JEEVAN VIKAS MAHAVIDYALAYA, DEVGRAM

Tah. Narkhed, Dist. Nagpur-441301 (M.S.)

(Permanent Affiliated to Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur)

College Code: 341

(NAAC Accredited in Cycle II with 'B++' Grade, CGPA 2.93)

ISO 9001:2015 Certified, NIRF Participated

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Declaration

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SEAL

Principal
Jeevan Vikas Mahavidyalaya
Devgram (Thugaondeo)
Tah. Narkhed, Dist. Nagpur

Programme Outcomes
Course Outcomes

Academic Session-2022-2023

- **Faculty of Bachelor of Arts**
- **Bachelor of Commerce**
- **Bachelor of Science**

Jeevan Vikas Mahavidyalaya, Devgram

Course Outcomes and Programme Outcomes

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Department of Arts

Academic Session-2022-2023

Course	Semester	Sr. No.	Subject
B A	First	1	English
		2	Marathi
		3	Political Science
		4	Economics
		5	Sociology
		6	Marathi Literature
		7	Music
		8	Library Science
	Second	9	English
		10	Marathi
		11	Political Science
		12	Economics
		13	Sociology
		14	Marathi Literature
		15	Music
		16	Library Science
	Third	17	English
		18	Marathi
		19	Political Science
		20	Economics
		21	Sociology
		22	Marathi Literature
		23	Music
		24	Library Science
	Forth	25	English
		26	Marathi
		27	Political Science
		28	Economics
		29	Sociology
		30	Marathi Literature
		31	Music
		32	Library Science
	Fifth	33	English
		34	Marathi
		35	Political Science
		36	Economics
		37	Sociology

		38	Marathi Literature
		39	Music
		40	Library Science
	Sixth	41	English
		42	Marathi
		43	Political Science
		44	Economics
		45	Sociology
		46	Marathi Literature
		47	Music
		48	Library Science

Department of Commerce

Course	Semester	Sr. No.	Subject
B. Com	First	1	English
		2	Marathi
		3	Financial Accounting- I
		4	Business organization
		5	Company law
		6	Business Economics- I
	Second	7	English
		8	Marathi
		9	Statistics and Business mathematics
		10	Business Management
		11	Secretarial Practice
		12	Business Economics II
	Third	13	English
		14	Marathi
		15	Financial Accounting II
		16	Business communication and management
		17	Business law
		18	Monetary economics-I
	Forth	19	English
		20	Marathi
		21	Financial Accounting-III
		22	Skill Development
		23	Income Tax
		24	Monetary Economics-II
	Fifth	25	Financial Accounting-IV
		26	Cost Accounting
		27	Management Process
		28	Indian Economics-I
		29	Computerized Accounting
		30	Auditing
	Sixth	31	Financial Accounting-V
		32	Management Accounting
		33	Advanced Statistics

		34	Indirect Economics-II
		35	Human Resource Management
		36	Industrial Law

Department of Science
(Physics, Chemistry, Mathematics, Zoology, Microbiology, Botany and Computer Science)

Course	Semester	Sr. No.	Subject
B.Sc.	First	1	English
		2	Marathi
		3	Chemistry I & II
		4	Physics I & II
		5	Mathematics I & II
		6	Zoology I & II
		7	Botany I & II
		8	Microbiology I&II
		9	Computer Science I&II
	Second	10	English
		11	Marathi
		13	Chemistry I & II
		14	Physics I & II
		15	Mathematics I & II
		16	Zoology I & II
		17	Botany I & II
		18	Microbiology I&II
		19	Computer Science I&II
	Third	20	Chemistry I & II
		21	Physics I & II
		22	Mathematics I & II
		23	Zoology I & II
		24	Botany I & II
		25	Microbiology I&II
		26	Computer Science I&II
	Forth	27	Chemistry I & II
		28	Physics I & II
		29	Mathematics I & II
		30	Zoology I & II
		31	Botany I & II
		32	Microbiology I&II
		33	Computer Science I&II
	Fifth	34	Chemistry I & II
		35	Physics I & II
		36	Mathematics I & II
		37	Zoology I & II
		38	Botany I & II

		39	Microbiology I&II
		40	Computer Science I&II
	Sixth	41	Chemistry I & II
		42	Physics I & II
		43	Mathematics I & II
		44	Zoology I & II
		45	Botany I & II
		46	Microbiology I&II
		47	Computer Science I&II

Programme Outcomes and Course Outcomes

Faculty of Arts

Academic Session-2022-2023

Sr. No	Subject	Programme Outcomes	Course Outcomes
		First Semester	
1	English	On the completion of the Course:	The students will be able:
		Students will be able to attempt different types of written communication utilizing the language study and vocabulary.	1. To respond to the texts and thereby improving in their linguistic and Communication Skills. 2. To get inspired from biographies and broaden their horizon. 3. To develop drafting skills, job applications and resumes. 4. To understand the structure of sentences through prescribed grammar
2	Marathi	1- युवक वयोगटातील विद्यार्थ्यांची भाषा व वाङ्मयविषयक मनोभूमिका दृढ होते. 2- भाषा व संस्कृती आणि साहित्य व संस्कृती यांचा अनुबंध समजून घेता येतो. 3- मातृभाषा व साहित्यातून मानवी जीवनव्यवहार समजून घेता येतो. 5- व्यक्तिमत्त्व विकास साध्य करता येतो. 6- भाषेवर प्रभुत्व निर्माण करता येते. 7- चौकस वाचनातून शब्दसंग्रह वाढतो.	१. विद्यार्थी भाषेचे सुव्यवस्थित उपयोजन करू शकेल. २. पत्रलेखन, सारांशलेखन यासारखी भाषिक कौशल्ये विकसित होऊन कार्यालयीन भाषाव्यवहारात तसेच जीवनव्यवहारात उपयुक्त ठरतील. 3. एकाग्रतेने वाचन करण्याची सवय लागेल. ४. भाषिक संवाद व्यवहारामुळे विद्यार्थ्यांचा सामाजिक व वैयक्तिक विकास होईल. ५. अचूक आणि अविलंब विचार करण्याची क्षमता निर्माण होईल. ६. विचारांचा नेमका वेध घेण्याची क्षमता निर्माण होईल.

		8- समाजामध्ये वावरण्यासाठीची संवेदनशीलता विकसित होते. 9- नवनिर्मितीक्षमता व अभिव्यक्तिक्षमता विकसित होते. 10- सामाजिक बांधिलकी निर्माण होते. 11- साहित्य व संस्कृतीविषयी ज्ञान संग्रहण, संक्रमण प्रक्रिया गतिमान होते. 12- विशिष्ट समस्येची चिकित्सा करता येते. 13- नोकरी व रोजगाराच्या संधी शोधता येतात.	
3	Political Science		The students will be able: 1. To understand the basic concept and ideological orientations of political science discipline. **2.** To discuss the major theories and concepts of political science and its subfields.
4	Economics		1. After completing this course, the students will be able to Learn the basic principles of microeconomic theory. 2. Students shall be able to understand efficiency and equity of consumption and production as well as cost and firms' policy in market behavior. 3. Students will also be

			able to analyze demand by households and supply of goods and services by business firms. 4. Students will also be able to understand interaction of demand and supply in various market structures. 5. Lastly Students will gain and develop the skill to think practically in to economic domain like Economists.
6	Sociology		The students will be able to: 1. To know in details about culture and society 2. To know in details about Social Structure 3. To know in details about Social Stratification. 4. To aware of Concept of Gender.
7	Marathi Literature	1 मराठी वाङ्मय प्रकाराांची ओळख करून देणे- 2-आत्मचररत्र या वाङ्.मय प्रकाराचे स्वरूप व वैसशष्टये याांचे आकलन करुन देणे- 3-माझी जन्मठेप या वव-दा-सावरकराांच्या आत्मचररत्राचा आढावा घेणे-	1- मराठीतील कववता] कर्था] नाटक] चररत्र- आत्मचररत्र या वाङ्.मय प्रकाराांची ओळख ववद्यार्थयाांना झाली- 2- आत्मचररत्र या वाङ्-मय प्रकाराचे स्वरूप व वैसशष्टये व घटकाांची माहिती ववद्यार्थयाांना समळाली- 3- वव- दा- सावरकराांच्या जजवनाचा वृत्ताांत माझी जन्मठेप या आत्मचररत्रातून समजून आला-

		4-साहित्यातून व्यक्त ववषेशाांची माहिती देणे-	
8	Music		
9	Library science		
Second Semester			
10	English	On the completion of the course: Students will be able to apply the grammar, vocabulary to respond to the questions and in daily lives and will espouse the values through the biographies of people who by their hard braved life and succeeded.	The students will be able: 1. To espouse important values and principles of life through the texts. 2. To develop drafting skills: advertisement Writing Meeting Agenda, Notice and Minutes. 3. To use verbs and tenses in the given contexts. 4. To comprehend vocabulary and use it in their daily lives.
11	Marathi	१ मराठी भाषेच्या समृद्धीचा जाणीव करून देणे २ भाषेच्या व साहित्याच्या अभ्यासाद्वारे भारतीय सांस्कृ ती आणण इतिहासाची ओळख करून देणे- ३ साहित्यप्रकाराांची ओळख करून देणे- ४ ववद्यार्थ्यांची भावषक कौशल्ये ववकससत करणे व त्याना रोजगारासभमुख बनववणे ५ नैततक मूल्ये रुजववणे	१- ववद्यार्थी भाषेचे सुयोग्य उपयोजन करू शकेल- २ -पत्रलेखन,साराशलेखन यासारखी भावषक कौशल्ये व कायाालयीन भाषा तसेच जीवनव्यविारात उपयुक्त ठरतील- ३- एकाग्रतेने वाचन करण्याची सवय लागेल- ४- भावषक सांवाद व्यविारामुळे ववद्यार्थ्यांचा सामाजजक व वैयजक्तक ववकास होईल- ५- अचूक आणण अववलांब ववचार करण्याची क्षमता तनमााण होईल- ६-ववचाराांचा नेमका वेध घेण्याची क्षमता तनमााण होईल ७- अभ्यासक्रमाची उद्दिष्टे साध्य होतील-
12	Political		The students will be able:

	Science		1. To understand the contribution of the main traditions of Western Political Thinkers to Political Thought **2.** To evaluate the Renaissance; Political thought of Reformation and Plato, Aristotle, J. S. Mill and Karl Marx.
13	Economics	On the completion of the course: Economics subject enables the learners to build up a professional carrier as economists, financial advisors, economics planners and policy makers. It prepares them to cope up with the stress and strain involved in the process of economic development. Department supports the education and training of students, teachers and research in economics.	1. After completing this course, the students will be able to Learn various concepts of GDP and relationship between National Income and welfare of people. 2. Students will further be able to understand factors determine domestic productivity, employment level of prices and interest rates. 3. Students will be able to apply basic concepts to Analyses the situations of inflation and business cycles. 4. Students will able to evaluate the role of monetary and fiscal policy of Government to fight inflation or to stabilize business cycles. 5. Lastly, Students will have ability to understand the relationship between consumption function and investment in

			economy and shall be able to give suggestion for promoting investment
14	Sociology		**1-** To know in detail about Socialization 2- To know in detail about Social Change 3- To know in detail about Social Movements. 4– To know in detail about Social Deviation and Social Control**.**
15	Marathi Literature	1- नाटक या वाड्.मय प्रकाराचा आढावा घेऊन स्वरूप व वैसशष्टये याांचे आकलन करुन देणे— 2- -वव- वा सशरवाडकराांच्या नटसम्राट या शोकात्म नाटकाची माहिती देणे- 3- कर्था व कववता वाड्.मय प्रकाराांची ओळख करुन देणे-	1 मराठीतील ववववधं वाड्मय प्रकाराांची माहिती ववद्यार्थयाांना समळाली- 2- नाटक या वाड्.मय प्रकाराची स्वरूप व याांची जाणीव ववद्यार्थयाांना झाली- 3- नटसम्राट या षोकात्म नाटकाच्या आधारे वव- वा सशरवाडकराांच्या साहित्याचे रिस्य **वळून** आणे-
16	Music		
17	Library Science		
Third Semester			
18	English	On the completion of the Programme: Students will be able to apply the human values, the grammar vocabulary to respond to the questions and in daily lives and will espouse the values through the biographies of people who by their hard braved life and succeeded.	The students will be able: 1. To understand the importance of Honesty. 2. To understand the beauties of nature and sublime. 3. To apply the Values of nature and sublime. 4. To understand the social evils of society and the values of Humanity. 5. To understand the correct usage of Narration and Punctuation. 6. To use English for the purpose of communication.

19	Marathi	१ मराठी भाषेच्या समृद्धीची जाणीव करून देणे व प्राचीन तसेच आधुनिक साहित्याचा परिचय घडवणे २ भाषेच्या व साहित्याच्या अभ्यासाद्वारे राष्ट्रीय आणि सामाजिक प्रश्नांची जाणीव करून देऊन त्यावरील उपायांचा शोध घेण्यास प्रवृत्त करणे. ३ मानवतावाद व जीवनमूल्यांची सांगड घालणे व मानवतावादी दृष्टिकोन निर्माण करणे. ४ विद्यार्थ्यांची लेखनकौशल्ये विकसित करणे व त्यांना रोजगाराभिमुख बनवणे ५ ग्रामजीवन, लोकसंस्कृती व सांस्कृतिक यांविषयी आदराची भावना निर्माण करणे.	१ साहित्याचा आस्वाद घेण्याची क्षमता विकसित होईल. २ संपादन कला, संवादलेखन यासारखी भाषिक संवाद कौशल्ये भाषाविषयात तसेच जीवनविषयात उपयुक्त ठरतील. ३ मुद्रण विषयात परिचय होईल. ४ मानवतावाद व जीवनमूल्यांची व विषयांची जोपासना करतील ५ श्राव्य,दृक् श्राव्य व दृक् माध्यमासाठी संवादलेखन कसे करावे याची जाण निर्माण होईल. ६ देशप्रेम व देशभक्तीची भावना निर्माण होईल. ७ अभ्यासक्रमाची उद्दिष्टे साध्य होतील.
20	Political Science		The students will be able: 1. To understand the processes and dynamics of Indian government and politics 2. To understand the strengths and weaknesses of Indian political processes, both in terms of their effectiveness in responding to public policy needs. 3. To attentive current political issues in context of wider debates about democratic life in India and the capacity of political institutions **4.** To understand the basic concept and issues concerning the Right to Information Act, Human

			Rights and challenges.
21	Economics	On the completion of the course: Economics subject enables the learners to build up a professional carrier as economists, financial advisors, economics planners and policy makers. It prepares them to cope up with the stress and strain involved in the process of economic development. Department supports the education and training of students, teachers and research in economics.	1. It provides knowledge regarding the formulation of broad economic policies that maximize the level of national income. 2. Students Identify various Concept of National income. 3. Providing economic growth to achieve sustainability, full employment, 4. Price stability, external balance, increasing Productivity in the long run. Students will learn a theory of Employment
22	Sociology		1. To know in detail about Sociology as a Discipline 2. To know in detail about August Comte, Herbart Spencer To know in detail about Charles Horton Cooley, Emile Durkheim 3. To know in detail about Karl Marx, Max Weber.
23	Marathi Literature	1- स्वातांन्त्रोत्तर मराठी कववता या पुस्तकातील कववतांचा व त्यांचा आढावा घेणे- 2- असभनव काव्यप्रकाश या साहित्य ग्रंथेतील काव्याची लक्षणे व काव्याचे प्रयोजन यावरशयी माहिती देणे-	2- स्वातांन्त्रोत्तर मराठी कववता मधील तनवडक कवी व कववतांचा भावार्था ववद्यार्थ्यांना समजून आले- 3- असभनव काव्यप्रकाश मधील कववतेची लक्षणे व कववतेची प्रयोजने यावरशयीची माहिती समळाली-
24	Music		
25	Library Science		

Forth Semester			
26	English	On the completion of the Programme: Students will be able to apply the human values, the grammar, vocabulary to respond to the questions and in daily lives and will espouse the values through the biographies of people who by their hard braved life and succeeded.	The students will be able: 1. To understand the importance of faith and friendship 2. To apply discipline and struggle in their lives. 3. To solve the examples of Tense and Voice. 4. To use English for the purpose of communication.
27	Marathi	१ मराठी भाषेच्या समृद्धीची जाणीव करून देणे व प्राचीन तसेच आधुतनक साहित्याचा पररचय घडववणे २ भाषेच्या व साहित्याच्या अभ्यासाद्वारे राष्ट्रीय आणण सामाजजक प्रश्नाांची जाणीव करून देऊन त्यावरील उपायाचा शोध घेण्यास प्रवृत्त करणे. ३ मानवतावाद व जीवनव्यविाराची साांगड घालणे व मानवतावादी दृजष्टकोन तनमाण करणे. ४ ववद्यार्थ्यांची लेखनकौशल्ये ववकससत करणे व त्याना रोजगारा सभमुख बनववणे ५ ग्रामजीवन, लोकसांस्कृ ती व राष्ट्रीय सांस्कृ ती याववषयी आदराची भावना तनमाण करणे.	१ साहित्याचा आस्वाद घेण्याची क्षमता ववकससत होईल. २ साांपादन कामा, सांवादलेखन यासारखी भावषक सांवाद कौशल्ये भाषाव्यविारात तसेच जीवनव्यविारात उपयुक्त ठरतील. ३ मुद्रण व्यविारात पररचय होईल. ४ मानवतावाद व जीवनमूल्यांची व ववदयाांची जोपासना करतील ५ श्राव्य,दृक् श्राव्य व दृक् माध्यमासाठी सांवादलेखन कसे करावे याची जाण तनमाण होईल. ६ देशप्रेम व देशभक्तीची भावना तनमाण होईल. ७ अभ्यासक्रमाची उद्दिष्टे साध्य होतील.
28	Political		The students will be able:

	Science		1. To understand the vital contemporary emerging issues of center-state relation, political parties, emergence of new leadership at different levels, demand for autonomy movement, ethnic conflicts etc. 2. To understand the changing nature of the Indian State 3. To understand the Religion and Politics, Cast and Politics, Affirmative Action policies**.**
29	Economics	On the completion of the course: Economics subject enables the learners to build up a professional carrier as economists, financial advisors, economics planners and policy makers. It prepares them to cope up with the stress and strain involved in the process of economic development. Department supports the education and training of students, teachers and research in economics.	1. It attempts to impart an understanding of monetary economics. 2. It describes carefully the basics of monetary economics like money, value of money, theories of money, banking and international financial institutions. 3. Students learn the function of Commercial and Central Bank and why it is importance 4. Students learn about the structure of RBI and its function. Students Will be identify Financial Market Function
30	Sociology		1. To know in detail about Founders of theoretical Root's of caste in India B.R. Ambedkar and G.S. Gurye 2. To know in detail about Social change from Indian perspective M.N. Shriniwas & D.P. Mukharjee 3. To know in detail

			about Indian Society and Contemporary Chenges R.K. Mukherjee and S.C. Dube 4. To know in detail about Gender and Society in India Tarabari Shinde, Jyotirao Fule and Savitribai Fule
31	Marathi Literature	1- स्वातांत्र्योत्तर मराठी कर्था या पुस्तकाच्या आधारे कर्थाकार व कर्थेचा आढावा घेणे- 2- अभीनव काव्यप्रकाश या पुस्तकातील शब्दाच्या तीन शक्ती व अलांकाराचा आढावा घेणे-	1- स्वातांत्र्योत्तर मराठी कर्थाकाराांच्या कर्थाांची माहिती द्यार्थ्याांना प्राप्त झाली- 2- असभदा] व्यांजना व लक्षणा या शब्दाच्या तीन शक्ती ववद्यार्थ्याांना समजून आल्या-
32	Music		
33	Library Science		
Fifth Semester			
34	English	Upon successful completion of the B.A. Programme, students will be competent enough to internalize the subsequent qualities, which will facilitate their pursuit of envisioned objectives in their future lives: (a) Grasping of ethical principles (b) Development of a spirit of community engagement (c) Becoming a conscientious and accountable member of society (d)	1. Students will adopt and put into practice the principles of tolerance and simplicity as part of their everyday routines. 2. During a time characterized by widespread unemployment, students will find inspiration in the stories of three prominent personalities, motivating them to consider self-employment as a viable option. 3. The impactful messages aimed at the general public, as communicated through the poetry

		Cultivation of analytical disposition (e) Enhancement of innovative aptitude	segment, will exert a favorable influence on the students' attitudes. 4. Engaging with the Grammar and Composition segment will enhance their self-assurance, leading to the development of proficient communication abilities.
35	Marathi	१ मराठी साहित्यातील वववववध प्रवाि◌ाांची जाणीव करून देणे. 2. भाषेच्या व साहित्याच्या अभ्यासाद्वारे भारतीयत्वाच्या सांकल्पनेची ओळख करून देणे.	१ साहित्यातील वववववध प्रवाि◌ाांची जाणीव ि◌ोईल. २ सांत, पांत आणण तांत साहित्याची जा ओळख ि◌ोईल. साहित्य आणण समाज याांच्या परस्पर सांबांधाची जाणणव ि◌ोईल ३ मुहद्रतशोधन यासारखी भावषक कौशल्ये ववकससत ि◌ोवून कायाालयीन भा षा व्यविारात व जीवनव्यविारात उपयुक्त ठरतील ४ अचूक लेखन करण्याची सवय लागेल. ५ ब्रृ श्राव्य माध्यमासाठी लेखन, मुहद्रतशोधन, भाषाांतर कौशल्ये ववकससत झाल्यामुळे रोजगाराच्या सांधी उपलब्ध ि◌ोतील. ६ सामाजजक व राष्ट्रीय प्रश्नाांवर ववचार करण्याची क्षमात तनमााण ि◌ोईल. ७ देशातील वेगवेगळ्या साांस्कृ तीचा आदर करण्याची क्षमता तनमााण ि◌ोईल. ८ अभ्यासक्रमाची उिष्टे साध्य ि◌ोतील.
36	Political Science		The students will be able to: 1. Comparative understanding of specific world constitutions such as U. K. and U.S.A. **2.** To analyze

			contemporary problems in the countries (U. K. and U. S. A.) under consideration in light of the conceptual frameworks presented in class.
37	Economics	On the completion of the course: Economics subject enables the learners to build up a professional carrier as economists, financial advisors, economics planners and policy makers. It prepares them to cope up with the stress and strain involved in the process of economic development. Department supports the education and training of students, teachers and research in economics.	1. This course will use appropriate analytical frameworks to review major trends in economic indicates in the India in post-independence period 2. The course will be able to highlight major policy debates and evaluate the Indian empirical evident to update the major changes of Indian Economy. 3. It will examine various paradigm shifts and turning points in policy debates in India. It enables students to examine sector spacific policies and their impact trends in key economic indicators in India
38	Sociology		1. To know in detail about Indian Society, Structure and Inequality 2. To know in detail about Family in contemporary India 3. To know in detail about Tribal Issue and problems in India 4. To know in detail about Rural Community in India
39	Marathi		

