भारत 1858 ई. से 1964 ई.तक . (राजनीतिक, प्रशासनिक) Modern India 1858 A.D. to 1964 A.D. (Political, Administrative)	100	80	20
II	आधुनिक भारत 1858 ई. से 1964 ई. तक (आर्थिक, सामाजिक, सांस्कृतिक) Modern India 1858 A.D. to 1964 A.D. (Economic, Social, Cultural)	100	80	20
वैकल्पिक प्रश्न पत्र **(OPTIONAL PAPER)**				
OPTIONAL I	भारतीय राष्ट्रीय आंदोलन का इतिहास (1922 से 1947 ई. तक) History of National Movement (1922 to 1947 A.D.)	100	80	20
OPTIONAL II	भारत का सांस्कृतिक इतिहास (1526 से 1950 ई.) Cultural History of India (Begining to 1526 AD	100	80	20
OPTIONAL III	भारतीय की केन्द्रीय तथा प्रांतीय शासन व्यवस्था Central and State Administrative System of India	100	80	20
OPTIONAL IV	पर्यटन सिद्धांत एवं व्यवहार–इतिहास के संदर्भ में Tourism Theory and Priniciples In Reference of History	100	80	20
			TOTAL	**400**

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Bilaspur (C.G.)

अटल बिहारी वाजपेयी विश्वविद्यालय, बिलासपुर(छत्तीसगढ़)

सेमेस्टर पाठ्यक्रम

M.Com.

M.Com. - Semester IV

Special attention to the students. Students are required to select **'any one'** Specialization out of Three suggested below.

Choice Based – Specialization

(A) Marketing
(B)Management
(C)Banking and Insurance

Optional Group- (A) Marketing

Paper No.	प्रश्न पत्र का नाम	Internal Assessment	Term End Exam	Total Marks
1.	विपणन के सिद्धांत Principal of Marketing	20	80	100
2.	विज्ञापन एवं विक्रय Advertising & Sales Management	20	80	100
3.	विपणन अनुसंधान Marketing Research	20	80	100
4.	अन्तर्राष्ट्रीय विपणन International Marketing	20	80	100

Optional Group- (B) Management

Paper No.	प्रश्न पत्र का नाम	Internal Assessment	Term End Exam	Total Marks
1.	वित्तीय प्रबंध Financial Management	20	80	100
2.	कार्मिकप्रबंध Personal Management	20	80	100
3.	उत्पादनप्रबंध Production Management	20	80	100
4.	व्यूहरचना प्रबंध Strategic Management	20	80	100

Optional Group- (C) Banking and Insurance

Paper No.	प्रश्न पत्र कानाम	Internal Assessment	Term End Exam	Total Marks
1.	बैंकिंग व्यवहार Banking Practices	20	80	100
2.	भारत के बैंकिंग संस्थाए Banking Institution in India	20	80	100
3.	जीवन बीमा Life Insurance	20	80	100
4.	सामान्य बीमा	20	80	100

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Bilaspur (C.G.)

Atal Bihari Vajpayee Vishwavidyalaya, Bilaspur (C.G.)

Scheme and Syllabus

of

M. Sc. (Microbiology)

Program Code: MSCMBR117

Semester system for affiliated college
(As per LOCF and credit system)

w.e.f. 2023-2024

(As approved by AC and EC meetings held on 16.08.2023 and 18.04.2023 respectively)

अटल बिहारी वाजपेयी विश्वविद्यालय, बिलासपुर (छ.ग.)

कोनी पुलिस थाना के सामने, बिलासपुर–रतनपुर मार्ग, कोनी, बिलासपुर (छ.ग.) 495009

Website : www.bilaspuruniversity.ac.in

Scheme for M.Sc. Microbiology
Program Code: MIC

Semester	Course Code	Subject Name	Credit			Total Credit	Marks			
							ESE	IA	Total	
			L	T	P				Max	Min
First	MICT101	General Microbiology and Bacteriology	3	1	-	4	80	20	100	36
	MICT102	Virology	3	1	-	4	80	20	100	36
	MICT103	Phycology, Mycology and Proto-Zoology	3	1	-	4	80	20	100	36
	MICT104	Biochemistry	3	1	-	4	80	20	100	36
	MICP101	Lab 1	-	-	2	2	100	-	100	36
	MICP102	Lab 2	-	-	2	2	100	-	100	36
	Subtotal		**12**	**4**	**4**	**20**	-	-	**600**	-
Second	MICT201	Bioinstrumentation and Biochemical Techniques	3	1	-	4	80	20	100	36
	MICT202	Microbial Physiology	3	1	-	4	80	20	100	36
	MICT203	Microbial Genetics and Molecular Biology	3	1	-	4	80	20	100	36
	MICT204(A)	Cell Biology (Elective)	3	1	-	4	80	20	100	36
	MICT204(B)	Genetic Engineering (Elective)								
	MICT204(C)	Agriculture Microbiology (Elective)								
	MICP201	Lab 3	-	-	2	2	100	-	100	36
	MICP202	Lab 4	-	-	2	2	100	-	100	36
	Subtotal		**12**	**4**	**4**	**20**	-	-	**600**	

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BILASPUR (C.G.)

Note: *Students have to opt one paper from the pool of Elective I of 2nd Semester, one paper from the pool of Elective II of 3rd Semester and Elective III of 4th Semester.*

Abbreviations used: **ESE:** End Semester Exam; **IA:** Internal Assessment

As approved by academic council and executive council meetings

Atal Bihari Vajpayee Vishwavidyalaya, Bilaspur (C.G.)

