

Shri A.P.D.Jain Pathshala's

Walchand College of Arts and Science

Walchand Hirachand Marg,

Ashok Chowk, Solapur

Maharashtra - 413006

Program outcome, Program specific outcome and Course outcome

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Sr. Name of the Subject

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WALCHAND COLLEGE OF ARTS AND SCIENCE, SOLAPUR

Program Outcomes, Program Specific Outcomes and Course Outcomes for all programs offered by the institution are stated and displayed in website of the Institution

Sr. No.	Name of the Program	Program outcome
<u>Sr. No.</u> 1. <u>Sr. No.</u> 2.	Name of the Program B.A. Economics Name of the Program B.A. Economics	 Program outcome To expose the students to the basic principles of Micro and Macro Economic Theory and also to introduce basics of Research Methodology. The emphasis will be on thinking like an economist and the course will illustrate how microeconomic concepts can be applied to the market. This course aims to introduce the students to the basic concepts of Economics. Macroeconomics deals with the aggregate economy. This course discusses the preliminary concepts associated with the determination and measurement of aggregate macroeconomic variables like savings, investment, GDP, money, inflation, and the balance of payments. This course looks at the behavior of the consumer and the producer and also covers the behavior of a firm. It introduces the students to various issues related to an Agricultural Economics. Course Outcome Students get well-founded education in Economics. Enable graduates for employment and further study as economists. Students get an opportunity to pursue courses that emphasize quantitative and theoretical aspects of Economics. Students get an opportunity to focus on applied and policy issues in Economics. Programmers allow the students to choose from a wide range of economic specialization.
		learning environment for Economics.
		fourning environment for Leonomies.
	Prog	ram Specific Outcome
	BA Part 1: Semester 1&2	1. Students get familiar with broad features of
	Paper No. 1 Indian	Indian economy
	Economy-1	2. Students can understand the problems of

DEPARTMENT OF ECONOMICS

	excess population, poverty and
	unemployment
	3. Students learnt the problem of rising prices
	and its causes, effects and remedies
	4. Students get familiar with the role and
	importance of agriculture in Indian economy
	importance of agriculture in mutan economy
Papar No 2 Indian	1 Students learn about the industrial sector in
Foonomy 2	India
Economy-2	11101a
	2. Students get familiar with the process of
	planning in India & growth models
	3. Students learn about economy of
	Maharashtra & the salient features of
	Maharashtra economy
	4. Students get familiar with coop. movement
	in Maharashtra
BA Part-2:Semester 3&4	1. Students get familiar with Barter system,
Paper No. 3 Money	evolution of money and the functions of money
Banking & Public	2. Students understands the process of
Finance -1	determination of value of money, inflation and
	deflation
	3. Students get familiar with the commercial
	banking and modern techniques of banking
	4 Students get familiar with RBI
Paper No. 4	3 Students learn population studies. Students get
Demography-1	familiar with demography
	4 Students get familiar with census and
	demographic surveys
	5 Students understand theories of nonulation
	 Students and fiscal incones of population. Students get familier with techniques of data
	o. Students get fammar with techniques of data
Demon No. 5 Marray	1 Studente est femilien with multis finance and
Paper No. 5 Money	1. Students get familiar with public finance and
Banking & Public	scope, nature and principles of public finance
Finance -2	2. Students learn about public expenditure
	3. Students learn about taxation
	4. Students learnt about public debt and financial
	administration
Paper No. 6	1. Students get familiar with population in India.
Demography-2	2. Students learn about migration in India.
	3. Students get familiar with population policy in
	India.
	4. Students learn population projection and
	forecasting technique
IDS	1 Students get introduced to cooperation
	1. Students Set introduced to cooperation.

	Cooperation- Semester 3	2.	Students get familiar with features and benefits
			of cooperation.
		3.	Students understand cooperative movement in India
	Semester 4	1.	Students get familiar with role of national
			agencies in the development of cooperative
			movement.
		2.	Students learn about credit and non credit
			cooperatives in India.
		3.	Students get familiar with cooperative movement
			in Maharashtra
	BA Part3: Semester 5&6	1	Students act introduces to mismo economics
	Paper No. / Micro	1.	Students get introduce to micro economics.
	Economics -1	2. 3	Students get introduce to consumer behavior.
		5.	Students learn theory of production and cost.
		1	Students get familiar with market structure and
	Paper No. 12 Micro	1.	different types of markets
	Economics -2	2.	Students learn about factor pricing
		3.	Students get introduce to welfare economics
			C
	Paper No. 8 Macro	1.	Students get introduce to macro economics.
	Economics -1	2.	Students get introduce to national income.
		3.	Students learn about output and employment.
		4.	Students get familiar with Demand and Supply
	Daman Na. 12 Maana	1	of Money Students learn shout trade sucles
	Faper No. 15 Macro	1. 2	Students learn about trade cycles.
	Economics -2	2. 3	Students get familiar with international trade
		4	Students learn about inflation
	Paper No. 9 History of	1.	Students rear about inflation
	Economic Thoughts-1		economics.
		2.	Students get familiar with the contribution of
			Adam Smith, David Ricardo, Malthus and J.B.
			Say.
		3.	Students get familiar with the economic
			contribution by Fredric List and Karl Marx.
		4.	Students get familiar with the economic
			contribution by Boham Bawark and Carl
			menger.
1		1	

Paper No. 10 Economics of Development -1	 Students get introduce to Economic Growth and Development. Students get familiar with the theories of Economic Development. Students learn about the sectoral view of Economic Development. Students understands the role and importance of resources for Economic Development
Paper No. 11 Economics of Agriculture -1	 Students get familiar with rural economy of India. Students get information about land reforms in India. Students get familiar with development of Agriculture. Students get information about technological changes in agriculture
Paper No. 14 History of Economic Thoughts-2	 Students get familiar with the economic contribution by Alfred Marshall. Students get familiar with the Keynesian Ideas. Students get familiar with the economic contribution by Joseph Schumpeter. Students get familiar with economic contribution by Mahatma Gandhi, Dr. Babasaheb Ambedkar and Amartya Sen.
Paper No. 15 Research Methodology -2	 Students get familiar with research methodology Students get introduced to the stages of research Students learn the methods of data collection Students learn report writing
Paper No. 16 Economics of Agriculture -2	 Students learn about agricultural finance I India. Students get familiar agricultural marketing. Students learn about agricultural prices Students get familiar with New Economic policy (1991) and Indian agriculture

Dr. S. D. Chavan Dept. Of Economics

DEPARTMENT ENGLISH

Sr.No.	Name of the	Program outcomes
	program	
1.	BA & BSc	1. The students are enabled into acquiring and further strengthening
		different language skills- writing and speaking.
		2. They are initiated into the aspects of literary types like- poetry,
		drama and fiction along with criticism.
		3. The students acquire the understanding of the minor literary types
		like- essays, articles, one act plays, etc
Sr.No.	Name of the	Program specific outcomes
	program	
1.	Literature	1. The students are made aware of the representative writes of England,
		America and India.
		2. They are acquainted with the writers from different literary periods
		of these nations.
2.	Language	1. The students acquire insights into various aspects of language-
		Grammar and Phonology.
		2. They are enabled into interpreting various aspects of language.
Sr.No.	Name of the	Course outcomes
	program	
1.	British Literature	1. The students study various writers from England.
		2. They acquire a comparative understanding of the writers belonging
		to different literary periods.
2.	Indian Writing in	1. The students are made aware of the representative Indian writers in
	English	English.
		2. They are taught the ways of appreciating the Indian writers in terms
		of their sensibilities, insights and diction.
3.	Literatures in	1. The students of English are made aware of various writers whose
	English	works have been brought into English language.
		2. This helps the students have a comparative approach to the texts.
4.	Structure and	1. The students are first of all initiated into Morphology and
	Function of	Phonology.
	Modern English	2. Afterwards they are enabled into acquiring an understanding of
		various levels of Syntax like Phrases, Clauses and Sentences.
		3. They are also made conscious of the aspects of Discourse Analysis.

Mr. M. R. Kamble Department of English

DEPARTMENT OF GEOGRAPHY

Sr.No.	Name of the program	Program outcomes
1.	B.A. Geography	 PO1: Students understood basic concepts, scientific information related to Geography. PO2: Students acquired basic knowledge, processes related with Geography. PO3: Students acquired skills in handling Survey instruments (Prismatic Compass, Plain Table, Chain tape).
Sr.No.	Name of the program	Program Specific Outcomes
	B.A I Geography	 PSO1: Students understood basics concept of Geography specially related to the Earth. PSO2: Students determined the origin of the Earth, their evolution processes and impact on biological factor. PSO3: Students identified various types of the rocks. PSO4: Students identified Human race, Religious and Language groups.
2	В.А II Geography	 PSO1: Studentsintroducedthe different types of resources. PSO2: Studentsidentified the types of soil and important crops taken in different soils. PSO3: Students developed skills to draw the map of Physiography, river system in India. PSO4: Student understood the mechanism of monsoon.
	B.A III Geography	 PSO1: Students acquired the Cartographic and advanced techniques in Geography. PSO2: Students understood the urbanization process in India and World. PSO3: Students identified the economic activities of man and categorized into various types. PSO4: Student understood the concept of Nation, state and changing political map of India.
Sr.No.	Name of the program	Course Outcomes
3	B.A I Geography Paper I	CO1 : Students sensitized about the background of Geography and Geology.

(Geomorphology)	CO2: Studentsfamiliarized with geomorphological
	concepts and processes takes place on the earth surface
	and within the earth crust.
	CO3: Studentsunderstood the types of Endogenic and
	exogenesis forces.
B.A I Geography	CO4: Students understood the age and sex composition
Paper II (Human	of population.
Geography)	CO5: Students understand types, pattern and function of
	human settlement.
	CO6: Students identified the spatial distribution of
	population in the world.
B.A IIGeography	CO7: Student understood the human life in cold, desert,
Paper III (Human	plateau and mountainous region.
Geography)	CO8: Student understood with the dichotomy in between
	environmental determinism and Possibilism.
	CO9: Students draw various diagrams using the
	geographical data.
B.A II Geography	COI0:Students understood the absolute and Relative
Paper IV (Physical	location of India.
Geography of India)	COII: Students understand mechanism of monsoon and
	CO12: Students understand and describe turnes
	distribution and conservation of forest
	distribution and conservation of forest.
B.A II Geography	CO13: Studentsunderstand growth of population in
Paper V (Population	world.
Geography)	CO14: Students understood factor affecting on
	population distribution and the concept of under, over
	and optimum population.
	CO15: Students understood population policies in India.
B.A II Geography	CO16: Students identified the major cash and food crops
Paper VI (Economic	in India.
and Demographic	CO17: Students understood the importance of industries
Geography of India)	in Indian Economy.
	CO18:Students categorized trade and transport system in
	India.
B.AIII Geography	CO19: Students understood basic concept of Resources.

Paper VII (Resource	CO20:Students differentiated mineralsand power
Geography)	resources.
	CO21: Students understood the spatial distribution of
	forest and livestock resources in the world.
B.AIII Geography	CO22: Students identify the process and trends of
Paper VIII (Urban	urbanization.
Geography)	CO23:Students identified morphology, structure and
	problems of urban area.
	CO24: Students understood the theory related
	development of town structure.
B.AIII Geography	CO25: Students understood the brief history of
Paper IX	geographical idea.
(Development of	CO26: Students understood the comparative study
Geography)	between physical vshuman.
	CO27: Students understood the various countries
	contribution in development of geographical thoughts.
	CO28: Students understood the types of agriculture.
B.A. – III Geography	CO29:Students identified the modes of transport.
Paper X (Geography	CO30:Students understood the concept of tourism and
of Economic	region.
Activities)	
	CO31:Students understood the basic concepts related
	political geography.
B.A. – III Geography	CO32:Students understood global strategic views and
Paper XI (Political	their relevance to contemporary world situation.
Geography)	CO33: Students understood Geo-political issues of
	India.
	CO34:Students understood issues related to physical
	environment.
B.A. – III Geography	CO35:Students identified various environmental
Paper XII (Applied	degradation processes.
Geography)	CO36:Students understood of issues related to human
	resources and economy.
	CO37: Students enabled to use of elements of map
	work.
B.A. – III Geography	CO38: Students handled the weather instruments and

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	P. Paper I (Element of	weather charts.
	Map Work and	CO39: Students draw various map scale and projections.
	Weather Reports)	
		CO40: Students enable to use various cartographic
		techniques.
	B.A. – III Geography	CO41:Students identified and familiarized GIS
	P. Paper II	techniques.
	(Cartographic and	CO42: Students use aerial photographs to photo
	Advanced Techniques	interpretation.
	in Geography)	
		CO43:Students draw relief features using counters.
		CO44: Students used statistical methods for data
	B.A. – III Geography	interpretation.
	P. Paper III	CO45: Students identified relief features from
	(Topographical Maps	toposheets.
	and Statistical	
	Methods)	CO46: Students acquainted with the surveying.
		CO47:Students handled plane table, prismatic compass
		and chain tape.
	B.A. – III Geography	CO48: Students understood about the field work and
	P. Paper IV	study tour.
	(Surveying and Field	
	work)	