	Literature	1- पुण्णामायची लेखक या कथांशाचा आढावा घेणे- 2- दखलत साहित्य वेदना व ववद्रोि या पुस्तकातील दखलत साहित्याचा आढावा घेणे- 3- साहित्याच्या ववववध प्रवाि्ांचा आढावा घेणे-	1- पुण्णामायची लेखक या कथांशातील समाजजजवनाची माहिती ववद्यार्थ्यांना समळाली- 2- दखलत साहित्य वेदना व ववद्रोि यातून दखलतांच्या वेदनेचे व ववद्रोि्ांचे ववद्यार्थ्यांना आकलन झाले- 3- प्राचीन साहित्यातील सांत, पांत व तांत साहित्यप्रवाि्ांची माहिती ववद्यार्थ्यांना प्राप्त झाली-
40	Music		
41	Library Science		
		SIX Semester	
42	English	Upon successful completion of the B.A. Programme, students will be competent enough to internalize the subsequent qualities, which will facilitate their pursuit of envisioned objectives in their future lives: (a) Grasping of ethical principles (b) Development of a spirit of community engagement (c) Becoming a conscientious and accountable member of society (d) Cultivation of analytical disposition (e) Enhancement of innovative aptitude	1. Students will grasp the idea that prioritizing friendships and human connections is more valuable than a self-centered focus on financial gains, as portrayed in the Prose section. 1. After engaging with A.P.J. Abdul Kalam's reflections on resilience, students will witness a significant positive influence on their own lives. 2. The remarkable accomplishments of renowned personalities will prompt learners to understand the truth that determination and hard work are the keys to success.' 3. The Poetry Segment will enhance the promotion of spreading harmony and the message of serenity.
43	Marathi	१ मराठी साहित्यातील ववववध प्रवाि्ांचा	१ साहित्यातील ववववध प्रवाि्ांचा जाणीव

		जाणीव करून देणे. २ भाषेच्या व साहित्याच्या अभ्यासाद्वारे भारतीयत्वाच्या सांकल्पनेची ओळख करून देणे. ३ ववववध साहित्य प्रकारांचीओळख करून देणे. ४ व्यावसरक मराठीच्या माध्यमातून लेखन कौशल्ये ववकससत करो व रोजगारासभमुख बनववणे ५ भारतीय सांस्कृ ती -कालची ,आजची आणण उद्याची या सांदभात समन्वयाची भावना रुजवणे.	ोईल. २ सांत, पांत आणण तांत साहित्याची जा ओळख ोईल. साहित्य आणण समाज यांच्या परस्पर सांबांधाची जाणणव ोईल ३ मुहद्रतशोधन यासारखी भावषक कौशल्ये ववकससत ोवून कायालयीन भा षा व्यविारात व जीवनव्यविारात उपयुक्त ठरतील ४ अचूक लेखन करण्याची सवय लागेल. ५ कृ श्राव्य माध्यमासाठी लेखन, मुहद्रतशोधन, भाषांतर कौशल्ये ववकससत झाल्यामुळे रोजगाराच्या सांधी उपलब्ध ोतील.
44	Political Science		The students will be able to: 1. To understand the nature and development in International Politics 2. To relate the basics of international relations and the new trends in the realm of international Relations.
44	Economics	On the completion of the course: Economics subject enables the learners to build up a professional carrier as economists, financial advisors, economics planners and policy makers. It prepares them to cope up with the stress and strain involved in the process of economic development.	1. It makes the students to understand the aspect of development process in low-income counties. Its focus is on improving the potential for the mass of population through health and education. 2. It makes learners to understand the economic functioning and conditions of our country in the context of past, present and future. 3. Enable the students the

		Department supports the education and training of students, teachers and research in economics.	pattern and nature of international trade and their contribution to economic development It also enables learners to know the role of public authorities in raising revenue and its Spending.
45	Sociology		1. To know in detail about Education in contemporary 2. To know in detail about Displacement and Rehabilitation 3. To know in detail about Intolerance, Riot and Crime 4. To know in detail about Epidemic social issues & policy intervention
46	Marathi Literature	1-एक िोता काव्िर या चररत्रातील काव्िरचे चररत्र समजून घेणे- 2- भाषाववज्ञान पुस्तकातील मराठीची वणामालेचा आढावा घेणे-	1- जॉजा वॉस्शिंग्टन काव्िर याांचे चररत्र ववद्यार्थयाांना समजून आले- 2- मराठीची वणामालेतील स्वर व व्यांजनाची माहिती ववद्यार्थयाांना समळण्यास मदत झाली-
47	Music		
48	Library Science		

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PO1.Students could work on their start- up projects.
PO2. Students will be exposed to the nuances of Finance and Commerce.
PO3.Students will be able to do their Masters in allied subjects and venture into Market Research.
PO4. On completion of graduation, Students will be equipped with required skills and various Aspects of Managerial Tasks and over all Administration abilities of the Company.
PO5.Enables learners to get theoretical and practical exposure in the commerce sector which Includes Accounts, Commerce, Management and Economics.

Sr. No.	Subject	Programme Outcomes	Course Outcomes
First Semester			
1	**English**		• The assigned texts inspired students to uncover profound insights about life. • Each recommended biography imparted valuable lessons concerning human potential. • Informative content about startups, entrepreneurship, social media, and public speaking equipped students for success in the business realm. • The chosen study materials cultivated an environment of enthusiastic teaching and learning. • The literature provided

			paved the way for students to develop a keen interest in exploring their potential and facing real-world challenges**.**
2	**Marathi**		By the end of this course, the students will be able to • Mkjr.k yksd"kkgh p ewY; fon;kF;kæ/; #tfo.k- • xkeh.k tuftou o "ksrhfu'Bs"kh fon;kF;kaph ukG tksG.k- • larkP;k O;kogkjhd fopkjkapk ifjp; *kMfo.k- • "kkgw egkjktkP;k vkj{k.k fo'k;h fopkjkapk • ifjp; *kMfo.ks- • dkO;krhy jlxzg.k{kerk fodlr dj.k- • fon;kF;ke/; vk/kwfud ewY; #tfo.k • fon;kF;ke/; lkekthd ckaf/kydh fuekk.k dj.k- fon;kF;ke/; lrtu"kyrk fuekZ.k dj.k-
3	**Fundamental of Accounting**		• Given the information about transaction /cash students will be able to identify the nature of translation /events and will be able to record the financial transaction in the books of accounts. • Give the trial Balance of a sole Trading concern along with the accompanied adjustment the students will be able to prepare the financial statement of a Sole Trader at the

			end of financial year • Given the details business transaction between the Head office and Branches students will be able to prepare Branch Account, Cash and Credit sale, debtors & stock and debtors method of accounting. • Given the Trial Balance along with the adjustment of a Co-operative society a students would be able to prepare Trading Accounting, profit & Loss Account, Profit & Appropriation Account and balance Sheet of Co-operative society as per state Co- operative society Act 1960 • Given the information of business Receipts and Payments, students will be able to a simple cash book**.**
4	**Digital Marketing**		• The students will be able to understand the concept and develop the knowledge of Digital Marketing, E-Commerce and M-Commerce • The students will be able to understand the concept and will be equipped with the practical knowledge of creating electronic mail (E-mail), Websites, Brochure/Flyers.

			● The students will be able to develop the knowledge about usage and Procedures for handling various important Digital Marketing Platforms for Earning Income. ● The students will be able to develop the knowledge about Recent Trends for Earning income through Digital Marketing. ● The students will be equipped with the practical knowledge of various important Digital
5	**Microsoft Office**		● Students got well understood the following topics Microsoft word ● Students got well understood the following topics Creating Storing and Formatting data using different using Excel formatting tools and features. ● Students got well understood the following topics Calculation using function and Present data visually using chart and graph. ● Students got well understood the following topics create and design professional presentation using different features & tools of

			PowerPoint.
6	**Business Economics-I**		• Students will be able to classify fundamental problems of an economy. • Students will be able to use demand analysis & Indifference curves analysis in given situations and to measure and comment on elasticity of demand for given data. • Students will be able to apply various demand forecasting Techniques. • Students will be able to identify key elements in supply and isoquant curves.
Second Semester			
7	**English**		• Students are motivated to explore the extent of their capabilities due to the impact of the prescribed texts. • Informative content about start- ups, entrepreneurship, social media, and public speaking equipped students for success in the business realm. • Prose materials aided students in confronting practical challenges encountered in their daily lives. • Prescribed readings encouraged students to delve into deeper meanings and implications of life.

			• Biographies suggested, served as a source of guidance on realizing personal capabilities.
8	**Marathi**		By the end of this course, the students will be able to • Hkjrh; yksd"kkgh p ewY; fon;kF;kæ/; #tfo.k- • xzkeh.k tuftou o "ksrhfu'Bs"kh fon;kF;kaph ukG tksG.k- • larkP;k O;kogkjhd fopkjkapk ifjp; *kMfo.k- • "kkgw egkjkt kP;k vkj{k.k fo'k;h fopkjkapk • ifjp; *kMfo.ks- • dkO;krhy jlxzg.k{kerk fodlr dj.k- • fon;kF;ke/; vk/kwfud ewY; #tfo.k • fon;kF;ke/; lkekthd ckaf/kydh fuekZ.k dj.k- • fon;kF;ke/; ltu"kh yrh fuekZ.k dj.k-
9	**Statistics and Business Mathematics**		• Given the information about a particular variable, Students will be demonstrating an understanding of statistics by creating frequency distribution as per the Statistical Series. • From the given data set student will be able to compute, Mean, Median, Mode and other measure of central tendency as required**.** • From the given data Students will be able to know dispersion and to calculate Standard Deviation, Quartiles. Quartiles Deviation &

			Coefficient of Variation. ● From the given data set the students will be able to compute the Skewness & its coefficient by using Karl Pearson's and Bowley's method. ● From the Given information student will able to calculate Percentage, Simple interest**,** Compound interest and also able calculate Profit & Loss arising out business transaction.
10	**Fundamentals of Banking**		● The students will be able to Classify Banking Functions. ● The students will be aware of Types of Bank Accounts and its Eligibility. ● The students will be aware of Bank Account Procedure for Opening, operating, Transfer and Closing. ● The students will be known of Types of Bank services for the Customers. ● The students will be enlightened regarding the new concepts introduced in the banking system.
11	**Skill Development**		● The students will be able to relate the concept of skill development and its importance.