M. Sc. (Computer Science)

(w.e.f. 2023-2024)

Program Code: MSCITR104

PROGRAMME OUTCOMES (POs):

After the completion of the program students will be able to:

PO-1: Understand use of 1advanced computing techniques and tools.

PO-2: Understand and apply programming knowledge to solve complex problems not just by using technology, but also to contribute in creation of new & emerging technologies which meet the desired needs of industry and society.

PO-3: Understand the impact of technology & its applications and provide solutions to the end user in a cost effective and efficient manner.

PO-4: To adapt existing design patterns, techniques, algorithms, data structures, etc. to solve real world problems.

PO-5: Understand the impact of IT related solutions in socioeconomic context.

PO-6: Build a strong foundation for research in future & emerging technological trends.

PO-7: Emphasize on life-long learning considering the ever changing technological environment.

PO-8: To develop, a real world application.

PO-9: Understand advanced emerging techniques and to apply there in read world application.

PO-10: Carry on research based project and to develop commercial projects.

(As approved by AC and EC meetings held on 16.08.2023 and 18.04.2023 respectively)

Scheme of M.Sc. (Computer Science) under Semester System
Program Code: MSCCSR104

Semester	Course Code	Subject Name	Credit			Total Credit	Marks			
							ESE	IA	Total	
			L	T	P				Max	Min
First	CST101	Computer System Architecture	3	1	-	4	80	20	100	36
	CST102	Data Communication and Computer Network	3	1	-	4	80	20	100	36
	CST103	Object Oriented Programming with Java	3	1	-	4	80	20	100	36
	CST104	Operating Systems	3	1	-	4	80	20	100	36
	CSP101	Lab 1: Programming in Java	-	-	2	2	-	-	100	36
	CSP102	Lab 2: Operating Systems (Unix, Linux & Android)	-	-	2	2	-	-	100	36
	Subtotal		**12**	**4**	**4**	**20**	**-**	**-**	**600**	-
Second	CST201	Relational Database Management System	3	1	-	4	80	20	100	36
	CST202	Data Structure	3	1	-	4	80	20	100	36
	CST203	Software Engineering	3	1	-	4	80	20	100	36
	CST204	Elective-I: Computer Graphics	3	1	-	4	80	20	100	36
	CST205	Elective-I: Introduction to Block chain Technology								
	CST206	Elective-I: Cryptography and Network Security								
	CSP201	Lab 3: Relational Database Management System	-	-	2	2	-	-	100	36
	CSP202	Lab 4: Data Structure	-	-	2	2	-	-	100	36
	Subtotal		**12**	**4**	**4**	**20**	**-**	**-**	**600**	

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Note: *Students have to opt one paper from the pool of Elective-I of 2nd Semester, one paper from the pool of Elective-II of 3rd Semester and one paper from the pool of Elective-III of 4th Semester.*

Abbreviations used:

ESE: End Semester Exam
IA: Internal Assessment

Atal Bihari Vajpayee Vishwavidyalaya, Bilaspur (C.G.)

Scheme and Syllabus

of

M. Sc. (Chemistry)

Program Code: MSCCHER102

Semester system for affiliated college
(As per LOCF and credit system)

w.e.f. 2023-2024

(As approved by AC and EC meetings held on 16.08.2023 and 18.04.2023 respectively)

अटल बिहारी वाजपेयी विश्वविद्यालय, बिलासपुर (छ.ग.)

कोनी पुलिस थाना के सामने, बिलासपुर–रतनपुर मार्ग, कोनी, बिलासपुर (छ.ग.) 495009

Website :www.bilaspuruniversity.ac.in

Scheme of M.Sc. (Chemistry) under Semester System
Program Code: MSCCHER102

Semester	Course Code	Subject Name	Credit			Total Credit	Marks			
							ESE	IA	Total	
			L	T	P				Max	Min
First	CHEMT101	Inorganic Chemistry	3	1	-	4	80	20	100	36
	CHEMT102	Organic Chemistry	3	1	-	4	80	20	100	36
	CHEMT103	Physical Chemistry	3	1	-	4	80	20	100	36
	CHEMT104	Spectroscopy & Maths. for chemist	3	1	-	4	80	20	100	36
	CHEMP101	Lab 1 Organic Chemistry	-	-	2	2	-	-	100	36
	CHEMP102	Lab 2:Analytical Chemistry	-	-	2	2	-	-	100	36
	Subtotal		**12**	**4**	**4**	**20**	-	-	**600**	-
Second	CHEMT201	Inorganic Chemistry	3	1	-	4	80	20	100	36
	CHEMT202	Organic Chemistry	3	1	-	4	80	20	100	36
	CHEMT203	Physical Chemistry	3	1	-	4	80	20	100	36
	CHEMT205	Elective-I A: Photo-inorganic chemistry	3	1	-	4	80	20	100	36
	CHEMT206	Elective-I B: Chemistry of Hetrocyclic compounds								
	CHEMT207	Elective-I C: Chemistry of Material								
	CHEMP201	Lab 3: Inorganic Chemistry	-	-	2	2	-	-	100	36
	CHEMP202	Lab 4: Project Work	-	-	2	2	-	-	100	36
	Subtotal		**12**	**4**	**4**	**20**	-	-	**600**	

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BILASPUR (C.G.)

M.Sc. Chemistry

Programme outcome

After completing M.Sc. Chemistry programme, students will be able to:

Knowledge Outcomes:

PO1: Demonstrate and apply the fundamental knowledge of the basic principles in various fields of Chemistry

PO2: Create awareness and sense of responsibilities towards environment and apply knowledge to solve the issues related to Environmental pollution.