Dr. N.I. Dhayagode Department of Geography

DEPARTMENT OF GEOLOGY

Sr. No.	Name of the program	Program outcomes
1	B.Sc. Geology	PO1: Students understood basic terminology, concepts,
		scientific information related with geology
		PO2: Students acquired basic knowledge, processes related
		with geology
		PO3:Students acquired skills in handling petro logical
		microscopes, drawing geological sections and performing
		practical.
Sr. No.	Name of the program	Program specific outcomes
2	B.Sc I Geology	PSO1: Students understood basics of dynamic geology,
		physical geology, Mineralogy& Petrology
		PSO2: Students determined the earth processes and their
		impact on human being
		PSO3: Students identified minerals, rocks and fossils,
		developed skills to draw sketches and analyze data related
		with drainage basins
	B.Sc II Geology	PSO4: Students introduced to different topics related with
		mineralogy, petrology, structural geology
		PSO5: Students understood the functioning and use of
		polarizing microscope
		PSO6: Students developed skills to draw geological problems,
		sections of geological maps, identify minerals, rocks under
		microscope
Sr.No.	Name of the program	Course outcomes
3	B.Sc I Geology	CO1: Students determine about minerals, types, different
	Paper I (Mineralogy	types of physical properties, chemical bonding
	& Paleontology)	CO2: Students understand different types of mineral groups
		CO3: Students determine about fossils, conditions of
		fossilization
		CO4: Students understand modes of preservation and uses of
		fossils, morphology of hard parts of different fossil groups
		CO5: Students determine about rocks, types, different types of
	B.Sc I Geology	properties,
	Paper II (Petrology)	CO 6: Students understand different types of rock groups
		CO 7: Students determine about rocks, conditions of rock
		formation
		CO8: Students understand rock cycle

B.Sc I Geology Paper III (General Geology)	CO9: Students understand formation of Universe, Galaxy.Earth originCO10: Students understand Internal Structure of EarthCO11: Students understand and describe geological work
	carried by different types Volcanoes, Earthquake CO12: Students determine about formation relief features
	CO13:Students determine effect of natural agents on & below the earth CO14: Students understand weathering process and different
B.Sc I Geology	types CO15: Students understand and describe geological work carried by different types of natural agents like wind, river,
Paper IV (Physical Geology)	ocean, glacier etc. CO16: Students determine about formation, types of soil
 B.Sc II Geology	CO1: Students determine about polarizing microscope, its
mineralogy)	assembly and use CO2: Students understand different optical properties of minerals, draw sketches CO3: Students determine different mineral groups with their physical optical properties and occurrence
	CO4: Students identify minerals under microscope
B.Sc II Geology Paper VI (Structural Geology)	CO5: Students understand plate tectonics movement CO6: Students understand different types of structures CO7: Students determine terminology of structures CO8: Students identify structures from litho log
B.Sc II Geology Paper VII(Igneous petrology)	CO9: Students understand different processes involved in formation of Igneous rocks, classification CO10: Students determine different types of Igneous rocks, environment & types CO11: Students understand differentiation and assimilation CO12: Students determine different types of igneous rocks,Tabular classification,Textures

B.Sc II Geology	CO13: Students understand different processes involved in
Paper VIII	formation of sedimentary rocks, classification
(Sedimentary &	CO14: Students determine different types of sedimentary
Metamorphic	rocks, environment of deposition & types
petrology)	CO15: Students understand formation of metamorphic rocks,
	concept of grade and facies of metamorphism
	CO16: Students determine different types of facies, identify
	their mineral assemblages, understand concepts of retrograde,
	poly-metamorphism and process of anatexis

Dr. P. D. Mali Department of Geology

DEPARTMENT OF HINDI (B.A. & M.A.)

Sr.No.	Name of the program	Program outcomes
1.	B.A Hindi	 PO1: To enable students to learn different language skills e.g. Writing & Conversation etc. PO2: Students evable to understand different literature genre e.g Drama , Poetry , Criticism etc. PO3: Students understand literature like essays , one act play etc.
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•		

.2	M.A. Hindi	PO 4: Students Learn Various language skills- L.S.R.W.
		PO 5: Students know the concept of Literary research.
		PO 6: Students know the nature of two languages through the
		medium of translation.

Sr.No.	Name of the program	Program specific outcomes
		PSO1: Create interest in Hindi literature of students.
	B.AI Hindi	PSO2: Students know about Hindi authers & poets.
		PSO3: Students increase his imagination power as well as
		thought he also introduce different words like administration,
		economics .
		PSO4: Love for nation and social awareness will increase in
		the mind of students.
		PSO5 : Students introduce about gender etc.
		PSO1: Students know about conterporary literature and
		develop amodern perspective to words the morality and he also
		introduce with post Hindi storied and modern art.
	B.AII Hindi	PSO2: Students enable to know spiritual and social, cultural,
		religious situation side by side spiritual poems and their vice
		and virtues towords anicient and medieval culture.
		PSO3: To enable students to make interest in types of novels
3		and to create interest and critical view about it.
		PSO4: To enable students to understand the background of
		modern period of chhayavad and pragatiwad according to
		medium of this nature, awareness, human pain with know
		about the social and economic condition after independence.
		PSO1: Students try to learn micro learning of Hindi literature
		the writer and their place and thoughts.
		PSO2: Students enable to understand about the creation of
	B.AIII Hindi	Hindi literature its principles, values, virtues and figure of
		speeches.
		PSO3: Students understands the different types of literature of
		ancient, medieval and modern side by side he also
		acquaintance with different development of learning and
		various authors work as well as isms.

	POS4 : Students posses the knowledge about language, purity
	of language, students of grammar, introduction of language
	and also increased scientific view to wards language and know
	about pronounciation, meaning etc.
	POS 5 : Students understand the official correspondence and
	different skills, according to this he acquaintaned with
	advertisement , Translation and modern , Mass
	communication mediums.

4.	M.AI	PSO 1: Students Learn Various language skills- L.S.R.W.
		PSO 2: Students know the concept of Literary research.
		PSO 3: Students know the nature of two languages through
		the medium of translation.
		PSO 4: Students interest of literature among students.

5.	M.AII	PSO 5: Students take interest in Hindi literature .
		PSO 6: Students learn the stages of development of prose
		PSO 7: Students get introduced to various writers in Hindi
		literature .
Sr.No.	Name of the program	Course outcomes
	B.AI Hindi	CO1: Students know Hindi authors & poets
3	(Sahitya surbhi)	CO2: Students introduced different words like administrative,
5		Economical designation related.
		CO3: Students imagination thinking power will be increased .
	B.AI Hindi	CO4: To help students to increase love for nation and
	2-(Sahitya Ratna)	awareness for social emotion.
		CO5:. Students acquaint with gender , cases and also familiar
		with correct grammer and he also understand different idioms
		and phrases.
		CO6: Students familiar with development skills and about he
		which is written in devanagari script.

B.AII Hindi P 3- (Adhunik Gadhya: kahani evam Vyavahaarik Hindi)	 CO7: Students familiar with post centuary Hindi stories. CO8: Contemporary lifestyle and whole meaning of life he understand . CO9: Modern lessons a new values , students become familiar and developedhis own points of views. CO10: Students developed his taste and critical view to wards modern art.
B.AII Hindi P 4-(Hindi Kavya : vyakaran evam lekhan)	CO11: Students become familiar with spiritual period and tradition of social, religious and cultural conditions. CO12: Students studies spiritual poets including its vivesand virtues according to ancient and medieval culture. CO13: Students presents importance of romance and bravery

B.AII Hindi P 5- (Adhunik Gadhya :Upnyaas evam Vyavhaarik Hindi)	through poems. CO14: Creates emotion of love in the mind of students towards poems . CO15: Students become familiar with modern Hindi Novels. CO16: Students understands contemporary life and its meaning . CO17: Students develop their point of view towards modern teaching and new values. CO18: Students enable to taste and he also take interest about critical point of view towards art of novels .
B.AII Hindi P 6-(Hindi Kavya : Vyakaran evam Lekhan)	CO19: Students understands about the background of modern Hindi literature.CO20: Students understands about nature and human pain and through chhayawad and pragatiwad .CO21: Students become familiar with social as well as economic conditions after post independene.

CO22: Students become familiar with versatile personality and
intelligence of author
CO 23 : He decided the place of the author
CO 24 : He become familiar with the work of the author
CO 25: He become familiar with her thoughts.
CO 26: He also studies micro appreciation of the authors work.
CO27 : He understands about the process of creation of
literature.
CO28 : He acquarts with different between prose and poetry.
CO29 : He seware familiar with new trends of literature.
CO30 : He comprehends principles of prose and poetry
CO31 : He understands the power of words.
CO32 : He understands figures of speech.
CO33: Students asquait with the background of Hindi
literature.
CO34: He learn historical study of Hindi literature.
CO35: He also introduced general study of Hindi literature.
CO36:He become familiar with the development of Hindi
literature and its history.
CO37: Students acquairts with experimental Hindi nature and
its development.
CO38: Students become familiar with moder n mass-
communication and the increased the user Hindi language.
CO39: He increases his taste to use Hindi and about Hindi
correspondence.
CO40: Students become familiar with official as well as
correspondence in Hindi language.

		CO41: Students understand the we a importance of the
		language in day today life.
		CO42: Through Hindi language students try to develop skill to
		acquire job.
	B.AIII Hindi	CO43: Students introduced genral things about Hindi
	P-11 Hindi Bhasha	language.
		CO44: Students introduced different types of Hindi language.
		CO45: Students enable to familiar with Hindi script and
		development
		CO46: Students become vigilart about the we of correct
		language
		CO47: Students become familiar with grammer.
	B.AIII Hindi	CO48: Students introduced with standard Hindi in grammer.
	P- 12 Vishesh lekhika	CO49 · Students introduced with intelligence and personality if
	Krushna Sobati	the author
)Samay Sargam(CO50: Students decided the place of author
)Summy Surguin(CO51 : Students understands about the inspiration of authors
		in his literature
		CO52: Students taste his in her novels.
		CO53: Students acquainted with the work of the author
	B.AIII Hindi	CO54 · Students understands the different literature
	P- 13 Alochana	instruments
	i is invenunu	CO55 : He understands different experience of Rasas
		CO56: He understands the value and importance of his
		literature
		CO57 : Understands, critical aspects of different work
		CO58: Understands metered (chhanda)
	R A -III Hindi	CO59 : Students introduced with background modern
	P- 14 Adhunik	literature
	Hindi sahitya ka	CO60 · Students studies modern Hindi literature
	itihaas 1900)- (2010	CO61: He also introduces with modern Hindi literature and ite
	(2010	authors
		CO62 : Students developed different is Vidhas according for
		modern Hindi literature
	B.AIII Hindi	CO63 :Understands the natures and importance of translation
	P- 15 Vvavhaarik	CO64 : He introduced to advertisements and its rules.
	Hindi	CO65 : Develop his skill of translation and advertisements.
		CO66 : Students understands business correspondence.
		CO67 : He used Hindi in his day todaylife and also understand
		the importance of it.
		CO68 : Students developed functional employed based skill
		through Hindi language.
<u> </u>	B.AIII Hindi	CO69 : Develop scientific view toworded language
	P- 16 (BHASHA	CO70 : Students acquaints with scientific knowledge of
	VIGYAN	language.
		CO71 · Improve phonetic pronunciation
		co, i i improve phonetic pronunciution

CO72 : Improve pronounciation
CO73 : Know about meaning and position of language.

MALDIAdhunik	CO74 . Students will be introduced to verious prose writers		
MI.AI . F-I .Aululik	CO74. Students will be introduced to various prose writers		
Gaunya Samtya			
	CO75 :Students imagination and thinking will be increased.		
	CO76 : Students will know environment charactaristics of humans.		
	CO77 : The feeling of Nationality and social responsibility will be enhanced.		
M.AI : P-II :Hindi	CO78 : Students develops scientific view towards language.		
(Bhasha vigyan evam Hindi Bhasha)	CO79: Student knows about charactaristics structure and systems of language.		
	CO80: Student knows about the phonetics, phonology, syntay and semantics of language.		
	CO81 : Students knows about the Geographical expansion of Hindi language.		
	CO82 : Students knows about devnagari script and it'sstandardisation.		
	CO83 : Student knows about Historical background of Hindi language.		
M.AI : P-III :Hindi	CO84 : Students knows about various forms of Hindi.		
(Prayojanmulak Hindi)	CO85 : Students knows about the Constitutional provision of Hindi as a language of communication .		
	CO86 : Students knows about different Registers related with spheres of knowledge.		
	CO87 : Students knows about Hindi as a language of Governance.		
	CO88 : Students knows about computer , Internet , Link , Browsing, Hindi websites , Web-Magazine etc.		
M.AI : P-IV :Hindi	CO89 : Students knows about print Journalism and printing.		
(Patrakarita)	CO90 : Students know about laws and code of conduct regarding press.		
	CO91 : Students know about various unions of Journalists.		
	CO92 : Students know about Management of Journalism.		
M A -II · P-V ·Hindi	CO93 · Students know about Modern Hindi Poetry		
(Adhunik Hindi	CO94 : Students know about various poets of Hindi		

Kavita)	language.
	CO95 : Enhancement of Modernism , universalism and scientific attitude will be increased.
M.AII : P-VI :Hindi (Kavyashastra evam	CO96 : Students know about emotion thought and values in a work of Art.
Sahityalochan)	CO97 : Students knows the principles of post modernism.
	CO98 : Students knows the critical tendencies of Hindi.
M.AII : P-VII :Hindi (Hindi sahitya ka	CO99 : Students knows about the development of Hindi language.
itihas)	CO100 : He learn historical study of Hindi literature . CO101 : He also introduced general study of Hindi literature.
M.AII : P-VIII :Hindi	CO102 : Students knows about importance of translation in Study.
(Anuwad : Sidhant aur Prayog)	CO103 : Students knows about importance of translation in global understanding.
	CO104 : Students knows about the employment generated by translation.