			● The student will be able to interpret the problem-solving technique and multiple approaches to creativity. ● The students will be able to relate importance of communication Skill for interpersonal communication. ● The students will be able to analyses team behavior and impact of empowerment and delegation. ● The Students Will be able to explore various skill development avenues**.**
12	**Business Economics II**		● Students will be able to establish a relationship between cost and Output in the short/ long run. ● Students will be able to differentiate between various Market structures. ● Students will be able to determine prices under different market structures. ● Students will be able to explain basic concepts of macroeconomics and Students will be measure national income using given data.
Third Semester			
13	**English**		1. Students acquired the skill of comprehending

			the English language by engaging with recommended poems and prose. 2. Students demonstrated the ability to read and understand moderately intricate English texts. 3. Proficiency, with respect to English speaking, conversing, delivering speeches, narrating, and describing, has been cultivated among the students. 4. Students are equipped to convey proficiently their emotions and thoughts, both verbally and in written English.
14	**Marathi**		By the end of this course, the students will be able to: • ekr`Hkk'ksph vkoM o tkk.ko fuekk.k dj.kk • ikfpu ejkBhp oSf"k'Vªs Li'V dj.kk • fouksnh ys[kukr [ksGdjoRrhp n"ku *kMfo.k • lar lkfgR;krwu lkekftd] lkaLd`rhd] vk/;kfRed yksd"kkghpk ijLdj dj.k • L=h fo'k;d tkf.ko tkxrh dj.k • oRr ys[ku o dYiuk foLrkj ra=kph ekfgrh voxr dj.k
15	**Financial Accounting -I**		• Students get well understood the topic of Consignment Accounts and Hire Purchase • Students get well understood on the topic of Capital Structure and Issues of Shares.

			• Students get well understood on the topic of Final Accounts of Joint Stock Company.
16	**Business communication and management**		• To Make The students to understand Meaning, Definition and concept of Communication, objective of Communication • To Make The students to understand Business Communication. • Students get well understood the following topics Technology and Business Communication. • Students get well understood the following topics M.S. Office Aided Communication**.**
17	**Business law**		• Students get well understood the following topics. Essential of a Valid Contract, Characteristics or Essential of offer. Important of Rules for Valid offer, Process of Sale of goods Act, Price of goods & Effect of Sale Contract. • Students get well understood the following topics. Types of Negotiable Instruments, Presumptions as to Negotiable Instrument, Registration of Partnership & Type of

			Partner. ● Students get well understood the following topics Importance of Consumer Protection Act, Importance of points of Act, Consumer Rights & Importance of Right to Information Act 2005. Students get well understood the following topics Electronics Governance, Cyber Crime, Punishment, Need for Labor Legislation & Importance of Indian Factory Act.
18	**Monetary Economics-I**		● Students will be able to understand the evolution of Money and functions of Money. ● Students will be able to understand Inflation, Deflation, Monetary Policy and Fiscal Policy. ● Students will be able to understand Money Market and Policies. ● Students will be able to understand the concept of Public Finance and Types of Taxation.
Fourth –Semester			
19	**English**		1. Through analysis and discussion of prescribed prose and poems, students gained the ability to examine, interpret, and engage in debates on various topics. 2. Students are encouraged to adopt a positive outlook towards life through inspiration and motivation

			3. sought from the prescribed texts. Students are equipped with competence in utilizing information and communication technology (ICT) and social media in a productive manner. 4. Students developed logical reasoning skills and aptitude for forming personal opinions and making decisions across various subjects. The ideas and activities delineated in the prescribed texts fostered creativity and innovation among students.
20	**Marathi**		• ekr`Hkk'ksph vkoM o tkiko fuekk.k djkk • ikfpu ejkBhp oSf"k'Vªs Li'V djk.k • fouksnh ys[kukr [ksGdjoRrhp n"ku *kMfo.k • lar lkfgR;krwu lkekftd] lkaLd`rhd] vk/;kfRed yksd"kkghpk ijLdj dj.k • L=h fo'k;d tkf.ko tkxrh djk • oRr ys[ku o dYiuk foLrkj ra=kph ekfgrh voxr djk
21	**Financial Accounting-II**		• Students get well understood the topic of Final Accounts of Banking Companies. • Students get well understood the topic of Final Accounts of General Insurance Companies. • Students get well understood the topic of

			Valuation of Goodwill. ● Students get well understood the topic of Liquidation of Company.
22	**Skill Development**		● To Make The students to understand Basic of personality, Human Growth, Human Skill Behavior our & skill ● Development and Employment. To Make The students to understand Communication Skill and Personality Development. ● To Make The students to understand Techniques in Personality Development. ● To Make The students to understand Entrepreneurial Skill Development.
23	**Income Tax**		Students will be able to understand the • Income Tax Introduction. Agricultural • Income, Revenue and Capital receipt and • Deduction. Students will be able to understand the • Definition of Salary, Allowances types of • Allowances, Tax Free allowances partly • taxable allowances. • Income from House property: Meaning and Annual value, Fully

			Exempted Income from • House Property, Deemed owner, Deduction from Income from House Property, • Unrealized rent Computation Income from • House Property. • Students will be able to understand the • Income Tax slab Rates, Rebates, Deduction Under Section 80C, 80CCC,80CCD, 80D,80DDB, 80 G ,80 E, 80G,80GG, 80 U • Income From Other Sources.
24	**Monetary Economics-II**		• Students will be able to understand the functions of Commercial Bank. • Students will be able to understand the E-Banking and • Core Banking. Students will be able to understand and they apply their knowledge in the Bank as a customer. Students will be able to develop the knowledge about Central bank.
Fifth-Semester			
25	**Financial Accounting-IV**		• Students got well understood the following topics

			Amalgamation and absorption of Companies. ● Students got well understood the following topics Reconstruction of companies ● Students got well understood the following topics Valuation of Goodwill & Valuation Of Shares. ● Students got well understood the following topics Account of Public Utility Company**.**
26	**Cost Accounting**		● The students will be able to understand the concept and develop the knowledge of cost accounting and students will be able to prepare Cost Sheet and Tender Sheet. ● The students will be able to understand the concept and develop the knowledge of need of reconciliation statement of profit and students will be able to prepare Reconciliation Statement of Profit. ● The students will be able to understand the concept of Process Costing and students will be able to prepare Process Account. ● The students will be able to understand the concept of Contract Costing and students will be able to prepare Contract Account.

27	**Management Process**		• Students will be able to apply the knowledge of Management and Administration. • Students will be able to create the knowledge of Managerial Development & Group Dynamics • Students will be able to develop the knowledge of Managerial Style. • Students will be able to understand the meaning of Motivation and their types.
28	**Indian Economics-I**		• Students will be able to understand Indian Economy & Planning. • Students will be able to understand Indian Economy & Policy. • Students will be able to understand & create the knowledge about the Population and Unemployment. • Students will be able to develop the knowledge of India's Public Finance.
29	**Computerized Accounting**		• Students got well understood the following topics Introduction of Accounting, Advantage of Accounting, Books of Account,

			Computerized Accounting. ● Students got well understood the following topics Accounting Software Introduction to Tally Software. Students got well understood the following topics Accounts Information Menu, Accounts Group. ● Students got well understood the following topics Inventory Info. Features of Inventory Info, ● Balance Sheet.
30	**Auditing**		● Students will be able to understand the accounting system, principles, concepts and basics of auditing. ● Students will be able to gain knowledge about the internal control, the internal check and the internal audit. ● Students will be able to learn vouching, valuation of assets and liabilities and their verification. ● Students will be able to know about the appointment, rights, duties and the liabilities of an Auditor.
Sixth- Semester			

31	**Financial Accounting-V**		• Students got well understood the following topics Accounts of Holding Company • Students got well understood the following topics Insurance Claim • Students got well understood the following topics Investment Accounts • Students got well understood the following topics Profit Prior to Incorporation.
32	**Management Accounting**		• Students would explain the significance of basic concept, importance & functions of • Management Accounting. Students will be able to understand the Meaning of Budgets and prepare Cash Budget and Flexible Budget. • Students would calculate the various ratios and would be able to discuss the significance and use of the various ratios. • Students would be able to prepare Statement showing Changes in Working Capital and Fund Flow statements
33	**Advanced Statistics**		• Students got well understood the following topics Correlation

			• Students got well understood the following topics Regression Analysis • Students got well understood the following topics Index Number. • To Make The students to understand Time series Analys**is**
34	**Indian Economics-II**		• Students will be able to apply the knowledge of Indian Agriculture. • Students will be able to create knowledge about Indian Industry. • Students will be able to develop knowledge about India's International Trade. • Students will be able to understand the contribution of Indian Economic Thinkers (Mahatma Gandhi, Pandit Dindayal Upadhyaya, Dr. B. R. Ambedkar, Dr. Ram Manohar Lohiya.
35	**Human Resource Management**		• Students will be able to understand the concept of Human Resources Management & Human Resource Manager. Students will be able to understand the Recruitment, selection and training

			• Students will be able to understand Labour welfare and collective bargaining. • Students will be able to understand Human Resource Planning and Accounting.
36	**Industrial Law**		• Students will be able to understand the Provision for Workers under Indian Factories Act-1948**,** Industrial Dispute Act-1947 • Students will be able to understand the Provision for Workers under Minimum Wages Act-1948, Payment of Wages Act 1936, Payment of Bonus Act 1965 and Payment of Gratuity Act 1972, The Employee's State Insurance Act 1948 and Employee's Provident Fund & Miscellaneous Provision Act 1952, Workmen Compensation Act-1923 and Maternity Benefits Act 1961. • Students will be able to understand the Provision for Workers under Child Labour (Prohibition and Regulation) Act 1986, Trade Union Act 1926, Contract Labour Act. • Students will be able to understand the concept Industrial Estate, Software Technology Park, SEZ, Co-

			operative Industrial Estate, Intellectual Property Rights Law In India, Environment Protection Act 1986.