PO3: Apply knowledge to build up small scale industry for developing endogenous product.

PO4: Apply various aspects of chemistry in natural products isolations, pharmaceuticals, dyes, textiles, polymers, petroleum products, nanopartcles,computer programming for chemists etc. and also todevelop interdisciplinary approach of the subject.

Skill Outcomes: It would help students to

PO4: collaborate effectively on team-oriented projects in the field of Chemistry or other related fields.

PO5: communicate scientific information in a clear and concise manner both orally and in Writing.

PO6: inculcate logical thinking to address a problem and become result oriented with a positive attitude.

PO7: Explain environmental pollution issues and the remedies thereof.

PO8: apply the knowledge to develop the sustainable and eco-friendly technology in Industrial Chemistry.

Generic Outcomes:

PO9: Have developed their critical reasoning, judgment and communication skills.

PO10: Augment the recent developments in the field of green and eco-friendly reactions, pharmaceutical, Bioinorganic Chemistry and relevant fields of research and development.

PO11: Enhance the scientific temper among the students so as to develop a research culture and implementation of the policies to tackle the burning issues at global and local level.

PO12 :Will be able to undertake various projects of chemistry and will be familiar about research methodology.

SCHEME OF EXAMINATION & DISTRIBUTION OF MARKS

SEMESTER - I

Paper No.	Title of the Paper (s)	Internal Assessment	Term End Exam	Practical	Total Marks
1.	Inorganic Chemistry	20	80		100
2.	Organic Chemistry, Stereochemistry & Pericyclic Reaction	20	80		100
3.	Physical Chemistry- I	20	80		100
4.	Spectroscopy And Mathematics/Biology For Chemists	20	80		100
LAB-I	Organic Chemistry				100
LAB-II	Analytical Chemistry				100
				TOTAL	600

SEMESTER - II

Paper No.	Title of the Paper (s)	Internal Assessment	Term End Exam	Practical	Total Marks
1.	Inorganic Chemistry	20	80		100
2.	Organic Chemistry	20	80		100
3.	Physical Chemistry	20	80		100
4.	Spectroscopy, Diffraction Methods & Computer For Chemists	20	80		100
LAB-I	Inorganic Chemistry				100
LAB-II	Physical Chemistry				100
				TOTAL	600

SEMESTER - III

Paper No.	Title of the Paper (s)	Internal Assessment	Term End Exam	Practical	Total Marks
COMPULSORY FOR GROUP A, B & C					
1.	Applications Of Spectroscopy	20	80		100
2.	Chemistry Of Bio-Inorganic & Bio-Organic	20	80		100
LAB-I	General (Compulsory)			200	200
OPTIONAL GROUP-A INORGANIC					
3.	Organotrasition Metal Chemistry	20	80		100
4.	Photo inorganic Chemistry	20	80		100
OPTIONAL GROUP- B ORGANIC					
3.	Physical Organic Chemistry	20	80		100
4.	Chemistry Of Heterocyclic Compounds	20	80		100
OPTIONAL GROUP-C PHYSICAL					
3.	Chemistry Of Materials	20	80		100
4.	Advanced Quantum Chemistry	20	80		100
				TOTAL	600

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SCHEME OF EXAMINATION & DISTRIBUTION OF MARKS

SEMESTER - I

Paper No.	Title of the Paper (s)	Internal Assessment	Term End Exam	Total Marks
1.	Poetry -I (From Chaucer To Blake)	20	80	100
2.	Drama -I	20	80	100
3.	Prose	20	80	100
4.	Fiction	20	80	100

SEMESTER - II

Paper No.	Title of the Paper (s)	Internal Assessment	Term End Exam	Total Marks
1.	Poetry -II	20	80	100
2.	Drama- II	20	80	100
3.	Modern Literature (Poetry and Prose)	20	80	100
4.	Fiction And Short Stories	20	80	100

SEMESTER - III

Paper No.	Title of the Paper (s)	Internal Assessment	Term End Exam	Total Marks
1.	Critical Theory	20	80	100
2.	Indian Literature	20	80	100
3.	American Literature	20	80	100
4.	Optional (Any one) 1. History of English Literature 2. Linguistics	20	80	100

SEMESTER - IV

Paper No.	Title of the Paper (s)	Internal Assessment	Term End Exam	Total Marks
1.	Literature in Translation	20	80	100
2.	Diaspora and Dalit Literature	20	80	100
3.	World Literature	20	80	100
4.	Optional (Any one) 1. Colonial and Post Colonial Literature 2. Gender Studies	20	80	100

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III	Fish(Ichthyology) structure and function	80	20
IV	Applied Fisheries	80	20
Optional Group-II			
III	Cell biology	80	20
IV	Cellular organization and molecular organization	80	20
Optional Group-III			
III	Entomology	80	20
IV	Applied Entomology	80	20
Optional Group-IV			
III	Wildlife conservation	80	20
IV	Environment and biodiversity conservation	80	20
	M.Sc. Zoology Lab Course I	100	
	M.Sc. Zoology Lab Course II	100	

Student has choice to opt. For any one group out of four optional groups.(Paper III and IV in semester four)

Each theory paper will have 5 questions of equal marks. First question will be compulsory encompassing all the five units without any internal choice, whereas rest questions will be unit wise with internal choice.

Internal Assessment shall comprise of two parts- Ten marks for test and ten marks for seminar/ assignment /presentation.