Dr. M. D. Shinde Department of Hindi

DEPARTMENT OF HISTORY

Sr.No.	Name of the program	Course Outcomes		
1	B.A.I	Unit 1 :Student know the definition of Science and common sense, Science and religion, as well as Natural Sciences and Social Sciences positive and normative		
	Semester I & Paper I	Science etc.		
	Scientific Method	Unit 2 :Students knows Principles of objectivity Principles empiricism, Principles of casual relation, Principles of uniformity of nature.		
		Unit 3 :Students know the nature of Scientific observation; its benefits its fallacies etc.		
		Unit 4 :Students know the experimental methods of Mill.		
		Unit 5 :Students know different types of inspiration,Scientific methods and its stages.		
	B B.A.I	Unit 1 :Students know the Hypothesis Its definition, importance and use of it.		
	Semester II & Paper II Scientific Method	Unit 2 :Student know the meaning of definition. its format rules and types, nature and types and types of classification.		
		Unit 3 :Students get the information about government laws,Natural laws and General laws.		
		Unit 4 :Student know about methods and technique, questionnaire and interview.		
		Unit 5 :Student know about Computer and its parts,functioning, uses and characteristics as well as information and technology and its		
	B.A.I	Unit 1 :Students will know the background of the rise of Maratha empire and the contribution of Shahaji Raje and Jijabai in the rise of Maratha empire.		
	Semester I and Paper	Unit 2 : Students will know about the struggle of Chatrapati		
	Chapati Shivaii	Shivaji Maharaj against Adilshahi and his victory Jawali, struggle against Afzal Khan and siege of Panhala.		
	Maharaj And His Time	Unit 3 :Students will know the struggle between Chatrapati Shivaji Maharaj and Moguls. Including raid of		

	shahista Khan, plunder of Surat and meeting at Agra, expedition of Mirza Raja Jaysingh.
	Unit 4 :Students will know the great moments in the life of Chatrapati Shivaji Maharaj in detail. 1.Coronation 2. Karnataka expedition.
Semester II and Paper II	Unit 1 :Students will know about of Chatrapati Sambhaji Maharaj. Portuguese and Siddi and his struggle with Moguls.
	Unit 2 :Students will know the great work of the Chatrapati Rajaram Maharaj. Maharani Tarabai and the knights Santaji Ghorpade and Dhanaji Jadhav in the Maratha freedom struggle.
	Unit 3 :Students will know the Central, Regional, and Village administration of Maratha empire
	Unit 4 :Students will know the characteristics of Maratha Army administration,Forts and Judicial system
B.A.II	Unit 1 : Students will know about Industrial revolution its
	causes courses of development and effects on the world
Semester III and	Unit 2 :Students will know the French revolution, its causes
Paper III	courses of development and effects as well as the its gift of
-	Liberty, Equality and Fraternity to the world.
Modern Europe	
	Unit 3 : Students know the rise of Napoleon Bonaparte, reforms by him, his conquests, his policy and his downfall.
	Unit 4 : Students know the Vienna congress, life and work
	of Metternich and his downfall, concert of Europe etc
БАЦ	Unit 1 : Students will know the French revolution-
Б.А.П	1830, France between 1830 to 1848 A.D. and the
Semester IV and	10v01uti011-1646.
Paner V	Unit 2 :Students will know previous life of Napoleon III
- "Por '	his international policy, External policy and his defeat.
Modern Europe	
-	Unit 3 :Students will know about the unification of Italy as
	a important movement of the politics of Europe, Its
	background steps and effects.
	Unit 1 Students will know shout backensond of
	unification of Germany Its steps and effects
	unneation of Oemany, its steps and enects.

B.A Sem Pap	.II nester IV er VI	and	Unit 1: Students will know about Non co-operation movement,Quit India movement civil disobedience movement and Mahatma Gandhijis contribution in the freedom movement.
Moo 1950	dern India D)	(1857-	Unit 2: Students will know about the revolutionary organization established in Bengal Maharashtra and Punjab.
			Unit 3: Students will know about rise and growth of Muslim communalism, constitutional developments and Subhashchandra Bose and Indian National Army.
			Unit 4: Students will know about negotiations for independence and partition, Integration of princely states and salient features of Indian constitution.

Dr. C.S. Chavan Department of History

DEPARTMENT OF LOGIC (I.D.S.)

Sr.	Name of the	Program Outcome
No.	Program	
1.	B.A. Logic	 Bachelor of Arts graduates are also able to go into non-Arts related professions via graduate coursework study including marketing, finance and accounting, law, teaching, journalism and media. Bachelor of Arts students study ideas, movements and theories in culture, society, history, language, reasoning and more. Extensive reading and research helps arts students to form a broad understanding about the world around them and the ways in which humans connect and interact. Bachelor of Arts degree graduates are able to synthesize complex information and communicate it concisely both orally and in written form.
		 4) Bachelor of Arts students develop strong analytical skills – the ability to break ideas and issues down into their component parts and drill down to the root of problems while considering possible solutions. 5) Bachelor of Arts students know how to find information, and have the discernment to distinguish between good, authoritative information and poor quality, unreliable information. As part of their studies, arts students are required to find and research a large number of primary and secondary resources, and distil and analyze the most relevant points to create a clear argument
2	B.A. Logic	SPECIFIC OUTCOME
		After successfully completing a BA with Logic:
		1) Students will be able to explain logical texts and positions accurately,
		2) Students will be able to identify and apply research methods consistently,
		3) Students will be able to apply their logical learning to important public issues.
		4) Students will be able to articulate why logical understanding is valuable in such debates.
		5) Students will be able to describe the ways in which the formal techniques of logic are important to philosophical research.
		6) Students will be able to explain epistemological concepts such as the nature of knowledge, justification, evidence and skepticism, and to

	summarize and evaluate major philosophical positions in relation to each
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Course Outecome

B.A -II	Syllabus Topic	Objectives	Topic outcome
SEM-III Propositional logic	Unit 1. The nature of logic: Logic as the study of Inference. Nature of Inference. Deductive and Inductive Inference.	To study validity of inference.	Students know the difference between form and matter of arguments.
	Unit 2. Nature of Proposition: Distinguish between proposition and sentence Importance of symbolisation	To know distinction between Simple, Compound and general propositions.	Students can understand function propositions.
	Unit 3. Modern classification of propositions: Compound propositions	To know the distinction between traditional classification of propositions and modern classification of propositions	Students can understand the truth function of compound propositions.
	Unit 4. Rules of inference and replacement Direct proof method' Indirect proof method and Conditional proof method	To know how conclusion drawn from two premises jointly.	Students can understand rules of inference and Students know how we can draw the valid conclusion from two premises.

B.A -II	Syllabus Topic	Objectives	Topic outcome
SEM-IV Predicate Logic	Unit 1. Introduction to predicate logic Individual Variables and constants Singular and general propositions and symbolization	To know what is symbolic expression of variables and constants	Students can understand difference between singular and general propositions
	Unit 2. Propositional function Quantifiers- Universal and Existential Formal proof Rules of quantifier negation	To know what are the rules of quantifications	Students know the validity of arguments in general arguments i.e. syllogism
	Unit 3. Set theory Element of set Sub-set Universal set Null set Intersection set	To know what is the set theory and it's relation	Students can understand different sets in the external worlds
	Unit 4. Venn diagram	To know the meaning and importance and study of diagrams	Students can understand validity of arguments in diagrams

Dr. A. V. Nama Dept. of Logic

DEPARTMENT OF MARATHI

1	B.A Marathi	
Sr. No.	Name of the program	Course outcomes
	B. A. Marathi	1.To strengthen the awareness of Marathi
	FY Sem-I Optional	language and literature among students
	Maraini	2.To introduce Marathi literary types and trends
		to students
		3.To make them understand the concept, form
		and tradition of Marathi story
		4.To explain the students the story teller and the
		theme of the story
		5. To develop the oratorical skills among
		students
		6.To help students understand the concept, form
		and tradition of Marathi poetry
		7.To enable the students an awareness of the
		poets and their poetry
		8. To develop official letter writing skills among
		students
	DA EV Som I	1. To graate awareness and antitude regarding
	DAFI Sem-1	1. To create awareness and aptitude regarding
	Compulsory Marathi	Marathi language and literature among students
		2. To make the students aware of Marathi writers
		and their literary works
		3. To strengthen human values and national
		integrity among students
		4. To enable the students to face competitive
		examinations
		5. To develop information and technology skills of
		students
		6. To develop essay writing skills among students

BA SY Sem-III	1.	To introduce students to poetry
Marathi Paper III	2.	To make students aware of the development of
		Marathi poetry
	3.	To inform students about appreciation of poetry
	4.	To make students understand images and
		symbols
	5.	To develop the understanding of poetic style and
		form
 DA CV Com III	1	To make students sugar of stam as a literary true
BA SY Sem-III	1.	To make students aware of story as a interary type
Marathi Paper IV	2.	To introduce students to historical development
	2	of Marathi story
	3.	To inform students about contemporary Marathi
		story
	4.	To make students understand the form of
		summary writing
BA SY Sem-III		1. To highlight the importance of writer in
Marathi Paper IV		literature
		2. To make students aware of theme and
		experience in novel
		3. To create awareness regarding interpretation
		of realism in literary process
		4. To study the point of view of novelist
BA SY Sem-IV		1. To create awareness among students of social
Marathi Paper VI		development of the writers of biography and
		autobiography
		2. To make students know the form and features
		of biography and autobiography
		3. To study the motives and occasions in
		•

			biography and autobiography
		4.	To find out similarities and dissimilarities
			between biography and autobiography
	BA TY Sem-V	1.	To introduce students to literary theories
	Marathi Paper VII	2.	To make them aware of the form of literature
		3.	To enable an understanding of various
			occasions of literature
		4.	To introduce students to original causes of
			literature
		5.	To strengthen the literary aptitude
	BA TY Sem-VI	1	To introduce students to the powers of words
	Marathi Paper XII	2.	To make them aware of different literary
			types
		3.	To help them know the language thought in
			literature
		4.	To enable understanding of literary values
		5.	To develop literary thought and awareness
	BA TY Sem-V	1.	To introduce students to the form and
	Marathi Paper VIII		importance of language in human life
		2.	To develop scientific attitude towards
			language
		3.	To enable understanding of linguistic motives
		4.	To study language transformation
		5.	To illuminate Marathi grammar
	BA TY Sem-VI	1.	To discuss the correlation between linguistics
	Marathi Paper XIII		and language
	_	2.	To introduce students to descriptive
			linguistics
		3.	To illuminate the relation between Marathi
1		1	

	language and dialect
	4. To throw light on the impact of different
	languages on Marathi
	5. To understand the grammar of Marathi
	language
BA TY Sem-V	1. To introduce students to the Medieval
Marathi Paper IX	Marathi literature
	2. To enable understanding of the motives of
	literature during this period
	3. To study the form and features of the
	Medieval Marathi literature
	4. To create awareness about the cultural
	background during this period
	5. To bring out the relation between literary
	procedure and trends
	6. To discuss various types of literature and
	language during this period
PA TV Som VI	1 To inform students about the motives of the
DA 11 Sem- VI Marathi Danar VIV	1. To inform students about the motives of the Mediavel Merathi literature
Maraun Paper XIV	To introduce the healers and to the Medicush
	2. To introduce the background to the Medieval
	Marathi literature
	3. To study the form and features of the
	Medieval literature
	To correlate the literary trends and literature
	of this period
BA TY Sem-V	1. To introduce to students the applications of
Marathi Paper X	Marathi in different life situations
	2. To understand letter writing as a means of
	bringing two persons together

	3.	To help students understand the application
		of language in commercial field
	4.	To motivate students into acquiring language
		skills
	5.	To empower students to make creative use of
		language
 BA TV Sem-VI	1	To introduce to students the applications of
Marathi Paner XV	1.	Marathi in different life situations
	2	To enable personality development and
	۷.	acquisition of skills in expression
	2	To hale attudents understand the angligation
	5.	To help students understand the application
		of language in commercial field
	4.	To motivate students into acquiring language
		skills
	5.	To make students aware of writing skills
BA TY Sem-V	1.	To discuss the modern Marathi literary trends
Marathi Paper XI	2.	To explain the concept, motivation, from and
		features of Rural and Dalit literature
	3.	To study the origin and development of Rural
		and Dalit literature
	4.	To interpret the poems in terms of Rural
		poetry
	5.	To discuss the Dalit story in terms of theme,
		socialism, language and thought
 BA TY Sem-VI	1.	To study the background of modern Marathi
Marathi Paper XVI		literary trends
	2	To discuss the concept, motives and form of
	2.	feminine and Islamic literature
	3	To illuminate the origin and development of
	5.	To munimate the origin and development of

		feminine and Islamic literature
	4.	To study feminine novels in terms of theme,
		socialism, incidence, occasion, characters and
		language
	5.	To discuss Islamic autobiographies in terms
		of theme, life, conflict, socialism, thought and
		language

Mr. H. B. Mate Dept. of Marathi

DEPARTMENT OF N.S.S.