Programme Outcomes & Course Outcomes

Faculty of Science

(Physics, Chemistry, Mathematics, Zoology, Botany)

Academic session-2022-2023

Programme Outcomes:

On completion of the Course:

- Students will be able to achieve what they want with tenacity and ambition.
- Bachelor of Science offers theoretical as well as practical knowledge about different subject areas.
- This course forms the basis of science for coherent understanding of the academic field to pursue multi and interdisciplinary science careers in future. These subject areas include Physics, Chemistry, Mathematics and Botany and Zoology.
- Able to plan and execute experiments or investigations, analyze and interpret data information collected using appropriate methods.
- It helps to develop scientific temper and thus can prove to be more beneficial for the society as the scientific developments can make a nation or society to grow at a rapid pace through research.
- Think critically; follow innovations and developments in science and technology.
- Students will be able to achieve what they want with tenacity and ambition.

Sr. No	**Subject**	**Course Outcomes**
First Semester		
1	English	The student will be able: • To understand the text through insights given on compassion and freedom. • To comprehend the values system as a Human Beings while discharging one's duties. • To summarize the given text.

2	Marathi	• fon;kF;kaue/; lkfgR; foek;d vkoM fuekZ.k dj.kokpu laLd~rhpk ijLdkj dj.k • Hkkjrh; lafo/kkukps egRo letkow lkax.k • ekuoh eqY;kaph ti.kk dj.k • dfork ya[kukps ra= voxr dj.k • i;koj.k foek;d tkxrh fuekZ.k dj.k • O;kogkjhd ejkBhps egRo letkow lkax.k
3	**Chemistry** Paper-I Inorganic Chemistry (101)	**101.1** • To understand the basic structure of atom. • Understand shape of orbitals. • Understand periodic properties such as atomic and ionic radii, ionization energy, electron affinity etc. **101.2** • To understand the ionic structures with respect to NaCl and CsCl. • To understand the concept of covalent bond. • To understand the bond parameters and various types of types of hybridization. **101.3** • Understand s block element and their properties such as electronic configuration, atomic and ionic radii, I.P. etc. • Understand chemical properties of the noble gases, preparation, structures, bonding and applications. **101.4** • To understand the P block element. Comparative study of groups 15,16, 17 with respective their properties. • Understand the Hydrides Oxides, Peroxyacids, Hydrides. • Understand the concept of food adulteration and detection.

	Paper-II Physical Chemistry (102**)**	**102.1** • Understand the common thermodynamics terms. Types of systems and varies thermodynamics processes. • State and path functions and their differentiation. • Understand the first law of thermodynamics **102.2** • Understand gas equation and laws. • Understand qualitative discussion of the Maxwell-Boltzmann distribution. • Understand ideal gas and real gases behaviors **102.3** • Understand the Intermolecular forces, structure of liquid, structural difference between solid, liquid and gases. • Properties of liquid like surface tension, viscosity, refractive index **102.4** • Understand the concept of different types of surface phenomenon and catalytic property, like Adsorption mechanism of adsorption, factor affecting adsorption. Difference between adsorption and absorption, etc. • Understand types of catalysis and enzymes. • Understand colloidal states of system, preparation of gels, importance and application of colloids.
	Chemistry Practical Course	**103** • Verify theoretical principles experimentally • Interpret the experimental data • Improve analytical skills • Correlate the theory and experiments and understand their • importance
4	**Physics I:** Properties of Matter and Mechanics (**101)**	**101.1** • Understand the mechanical behavior of the material and the fundamental terminology like Stress, Strain, Poisson's ratio, Hooke's law, bending moment and modulus of elasticity **101.2**
		• Understand the concept of viscosity.
		• Apply Poiseuille's Equation, Bernoulli's Theorem, Stoke's law and
		the concept of terminal velocity.
		101.3
		• Understand the concept of surface tension and surface energy,
		Newton's laws of motion and to resolve the components of velocity
		and acceleration in different coordinate systems.
		101.4

		• Understand the System of particles and conservation laws.
	Physics II:	**102.1** • Understand the concept of Electrostatic force, Electric field, Electric potential, Electric dipole, Electric dipole moment. **102.2** • Understand the concept of polarization and capacitors with and without dielectric. • Apply Gauss law to parallel plate capacitors. **102.3** • To understand the concept of electromagnetic induction and transformer. • Apply equation of continuity and Kirchhoff's law to rise and decay of current in LR, CR and LCR circuits. **102.4** • To apply complex numbers in solving an a.c. circuit. • Apply j- operator in LR, CR and LCR circuit. • Understand the concept of Resonance • Calculate I, Z, Φ and fr.
5	Physics Practical **(103)**	**103.1** • Apply and demonstrate the theoretical concepts of Physics and to develop scientific attitude. **103.2** • Interpret the experimental data
6	**Mathematics- I** Elementary Mathematics (101)	**101.1** • Understand concept Elementary Functions **101.2** • Understand the basic concept related to Matrices and solve the problem based on system of Linear equations **101.3** • Understand the relation between roots and coefficients and solve the problems based on Cubic and Biquadratic equations **101.4** Understand GCD and LCM with Diophantine Equation and solve the problems
	Mathematics- II Differential and Integral Calculus (102)	**102.1** • Using Leibnitz's Rule for nth derivative of the product of two functions • Identify Indeterminate forms and application of L' Hospitals Rule **102.2** • Understand the concept of Partial Derivatives,

		Asymptotes and Envelopes **102.3** • Understand the concept of Jacobians, Taylors series, Maxima and Minima and solve the problems. **102.4** • Identify the various types and methods to solve Integration and application of Reduction Formulae
7	**Zoology I & II** Paper-I Life and Diversity of Animals – Non-chordates (Protozoa to Annelida) (101)	**101.1** • To understand general characters and classification up to classes of protozoa, structure and reproduction of *Paramoecium,* structure and life cycle of *Plasmodium*, parasitic Protozoans of Man (Entamoeba, Trypanosoma, Giardia and Leishmania). Mode of infection and its control. **101.2** • To understand the general characters and classification up to classes of porifera, Structure, reproduction and development, Canal system in sponges, General characters and classification up to classes of Coelenterata, structure and life cycle of Obelia, Polymorphism in hydrozoa. **101.3** • To Understand the Helminthes: General characters and classification up to classes, *Ascaris*: External morphology, reproductive system and life cycle, *Taenia solium*: Structure and life cycle, Elementary idea of parasitic adaptations in helminthes. **101.4** • To Understand the Annelida: General characters and classification up to classes, Leech: Morphology, digestive and urinogenital system, Trochophore larva and its significance, Vermiculture and its importance
8	**Paper-II** Environmental Biology **(**102)	• Understand the Ecosystem - Definition and types, Detailed study of pond ecosystem, Food chain, food web and ecological pyramids, Energy flow in an ecosystem, Single channel, Y – shape and Universal model. **102.3** • To understand the biodiversity and its conservation, Causes of reduction of biodiversity, Wildlife conservation acts (1972 and 1984) Introductory study of national parks and sanctuaries – Tadoba, Kanha, Bharatpur and Nagzira, Hot spots of biodiversity in India.

		102.4 • To understand the Sources, effect and control measures of air pollution Acid rain, greenhouse effect, ozone depletion and global warming Sources, effect and control measures of water pollution, Sources effec and control measures of noise pollution, Toxic effect of heavy metals (lead, cadmium and mercury) – Bioaccumulation and biomagnification
9	**Botany** Paper-I- Viruses, Prokaryotes, Algae and Biofertilizers (101)	• To understand the nature of viruses, Ultra-structure and economic importance. • Understand the properties of Mycoplasma and its reproduction. • Understand general characteristics and reproduction in bacteria • To understand general characteristics and classification of algae • To understand the to understand general structure of Cyanobacteria and its reproduction • Understand life cycle *of Chara, Vaucheria, Ectocarpus, and Batrachospermum.* • To understand Scope and importance of Biofertilizers. • Understand the microbes used in biofertilizers
	Paper-II Fungi, Plant Pathology,Li chens, Bryophyta and Mushroom Cultivation (102)	• Understand the Characteristics of fungi. • Understand the reproduction and life cycle of *Albugo, Muco, Puccinia and Cercospora.* • Pathogen study, control and causes of diseases: leaf curl of papaya, Citrus canker and red rot of sugarcane • Understand classification and general characteristics of Bryophyta. • Life history of *Marchantia, Anthoceros and Funaria* • To Study the nutritional and medicinal values of edible and non-edible mushrooms. Technology of mushroom cultivation
	Botany Practical Course	• Study the fungal genera. • Study the lichens, thallus structure and types of lichens. • Plant pathological study. • Study of bryophytes and identification of its characteristics. • Preparation of mushroom beds.
10	**Microbiology**	1. Students will be able to understand the needs and basics of techniques used in observing microbes.

	Paper - I	2. Students will be aware of applications of basic techniques. 3. Students will learn sterilization and disinfection principles and procedures. 4 Students will learn cultivation & aseptically handling of microorganism.
	Microbiology Paper - II	This course will enable the students to 1. Improve speed and accuracy in numerical calculations 2. Acquire IQ skills and high-end technical knowledge 3. gain test taking skills & creativity of calculation
11	**Computer Science Paper -I**	After completing this course satisfactorily, a student will be able to: 1. Write simple algorithms for arithmetic and logical problems. 2. Write the C code for a given problem 3. Perform input and output operations using programs in C 4. Write programs that perform operations on arrays, strings , structures, unions , functions and file handling.
	Computer Science Paper -I	After completing this course satisfactorily, a student will be able to: 1.Confidently operate computers to carry out computational tasks 2.Understand working of Hardware and Software and the importance of operating systems 3.Understand number systems, peripheral devices, networking, multimedia and internet concepts
	Second Semester	
12	**English**	The students will be able: • To understand the values of dignity and courage through the characters of the text. • To realize that the ascent of humanity, synthesis of science and spirituality, both are required. To apply phrasal verbs in their writings.
13	**Marathi**	• fon;kF;kaue/;s lkfgR; foek;d vkoM fuekZ.k dj.k • okpu laLd~rhpk ijLdkj dj.k • Hkkjrh; lafo/kkukpk egRo letion kax.k • ekuoh eqY;kaph ti.k dj.k • dfork ya[kukps ra= voxr dj.k • i;koj.k foek;d tkxrh fuekZ.k dj.k • O;kogkjhd ejkBhps egRo letion kax.k
14	**Chemistry** Paper -I Organic Chemistry (201)	**201.1** • To make student understand different organic compounds and the concept structure and bonding in organic compounds. • Understand mechanism of organic reaction **201.2**

		• Understand the concept of stereochemistry of organic compounds. • To make the structure of Geometrical isomerism and conformational isomerism **201.3** • Many of the daily used materials are organic compounds and majority of them are hydrocarbons therefore this topic makes the concept regarding their information **201.4** • Basic of the alkane and alkynes with respect to their chemical point of view. • To understand the aromaticity of organic compounds
	Paper-II Physical Chemistry (202)	**202.1** • To understand the thermodynamics of chemical reactions. • Understand free energy functions like work function, Gibb's free energy etc**.** **202.2** • To understand the concept of phase equilibria. Statement of phase rule and term. Application of phase rule**.** **202.3** • Understand the concept of nuclear chemistry and molecular structure **202.4** • To Understand the concept of chemical kinetics and theories of chemical kinetics.
	Chemistry Practical course	**203** • Verify theoretical principles experimentally • Interpret the experimental data • Improve analytical skills • Correlate the theory and experiments and understand their importance
15	**Physics Paper 1:** Oscillations, Kinetic theory of gases and Thermodynamic (201)	**201.1** • To understand the concept of linear and angular S.H.M., Damped harmonic oscillator. **201.2** • To understand the concept of Forced oscillation with one degree of freedom and kinetic theory of gasses. **201.3** • To understand the Transport phenomenon in gases, Zeroth and First law of thermodynamics and Cornet's Theorem.