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(छत्तीसगढ़)

सेमेस्टर पाठ्यक्रम

M.Sc. ZOOLOGY

SCHEME OF EXAMINATION & DISTRIBUTION OF MARKS

SEMESTER - I

Paper No.	Title of the Paper	Marks	
		External	Internal
I	Invertebrate structure and function, Minor Phyla	80	20
II	Animal Behaviour	80	20
III	Quantitative Biology	80	20
IV	Ecology and environmental physiology	80	20
	M.Sc. Zoology Lab Course I	100	
	M.Sc. Zoology Lab Course II	100	

SEMESTER - II

Paper No.	Title of the Paper	Marks	
		External	Internal
I	General & comparative endocrinology of vertebrates	80	20
II	Gamete biology and reproductive physiology in human beings	80	20
III	Molecular cell biology	80	20
IV	Tools and techniques for biology	80	20
	M.Sc. Zoology Lab Course I	100	
	M.Sc. Zoology Lab Course II	100	

SEMESTER - III

Paper No.	Title of the Paper	Marks	
		External	Internal
I	Comparative anatomy of vertebrates	80	20
II	Biosystematics, taxonomy & biodiversity	80	20
III	Immunology and developmental biology	80	20
IV	Population genetics & evolution	80	20
	M.Sc. Zoology Lab Course I	100	
	M.Sc. Zoology Lab Course II	100	

SEMESTER - IV

Paper No	Title of Paper	Marks	
		External	Internal
I	General physiology and neurophysiology *(compulsory)*	80	20
II	Biochemistry and metabolic regulation and cell function *(compulsory)*	80	20
Optional Group-I			

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Fourth Semester	Paper No	Title of Paper	Marks	
			External	Internal
	I	General physiology and neurophysiology (*compulsory*)	80	20
	II	Biochemistry and metabolic regulation and cell function (*compulsory*)	80	20
Optional Papers (*GROUP I*)				
	III	Fish(Ichthyology) structure and function	80	20
	IV	Applied Fisheries	80	20
Optional Papers (*GROUP 2*)				
	III	Cell biology	80	20
	IV	Cellular organization and molecular organization	80	20
Optional Papers (*GROUP 3*)				
	III	Entomology	80	20
	IV	Applied Entomology	80	20
Optional Papers (*GROUP 4*)				
	III	Wildlife conservation	80	20
	IV	Environment and biodiversity conservation	80	20
Practical		M.Sc. Zoology Lab Course	200	

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SEMESTER SYLLABUS

M.Sc. MATHEMATICS

SCHEME OF EXAMINATION & DISTRIBUTION OF MARKS

SEMESTER - I

Paper No.	Title of the Paper (s)	Internal Assessment	Term End Exam	Practical	Total Marks
1.	Advanced Abstract Algebra (I)	20	80		100
2.	Real Analysis (I)	20	80		100
3.	Topology (I)	20	80		100
4.	Complex Analysis (I)	20	80		100
5.	Advanced Discrete Mathematics (I)	20	80		100

SEMESTER - II

Paper No.	Title of the Paper (s)	Internal Assessment	Term End Exam	Practical	Total Marks
1.	Advanced Abstract Algebra (II)	20	80		100
2.	Real Analysis (II)	20	80		100
3.	Topology (II)	20	80		100
4.	Complex Analysis (II)	20	80		100
5.	Advanced Discrete Mathematics (II)	20	80		100

SEMESTER - III

Paper No.	Title of the Paper (s)	Internal Assessment	Term End Exam	Practical	Total Marks
1.	Integration Theory and Functional Analysis -I	20	80		100
2.	Partial Differential Equations Mechanics and Gravitation - I	20	80		100
OPTIONAL PAPER (ANY THREE)					
3.	Program. in C with ANSI Features I	20	50	30	100
4.	Fuzzy Sets and their Applications-I	20	80		100
5.	Operations Research-I	20	80		100
6.	Fluid Mechanics-I	20	80		100
7.	Information Theory-I	20	80		100
8.	Fundamentals of Computer Science –I	20	80		100

SEMESTER - IV

Paper No.	Title of the Paper (s)	Internal Assessment	Term End Exam	Practical	Total Marks
1.	Integration Theory and Functional Analysis -II	20	80		100
2.	Partial Differential Equations Mechanics and Gravitation - II	20	80		100
OPTIONAL PAPER (ANY THREE)					
3.	Programming in C with ANSI Features- II	20	50	30	100
4.	Fuzzy Sets and their Applications-II	20	80		100
5.	Operations Research-II	20	80		100
6.	Fluid Mechanics-II	20	80		100
7.	Information Theory-II	20	80		100
8.	Fundamentals of Computer Science II	20	80		100

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SYLLABUS
B.COM. PART-III

GROUPING OF SUBJECTS AND SCHEME OF EXAMINATION

Subject		Max.	Min.
Foundation Course			
I. Hindi Language		75	26
II. English Language		75	26
Compulsory Groups			
Group-I			
I. Income Tax	75	150	50
II. Auditing	75		
Group-II			
I. Indirect Taxes	75	150	50
II. Management Accounting	75		
Group-III Optional			
Option Group A (Finance Area)			
I. Financial Management	75	150	50
II. Financial Market Operations	75		
Option Group B (Marketing Area)			
I. Principles of Marketing	75	150	50
II. International Marketing	75		
Option Group C (Commercial Area)			
I. Information Technology and its Applications in Business	75	150	50
II. Essential of e-Commerce	75		
Option Group D (Money Banking & Insurance Area)			
I. Fundamental of Insurance	75	150	50
II. Money & Banking System	75		

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2020-21

ENGLISH LETERATURE

PAPER -I

INDIAN WRITING IN ENGLISH

M.M.: 75

(Paper Code-0235)

All questions are compulsory.