Sr. No.	Name of the program	Program outcomes
		PO1: Students understood basic concepts, information
		related to National Service Scheme .
1.	B.A. NSS	PO2: Students acquired basic knowledge, processes
		related with NSS.
		PO3: Students acquired skills in Social Work (Rally,
		Voter Awareness, Campus cleaning, tree plantation).
Sr. No.	Name of the program	Program specific outcomes
		PSO1: Students understood History, basics concept of
	B.A. – I- NSS	NSS specially related to social work. Students
		understood contribution of social reformers
		PSO2 :.Students understood contribution of social
		reformers.: Students identified NSS, regular activities.
		PSO1: Students sensitize about background knowledge
		of NSS, Social Science.
		PSO2: Students familiarized with social concept in
	B.A II -NSS	society.
2		PSO3: Students developed skills about personality
		development, leadership and social survey.
		PSO4: Student understood the working with individual
		,group and community.
		PSO5 : Students familiarized with rural community,
		functional structure of Panchayat Raj.
		PSO6 : Students sensitize about human right, NGO.
Sr. No.	Name of the program	Course outcomes
3	B.A I NSS Paper I	CO1: Students sensitized about history of social work in
	(NSS)	India.
		CO2: Students familiarized with contribution of social
		reformer.
		CO3: Students understood the National Service Scheme.
	B.A I NSS Paper II	CO4: Students understood the NSS regular Activities
	(NSS)	CO5 : To understand special camping pogramme.
		CO6: Students understood with impact of modernization
		on family and marriage system and social problem.
	B.A II NSS Paper	CO7: Student understood concept of personality

III (NSS)	development.
	CO8: Student understood concept of leadership
	CO9: Students developed skills about Social survey.
B.A II NSS Paper IV (NSS)	CO10: Students familiarized with working individual, group and community.
	planning
	CO12: Students understand the scheme for rural development.
B.A II NSS Paper V	CO13: Students identified and understand environment protection system.
	CO14: Students understood the rural life and rural community.
	CO15: Students understood the functional structure of
	Panchayat raj .
B.A II Geography	
Paper VI (Economic	CO16 Students and and a 1th a immediate of Community
and Demographic	COlo: Students understood the importance of Consumer
Geography of India)	CO 17 · Students understood the importance of Human
	Right and special group.
	CO 18 : Students understood the role of NGO in social
	development.

Head of the Department

DEPARTMENT OF POLITICAL SCIENCE

Sr.No.	Name of the program	Program outcomes
PO-1	B.A. Political Science	Understanding Political Theory concepts and Public Administration It also focuses on to understand local and state level politics and the essentials skills of political analysis required to participate actively in political debates.
PO-2	Critical thinking	the ability to analyse and Predict socio political phenomena based on the study of existing socio economic determinants and part of experiences and Vesit to Local Self Government
PO-3	Effective Citizenship	The course Curriculum inculcates among students a basic understanding of the rights and duties of Citizenship and thereby to act as responsible citizens through the observation of important days such as Independence Day, Republic Day and Constituion Day and Develop the Ambition of student to create Ideal Leadership
PO-4	Communication	Establishment of linkeges between academics and Civil society at large so as to successful address social Political Problem. Debates, Seminars and Discussions are organised
Sr.No.	Name of the program	Program specific outcomes
PSO-1	B.A. Political Science	Students of BA Political Science will be aware and understand the politics in all governments comparatively and to know the principles of good governance.
Sr.No.	Name of the program	Course outcomes
CO-1.	Constitutional Government and Democracy in India	1. The course acquaints Students with the constitutional design of state Structures and Institutions and their actual working overtime.
	Introduction to	2. The course aims to introduce certain key aspects of

CO-2.	Political Theory	conceptual analysis in political theory
CO-3.	Modern Indian	3. This is an introductory paper to the concepts, ideas
	Political Thought	and theoriesthat developed in India. It highlights the
GO 4	Public Administration	main sources of the modern political tradition.
CO-4.	IDS	4. The paper is an introductory course in Public
		Administration.
	Government &	
CO-5.	Politics of	5. The course aims to introduce the structure and
	Maharashtra	policy of Maharashtra Government, Panchyat Raj
	Political Sociology	Sansthas and Local Self Government.
CO-6	Introduction to International Politics	6. The course aims to introduce certain key aspects of conceptual analysis in modern political theory and the skills required to engage in debates surrounding the application of the modern concepts.
CO-7	Comparative Government & Politics	7. This Course is designed to give students a sense of some important theoretical approaches to understand international relations;
CO-8	Western Political Thought	8. The course aims to introduce the structures and politics of UnitedKingdom, USA and Switzerland.
CO-9		9. This paper aims to introduce the concepts, ideas and theories that developed inWestern country.

Dr. S. N. Salawde Dept. of Political Science
DEPARTMENT OF PRAKRIT

Sr.No.	Name of the program	Program outcomes
1.	BA1, BA2, Ph.D.	 The students are enabled into acquiring and further strengthening different language skills- writing and speaking. They are initiated into the aspects of literary types like- poetry, drama and fiction along with criticism.
		3. The students acquire the understanding of the minor
		literary types like- essays, articles, one act plays etc
		4. Helpful to strengthen moral values among students.
Sr.No.	Name of the program	Program specific outcomes
1.	Literature	 The students are made aware of the representative Prakrit writes. They are acquainted with the writers from different literary periods of India.
2.	Language	 The students acquire insights into various aspects of language- Grammar and Phonology. They are enabled into interpreting various aspects of language.
Sr. No.	Name of the program	Course outcomes
1.	Ardhamagadhi	1. The students study various writers from
	Literature	Ardhamagadhi.2. They acquire a comparative understanding of the writers belonging to different literary periods.
2.	Maharshtri Prakrit	 The students are made aware of the representative Indian writers in Maharshtri Prakrit. They are taught the ways of appreciating the Indian writers in terms of their sensibilities, insights and diction.
3.	Apabransha	1. The students of Prakrit are made aware of various
	Literature	writers whose works have been brought into Marathi language.2. This helps the students have a comparative approach
1		

Structure and	1. The students are first of all initiated into Morphology
Function of Prakrit	and Phonology.
	2. Afterwards they are enabled into acquiring an
	understanding of various levels of Syntax like Phrases,
	Clauses and Sentences.
	3. They are also made conscious of the aspects of
	Discourse Analysis.

Dr. M. P. Shastri Dept. of Prakrit

DEPARTMENT OF BOTANY

	One e.g. of POs, PSOs, and COs is given below	
Programme	POs of General Higher Education Programmes should be identified by the	
Outcomes	University/Autonomous College offering the three year Programmes	
	Sample POs of General Higher Education Programmes: Students of all	
	undergraduate general degree Programmes at the time of graduation will be able to	
	PO1. Critical Thinking: Take informed actions after identifying the assumptions that	
	frame our thinking and actions, checking out the degree to which these	
	assumptions are accurate and valid, and looking at our ideas and decisions	
	(intellectual, organizational, and personal) from different perspectives.	
	PO2.Effective Communication: Speak, read, write and listen clearly in person and	
	through electronic media in English and in one Indian language, and make	
	meaning of the world by connecting people, ideas, books, media and	
	technology.	
	PO3. Social Interaction: Elicit views of others, mediate disagreements and help reach	
	conclusions in group settings.	
	PO4.Effective Citizenship: Demonstrate empathetic social concern and equity	
	centred national development, and the ability to act with an informed	
	awareness of issues and participate in civic life through volunteering.	
	PO5.Ethics: Recognize different value systems including your own, understand the	
	moral dimensions of your decisions, and accept responsibility for them.	
	PO6.Environment and Sustainability: Understand the issues of environmental	
	contexts and sustainable development.	
	PO7.Self-directed and Life-long Learning: Acquire the ability to engage in	
	independent and life-long learning in the broadest context socio-technological	
	changes	
Programme	Sample PSOs of B Sc Botany	
Specific	PSO1. The student can understand the basic concept of microbiology, the viruses,	
Outcomes	diversity of bacteria and about the Mycoplasma	
	PSO2. The student can understand importance of algae and they can understand in	
	detail about the division Cyanophyta along with its one detailed example of	
	<i>Nostoc</i> and the division chlorophyta along with its one detailed example of	
	Spirogyra DSO2 The student conjunderstand shout the general introduction of two functions	
	PSO5. The student can understand about the general introduction of true rungi and they can understand about division of Zugamyasting and Assemyasting	
	PSO4 The student get an detailed idea about Arehagonista	
	PSO4. The student can understand about the life cycle and aconomic importance of	
	the Bryophytes: <i>Riccia</i> Pteridophytes: <i>Selaginella</i> and Gymposperms:	
	Cycas	
	PSO6 The student can understand about the Climatic and Edaphic factors of	
	Environment to analyze the relationships among animals plants and	
	microhes	
	PSO7 The student can understand about the Ecological adaptations in plants Plant	
	communities, concepts of ecology and Ecological succession	
	PSO8. The student can understand about importance of taxonomy, classification	

	systems in taxonomy, methods of classification and rules of nomenclature,	
	botanical gardens in India and can understand detailed identifying characters	
	of family	
	PSO9. Perform procedures as per laboratory standards in the areas of Biochemistry.	
	Bioinformatics, Taxonomy, Economic Zoology and Ecology	
	PSO10 Understand the applications of biological sciences in Apiculture	
	Aquaculture Agriculture and Medicine	
	PSO11 The student can understand the basic concept of anical meristem	
	PSO12. The student can understand in detail about the tissue system in plants	
	PSO12. The student can understand importance of the Tissue systems and their	
	functions. Secondary body of the plant	
	DSO14 The student can understand about the process of photosymthesis. Eacht	
	PSO14. The student can understand about the process of photosynthesis, light	
	PCO15. The student con understand chout the introduction, terminals size in constitution.	
	PSO15. The student can understand about the introduction, terminologies in genetics,	
	Medelism and principles of inneritance, classical genetics, allelism	
	PSO16. The student can understand the knowledge about the Economic Botany (like	
	legumes, plant fibers, vegetable oil sources, drug, perfumes and cosmetics	
~	yielding plants and ornamental Plants	
Course	Sample COs of the course "Botany"	
Outcomes	CO1 To get the knowledge about the Introduction of Microbiology and with the	
	characters, structure and economic importance of viruses. Knowledge about	
	the forms, size and diversity of bacteria and about the Mycoplasma	
	CO2 To get the knowledge knowledge about what is Phycology and the characters,	
	classification and economic importance of algae in respect of general	
	Characters, occurrence, classification, Thallus organization & reproduction of	
	division Cyanophyta along with the example <i>Nostoc</i> and division chlorophyta	
	along with the example Spirogyra	
	CO3 To know about characters, mode of nutrition & classification of the True	
	fungi and to get the knowledge about the fungal division Zygomycotina and	
	Ascomycotina	
	CO4 Write down the classification and general characters of Archegoniate	
	CO5 What are Bryophytes, Pteridophytes and Gymnosperms explain with suitable	
	example	
	CO6 To get the knowledge knowledge about ecology, ecological adaptations,	
	climatic and edaphic factors, primary and secondary succession	
	CO7 To get the knowledge about the Forms & structure of community along with	
	Qualitative and quantitative characters of community, Ecological pyramids	
	with Food chain and food webs, ecological succession	
	CO8 Discuss in details about the introduction to Angiosperms taxonomy	
	CO9 Note on different classification systems and its merit & demerits.	
	Identification methods, Nomenclature, Principles and Rules of ICBN	
	CO10 Explain in details about the technique of herbarium preparation and	
	significance and to provide the morphological & reproductive characters of	
	some important plant families	
	CO11 What are the legumes give its examples their source, botanical nomenclature	
	and economic importance	

CO12 What are the plant fibers give its examples their source, botanical
nomenclature and economic importance.
CO13 What are the drug yielding plants give its examples their source, botanical
nomenclature and economic importance.
CO14 What is rubber give its examples their source, botanical nomenclature and
economic importance
CO15 Discuss about the ornamental plants and their value

Dr. S.P. Gaikwad Department of Botany

DEPARTMENT OF CHEMISTRY

Department of	After successful completion of three year degree programme a student should
Chemistry	be able to
Programme	PO 1:- Provide a broad foundation in chemistry that emphasizes scientific
outcomes	reasoning and analytical problem solving with a molecular perspective.
	PO 2:- Create awareness of impact of chemistry on the social development &
	environmental chemistry.
	PO 3:- Solve the reaction mechanism and assign the final product.
	PO 4:- Achieve the skills required to succeed in the T-L process of schools, the
	chemical industries and professional's schools.
	PO 5:- Demonstrate, solve and develop an understanding of concepts of chemistry.
	PO 6:- Get exposure of a breadth of experimental techniques using modern
	instrumentation and chemistry software.
	PO 7:- Understand the importance of Periodic table of the elements and its role in
	organizing chemical information.
	PO 8:- Understand the interdisciplinary nature of the chemistry and to integrate the
	knowledge of Physics, Mathematics and other disciplines to a wide variety of
	Chemical problems.
	ro 9 Learn the laboratory skins needed to design safety and interpret chemical
	PO 10:- Enable to understand and critically interpret the primary chemical
	literature
	PO 11:- Learn professionalism including the ability to work in teams and apply
	hasic ethical principles
	Caste content house

Programme	PSO 1:- To acquire the knowledge of various discipline of chemistry through
Specific	theory, practical's and industrial visits.
Outcomes	PSO 2:- To explain formation, structure, bonding and reactivity of the basic
	chemical compounds.
	PSO 3:- To explain the nomenclature, stereochemistry of compounds and
	mechanism of chemical reactions.
	PSO 4:- To identify basic chemicals and their applications in agriculture, food
	science, medicinal science, material science, defense, biochemical science,
	electronics, communication and transportation.
	PSO 5:- To solve numerical problems related to chemical science.
	PSO 6:- To handle both basic and modern equipments for chemical analysis of
	samples and acquire analytical skills and develop research attitude.
	PSO 7:- To understand good manufacturing practices and safety strategies.