		201.4 • To understand second and third law of thermodynamics and Maxwell's general relationship and its applications.
	Paper 2: Gravitation, Astrophysics, Magnetism and Magnetostatics (202)	**202.1** • To understand Newton's laws of gravitation and the concept of Gravitational self-energy of the galaxy. **202.2** • Know the constituents of universe (Solar system, Stars, Galaxies) and some physical aspects of the universe. **202.3** • To understand the concepts of Diamagnetism, Para magnetism and Ferromagnetism and their applications. **202.4** • To understand the Concept of magnetic field and to study various laws of magneto static and their applications.
	Physics Practical **(**203**)**	• Apply and demonstrate the theoretical concepts of Physics and to develop scientific attitude.
16	**Mathematics- I** Geometry, Differential and Difference Equations (201)	**201.1** • Understand the concept of Solid Geometry. **201.2** • Understand the concept of Families of curves and orthogonal trajectories. **201.3** • Understand the Second order linear differential equations with constant coefficient. **201.4** • Understand the basic concept of Difference equation.
	Mathematics- II Vector Analysis (202)	**202.1** • Students learn the concept of Vector differentiation and Differentia Geometry. **202.2** • Learn the evaluation of area by double Integral and Relation between Beta and Gamma function. **202.3** • Apply integration to evaluate over Line, surface and volume. **202.4** • Understand the Greens theorem in the plane and its application, Gauss Divergence theorem and Stokes Theorem
17	**Zoology I & II**	**201.1**

	Paper -I Life and Diversity of Animals – Non-chordates (Arthropoda to Hemichordata) (201)	• To understand the, Arthropoda: General characters and classification up to classes, Cockroach: Mouth parts, digestive system and reproductive system, Insects as Vectors: Mosquito, Housefly, Sandfly, Tse-Tse fly, Study of crustacean larvae: Nauplius, Zoea and Megalopa; Social behavior in honey bees. **201.2** • To understand the Mollusca: General characters and classification up to classes, *Pila*: Morphology, digestive, respiratory and reproductive system, Pearl formation in Mollusca, Molluscan larvae: Glochidium and Veliger. **201.3** • To understand the Echinodermata: General characters and classification up to classes, *Asterias*: External features and digestive system, Water vascular system and locomotion in Starfish, Echinoderm larvae: Bipinnaria and Auricularia. **201.4** • To understand Hemichordata: General characters and phylogeny, *Balanoglossus*: External features and digestive system, Reproduction in *Balanoglossus*, Tornaria larva, Affinities of *Balanoglossus*.
	Paper-II Cell Biology (202)	**202.1** • To understand Ultrastructure of prokaryotic and eukaryotic cell, Plasma membrane: Structure- Fluid Mosaic Model and functions, Endoplasmic reticulum: Types, ultrastructure and functions, Golgi complex: Ultrastructure and functions. **202.2** • To understand Ultrastructure of mitochondria, Oxidative phosphorylation – Glycolysis and Krebs's cycle, Electron Transport Chain and terminal oxidation, Lysosome: Structure, polymorphism and functions. **202.3** • To understand the Nucleus: Ultrastructure of nuclear membrane, Structure and functions of nucleolus, Chromosome: Structure and types, structure of nucleosome, Giant chromosomes: Lamp-brush and polytene chromosome.

		202.4 • To understand the Ribosome: Structure, types, Lake's model and functions, Somatic cell division: Cell cycle and Mitosis, Meiosis (different phases and significance), synaptonemal complex, Cellular aging and cell death, Elementary idea of cancer and its causative agents.
18	**Botany** Paper-I Paleobotany, Pteridophytes ,Gymnosper msand Soil analysis	• To make student understand fossils, Pseudo fossils, and its importance. • Knowledge about types of fossils. • Details of Geological time scale. • Differentiation among the types of fossils. • Study the general characteristics of Pteridophytes and its classification. • Life history of *Selaginaella.* And *Equisetum.* • Classify the Gymnosperms, its characteristics and economic importance. • Understand the fossil gymnosperm. • Study the life cycle of *Cycas* and *Pinus* • Skill development and soil analysis. • Identification of types of soil on the basis of its color and texure. • Study the physical properties of soil. • Understand the pH of soil and nitrogen availability in it.
	Botany Paper-II Morphology of Angiosperms and Floriculture	• Study the morphological characteristics of plants. • Identification of morphological characters of plants. • Study the modification occur in root, stem and leaf. • Study the reproductive morphology. • Study the types of inflorescences. • Study the calyx, corolla and Androecium • Understand the structure of gynoecium. • Study the fruit and its types. • Develop the skills of floriculture and cultivation. • Method of cultivation.
	Botany Practical course	• Study of different root and stem modification and branching patterns. • Study the types of leaf and its phyllotaxy, venation and modification. • Understand the flower structure and position of calyx, corolla, androecim and gynoecium.
19	**Microbiology**	1. Acquire basics and importance of Microbiology

	Paper - I	2. Learn about basic characteristics features of microorganisms 3. Describe the classification of Bactria 4. Gain insights into the important characters, classification & life cycle of viruses.
	Microbiology Paper - II	1. Students will learn about different types of biomolecules and their functions. 2. To categorize on the types of enzymes and their mechanism. 3. Students will learn about the various diseases due to deficiency of vitamins.
20	**Computer Science Paper -I**	After completion of this course, students will be able to: 1. Realize the need and features of OOP and idealize how C++ differs from C. 2. Infer knowledge on various types of overloading. 3. Choose suitable inheritance while proposing solution for the given problem. 4. Handle pointers and effective memory management. 5. Illustrate application of pointers in virtual functions.
	Computer Science Paper -II	1. Describe the various OS functionalities, structures and layers. 2. Usage of system calls related to OS management and interpreting different stages of various process states. 3. Design CPU scheduling algorithms to meet and validate the scheduling criteria. 4. Apply and explore the communication between inter process and synchronization techniques. 5. Implement memory placement strategies, replacement algorithms related to main memory and virtual memory techniques. 6. Differentiate the file systems; file allocation, access techniques along with virtualization concepts and designing of OS with protection and security enabled capabilities.
	Third- Semester	
21	**Chemistry- I** Paper-I Inorganic Chemistry (301)	**301.1** ● Understand the concept of molecular orbital theory and VSEPR theory **301.2** ● Understand the properties of d and f block elements. **301.3·** ● Understand the role of nonaqueous solvents. ● Understand concept of errors and evaluation in chemical analysis. **301.4** ● Understand the concept of chemistry of Lanthanides and Actinides serious.
	Paper-II Organic Chemistry (302)	**302.1** ● Understand the structure and chemical bonding in aryl, alkyl halides, aldehydes

		302.2 Understand the structure and chemical bonding in alcohols and phenols. **302.3** ● Understand the nomenclature, structure of the carbonyl group, synthesis of aldehydes and ketones **302.4** ● Understand chemical reaction of carboxylic acids and its derivatives.
	Chemistry Practical Course	303 ● Verify theoretical principles experimentally ● Interpret the experimental data ● Improve analytical skills ● Correlate the theory and experiments and understand their importance
22	**Physics Paper-1** Sound Waves, Applied Acoustic, Ultrasonic and Power Supply (301)	**301.1** ● Understand the concept of group and phase velocities, formation of standing waves and diagrammatic introduction of human ear and its responses. **301.2** ● Understand the working of transducers and their characteristics and the concept of acoustic and its applications. **301.3** ● Understand the production and applications of ultrasonic waves. **301.4** ● Understand the concept of voltage regulation and working of half, full and bridge rectifier.
	Paper -II Physical Optics and lectromagneti c Waves (302)	**302.1** ● Understand the concept of interference of light through thin film ● Apply the concept of interference of light through thin film in wavelength determination. **302.2** ● Understand the concept of diffraction, Resolving Power of grating and Rayleigh's criterion for resolution. **302.3** ● Understand the concept of polarization and double refraction. **302.4** ● Understand the origin and characteristics of EM waves, Physica significance of Maxwell's equations, Characteristics impedance o dielectric and Pointing theorem.
	Physics Practical (303)	**303** ● Apply and demonstrate the theoretical concepts of Physics and to develop scientific attitude.

23	**Mathematics- I** Partial Differential equation and Calculus of Variation (301)	**301.1** ● Students understand First order partial differential equation and solutions of pfaffian differential equation. **301.2** ● Learn about Integral surface passing through a given curve. **301.3** ● Understand the concept of PDEq of second order and Linear PDEq with constant coefficient. **301.4** ● Understand the concept of Calculus of Variation.
	Mathematics- II Modern Algebra (302)	302.1 ● Understand the concept of Group theory and properties. **302.2** ● Students understand the concept of Normal subgroup, Quotient group. **302.3** ● Students understand the definition and examples of Ring theory. **302.4** Students develop more knowledge in Ring theory
24	**Zoology I & II** Paper-I Life and Diversity of Animals - Chordates (Protochordate to Amphibia) (301)	**301.1** ● Understand the Protochordata : General characters and classification up to order, *Herdmania* : Structure, digestive system, ascidian tadpole and retrogressive metamorphosis, *Amphioxus* : Structure, digestive system, circulatory system, sense organs and protonephridia, Agnatha : General characters of Cyclostomata (*Petromyzon* and *Myxine*). **301.2** ● Understand the Pisces : Salient features of Chondrichthyes and Osteichthyes, Origin of paired fins in fishes, Migration and Accessory respiratory organs in fishes, Amphibia : General characters and classification up to order, Parental care and Neotony in Amphibia. **301.3** ● Understand the Gametogenesis and type of eggs, Fertilization of egg, Post fertilization development of fish, Types of scales of fishes, Development of placoid scales. **301.4** ● Understand the Frog Embryology - Cleavage,