Note : 1. Uint - I is compulsory. Two passages from each of the units II to V to be set and three to be attempted. (3x5 = 15)

2. Short answer questions from unit VII, seven to be set and five to be attempted. (5x2 = 10)

3. Long-answer questions from unit II to VI. Êive questions from each unit with internal choice to be set. (5x10 = 50)

UNIT-I Annotations and short answer questions.

UNIT-II Poetry -

Toru Dutt	-	'Our Casurina Tree'
Tagore	-	Songs 1 & 103 from 'Gitanjali'
Sarojini Naidu	-	'The Ecstasy', 'The Lotus'

UNIT-III

Kamla Das	-	'The old playhouse'
Gauri Deshpandey	Or	' The female of the species
Jayant Mahapatra	-	'Dawn at Puri'
K.N. Daruwala	Or	'Death by Burial'
Shiv K. Kumar	-	'Indian Women'

UNIT-IV Prose -

Nirad C.Choudhary	-	My Birth Place.
Dr. S. Radhakrishnan	-	The call of the suffering.

UNIT-V Drama -

Girish Karnad	-	Hayavadana
	Or	
Tendulkar	-	Silence ! The Court is in session.

UNIT-VI Fiction -

R.K. Narayan	-	Guide

UNIT-VII 1. Lyric, 2. Subjective poetry, 3. Couplet, 4. Fable, 5. Hymn, 6. Allegory, 7. Autobiography,

BOOK RECOMMENDED :

1. Indian Poetry in English, Ed. Hari Mohan prasad, Sterling Publication.
2. An Introduction to the study of English Literature, B. Prasad.
3. A Glossary of Literary Terms - M.H. Abrams.
4. Prose of To day - M.C. Millan.

PAPER - II

(A) AMERICAN LITERATURE

(Paper Code-0236)

All questions are compulsory.

Note : 1. Uint-I is compulsory. Two passages from each of the units II to V to be set and three to be attempted. (3x5 = 15)

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2. Short answer questions from unit VII, seven to be set and five to be attempted. (5x2 = 10)

3. Long-answer questions from unit II to VI. (word limit for each answer is 300-400 words) internal choice to be set. (5x10 = 50)

UNIT-I Annotations and short answer question.

UNIT-II Poetry -

Wait whitman	-	O Captain ! My Captain, when the Lilacs Last in the Dooryard Bloomed.
Carl Sandberg	-	'Who Am I ?', 'I am the People, The Mob'

UNIT-III

Emily Dickinson	-	'Hope is the thing with Feather' I Felt a funeral in My Brain'
E.E. Cummings	-	'The Cambridge Ladies' 'As Freedom is a Breakfast food'

UNIT-IV Prose -

William Faulkner	-	Nobel Award Acceptence Speech
W. Carlos Williams	-	In the American Grain
Walt Whitman	-	Preface to "Leaves of Grass'

UNIT-V Drama -

Miller	-	All My Sons
	Or	
Eugene O'Neill	-	The Hairy Ape

UNIT-VI Fiction -

E. Hemingway	-	A Farewell to Arms
	Or	
W. Faulkner	-	The Sound and the Fury

UNIT-VII 1. Naturalism, 2. Realism, 3. Art for Art's sake, 4. Poetic-Drama, 5. Symbolism, 6. American Renaissance, 7. Existentialism.

BOOK RECOMMENDED :

1. American Literature, An Anthology, Ed. Fr. Egbert S. Oliver.
2. A Glossary of Literary Terms - M.H. Abrams.

PAPER - II

(B) 20TH CENTURY LITERATURE IN ENGLISH

(Paper Code-0237)

The paper will be taught as an optional paper to Paper-II(A) which is a paper on American Literature. The Principle focus will be to probe the students a general background and cultural history of this period and also to make them aware of the Literary trends of the twentieth century. The Paper will comprise six units and in all six quetions are to be attempted, one from each unit.

UNIT-I The following historical and literary topics will be included in this unit. Students are required to write short notes of not more than three hundred words on any two of the following topics. (10 Marks)

i. The Two world wars.
ii. The Russian Revolution.

iii) The Great Depression.
iv) The Vietnam war.
v) Freudian Thought
vi) Existentialism.
vii) Absurdism.
viii) Modernism and Post Modernism.
ix) New Development in fiction and Drama.

UNIT-II Ten objective type questions on the life History and major poetical works of the following poets of the twentieth century will be asked in this unit. (10 Marks)

i) W.B. Yeats (1865-1939)
ii) Siegfried Sasson (1886-1967)
iii) Rupert Brooke (1887-1915)
iv) T.S. Eliot (1888-1965)
v) Wilfred Owen (1893-1918)
vi) W.H. Auden (1907-1937)
vii) Louis Macneice (1907-1963)
viii) Stephen Spender (1909-)
ix) Dylan Thomas (1914-1953)
x) Philip Larkin (1922-1985)

UNIT-III (15 marks)

T.S. Eliot	-	'The Waste Land'
	Or	
Wilfred Owen	-	'Disabled'
Siegfried Sassoon	-	'Attack', 'Falling Asleep'
Rupert Brooke	-	'The Hill'
W.H. Auden	-	'Miss Gee'

UNIT-IV (15 marks)

Joseph Conrad	-	'Heart of Darkness'
	Or	
Chinua Achebe	-	'Things Fall Apart'

UNIT-V (Non Fictional Prose) (10 marks)

Virginia Woolf	-	'The Death of the Moth'
Graham Greene	-	'The Lost Childhood'