COURSE OUTCOMES

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	reaction.
	CO-5: To prepare standard solutions of compounds and their use in determination of
	unknown strength of given samples.
	CO-6: To detect the basic radicals by spot tests.
	CO-7: To study the technique of paper chromatography for separation and identification
	CO-8: To estimate the amount of aniline, acetamide and aspirin in the given samples.
	CO-9: To prepare the organic compounds and determine their physical constant.
Sem III	CO-10: To study quantative analysis of organic compounds. CO-1:- To understand the principles of spectrophotometric analysis and properties of
	electromagnetic radiations.
Paper V	CO-2:- To study the nomenclature of optical, geometrical ad conformational isomers with
Organic	CO 3:- To study dihydric, trihydric alcohols, phenols and their chemical reactions and
Chemistry	uses.
	CO 4:- To discuss the name reactions of aldehydes and ketones with their mechanisms.
	salts with their synthetic applications.
	CO-6:- To study preparation and properties of ethers and epoxides.
	CO 7:- To develop problem solving attitudes related to chemical reactions.
Paner-VI	CO-1: The study the types of compounds as simple, double and complex salts.
1 apc1- 11	CO-2: To study nature, structure, physical & chemical properties of compounds.
Inorganic	CO-3: To detect the metal ions by chelating agents.
Chemistry	CO-5: To study different theories behind acids and bases.
	CO-6: To Study properties of d-block elements.
Sem III	CO-1: To study process of electrolysis, terms like specific, equivalent & molecular
Paper VII	conductance, Transport no. factors affecting transport no., kohlrausch law, its application
Physical	to determine equivalent conductance at infinite dilution, Ionic product of water, degree of
Chemistry	dissociation and solubility of sparingly soluble salt.
	CO-2: To understand different crystal systems, x-rays to detect crystal structure, unit cell, space lattices. Bragg's spectrophotometer to detect & interpret the crystal structure
	CO-3: To study and understand thermodynamic property, entropy, its derivation with
	various definitions, concepts of entropy of mixing of gases, physical transformations,
	ideal gases with equations.
	CO-4: To study partition coefficient, distribution law and its applications.
Paper-VIII	CO-1: To study qualitative as well as quantitative analysis of chemical compounds.
Inorganic	CO-2: To study the theory and concepts of gravimetric analysis and its applications in

Chemistry	ores, minerals.
	CO-3: To study the industrial processes for manufacture of different inorganic heavy
	chemicals.
B Sc-II	CO-4: To study basic principles involved in manufacture of iron and its alloys with their
D .5C-II Practicals	applications.
Tucticuls	
	CO-1: To study chemical kinetics of various types of reactions.
	CO-2: To study sample analysis by Conductometry.
	CO-3: Study of calculations of specific and molar refraction of -CH ₂ group using
	CO_{-4} . To use polarometer to determine specific rotation of sugar solution
	CO-5: To prepare and study properties of various types of complex
	CO-6: To study semi micro analysis of binary mixtures.
	CO-7: To study the gravimetric estimation of Iron and Barium.
	CO-8: To study and estimate the unknown amounts in Fertilizer, soda-ash, water sample
	and vinegar volumetrically.
	CO-9: To study organic spotting of compounds.
	CO-10: To prepare and determine physical constants of organic compounds.
Sem V	Co-1: To study theory and concepts of phase rule and its applications to one component
Sem V Paner-IX	Co-1: To study theory and concepts of phase rule and its applications to one component and two component systems with the help of phase diagram.
Sem V Paper-IX	Co-1: To study theory and concepts of phase rule and its applications to one component and two component systems with the help of phase diagram. Co-2: To understand thermodynamics of electrode potential in an electrochemical cell,
Sem V Paper-IX (Physical	Co-1: To study theory and concepts of phase rule and its applications to one component and two component systems with the help of phase diagram. Co-2: To understand thermodynamics of electrode potential in an electrochemical cell, Nernst equation, types of electrodes, derivations for chemical cell, electrode & electrolyte concentration, cell, with various, exemples. Applications of EME measurement in
Sem V Paper-IX (Physical Chemistry)	Co-1: To study theory and concepts of phase rule and its applications to one component and two component systems with the help of phase diagram. Co-2: To understand thermodynamics of electrode potential in an electrochemical cell, Nernst equation, types of electrodes, derivations for chemical cell, electrode & electrolyte concentration cell with various examples. Applications of E.M.F. measurement in determination of pH & solubility.
Sem V Paper-IX (Physical Chemistry)	 Co-1: To study theory and concepts of phase rule and its applications to one component and two component systems with the help of phase diagram. Co-2: To understand thermodynamics of electrode potential in an electrochemical cell, Nernst equation, types of electrodes, derivations for chemical cell, electrode & electrolyte concentration cell with various examples. Applications of E.M.F. measurement in determination of pH & solubility. Co-3: To study laws of photochemistry concept of quantum yield photochemical
Sem V Paper-IX (Physical Chemistry)	 Co-1: To study theory and concepts of phase rule and its applications to one component and two component systems with the help of phase diagram. Co-2: To understand thermodynamics of electrode potential in an electrochemical cell, Nernst equation, types of electrodes, derivations for chemical cell, electrode & electrolyte concentration cell with various examples. Applications of E.M.F. measurement in determination of pH & solubility. Co-3: To study laws of photochemistry, concept of quantum yield, photochemical reactions such as decomposition, photosensitized reactions, and photodimerization.
Sem V Paper-IX (Physical Chemistry)	 Co-1: To study theory and concepts of phase rule and its applications to one component and two component systems with the help of phase diagram. Co-2: To understand thermodynamics of electrode potential in an electrochemical cell, Nernst equation, types of electrodes, derivations for chemical cell, electrode & electrolyte concentration cell with various examples. Applications of E.M.F. measurement in determination of pH & solubility. Co-3: To study laws of photochemistry, concept of quantum yield, photochemical reactions such as decomposition, photosensitized reactions, and photodimerization. Explanations of phenomenon like fluorescence & phosphorescence with Jablonski
Sem V Paper-IX (Physical Chemistry)	 Co-1: To study theory and concepts of phase rule and its applications to one component and two component systems with the help of phase diagram. Co-2: To understand thermodynamics of electrode potential in an electrochemical cell, Nernst equation, types of electrodes, derivations for chemical cell, electrode & electrolyte concentration cell with various examples. Applications of E.M.F. measurement in determination of pH & solubility. Co-3: To study laws of photochemistry, concept of quantum yield, photochemical reactions such as decomposition, photosensitized reactions, and photodimerization. Explanations of phenomenon like fluorescence & phosphorescence with Jablonski diagram. Chemiluminessence phenomenon.
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Sem V Paper-IX (Physical Chemistry)	 Co-1: To study theory and concepts of phase rule and its applications to one component and two component systems with the help of phase diagram. Co-2: To understand thermodynamics of electrode potential in an electrochemical cell, Nernst equation, types of electrodes, derivations for chemical cell, electrode & electrolyte concentration cell with various examples. Applications of E.M.F. measurement in determination of pH & solubility. Co-3: To study laws of photochemistry, concept of quantum yield, photochemical reactions such as decomposition, photosensitized reactions, and photodimerization. Explanations of phenomenon like fluorescence & phosphorescence with Jablonski diagram. Chemiluminessence phenomenon.
Sem V Paper-IX (Physical Chemistry) Paper-X	 Co-1: To study theory and concepts of phase rule and its applications to one component and two component systems with the help of phase diagram. Co-2: To understand thermodynamics of electrode potential in an electrochemical cell, Nernst equation, types of electrodes, derivations for chemical cell, electrode & electrolyte concentration cell with various examples. Applications of E.M.F. measurement in determination of pH & solubility. Co-3: To study laws of photochemistry, concept of quantum yield, photochemical reactions such as decomposition, photosensitized reactions, and photodimerization. Explanations of phenomenon like fluorescence & phosphorescence with Jablonski diagram. Chemiluminessence phenomenon. Co-1: To study and understand the nature of metal ligand bonding in transition metal complexes (by CFT and MOT).
Sem V Paper-IX (Physical Chemistry) Paper-X	 Co-1: To study theory and concepts of phase rule and its applications to one component and two component systems with the help of phase diagram. Co-2: To understand thermodynamics of electrode potential in an electrochemical cell, Nernst equation, types of electrodes, derivations for chemical cell, electrode & electrolyte concentration cell with various examples. Applications of E.M.F. measurement in determination of pH & solubility. Co-3: To study laws of photochemistry, concept of quantum yield, photochemical reactions such as decomposition, photosensitized reactions, and photodimerization. Explanations of phenomenon like fluorescence & phosphorescence with Jablonski diagram. Chemiluminessence phenomenon. Co-1: To study and understand the nature of metal ligand bonding in transition metal complexes (by CFT and MOT). Co-2: To understand the types of nuclear reaction, use of radioactive elements in atomic anary along with some applications of some isotones as tracers.
Sem V Paper-IX (Physical Chemistry) Paper-X (Inorganic Chemistry)	 Co-1: To study theory and concepts of phase rule and its applications to one component and two component systems with the help of phase diagram. Co-2: To understand thermodynamics of electrode potential in an electrochemical cell, Nernst equation, types of electrodes, derivations for chemical cell, electrode & electrolyte concentration cell with various examples. Applications of E.M.F. measurement in determination of pH & solubility. Co-3: To study laws of photochemistry, concept of quantum yield, photochemical reactions such as decomposition, photosensitized reactions, and photodimerization. Explanations of phenomenon like fluorescence & phosphorescence with Jablonski diagram. Chemiluminessence phenomenon. Co-1: To study and understand the nature of metal ligand bonding in transition metal complexes (by CFT and MOT). Co-2: To understand the types of nuclear reaction, use of radioactive elements in atomic energy along with some applications of some isotopes as tracers. Co-3: To study hojporganic chemistry role of some metal ions in biological processes
Sem V Paper-IX (Physical Chemistry) Paper-X (Inorganic Chemistry)	 Co-1: To study theory and concepts of phase rule and its applications to one component and two component systems with the help of phase diagram. Co-2: To understand thermodynamics of electrode potential in an electrochemical cell, Nernst equation, types of electrodes, derivations for chemical cell, electrode & electrolyte concentration cell with various examples. Applications of E.M.F. measurement in determination of pH & solubility. Co-3: To study laws of photochemistry, concept of quantum yield, photochemical reactions such as decomposition, photosensitized reactions, and photodimerization. Explanations of phenomenon like fluorescence & phosphorescence with Jablonski diagram. Chemiluminessence phenomenon. Co-1: To study and understand the nature of metal ligand bonding in transition metal complexes (by CFT and MOT). Co-2: To understand the types of nuclear reaction, use of radioactive elements in atomic energy along with some applications of some isotopes as tracers. Co-3: To study bioinorganic chemistry, role of some metal ions in biological processes.
Sem V Paper-IX (Physical Chemistry) Paper-X (Inorganic Chemistry)	 Co-1: To study theory and concepts of phase rule and its applications to one component and two component systems with the help of phase diagram. Co-2: To understand thermodynamics of electrode potential in an electrochemical cell, Nernst equation, types of electrodes, derivations for chemical cell, electrode & electrolyte concentration cell with various examples. Applications of E.M.F. measurement in determination of pH & solubility. Co-3: To study laws of photochemistry, concept of quantum yield, photochemical reactions such as decomposition, photosensitized reactions, and photodimerization. Explanations of phenomenon like fluorescence & phosphorescence with Jablonski diagram. Chemiluminessence phenomenon. Co-1: To study and understand the nature of metal ligand bonding in transition metal complexes (by CFT and MOT). Co-2: To understand the types of nuclear reaction, use of radioactive elements in atomic energy along with some applications of some isotopes as tracers. Co-3: To study bioinorganic chemistry, role of some metal ions in biological processes. Co-4: To study phenomenon of catalysis and its applications.
Sem V Paper-IX (Physical Chemistry) Paper-X (Inorganic Chemistry)	 Co-1: To study theory and concepts of phase rule and its applications to one component and two component systems with the help of phase diagram. Co-2: To understand thermodynamics of electrode potential in an electrochemical cell, Nernst equation, types of electrodes, derivations for chemical cell, electrode & electrolyte concentration cell with various examples. Applications of E.M.F. measurement in determination of pH & solubility. Co-3: To study laws of photochemistry, concept of quantum yield, photochemical reactions such as decomposition, photosensitized reactions, and photodimerization. Explanations of phenomenon like fluorescence & phosphorescence with Jablonski diagram. Chemiluminessence phenomenon. Co-1: To study and understand the nature of metal ligand bonding in transition metal complexes (by CFT and MOT). Co-2: To understand the types of nuclear reaction, use of radioactive elements in atomic energy along with some applications of some isotopes as tracers. Co-3: To study phenomenon of catalysis and its applications. Co-5: To understand the importance of organic fertilizers rather than inorganic fertilizers for healthy growth of plants.