		blastulation and gastrulation, Fate map, Morphogenetic movements in gastrula of frog, Development of respiratory organs in frog, Development of Aortic arches of frog
	Paper-II	**302.1** ● Understand the Mendelian Principles- Dominant recessive relationships, Mendelian laws, Interaction of genes- Epistasis - dominant and recessive, codominance, incomplete dominance, Quantitative genetics – Polygenic traits, inbreeding and outbreeding, hybrid vigor, Extracellular genome – Presence and functions of mitochondrial DNA, plasmids. **302.2** ● Understand the concept of Cytoplasmic inheritance- *Kappa* particles in *Paramecium*, CO2 sensitivity in *Drosophila*, milk factor in mice, Linkage and crossing over – Basic concepts of linkage, types and theories, Concepts of genes – Cistron, muton and recon, Genetic disorders in human beings – Haemoglobin disorders – Thalassemia and Sickle cell anemia. Metabolic disorder: Phenylketonurea. **302.3** ● Understand the concept of Sex determination – ZZ, XY, XO, ZW pattern, Sex determination in *Drosiphila* – Genic balance theory, Environmental sex determination in *Bonellia*, Chromosomal aberrations: addition, deletion, duplication and inversion, Gene mutations- Spontaneous and induced mutations, mutagenic agents, Disorders related to chromosomal number- Turner syndrome, Klinefelter syndrome and Down syndrome. **302.4** Understand the Lethal genes – Concepts and consequences, Population genetics: Basic concepts in population genetics, Hardy Weinberg equilibrium and its significance, Genetic counseling – Introduction, purpose, hereditary diseases and disorders, Applied genetics - DNA fingerprinting, amniocentesis, sperm banks,

		karyotyping
25	**Botany** Paper - I Angiosperm Systematics, Embryology and Indoor Gardening (301)	• Understand the study of angiosperms, Fossil angiosperms, Angiosperms taxonomy. • Understand the nomenclature. • Study the trends in taxonomy. • Understand the classification system of Bentham and Hooker, Angler and Prattle. • Study the types of pollination and its significance • Study the structure of anther, pollen grain and male gametophyte development. • Study the types of ovules and female gametophyte. • Understand the fertilization process. • Study the skills of landscaping and gardening.
	Paper-II Angiosperm anatomy and Horticulture (302)	• Understand anatomical features of plants and its organs. • Study the tissue its types and functions. • Study the primary and secondary growth I stem and root. • Study the periderm growth rings, sap heartwood, leaf anatomy. • Study the Senescence and Abscission. • Study the techniques of horticulture, methods of propagation. • Learn the technique of bonsai preparation.
	Botany Practical Course	• Study the simplest and complex tissue from permanent micro preparation. • Identification of types of vascular bundle. • Anatomy of Dicot and Monocot stem with temporary or double stained. • Study the internal structure of dicot and monocot leaf.
26	**Microbiology Paper - I**	
	Microbiology Paper - II	
27	**Computer Science Paper -I**	
	Computer Science Paper -I	
Forth- Semester		
28	**Chemistry -I** Paper-I Inorganic Chemistry (401)	**401.1** • Understand the properties of coordination compounds. Chelates: classification and their application and valance bond theory of

		Complexes. **401.2** ● Understand the concept of isomerism in coordination compounds. Concept of oxidation and reduction and balancing of redox reaction**.** **401.3·** ● Understand the concept of colorimetric and spectrophotometry. ● Understand the concept of separation technique like chromatography ion exchange and solvent extraction. **401.4** Understand the concept of inorganic polymers.
	Paper-II Physical Chemistry (402)	**402.1** ● Understand solid state and their classification and their laws. ● To understand the concept of determination of crystal structure. **402.2** ● Understand electrochemistry of reversible and irreversible cells. ● Understand the concept of electrical transport and transport number**.** **402.3** ● Use spectroscopy for chemical analysis. ● Understand types of spectroscopies. **402.4** ● Understand the concept of quantum chemistry and wave function.
	Chemistry Practical Course	**403** ● Verify theoretical principles experimentally ● Interpret the experimental data ● Improve analytical skills ● Correlate the theory and experiments and understand their importance.
29	**Physics Paper -1** Solid State Physics, X-ray and Laser (401)	**401.1** • Understand the basic concept of crystallography, find various lattice parameters, find Miller Indices of the given plane and draw planes from the set of Miller Indices. **401.2** • Understand main feature of continuous X-ray spectra and Characteristics X-ray spectra • Apply Moseley's law to determine wavelength of X-ray. **401.3** • Understand the basic concept of solid-state physics. • Apply Bragg's law for wavelength determination and simple cubic structure determination.

		• Calculate Miller indices of the given plane and identify the orientation of the plane from the given set of Millar indices. **401.4** • Understand the concepts of LASER emission. • Understand the construction and working of various types of LASER
	Paper-II Solid State Electronics, and Molecular Physics (402)	**402.1** • Understand the construction and working and characteristics of various solid-state devices. **402.2** • Understand the construction and working and characteristics of various FETs. **402.3** • Understand the concept of molecular physics. **402.4** Understand and apply the Raman spectroscopy.
	Physics Practical (403)	**403** • Apply and demonstrate the theoretical concepts of Physics and to develop scientific attitude.
30	**Mathematics- I** Real Analysis (401)	**401.1** • Understand the concept of ordinary Differential Equations in more than two variables. **401.2** • Understand the Definition, types and examples of Sequences. **401.3** • Use Tests for convergence. **401.4** • Understand the concept of Riemann Integration and properties o integrable functions.
	Mathematics- II Mathematic al Methods (402)	402.1 • Students learn about Power series solutions. 402.2 • Understand the Legendres and Bessels Function 402.3 • Understand the concept of Laplace tranceformation and properties. 402.4 • Understand the concept of Fourier series with Even and Odd Functions
31	**Zoology I & II** Paper-I Life and Diversity of Animals – Chordates (Reptilia, Aves and Mammals) (401)	**401.1** • Understand the Reptilia- Classification based on temporal vacuities, Poison apparatus, biting mechanism, snake venom and its importance, Aves – Comparison of Ratitae and Caranitae, Flight adaptations and migration, Mammals – General characters of Prototheria, Metatheria and Eutheria. **401.2**

		• Understand the Modern theories of evolution: Darwinism and Neo- Darwinism, Adaptations – Cursorial, Aquatic, Terrestrial, Fossorial and Volant, Introduction to genetic basis of evolution – Species Deme, Variation, Races in Man (Caucasoid, Negroid, Mongoloid and Australoid). **401.3** • Understand the Comparative account of aortic arches and heart in Reptiles, Birds and Mammals, Structure of hen's egg, Development of chick up to primitive streak stage, Development of extra embryonic membranes in chick and functions. **401.4** • Understand the Frog Embryology - Cleavage, blastulation and gastrulation, Fate map, Morphogenetic movements in gastrula of frog, Development of respiratory organs in frog, Development of Aortic arches of frog.
	Paper-II	• Understand the DNA: Structure of DNA, forms of DNA, properties of DNA, DNA as a genetic material, RNA: Structure of RNA, types of RNA, RNA as a genetic material, Prokaryotic and eukaryotic gene structure, Recombination in Bacteria: Bacterial transformation – Griffith's experiment, Conjugation in bacteria, transduction. **402.2** • Understand the concept DNA replication: Semiconservative model, Meselson Stahl experiments. Process of replication – origin of replication, concept of replication, directionality of replication, Genetic code: Characteristics of genetic code, Wobble hypothesis, Protein synthesis: Transcription mechanism Initiation, elongation and termination of transcription. Translation – activation of amino acids, transfer of activated amino acids to tRNA, Initiation, elongation and termination of polypeptide chain; inhibitors of protein synthesis, Gene regulation models - Lac operon and tryptophan operon. **402.3** • Understand the Concepts of immunity – Innate and acquired immunity, organs of the immune system, Antigen - Structure, diversity, functions and types

		of antigens, Antibody- Structure, types and functions, Antigen-antibody interaction – Precipitation and agglutination. **402.4** • Understand the Types of immune response: B cell response (antibody mediated), T cell response (cell mediated), Complement system: Basic concepts of complement cascades, classical, alternative and MBL pathways, implications of complement system in immune defense, Cytokines- General account on cytokines, Cytokine related diseases, Autoimmunity and immunodeficiency's- Autoimmune diseases and their treatment, AIDS and other immunodeficiency's
32	**Botany -I** Paper-I Cell biology, Plant Breeding, Evolution, and Technology (401)	• Understand the brief account of cell theory. Comparison between eukaryotic and prokaryotic cell. • Structure and function of cell wall, Endoplasmic reticulum, Golgi complex, plasma membrane, Ribosome and Vacuole. • Understand the structure and functions of chloroplast, Mitochondria and Nucleus. • Understand the chromosome morphology, Molecular organization of chromosomes. • Understand the sex chromosomes and cell division process. • Understand plant breeding, methods of plant breeding. • Understand the biostatistics and determine the Mean, Mode, Median. • Understand the evolution process. • Understand the seed development technology which is used to increase a commercial value of seeds.
	Paper-II Genetics, Molecular Biology and Plant Nursery	• Understand the principle of Mendelism. • Understand the linkage and crossing over process. • Understand the Mutation, chromosomal aberrations and variation in chromosome number. • Understand the DNA damage and repair process. • Study the concept of DNA and RNA. • Understand the concept of gene, genetic code. • Understand the process of protein synthesis and regulation of gene interaction.

		• Study the skill development. • Develop the skills related with plant nursery. • Understand the nursery management techniques.
	Botany Practical Course	• Study the Mendel's law of segregation with help of color beads. • Prove the Mendel's law of independent assortment. • Study the different method of vegetative propagation. • Study the method of soil sterilization for plant nursery.
33	**Microbiology Paper - I**	
	Microbiology Paper - II	
34	**Computer Science Paper -I**	
	Computer Science Paper -I	
Fifth- Semester		
35	**Chemistry- I** Paper-I Organic Chemistry (501)	**501.1** • Understand the concept of organic compounds of nitrogen and amines. **501.2** • Understand heterocyclic compounds and their structure **501.3** • Understand quantitative analysis: Estimation of carbon, hydrogen and nitrogen etc. • Understand reaction and structure of organometallic compounds **501.4** • To study Spectroscopy. • To understand Electromagnetic and Infrared absorption spectroscopy
	Paper-II Physical Chemistry (502)	**502.1** • Understand electrochemistry and various types of cells. • Understand types of reversible electrodes **502.2** • Understand quantum chemistry and molecular orbital theory**. 502.3** • Understand the concept of Photochemistry. • To study Raman Spectroscopy.