UNIT-VI (Drama) (15 marks)

Bernard Shaw	-	'Pygmalion'
	Or	
Samuel Beckett	-	'Waiting for Godot'

- - - - - - - - -

MATHEMATIS

There shall be three theory papers Two compulsory and one optional Each paper carrying 5C marks is divided into five units and each unit carry equal marks

PAPER - I Paper Code-C898;

ANALYSIS

REAL ANALYSIS

UNIT-I Series of arbitrary terms Convergence, divergence and Oscillation Abel s and Dirichlet s test Multiplication of series Double series

Partial derivation and differentiability of real-valued functions of two variables Schwarz and Young s theorem Implicit function theorem

Fourier series Fourier expansion of piecewise monotonic functions

UNIT-II Riemann integral Intergrability of continuous and monotonic functions The fundamental theorem of integral calculus Mean value theorems of integral calculus

Improper integrals and their convergence, Comparison tests Abel s and Dirichlet s tests Frullani s integral Integral as a function of a parameter Continuity, derivability and integrability of an integral of a function of a parameter

COMPLEX ANALYSIS

UNIT-III Complex numbers as ordered pairs Geometric representation of Complex numbers Stereographic projection

Continuity and differentiability of Complex functions Analytic functions Cauchy-Riemann equations Harmonic functions

Elementary functions Mapping by elementary functions

Mobius transformations Fixedpoints, Cross ratio Inverse points and critical mappings Conformal mappings

METRIC SPACES

UNIT-IV Definition and examples of metric spaces Neighbourhoods, Limit points, Interior points, Open and closed sets, Closure and interior Boundary points, Sub-space of a metric space Cauchy sequences, Completeness, Cantor s intersection theorem Contraction principle, Construction of real numbers as the completion of the incomplete metric space of rationals Real numbers as a complete ordered field

UNIT-V Dense subsets Baire Category theorem Separable, second countable and first countable spaces Continuous functions Extension theorem Uniform continuity, Isometry and homeomorphism Equivalent metrics Compactness, Sequential compactness Totally bounded spaces Finite intersection property Continuous functions and compact sets, Connectedness, Components, Continuous functions and connected sets

REFERENCES

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2 R R Goldberg, Real Analysis, Oxford & IBH publishing Co , New Delhi, 197C

3 S Lang, Undergraduate Analysis, Springer-Verlag, New York, 1983

4 D Somasundaram and B Choudhary, A First Coarse in Mathematical Analysis, Narosa Publishing House, New Delhi, 1997

5 Shanti Narayan, A Course of Mathematical Analysis, S Chand & Co New Delhi

6 P K Jain and S K Kaushik, An introduction to Real Analysis, S Chand & Co , New Delhi, 2000
7 R v Churchill & J W Brown, Complex Variables and Applications, 5*' Edition, McGraw-Hill, NewYork, 1990
8 MarkJ Ablowitz & A S Fokas, Complex Variables Introduction and Applications, Cambridge University Press, South Asian Edition, 1998
9 Shanti Narayan, Theory of Functions of a Complex Variable, S Chand & Co , New Delhi
10 E t Copson, Metric Spaces, Cambridge University Press, 1968
11 P K Jain and K Ahmad, Metric Spaces, Narosa Publishing House, New Delhi, 1996
12 G F Simmons, Inroductin to Topology and Modern Analysis, McGraw-Hill, 1963

PART - II Paper Code-0899)

ABSTRACT ALGEBRA

UNIT-I Group-Automorphisms, inner automorphism Automorphism groups and their computations, Conjugacy relation, Normaliser, Counting principle and the class equation of a finite group Center for Group of prime-order, Abelianizing of a group and its universal property Sylow s theorems, Sylow subgroup, Structure theorem for finite Abelian groups

UNIT-II Ring theory-Ring homomorphism Ideals and Quotient Rings Field of Quotients of an Integral Domain, Euclidean Rings, Polynomial Rings, Polynomials over the Rational Field The Eisenstien Criterion, Polynomial Rings over Commutative Rings, Unique factorization domain R unique factorisation domain implies so is R x1, x2 xn) Modules, Submodules, Quotient modules, Homomorphism and Isomorphism theorems

UNIT-III Definition and examples of vector spaces Subspaces Sum and direct sum of subspaces, Linear span Linear dependence, independence and their basic properties Basis Finite dimensional vector spaces Existence theoremfor bases Invariance of the number of elements of a basis set Dimension Existence of complementary subspace of a subspace of a finite dimensional vector space Dimension of sums of subspaces Quotient space and its dimension

UNIT-IV Linear transformations and their representation as matrices The Algebra of linear transformations The rank nullity theorem Change of basis Dual space Bidual space and natural isomorphism Adjoint of a linear transformation Eigenvalues and eigenvectors of a linear transformation Diagonalisation Annihilator of a subspace Bilinear, Quadratic and Hermitian forms

UNIT-V Inner Product Spaces-Cauchy-Schwarz inequality Orthogonal vectors Orthogonal Complements Orthonormal sets and bases Bessel s inequality for finite dimensional spaces Gram-Schmidt Orthogonalization process

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1 I N Herstein, Topics in Algebra, Wiley Eastern Ltd , New Delhi, 1975
2 N Jacobson, Basic Algebra, Vols I & II W H Freeman, 1980 also published by Hindustan Publishing Company)
3 Shanti Narayan, A Text Book of Modern Abstract Algebra, S Chand & Co New Delhi
4 K B Datta, Matrix and Linear Algebra, Prentice Hall of India Pvt Ltd , New Delhi, 2000
5 P B Bhattacharya, S K Jain and S R Nagpal, Basic Abstract Algebra 2'' Edition) Cambridge University Press, Indian Edition, 1997