Paper XI	CO-1:- To study the and understand spectrophotometric methods of analysis (IR, NMR,
_	Mass) and their applications in structural deductions of organic compounds.
(Organic	CO-2:- To study and explain conformational isomerism in cycloalkanes and its
Chemistry)	derivatives.
	CO-3:- To understand mechanisms of certain name reactions with their synthetic
	applications.
	CO 4:- To study the preparation and synthetic applications of EAA and Malonic ester.
	CO-5:- To develop problem solving attitude and inculcate research oriented
	skills.
	CO-6:- To Discuss a solve problems based on UV. IR. NMR spectroscopy and Mass
	spectrometry
	spectrometry.
	CO 1:- To understand the fundamentals of colorimetry and its applications in qualitative
Paper-XII	and quantitative analysis.
(Analytical	CO 2:- To understand basic concepts of Conductometry and its applications in qualitative
and	and quantitative analysis
Industrial	CO_3 :- To study fundamentals of the potentiometry and develop the analytical skills
_Physical	required for sample analysis and its applications in qualitative and quantitative analysis
-I hysical Chomistry)	CO 4:- To understand the basic concepts of flame photometry and its applications in
Chemistry)	qualitative and quantitative analysis
	CO 5:- To study the basic concepts of electroplating and its applications in qualitative and
	quantitative analysis.
	CO-6: To develop the skills required for chemical analysis using these instrumental
	techniques.
	CO 1: To study the basics behind spectroscopy fundamental equation rotational spectra
	for diatomic molecule, vibrational spectra their selection rules & applications of these
Sem VI	spectra.
Paper-XIII	CO-2: To study thermodynamic property free energy, conditions for spontaneity of reaction derivations to explain change of phase Gibbs-Helmholtz equation Clapevron
(Physical	Clausius equation, concept of vant Hoff equilibrium box, using this box how to prove law
Chemistry)	CO-3: To study and apply Raoult's law to ideal and nonideal solutions, distillation
	behavior of completely miscible solutions, studying mutual solubility of partially miscible
	solutions.
	CO-4: To understand temperature coefficient, concept of energy of activation, with
	various theories, Third order reaction, derivation, characteristics and examples.
	Co-1: To study the sub-transition elements of periodic table with emphasis on their
	properties and preparation of transuranic elements.
Paper XIV	Co-2: To study the metals, semiconductors, superconductors with their properties and
*	applications.

(Inorganic	Co-3: To study structural chemistry mainly related to diborane, borazine and some xenon
Chemistry)	compounds.
_	Co-4: To study theory and concepts of corrosion, and destruction of metals, passivity of
	metals by different electro processes.
	Co-5: To study the applications of organometallic compounds in industrial and synthetic
	organic chemistry.
	CO-1:- To study the synthesis, properties and importance of Heterocyclic compounds
	CO-2:- To study classification, structural determination and properties of Carbohydrates-
Sem VI	Glucose, Sucrose, Maltose, Starch and Cellulose.
Paper-XV	CO-3:- To study classification of vitamins, hormones and structural determination of Vit
-	A, Adrenance and Thyroxin by analytical and synthetical evidences. CO_{-4} :- To study classification and synthesis of dyes, various modes of application of
Organic	dves
Chemistry	CO-5 :- To have the knowledge of various pesticides, insecticides with their synthesis and
	uses.
	CO- 6 :- To study the classification of drugs, qualities of Ideal drugs and synthesis of
	drugs with their uses in curing of diseases.
Paper XVI	CO 1:- To know the importance of chemical analysis in industries.
_	CO 2:- To study manufacture, properties and applications of high polymers, soaps and
(Analytical	detergents.
and	CO 3:- To study steps involved in the manufacture of sugar and ethanol, potential of sugar industry and process of formantation of malassas
Industrial	CO4- To know different analytical techniques of Chromatography
Organic	CO 5:- To understand twelve principles of green chemistry and use of green techniques in
Chemistry)	synthesis of compounds.
	Co-1: To study and perform non instrumental experiments from chemical kinetics 1) To
	determine energy of activation for 1 st order and 2 nd order reactions. 2) To study effect of
	ionic strength, 3) effect of variation of concentration.
	Co-2: To determine partial molar volume using phenol-water system.
Som - VI	co-3: To study and perform instrumental experiments in conductometry to measure 1)
	Co-4: To study and perform Instrumental experiments in Potentiometry 1) to measure pH
Practicals	2) end points of a acid-base and redox titration. To determine standard electrode potential
	and solubility of sparingly soluble salt.
	Co-5: To study to use colorimeter 1) to verify Beer's-Lambet law & 2) to determine
	concentration of unknown solution.
	Co-6: To study to use pH-meter to determine the degree of dissociation of weak acid.
	CU / :- 10 study separation and purification of organic binary mixture and identification
	CO 8:- To study preparation, purification and determination of physical constant of
	organic compound (Calculations of theoretical and practical vields).

CO 9:- To study preparation of various types of derivatives of organic compounds and
their Identification.
CO 10:- To analyise volumetrically samples are containing organic compounds (Sugar
Analysis, Nitro group Analysis, Saponification, Acid-Ester/ Acid-Amide mixture
analysis).
CO 11- To understand accuracy, precision in chemistry practical and develop analytical
skills as required in industries.
CO-12: To study gravimetric analysis of samples
CO-13: To prepare and study percentage purity of different coordination complexes
CO-14: To separate and identify the components of a mixture by using ion exchange
chromatographic techniques.
CO-15: To determine acidity, turbidity, hardness of samples by volumetric estimations.

Dr. S..N. Battin Department of Chemistry

DEPARTMENT OF INORGANIC CHEMISTRY

Department of	After successful completion of two year degree program a student should
Chemistry	be able to-
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Program	PO 1:- Understand the major concepts in various disciplines of
outcomes	Chemistry.
outcomes	PO 2:- Inculcate scientific temperament amongst students and outside
	scientific community.
	PO 3:- Take informed actions, develop critical thinking and execute them
	for chemical analysis by various techniques.
	PO 4:- Achieve the skills required to succeed in the T-L process of
	schools, the chemical industries and research work.
	PO 5:- Demonstrate, solve and develop an understanding of concepts in
	chemistry.
	PO 6:- Get exposure of a breadth of experimental techniques using
	modern instrumentation and chemistry software.
	PO 7:- Understand the importance of Periodic table of the elements and
	its role in organizing chemical information.
	PO 8:- Understand the interdisciplinary nature of the chemistry and to
	integrate the knowledge of Physics, Mathematics and other disciplines to
	a wide variety of chemical problems.
	PO 9:- Learn the laboratory skills needed to design, safety and interpret
	chemical science.
	PO 10:- Enable to understand and critically interpret the primary
	chemical literature.
	PO 11:- Learn professionalism including the ability to work in teams and
	apply basic ethical principles.

Program Specific	PSO 1 :- To develop knowledge, understanding and expertise in the
Outcomes	field of chemical science.
	PSO 2 :- To understand theoretical principles, laws of subject and use
	them for chemical analysis both by instrumental and non instrumental
	methods of chemical analysis.
	PSO 3 :- To know chemical formulae, chemical reactions,
	mechanisms of reactions.
	PSO 4 :- To understand eco friendly chemical processes and study
	impact of chemistry on health and environment
	PSO 5:- To identify basic chemicals and their applications in
	agriculture, food science, medicinal science, material science, defense,
	biochemical science, electronics, communication and transportation.
	PSO 6:- To develop ability of solving numerical problems related to
	chemical science.
	PSO 7:- To identify and provide opportunities to excel in academic,
	industries and research work.

COURSE OUTCOMES

M Sc I st year	CO 1 :- To understand the concepts of matter waves and study of
Som I	interaction between metter and wewee along with verious kind of
Denor I	expressions ad derivations
Taper I (Inorgania	CO 2. To know the theory of transition elements and study of physical
(Inorganic	CO 2 - To know the theory of transition elements and study of physical
Chemistry–1)	properties, chemical properties, different parameters and properties of
	these elements in compound form.
	CO 3 :- To understand the patterns of orientation of orbital as well as its
	mechanism toward formation of bond in different types of compounds.
	CO 4 :- To understand the concepts of formation of metallic, non
	metallic, conducting, semiconducting, and insulating substances and its
	related properties.
	CO 5:- To study the chemistry of radioactive materials, its reaction,
	properties and application.
Sem I	CO 1 :- To understand various types of chemical reactions, its
Paper II	intermediates, mechanism, stability, stereochemistry and its application.
(Organic	CO 2 :- To study the concept of substitution name reaction, its different
(Organic Chamistury)	types, stereochemistry and theory involving it.
Chemistry)	CO 3 :- To understand the reaction of unsaturated compounds, name
	reaction based on it, and its applications.
	CO 4 :- To study the different types of elimination reaction
	rearrangement reaction, its mechanism, stereochemistry and
	applications.
	CO 5 :- To study the structure of molecule in three dimension and its
	various classification and types.
Sem I	CO 1 :- To understand the principles and laws of thermodynamic
Paner III	reaction, its solution and its applications.
(Physical	CO 2 :- To study the speed as rate of progress of reactions including
	classification, methodology and applications.
Cnemistry)	CO 3 :- To solve numerical problems of thermodynamic reaction.
	CO 4 :- To study the colloidal solution and macromolecules including
	polymers, its type, mechanism, reaction kinetics and derivation of rate
	of reaction
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	CO 1 :- To study the concept of error, its origin, classification,
SemI	measurement, mathematical derivation, and its minimization.
Paper IV	CO 2 :- To study and explain conformational isomerism in cycloalkanes
(Analytical	and its derivatives.
Chemistry)	CO 3 :- To understand mechanisms of certain name reactions with their
	synthetic applications.
	CO 4 :- To study the preparation and synthetic applications of EAA and
	Malonic ester.
	CO 5 :- To develop problem solving attitude and inculcate research
	oriented skills.

	CO 6 :- To Discuss ad solve problems based on UV, IR, NMR spectroscopy and Mass spectrometry.
Sem I Practical I (Inorganic Chemistry + Analytical Chemistry)	 CO 1:- To study the synthesis and determination of purity of inorganic complex salt. CO 2:- To estimate the percentage of different elements in particular ore sample, by thermo gravimetrically and titrametrically. CO 3:- To determine the amount of medicinal compound in given drug sample titrametrically. CO 4:- to estimate the hardness, alkalinity ad salinity of water titrametrically. CO 5 :- to study the Conductometry and potentiometric titration. CO 6:- To develop the research skills and understand the good

Sem I	CO 1 :- To study the qualitative analysis, separation and determination of
Practical II	chemical compounds by mixture separation.
(Organic	CO 2 :- To study the instrumental and non instrumental analysis.
Chemistry +	CO 3 :- To determine the amount of medicinal compound in given drug
	sample titrametrically.
Physical	CO 4 :- To study the kinetics of the hydrolysis of reaction
Chemistry)	CO 5 :- To gain the knowledge of adsorption of acid on activated
	charcoal.
Sem II	CO 1 :- To study the various aspects like synthesis and properties of non
Paper V	transition elements
(Inorganic	CO 2 :- To study the uses of organometallic compounds as catalyst in
Chemistry)	synthesis of various commercial based chemicals.
	CO 3 :- To gain the knowledge of lanthanide and actinide series along
	with its, properties, characterization and behavior.
	CO 4 :- To study the occurrence, extraction, properties and applications of
	copper, silver, gold, zinc, tin and lead.
	CO 5 :- To gain the knowledge of role of biological ions in different
	processes.

	CO 1:- To understand the concept of different name reactions, their
	machanisms and their synthetic applications
Paner VI	CO(2). To study action of machanism of different reagants in chamical
	reactions
(Organic	CO_3 :- To understand the mechanism and working of oxidation and
Chemistry)	reduction reactions and to study their name reactions
0	CO 4:- To study the different types of organometallic compounds and
	their applications
	CO 5:- To gain the knowledge of different methodologies in organic
	synthesis, study of hydroboranes, enamines, protection and deprotection.
	CO 1:- To study the different aspects of photochemistry and its different
	concents
Paner VII	CO_2 : To gain the knowledge of concents in electrochemistry and their
ruper vii	applications
(Physical	CO 2: To understand the working and mechanism of compounds in his
(,	co 3 To understand the working and mechanism of compounds in bio-
Chemistry)	physical chemistry. CO(4). To study the kinetics of different order of reactions and
	determination of monthly constants and solve related numerical machines
	determination of reaction constants and solve related numerical problems.
	CO 1:- To study the concepts of Ultraviolet Spectroscopy and solve
	related problems.
Paper VIII	CO 2:- To study instrumentation, principle of working, factors affecting
	the absorption in Infrared Spectroscopy technique.
(Analytical	CO 3:- To understand the basic principles and working of Nuclear
Chemistry)	Magnetic Resonance (NMR) spectroscopy.
	CO 4:- To gain the knowledge of principle, instrumentation, working of
	Mass Spectrometry and its applications.
	CO 5:- To study the principles, instrumentations and workings of Atomic
	Absorption Spectroscopy and Inductively Coupled Plasma Spectroscopy.
	CO 6:- To develop the ability of solving numerical problems based on IR,
	NMR, UV spectroscopy and Mass Spectrometry.
Practical I	
(Inorganic	CO 1:- To study the synthesis and determination of purity of inorganic
Chemistry +	complex salt.
Analytical	CO 2:- To estimate the amount of Sn and Pb from given sample of alloy.
	CO 3:- To extract the caffeine from tea sample and determine its purity.
Cnemistry)	CO 4:- To study instrumental analysis such as pH-metry and
	conductometry.
	CO 1:- To study the various types of organic preparation.
	CO 2:- To study one step preparation and two step preparation of organic
Practical II	compounds.
(Organic	CO 3:- To prepare the derivatives of organic compounds.
Chemistry +	CO 4:- To study conductometry, potentiometery, pH metry methods of
Physical	analysis
Chomistry)	CO 5:- To study adsorption of acid on activated charcoal.
Chemistry)	CO 6:- To study the phase equilibrium of three component system.
	CO 7:- To determine the rates of reaction by chemical kinetics.