		502.4 • To understand colligative properties and macromolecules**.**
	Chemistry Practical Course (503)	• Interpret the experimental data. • Improve analytical skills • Correlate the theory and experiments and understand their importance
36	**Paper-I** Atomic Physics, Free Electron Theory and Statistical Physics (501)	**501.1** • Understand Vector atom Model, the concept of space quantization Zeeman Effect and L-S and J-J coupling. **501.2** • Apply free electron theory and band theory of solid to classify solids as conductor, semiconductor and insulator. **501.3** • Understand and apply Maxwell-Boltzmann statistics. **501.4** • Understand and apply Bose-Einstein statistics and Fermi-Dirac statistic
	Paper-II Quantum Mechanics, Nanomaterial s and Nanotechnol ogy (502)	**502.1** • Understand the basics of quantum mechanics and apply it to explain the phenomena like black body radiation and Compton Effect. **502.2** • Understand and apply Schrodinger's equation to free particle in a one and three dimension. **502.3** • Understand the basics of nanotechnology. **502.4** • Understand the synthesis and characterization techniques of nano materials.
	Physics Practical (503)	**503** • Apply and demonstrate the theoretical concepts of Physics and to develop scientific attitude.
37	**Mathematics- I** Analysis (501)	501.1 • Understand the concept of Fourier series. 501.2 • Understand the concept of Riemann-Stieltjes integral. 501.3 • Understand the concept of Analytics Functions. 501.4 • Students learn about Mobius Transformation
	Mathematics- II Metric spaces,	**502.1** • Students deal with the definition, properties and

	Complex Integration & Algebra (502)	examples of countable and uncountable sets and understand the metric space. **502.2** • Understand the concept of Completeness, Compactness and Connectedness. **502.3** • Understand the concept of Ring • Analyze and demonstrate examples of ideals and quotient rings. 502.4 • Understand the basic concept of Complex Integration • Evaluate integrals along a path - directly from the definition and also via the Fundamental Theorem of Contour Integration and Cauchy's Theorem
38	**Zoology I & II** **Paper-I** General Mammalian Physiology –I **(501)**	**501.1** • Understand the Enzymes – Distribution and chemical nature of enzymes, General properties of enzymes, Classification of enzymes, Factors affecting enzyme activity. **501.2** • Understand the Structure and functions of digestive glands - (Salivary, Gastric, Intestinal, Liver and Pancreas), Gastrointestinal hormones, Digestion and absorption of proteins, carbohydrates and lipids, Vitamins- Fat soluble and water-soluble vitamins; Sources, deficiency and diseases. **501.3** • Understand the Respiratory pigments - Types, distribution and properties, Mechanism of Respiration, Transport of O2 and CO2, Respiratory disorders and effects of smoking. **501.4** • Understand the Composition and functions of blood, Blood clotting – Intrinsic and extrinsic factors, blood groups and *Rh* factor, Cardiac cycle, E.C.G. and Blood pressure.
	Paper-II Physical Zoology (502)	**502.1** • Understand Site selection and construction, Pre stocking and post stocking management of nursery, rearing and stocking ponds, Breeding of fishes by bund and Chinese hatcheries. Induced breeding by hypophysetion. New generation drugs in induced breeding, Brief study of freshwater aquaculture system – Polyculture, cage culture, sewage fed fish culture, integrated fish farming, Fish products and byproducts, Fish preservation.

		502.2 • Understand the Prawn culture and Pearl culture, Fabrication and setting up of aquarium and its maintenance, Breeding of aquarium fishes – Live bearers and egg layers, Diseases caused by fungi, bacteria, protozoa and helminthes. **502.3** • Understand the concept Chemical control : Insecticides - Pyrethroids, carbomate and HCN – mode of action, merits and demerits, Biological control – Biological agents – predators and parasites; merits and demerits, Crop pest: Life cycle, damage and control of Cotton spotted boll worm -*Earias vitella*,Stored grain pest- Rice Weevil, *Sitophilus oryzae* , Animal pest: Life cycle, damage and control of – House fly – *Musca nebulo*, Stable fly – *Stomoxys calcitrans.* **502.4** • Understand the Sericulture- Types of Silkworm. Life cycle and rearing of mulberry silkworm, *Bombyx mori*, Life cycle and rearing of non mulberry silkworm (Tasar), *Antheraea mylitta* ; Brief idea of coccon processing for silk fabric - coccon boiling, reeling, rereeling, winding, doubling, twisting and weaving, Apiculture – Types of honey bees. Life cycle, culture, movable frame hive, bee product and its economic importance, Lac culture – Lac insect, *Laccifer lacca* - Life cycle, Lac processing, Lac products and Economic Importance.
39	**Botany** Paper-I Plant physiology, Mineral Nutrition and Hydrophonic s	• Understand water relation and its significance. • Understand the Osmosis, Diffusion, Osmotic Pressure. • Understand the ascent of sap. • Understand the transpiration, phloem transport and mineral uptake. • Understand the photosynthesis process, photosynthetic pigments. • Understand the light and dark reaction of photosynthesis. • Understand the respiration and its mechanism. • Understand the fermentation process. • Understand the nitrogen fixation by symbiotic and non-Symbiotic mechanism. • Study the pant movements and photoperiodism. • Study the circadian rhythms and Biological Clock.

		• Understand the mineral nutrition, source and types. • Study the role and deficiency symptoms Macronutrients and Micronutrients. • Study the hydroponics, advantages and disadvantages of hydroponics.
	Paper-II Plant Ecology and Organic Farming	• Understand the concept of Ecology. • Study the climatic, Edaphic and Physiographic factors. • Study the ecosystem, components of Ecosystem. • Understand the food chain, food web and ecological pyramids. • Study the Autecology and Synecology. • Understand the process of succession. • Study the plant adaptations. • Study the Biogeochemical cycles. • Develop the skills of organic farming. • Understand the methods of recycling of biodegradable kitchen, agriculture and industrial waste. • Study to prepare organic manure.
	Botany Practical	• Determining the Frequency, Density, and Abundance of community by Quadrate Method. • Determining the homogeneity of vegetation by Raunkier's frequency. • Study the frequency of herbaceous species in grassland to compare the frequency distribution with Raunkier's standard frequency diagram. • Study the soil profile of different locations near by area. • Study the salinity of different water samples.
Sixth- Semester		
40	**Chemistry- I** Paper-I Inorganic Chemistry (601)	• Electronic spectra of Transition Metal Complexes. **601.2** • Understand Magnetic Properties of Transition metal Complexes. • To study thermodynamic and kinetic aspect of metal complexes. **601.3** • Understand organometallic chemistry. • Understand properties and structure of metal carbonyls **601.4** • To study Bio-organic chemistry • Understand the concept of s Hard and Soft acids and bases.

	Paper-II Organic Chemistry (602)	**602.1** • Understand NMR Spectroscopy **602.2** • Understand Organic Synthesis via Enolates. • Carbohydrates: classification, reaction and mechanisms. **602.3** • Understand Amino acids, peptides and nucleic acids. To study Fats, oil and detergents. **602.4** • Understand synthetic dyes, synthetic drugs, synthetic polymer
	Chemistry Practical Course (603)	• Verify theoretical principles experimentally • Interpret the experimental data • Improve analytical skills • Correlate the theory and experiments and understand their importance
41	**Paper-I** Relativity, Nuclear Physics and Bio Physics **(601)**	601.1 • Understand the postulates of the special theory of relativity. • Apply the concept of relativity to explain Length contraction, Time dilation, Velocity addition theorem, Variation of mass with velocity Mass energy equivalence. 601.2 • Understand the concept of nuclear physics. 601.3 • Apply the concept of nuclear physics to explain various decay processes. 601.4 • Understand the Principle, Construction and working of different bio Instruments.
	Paper-II Electronics, Fiber Optics, Communication and Digital Electronics (602)	**602.1** • Understand the operations and applications of operational amplifiers. **602.2** • Understand the various basic structures of optical fibers and basic concept involved in propagation of light waves through optical fiber. 6**02.3** • Understand the concept of amplitude modulation and frequency modulation. **603.4** • Understand various number systems. • Construct the truth tables for various logic gates. • Verify De Morgan's theorem
	Physics Practical **(603)**	**603** • Apply and demonstrate the theoretical concepts

		of Physics and to develop scientific attitude.
42	**Mathematics- I** Abstract Algebra (601)	**601.1** • Understand the concept of Group Auto orphism. **601.2** • Understand definition and examples of vector spaces. **601.3** • Learn about algebra of linear transformation. **601.4** • Find range, rank, kernel and nullity of matrix and also study about Inner product spaces
	Mathematics- II Special Theory of Relativity (602)	**602.1** • Study the Newtonian Mechanics and understand the concept specia theory of relativity. **602.2** • Learn the Lorentz transformation and consequences. **602.3** • Understand the concept of Tensors and Space –Time structure. 602.4 • Study the Mass Energy Equivalence, Energy momentum Tensor and Maxwell's Equation of Electromagnetic theory in Vacuum
43	Zoology I & II **Paper-I**	**601.1** • Understand the Types of neurons, E.M. structure of neuron, Conduction of nerve impulse, Ultrastructure of striated muscle, Sliding filament theory of muscle contraction, Properties of muscles (Twitch, Tetanus, Tonus, Summation, All or None Principle, Muscle fatigue)
	General Mammalian Physiology - II	**601.2** • Understand Structure of uriniferous tubule, Mechanism of urine formation, Counter – current mechanism, Normal and abnormal constituents of urine; Elementary idea of dialysis. **601.3** • Understand the Structure and functions of pituitary gland, Structure and functions of thyroid and parathyroid gland, Structure and functions of adrenal gland, Structure and functions of pineal gland. **601.4** • Understand the Oestrous and menstrual cycle, Male and female sex hormones, Causes of infertility in male and female, Contraceptives –

		Mechanical and hormonal; *In-vitro* fertilization
	(602)	electrophoresis, SDS-PAGE, Principles of colorimeter and spectrophotometers. **602.2** • Understand the concept of Fixation, dehydration, clearing, embedding & section cutting, Difficulties encountered during section cutting (causes and remedies), Double staining with Haematoxylin and Eosin, Histochemical staining techniques for carbohydrates (Periodic acid schiff), proteins (Mercury-bromophenol blue) and lipids (Sudan black- B). **602.3** • Understand the Basic concepts in recombinant DNA technology, Gene isolation method- Shotgun cloning, Isolation of gene- DNA manipulation enzymes: Nucleases, ligases, polymerases, Basic concepts of cloning vectors and splicing: Insertion of DNA and ligation using blunt ends, cohesive ends, Cloning vectors, Application of biotechnology: Insulin and vaccine production. **602.4** • Understand the Bioinformatics: Definition, Basic concepts in bioinformatics, importance and role of bioinformatics in life sciences, Bioinformatics databases- introduction, types of databases, Nucleotide sequence databases, Elementary idea of protein databases, Biostatistics – Tabulation of data, presentation of data, sampling errors, mean, mode, median, probability, standard error and standard deviation
44	**Botany** **Paper-I** Biochemistry Biotechnology and Herbal Technology	• Study the lipids, role of fatty acids, oils and waxes. • Study the enzymes its classification and nomenclature. • Study the basic concepts of Enzymology. • Study the enzyme inhibitors. • Study the tissue culture techniques. • Study the process of sterilization. • Study the preparation of culture media • Understand the techniques of genetic engineering. • Study the process of DNA library. • Study the types of DNA library. • Study the Agrobacteria mediated gene transfer. • Develop the skills of herbal technology. • Study the methods of Cultivation, Harvesting, • Understand the technique of dye yielding of herbal plants. • Study the used of herbs in cosmetics.

	Paper-II Phytogeography, Utilization of Plants, Techniques and Pharmacognosy	• Study the phytogeography, climatic regions of India. • Study the Environmental pollution. • Study the Renewable and Non-Renewable sources. • Understand the conservation strategies. • Study the morphology, utilization and important chemicals constituents of the plants. • Understand the concept of Ethno botany. • Study the principle, types and application of microscope. • Study the various techniques.

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