6 K Hoffman and R Kunze, Linear Algebra, 2'' Editon, Prentice Hall Englewood Cliffs, New Jersey, 1971
7 S K Jain, A Gunawardena & P B Bhattacharya, Basic Linear Algebra with MATLAB Key College Publishing Springer-Verlag, 2001
8 S Kumaresan, Linear Algebra, A Geometric Approach, Prentice-Hall of India, 2000
9 Vivek Sahai and Vikas Bist, Algebra, Norosa Publishing House, 1997
10 I S Luther and I B S Passi, Algebra, Vol I-Groups, Vol II-Rings Narosa Publishing House Vol I-1996, Vol II-1999,
11 D S Malik, J N Mordeson, and M K Sen, Fundamentals of Abstract Algebra, McGraw-Hill International Edition, 1997

PAPER - III - OPTIONAL,

I, PRINCIPLES OF COMPUTER SCIENCE Paper Code-0900,

UNIT-I **Data Storage** - Storage of bits Main Memory Mass Storage Coding Information of Storage The Binary System Storing integers, storing fractions, communication errors
Data Manipulation - The Central Processing Unit The Stored-Program Concept Programme Execution Other Architectures Arithmetic/Logic Instructions Computer-Peripheral Communication

UNIT-II **Operating System and Networks** - The Evolutionof Operating System Operating System Architecture Coordinating the Machine s Activities Handling Competition Among Process Networks Networks Protocol
Software Engineering - The Software Engineering Discipline The Software Life Cycle Modularity Development Tools and Techniques Documentation Software Ownership and Liability

UNIT-III **Algorithms** - The Concept of an Algorithm, Algorithm Representation Algorithm Discovery Iterative Structures Recursive Structures Efficiency and Correctness Algorithms to be implemented in C++,
Programming Languages - Historical Perspective Traditional Programming Concepts, Program Units Language Implementation Parallel Computing Declarative Computing

UNIT-IV **Data Structures** - Arrays Lists Stacks Queues Trees Customised Data Types Object Oriented Programming
File Structure - Sequential Files Text Files Indexed Files Hashed Files The Role of The Operating System
Database Structure - General Issues The Layered Approach to Database Implementation The Relational Model Object-Oriented Database Maintaining Database Integrity E-R models

UNIT-V **Artifical Intelligence** - Some Philosophical Issues Image Analysis Reasoning, Control System Activities Using Heuristics Artificial Neural Networks Application of Artificial Intelligence
Theory of Computation - Turning Machines Computable functions A Non computable Function Complexity and its Measures Problem Classification

REFERENCES

1 J Glen Brookshear, Computer Science An Overview, Addition -Wesley
2 Stanley B Lippman, Josee Lojoie, C++ Primer 3rd Edition, , Addison-Wesley

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PAPER - III - OPTIONAL)

II) DISCRETE MATHEMATICS Paper Code-0901)

UNIT-I **Sets and Propositions** - Cardinality Mathematical Induction, Principle of Inclusion and exclusion

Computability and Formal Languages - Ordered Sets Languages Phrase Structure Grammars Types of Grammars and Languages Permutations Combinations and Discrete Probability

UNIT-II **Relations and Functions** - Binary Relations, Equivalence Relations and Partitions Partial Order Relations and Lattices Chains and Antichains Pigeon Hole Principle **Graphs and Planar Graphs** - Basic Terminology Multigraphs Weighted Graphs Paths and Circuits Shortest Paths Eulerian Paths and Circuits Travelling Salesman Problem Planner Graphs

TREES

UNIT-III **Finite State Machines** - Equivalent Machines Finite State Machines as Language Recognizers Analysis of Algorithms - Time Complexity Complexity of Problems Discrete Numeric Functions and Generating Functions

UNIT-IV **Recurrence Relations and Recursive Algorithms** - Linear Recurrence Relations with Constant Coefficients Homogeneous Solutions Particular Solution Total Solution Solution by the Method of Generating Functions Brief review of Groups and Rings

UNIT-V **Boolean Algebras** - Lattices and Algebraic Structures Duality, Distributive and Complemented Lattices Boolean Lattices and Boolean Algebras Boolean Functions and Expressions Prepositional Calculus Design and Implementation of Digital Networks Switching Circuits

REFERENCES

C L Liu, Elements of Discrete Mathematics, Second Edition), McGraw Hill, International Edition, Computer Science Series, 1986

PAPER - III - OPTIONAL)

III) APPLICATION OF MATHEMATICS IN FINANCE AND INSURANCE

Paper Code-0902)

Application of Mathematics in Finance

UNIT-I **Financial Management** - An overview Nature and Scope of Financial Management Goals of Financial Management and main decisions of financial management Difference between risk, speculation and gambling

Time value of Money-Interest rate and discount rate Present value and future valuediscrete case as well as continuous compounding case Annuities and its kinds

UNIT-II Meaning of return Return as Internal Rate of Return IRR) Numerical Methods like Newton RaphsonMethod to calculate IRR Measurement of returns under uncertainty situations Meaning of risk Difference between risk and uncertainty Types of risks Measurement of risk Calculation of security and Portfolio Risk and Return-Markowitz Model Sharpe s Single Index Model Systematic Risk and Unsystematic Risk

UNIT-III Taylor series and Bond Valuation Calculation of Duration and Convexity of bonds Financial Derivaties - Futures Forward Swaps and Options Call and Put Option Call and Put Parity Theorem Pricing of contingent claims through Arbitrage and Arbitrage Theorem