Course Outcome.

M.Sc. II nd year	CO 1:- To understand the group theory of molecules molecular
	symmetry, elements of symmetry, operations and molecular point groups.
SEM III	CO 2:- To study the electronic spectra of transition elements through the
Paper I	Orgel diagram, Tanabe Sugano diagram and charge transfer spectra.
(Inorganic	CO 3:- To study IR and Raman Spectra of inorganic molecules and its
Chemical	applications.
spectroscopy)	CO 4:- To understand the concepts of microwave spectroscopy of simple
	inorganic molecules and effect of different factors on transition intensity
	and its application.
	CO 5:- To study the basic concepts, instrumentation, applications of
	Nuclear Magnetic Resonance (NMR) Spectroscopy with reference to
	inorganic compounds.
	CO 6:- To understand the basic principles, instrumentations and
	applications of PAS, PES and AES techniques.
Paper II	CO 1:- To understand various theories such as VBT, CFT, LFT and MOT
(Co andination	of octahedral, tetrahedral and square planar complexes.
(Co-orgination	CO 2:- To study the thermal, magnetic and electronic properties of first
Chemistry)	transition elements through DTA and TGA.
	CO 3:- To understand the types of magnetic behavior of complexes and
	different theories and techniques in magneto chemistry.
	CO 4:- To study the general principles and catalysis by transition metal
	complexes as well as the current and future trends in catalysis.
	CO 5 :- To study the stability of tertiary complexes and mechanism of
	different reactions such as mimicking reactions, amino acids, ester
	hydrolysis and decarbonylation of B-ketoacids.
SEM III	CO 1:- To understand the structure of nucleus and the stability of the
Paper III	nucleus through different models.
(Nuclear	CO 2:- To study the different types of nuclear reactions, nuclear cross-
Chemistry)	section, coulomb scattering and potential barrier of different nucleus.
	CO 3:- To study the mechanism of nuclear fission through liquid drop
	model.
	CO 4:- To study the different types of nuclear reactors and reactors in
	India, shielding and health protection from nuclear radiation.
	CO 5:- To study the different Uranium and Thorium resources and heavy
	water manufacturing in India.
	CO 6:- To Understand the mechanism of interaction of different radiation
	with matter and radiolysis of water.

SEMIII	CO 1:- To study the classification of air pollutants and their effect on
Paper IV (Environmental Chemistry)	 living and non living things and major air pollution disasters. CO 2:- To study the types, sources, and classification of water pollutants with reference to their effect on life and environment. CO 3:- To understand methods of controlling air pollution through different techniques. CO 4:- To study the waste water treatments through aerobic, anaerobic, coagulation, disinfection and demineralization processes. CO 5:- To study different methods of sampling and analysis of air and water pollutants. CO 6:- To study the classification, effects of ionizing and non ionizing radiations on life, radioactivity, protection and control from radiation.

Practical(Non- Instrumentation) I SEM III	 CO 1:- To determine the percentage of Si, Ca, Mg and Fe elements in given cement sample. CO 2:- To determine the percentage of Si, Al and Fe elements in Bauxite ore. CO 3:- To synthesize different co ordination complexes and determination of its purity. CO 4:- To determine the percentage purity of co ordination complexes. CO 1:- To Study the spectra and to determine extinction coefficient of
Practical II (Instrumentation)	 sample by spectrophotometric method. CO 2:- To determine the concentration of metal in given sample by spectrophotometric method. CO 3:- To study the titration and dissociation constant of solutions by using pH meter. CO 4:- To determine the formula and stability constant of given complex conductometrically.
Sem IV Paper I (Instrumental techniques)	 CO 1:- To understand the fundamentals, theory, instrumentation and applications of X-Ray and Neutron diffraction techniques. CO 2:- To study the thermal methods of analysis such as TGA, DTA, DCS, TMA and its application. CO 3:- To understand the principle, instrumentation and applications of Mossbauer spectroscopy in investigation of Fe and Sn compounds. CO 4:- To study the principle of ESR, hyperfine splitting, factors affecting G values and application to inorganic compounds. CO 5:- To study the effect of magnetic field on the spectra, structure determination and applications through NQR spectroscopy.
Paper II (Co-ordination Chemistry)	 CO 1:- To study the classification of inorganic reactions (substitution reaction), reaction intermediates, order of reaction and reaction mechanism techniques to follow the rate of reaction. CO 2:- To understand the stereo chemical aspects of substitution reaction (SN¹ and SN²) of octahedral complexes. CO 3:- To discuss the substitution reaction of labile transition metal complex.

	CO 4:- To study the mechanism of atom and electron transfer reactions
	of transition metal complex.
	CO 5:- To study the basics and types of photochemical reactions and the
	photochemistry of different co-ordination compounds.
	CO 6:- To understand the principles and fundamental relations in CD and
	ORD curves and their use in co ordination chemistry.
Sem IV	CO 1 :- To study the different types of Solids, types of defects.
	determination of defects (structural and thermodynamic aspects)
Paper III	CO 2:- To gain the knowledge of synthesis of inorganic materials by
	using different techniques
(Chemistry of	CO 3:- To understand the types of ionic conductors mechanism of ionic
Inorganic materials)	conduction and its applications
	COA: to study the electronic properties such as superconductivity
	piezoelectricity ferroelectricity and lasers and masers action with their
	applications
	applications.
	theories and to study the applications of magnetic materials
	theories and to study the applications of magnetic materials. $CO(\epsilon)$ To understand the atmusture and properties of different materials
	CO 0 To understand the structure and properties of different materials
	CO 7. To study the basis concents, peroversities and spin glasses.
	CO 7 To study the basic concepts, classifications and applications of
	nanomaterials in inorganic chemistry and the properties, structures and
	applications of glass and ceramics.
Sem IV	CO 1:- To study the basic principles, thermodynamics and kinetic aspects
Paper IV	in catalysis of transition elements.
(Applied Inorganic	CO 2:- To study the classification of organometallic compounds,
Chemistry)	synthesis of zeolites, characterization and its application.
	CO 3:- To understand the properties of inorganic polymers and its
	different types.
	CO 4:- To gain the knowledge of non conventional sources of energy
	such as geothermal energy, energy from biogas and energy from fission
	and fusion reaction.
	CO 5:- To study the types, importance, properties, synthetic techniques
	and applications of nanomaterials.
	CO 1:- To determine the amount of lead and iron from the given sample
Sem IV	of Galena ore.
Practical I (Non	CO 2:- To determine the amount of silica, iron, manganese from the
Instrumentation)	given sample of Pyrolusite ore.
	CO 3:- To analyze the given sample of zinc ferrite by ion exchange
	method.
	CO 4:- to prepare different co-ordination complexes.
	CO 5:- to determine the percentage purity of given complex.

Sem IV	CO 1:- To determine the pKa value of indicators by spectrophotometric
Practical II	method.
(Instrumentation)	CO 2:- To study the stability constant of complexes by Jobs continuous variation methods by spectrometry.
	CO 3:- To determine the dissociation constant and pKa values of
	different samples by using pH meter.
	CO 4:- To study the precipitation titration and the normality of acids by
	Conductometry.
	CO 5:- To determine the concentration of given sample by fluorometric
	method.
	CO 6:- To study and interpret the X-Ray spectra and Mossbauer spectra
	of different samples.

Dr. S. N. Battin

Department of Chemistry

Sr. No.	Name of the program	Program outcomes
1	B.Sc. Mathematics	PO1: Acquired the knowledge in advance mathematics
		PO2: Geometrical and analytical concepts were cleared
		Learnt basic lemmas, theorems and Postulates
		PO3: Skills related to computers, software's,
		programming languages were understood.
		Program specific outcomes
1	B.Sc. I Mathematics	PSO1: Understood the concepts of algebra, calculus
		basic differential equations and geometry.
		PSO2:Taken the practice of Solving problems
		PSO3: Understood the concepts related to Partial
		differential equation and vector algebra in three
		dimensions.
	B.Sc. II Mathematics	PSO4:Introduced Real analysis in primary level
		PSO5: Differential calculus along with tangent and
		normal to the curve and curvature have been understood
		PSO6: Algebra with only group theory has been
		introduced
		PSO7: Total differential equation and simultaneous
		differential equation is studied.
	B.Sc. III Mathematics	PSO8: Understood the ring and field theory along with
		linear algebra.
		PSO9: Understood the complex analysis
		PSO10: Learnt Partial differential equation
		PSO11: Understood the concepts of integral calculus and
		double integral along with beta and gamma function and
		improper integral.
		Course outcomes
1	B.Sc. I Paper I	CO1: Find Inverse of Matrix, Rank of Matrix,
	Algebra	Characteristic equation of a matrix, Cayley Hamilton
		theorem
		CO2: Application of matrices to a system of linear
		equation, Eigen values and Eigen vectors.
		CO3: Understand the Complex number to find root
		modulus and argument of complex number, DeMoivers
		theorem.
2	B.Sc. I Paper II	CO4: Leibnit'z theorem Maclaurines and Taylors series
	Calculus	Vector Algebra