Application of Mathematics in Insurance

UNIT-IV Insurance Fundamentals - Insurance defined Meaning of loss Chances of loss, peril, hazard, and proximate cause in insurance Costs and benefits of insurance to the society and branches of insurance-life insurance and various types of general insurance Insurable loss exposuresfeature of a loss that is ideal for insurance Life Insurance Mathematics - Construction of Mortality Tables Computation of Premium of Life Insurance for a fixed duration and for the whole life

UNIT-V Determination of claims for General Insurance - Using Poisson Distribution and Negative Binomial Distribution-the Polya Case

Determination of the amount of Claims in General Insurance - Compound Aggregate claim model and its properties, and claims of reinsurance Calculation of a compound claim density function F-recursive and approximate formulae for F

REFERENCES

1 Aswath Damodaran, Corporate Finance - Theory and Practice, John Wiley & Sons Inc

2 John C Hull, Options, Futures, and Other Derivatives, Prentice-Hall of Indian Private Limited

3 Sheldon M Ross, An Introduction to Mathematical Finance, Cambridge University Press

4 Mark S Dorfman, Introduction to Risk Management and Insurance, Prentice Hall, Englwood Cliffs, New Jersey

5 C D Daykin, T Pentikainen and M Pesonen, Practical Risk Theoryfor Actuaries, Chapman & Hall

PAPER - III - OPTIONAL

Theory component will have maximum marks 30

Practical component will have maximum marks 20

IV. PROGRAMMING IN C AND NUMERICAL ANALYSIS Thoury & Practical

Paper Code-0903

UNIT-I Programmer s model of a computer Algorithms Flow Charts Data Types Arithmetic and input/output instructions Decisions control structures Decision statements Logical and Conditional operators Loop Case control structures Functions Recursions Preprocessors Arrays Puppetting of strings Structures Pointers File formatting

Numerical Analysis

UNIT-II Solution of Equations Bisection, Secant, Regula Falsi, Newton s Method, Roots of Polynomials Interpolation Lagrange and Hermite Interpolation, Divided Differences, Difference Schemes, Interpolation Formulasusing Differences Numerical Differentiation Numerical Quadrature Newton-Cote s Formulas Gauss Quadrature Formulas, Chebychev s Formulas

UNIT-III Linear Equations Direct Methods for Solving Systems of Linear Equations Guass Elimination, LU Decomposition, Cholesky Decomposition, Iterative Methods Jacobi, GaussSeidel, Relaxation Methods,

The Algebraic Eigenvalue problem Jacobi s Method, Givens Method, Householder s Method, Power Method, QR Method, Lanezos Method

UNIT-IV Ordinary Differential Equations Euler Method, Single-step Methods, Runge-Kutta s Method, Multi-step Methods, Milne-Simpson Method, Methods Based on Numerical

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Integration, Methods Based on Numerical Differentiation, Boundary Value Problems, Eigenvalue Problems

Approximation Different Types of Approximation, Least Square Polynomial Approximation, Polynomial Approximation using Orthogonal Polynomials, Approximation with Trigonometric Functions, Exponential Functions, Chebychev Polynomials, Rational Functions

Unit-V Monte Carlo Methods Random number generation, congruential generators, statistical tests of pseudo-random numbers

Random variate generation, inverse tranform method, composition method, acceptancerejection method, generation of exponential, normal variates, binomial and Poisson variates

Monte Carlo integration, hit or miss Monte Carlo integration, Monte Carlo integration for improper integrals, error analysis for Monte Carlo intergration

REFERENCES

1 Henry Mullish& Herbert L Cooper, Spirit of C An Introductionto Modern Programming, Jaico Publishers, Bombay

2 B W Kernighan and D M Ritchie The C Programming Language 2'd Edition, ANSI features', Prentice Hall, 1989

3 Peter A Darnel and Philip E Margolis, C A Software Engineering Approach, Narosa Publishing House, 1993

4 Robert C Hutehisonand Steven B Just, Programming using C Language, McGraw Hill, 1988

5 Les Hancock and Morris Krieger, The C Primer, McGraw Hill, 1988

6 V Rajaraman, Programming in C, Prentice Hall of India, 1994

7 Byron S Gottfried, Theory and Problems of Programming with C, tata McGraw-Hill Publishing Co Ltd , 1998

8 C E Froberg, Introduction to Numerical Analysis, Second Edition', Addison-Wesley, 1979

9 James B Scarborough, Numerical Mathematical Anasysis, Oxford and IBHPublishing Co Pvt Ltd 1966

10 Melvin J Maron, Numerical Analysis A Practical Approach, Macmillan publishing Co , Inc New York, 1982

11 M K Jain, S R K Iyengar, R K Jain, Numerical Methods Problems and Solutions, New Age International P' Ltd , 1996

12 M K Jain, S R K Iyengar, R K Jain, Numerical Methods for Scientific and Engineering Computation, New Age International P' Ltd , 1999

13 R Y Rubistein, Simulation and the Monte Carlo Methods, John Wiley, 1981

14 D J Yakowitz Computational Probability and Simulation, Addison-Wesley, 1977

PAPER - III - OPTIONAL'

IV' PRACTICAL

PROGRAMMING IN C AND NUMERICAL ANALYSIS

LIST OF PRACTICAL TO BE CONDUCTED

1 Write a program in C to find out the largest number of three integer numbers

2 Write a program in C to accept monthly salary from the user, find and display income tax with the help of following rules