		CO5: Reduction formulae and Euler's functions for
		determining degree of homogeneous equation
3	B.Sc. I Paper III	CO6: Understand the Plane ,Sphere and Change of axis
	Geometry	along with rotation and translation
		CO7: Understand equation of normal
4	B.Sc. I Paper IV	CO8: Understand differential equation and its type,
	Differential Equation	Exact Differential equation, Integrating factor,
		Bernoulli's equation
		CO9: Solution of linear differential equation with
		constant coefficient.
5	B.Sc. II Paper V	CO10: Find maximum and minimum value Jacobian of n
	Differential calculus	order and find curvature of any given curve as well as
		find tangents and normals of any given curve.
6	B.Sc. II Paper VI	CO11 : To understand completeness of set of real
	Real Analysis	number, absolute value of real number.
		CO12: Define sequence of real number, convergence of
		sequence, non-convergent sequence, Cauchy's General
		Principle of Convergence, Monotonic Sequence.
		CO13: Define series of real number, Cauchy root test,
		D'Alembert's test, Ratio test for convergence of series.
7	B.Sc. II Paper VII	CO14: To solve differential Equation of first order and
7	B.Sc. II Paper VII Differential Equation	CO14: To solve differential Equation of first order and of degree higher than the first, linear equation of the
7	B.Sc. II Paper VII Differential Equation	CO14: To solve differential Equation of first order and of degree higher than the first, linear equation of the second order, homogeneous linear equation
7 8	B.Sc. II Paper VII Differential Equation B.Sc. II Paper VIII	CO14: To solve differential Equation of first order and of degree higher than the first, linear equation of the second order, homogeneous linear equationCO15: Apply the theory of groups to number systems
7 8	B.Sc. II Paper VII Differential Equation B.Sc. II Paper VIII Algebra-I	 CO14: To solve differential Equation of first order and of degree higher than the first, linear equation of the second order, homogeneous linear equation CO15: Apply the theory of groups to number systems ,define group and its properties ,homomorphism and
8	B.Sc. II Paper VII Differential Equation B.Sc. II Paper VIII Algebra-I	 CO14: To solve differential Equation of first order and of degree higher than the first, linear equation of the second order, homogeneous linear equation CO15: Apply the theory of groups to number systems ,define group and its properties ,homomorphism and isomorphism
7 8 9	B.Sc. II Paper VII Differential Equation B.Sc. II Paper VIII Algebra-I B.Sc. III Paper IX	 CO14: To solve differential Equation of first order and of degree higher than the first, linear equation of the second order, homogeneous linear equation CO15: Apply the theory of groups to number systems ,define group and its properties ,homomorphism and isomorphism CO16: Understand the theory of rings and fields as well
7 8 9	B.Sc. II Paper VII Differential Equation B.Sc. II Paper VIII Algebra-I B.Sc. III Paper IX Algebra – II	 CO14: To solve differential Equation of first order and of degree higher than the first, linear equation of the second order, homogeneous linear equation CO15: Apply the theory of groups to number systems ,define group and its properties ,homomorphism and isomorphism CO16: Understand the theory of rings and fields as well as linear algebra
7 8 9 10	B.Sc. II Paper VII Differential Equation B.Sc. II Paper VIII Algebra-I B.Sc. III Paper IX Algebra – II B.Sc. III Paper X	 CO14: To solve differential Equation of first order and of degree higher than the first, linear equation of the second order, homogeneous linear equation CO15: Apply the theory of groups to number systems ,define group and its properties ,homomorphism and isomorphism CO16: Understand the theory of rings and fields as well as linear algebra CO17: Define Analytic Function, Complex
7 8 9 10	B.Sc. II Paper VII Differential Equation B.Sc. II Paper VIII Algebra-I B.Sc. III Paper IX Algebra – II B.Sc. III Paper X Complex Analysis	 CO14: To solve differential Equation of first order and of degree higher than the first, linear equation of the second order, homogeneous linear equation CO15: Apply the theory of groups to number systems ,define group and its properties ,homomorphism and isomorphism CO16: Understand the theory of rings and fields as well as linear algebra CO17: Define Analytic Function, Complex Differentiation, Cauchy-Rieman equation.
7 8 9 10	B.Sc. II Paper VII Differential Equation B.Sc. II Paper VIII Algebra-I B.Sc. III Paper IX Algebra – II B.Sc. III Paper X Complex Analysis	 CO14: To solve differential Equation of first order and of degree higher than the first, linear equation of the second order, homogeneous linear equation CO15: Apply the theory of groups to number systems, define group and its properties ,homomorphism and isomorphism CO16: Understand the theory of rings and fields as well as linear algebra CO17: Define Analytic Function, Complex Differentiation, Cauchy-Rieman equation. CO18: Complex Integration, Line Integration, Cauchy
7 8 9 10	B.Sc. II Paper VII Differential Equation B.Sc. II Paper VIII Algebra-I B.Sc. III Paper IX Algebra – II B.Sc. III Paper X Complex Analysis	 CO14: To solve differential Equation of first order and of degree higher than the first, linear equation of the second order, homogeneous linear equation CO15: Apply the theory of groups to number systems, define group and its properties ,homomorphism and isomorphism CO16: Understand the theory of rings and fields as well as linear algebra CO17: Define Analytic Function, Complex Differentiation, Cauchy-Rieman equation. CO18: Complex Integration, Line Integration, Cauchy Integral Formula, Power Series, Laurent Series.
7 8 9 10	B.Sc. II Paper VII Differential Equation B.Sc. II Paper VIII Algebra-I B.Sc. III Paper IX Algebra – II B.Sc. III Paper X Complex Analysis	 CO14: To solve differential Equation of first order and of degree higher than the first, linear equation of the second order, homogeneous linear equation CO15: Apply the theory of groups to number systems, define group and its properties ,homomorphism and isomorphism CO16: Understand the theory of rings and fields as well as linear algebra CO17: Define Analytic Function, Complex Differentiation, Cauchy-Rieman equation. CO18: Complex Integration, Line Integration, Cauchy Integral Formula, Power Series, Laurent Series. CO19: Calculus of Residues, Residue at simple pole
7 8 9 10	B.Sc. II Paper VII Differential Equation B.Sc. II Paper VIII Algebra-I B.Sc. III Paper IX Algebra – II B.Sc. III Paper X Complex Analysis	 CO14: To solve differential Equation of first order and of degree higher than the first, linear equation of the second order, homogeneous linear equation CO15: Apply the theory of groups to number systems, define group and its properties ,homomorphism and isomorphism CO16: Understand the theory of rings and fields as well as linear algebra CO17: Define Analytic Function, Complex Differentiation, Cauchy-Rieman equation. CO18: Complex Integration, Line Integration, Cauchy Integral Formula, Power Series, Laurent Series. CO19: Calculus of Residues, Residue at simple pole Residue at infinity, Cauchy residue theorem.
7 8 9 10 11	B.Sc. II Paper VII Differential Equation B.Sc. II Paper VIII Algebra-I B.Sc. III Paper IX Algebra – II B.Sc. III Paper X Complex Analysis B.Sc. III Paper XI	 CO14: To solve differential Equation of first order and of degree higher than the first, linear equation of the second order, homogeneous linear equation CO15: Apply the theory of groups to number systems, define group and its properties ,homomorphism and isomorphism CO16: Understand the theory of rings and fields as well as linear algebra CO17: Define Analytic Function, Complex Differentiation, Cauchy-Rieman equation. CO18: Complex Integration, Line Integration, Cauchy Integral Formula, Power Series, Laurent Series. CO19: Calculus of Residues, Residue at simple pole Residue at infinity, Cauchy residue theorem. CO20: Acquire the knowledge of double integral beta
7 8 9 10 11	B.Sc. II Paper VII Differential Equation B.Sc. II Paper VIII Algebra-I B.Sc. III Paper IX Algebra – II B.Sc. III Paper X Complex Analysis B.Sc. III Paper XI Integral Calculus	 CO14: To solve differential Equation of first order and of degree higher than the first, linear equation of the second order, homogeneous linear equation CO15: Apply the theory of groups to number systems, define group and its properties ,homomorphism and isomorphism CO16: Understand the theory of rings and fields as well as linear algebra CO17: Define Analytic Function, Complex Differentiation, Cauchy-Rieman equation. CO18: Complex Integration, Line Integration, Cauchy Integral Formula, Power Series, Laurent Series. CO19: Calculus of Residues, Residue at simple pole Residue at infinity, Cauchy residue theorem. CO20: Acquire the knowledge of double integral beta ,gamma function and improper integral
7 8 9 10 11 12	B.Sc. II Paper VII Differential Equation B.Sc. II Paper VIII Algebra-I B.Sc. III Paper IX Algebra – II B.Sc. III Paper X Complex Analysis B.Sc. III Paper XI Integral Calculus B.Sc. III Paper XII	 CO14: To solve differential Equation of first order and of degree higher than the first, linear equation of the second order, homogeneous linear equation CO15: Apply the theory of groups to number systems, define group and its properties ,homomorphism and isomorphism CO16: Understand the theory of rings and fields as well as linear algebra CO17: Define Analytic Function, Complex Differentiation, Cauchy-Rieman equation. CO18: Complex Integration, Line Integration, Cauchy Integral Formula, Power Series, Laurent Series. CO19: Calculus of Residues, Residue at simple pole Residue at infinity, Cauchy residue theorem. CO20: Acquire the knowledge of double integral beta ,gamma function and improper integral CO21: Learn to Partial Differential Equation, Formation
7 8 9 10 11 12	B.Sc. II Paper VII Differential Equation B.Sc. II Paper VIII Algebra-I B.Sc. III Paper IX Algebra – II B.Sc. III Paper X Complex Analysis B.Sc. III Paper XI Integral Calculus B.Sc. III Paper XII Partial Differential	 CO14: To solve differential Equation of first order and of degree higher than the first, linear equation of the second order, homogeneous linear equation CO15: Apply the theory of groups to number systems, define group and its properties ,homomorphism and isomorphism CO16: Understand the theory of rings and fields as well as linear algebra CO17: Define Analytic Function, Complex Differentiation, Cauchy-Rieman equation. CO18: Complex Integration, Line Integration, Cauchy Integral Formula, Power Series, Laurent Series. CO19: Calculus of Residues, Residue at simple pole Residue at infinity, Cauchy residue theorem. CO20: Acquire the knowledge of double integral beta ,gamma function and improper integral CO21: Learn to Partial Differential Equation, Formation of Partial Differential Equation, types of partial
7 8 9 10 11 12	B.Sc. II Paper VII Differential Equation B.Sc. II Paper VIII Algebra-I B.Sc. III Paper IX Algebra – II B.Sc. III Paper X Complex Analysis B.Sc. III Paper XI Integral Calculus B.Sc. III Paper XII Partial Differential Equation	 CO14: To solve differential Equation of first order and of degree higher than the first, linear equation of the second order, homogeneous linear equation CO15: Apply the theory of groups to number systems, define group and its properties ,homomorphism and isomorphism CO16: Understand the theory of rings and fields as well as linear algebra CO17: Define Analytic Function, Complex Differentiation, Cauchy-Rieman equation. CO18: Complex Integration, Line Integration, Cauchy Integral Formula, Power Series, Laurent Series. CO19: Calculus of Residues, Residue at simple pole Residue at infinity, Cauchy residue theorem. CO20: Acquire the knowledge of double integral beta ,gamma function and improper integral CO21: Learn to Partial Differential Equation, Formation of Partial Differential Equation.

13	B.Sc. III Paper XIII	CO23: Define metric spaces completeness ,compactness
	Metric Space	and open ,closed sets
14	B.Sc. III Paper XIV	CO24: Define operators, finite difference, Gauss
	Numerical Analysis	Interpolation Formula, Newton's Interpolation
		Formula(Center, forward, backward)
		CO25: Numerical differentiation and integration,
		Maxima and minima of tabulated function, Difference
		equation.
15	B.Sc. III Paper XV	CO26: Introduce Computer programming language C to
	Programming in C	write program for mathematical operations.
16	B.Sc. III Paper XVI	CO27: Define Laplace transform inverse Laplace
	Integral Transform	transform and applications
		Program outcomes
1	B.Sc. Statistics	PO1: Acquired the knowledge in advance statistics
		PO2: Geometrical and analytical concepts were cleared
		Learnt basic theorems and Postulates
		PO3: Skills related to computers, software's, calculator
		were understood.
		Program specific outcomes
1	B.Sc. I Statistics	PSO1: Understood the concepts of Descriptive Statistics
		–I, Probability and Probability Distribution-I,
		Descriptive Statistics –II, Probability and Probability
		Distribution-II.
		PSO2: Taken the practice of Solving statistical data
		graphically, to compute various measures of central
		tendency, dispersion, moments, skewness and kurtosis.
		PSO3: Understood the concepts related to sample space
		and event, probability conditional probability and
		independence of events, correlation regression.
		Course outcomes
1	B.Sc. I Paper I	CO1: Meaning of primary and secondary data,
	Descriptive Statistics	classification of data, graphical representation of data
	-I	CO2: concept of central tendency of statistical data,
		Arithmetic mean, Geometric mean, Harmonic mean,
		Median, Mode.
		CO3: concept of dispersion, range, Quartile Deviation,
		Mean Deviation, variance and standard deviation.
		CO4: Moments, Raw moment, Central moment,
		Sheppard correction Skewness, Bowley's coefficient of
		skewness

2	B.Sc. I Paper II	CO5: experiment, random experiment, sample space,
	Probability and	algebra of event,
	Probability	CO6: Probability, Axiomatic definition of probability
	Distribution-I	event based on permutations and combinations.
		CO7: conditional probability of an event, partition of
		sample space, independence of two event
		CO8: Discrete random variables, probability mass
		function.
3	B.Sc. I Paper III	CO9: Bivariate data, Scatter diagram, Spearman's rank
	Descriptive Statistics -	correlation coefficient
	Π	CO10: Concept of regression, regression coefficient,
		CO11: Attributes, concept of Consistency, Yule's
		coefficient of association
		CO12: Price index number, weighted price index
		number, test of index number
4	B.Sc. I Paper IV	CO 13: Expectation of random variable, variance of
	Probability and	univariate distributions.
	Probability	CO 14: Two dimensional discrete random variable,
	Distribution-II	bivariate probability marginal and conditional
		probability distributions.
		CO15: Expectation in bivariate distribution, theorems of
		expectation, conditional mean.
		CO16: Bernoulli Distribution p.m.f, mean, variance
		Discrete Uniform Distribution, Binomial Distribution

Dr. D. M. Zombade Dept. of Mathematics

DEPARTMENT OF MICROBIOLOGY

Sr.No.	Name of the program	Program outcomes
1	B Sc I	1.To attain the capability to employ in independent and1) Student learned how to handle and care the compound microscope.
		2) Student understood the proper staining techniques and cultivation of microorganisms as standard laboratory procedures.
		3) They learned different sterilization procedures.
		4) Students studied types of enzymes and microbial metabolism.
		5) They got information about water pollution, microbiological analysis of pollution and treatment, as well as sewage treatment process.
		6) They learned techniques used in dairy industries
	B.Sc. II	1) Students learned cytology and physiology of microorganisms.
		2) Students learned bacterial genetics including mutations and genetic recombination.
		3) They learned basic techniques and fermentation methods.
		4) They performed experiments on isolation, cultivation and identification of pathogens.
		5) Students learned how to test antibiotic sensitivity of pathogens.
Sr. No.	Name of the program	Course outcomes

B Sc I	Unit I - Students got detail information about history and development of Microbiology.
	Unit II – Students learned nomenclature and classification of microorganisms.
	Unit III – They learned morphology and cytology of bacteria.
	Unit IV – Students learned characteristics of different organisms
Paper II	Unit I - Students learned principles and working of
	compound and electron microscope.
	Unit II – They learned principle, procedures and
	mechanism of different staining techniques.
	Unit III – They studied sterilization techniques.
	Unit IV – Students got detail information of culture media and cultivation techniques.
Paper III	Unit I – student studied structure and functions of different macromolecules.
	Unit II – Students learned structure and types of enzymes.
	Unit III – They learned biochemical reactions in bacteria.
	Unit IV – They learned about microbial nutrition and their growth.
Paper IV	Unit I –Students learned techniques of microbiological analysis of pollution and treatment .
	Unit II – They learned types of sewage and and sewage treatment and disposal.
	Unit III – Students learned about contamination of milk and pasteurization process.
	Unit IV – This course included types of diseases, mode

	of transmission, preventon and control of diseases.
Practical course	 -Students learned constructions and functions of instruments used in Microbiology laboratory. They performed different staining procedures and cultivation techniques . Some bacteria isolated, cultivated and studied in detail. Different enzymatic reactions and biochemical tests are
	- Few fungal cultures were mounted and studied
B.Sc II – Paper V Paper VI	 Students studied ultrastructure and functions of bacterial cells and endospore. They got information about phases and types of growth. Bacteria respond positively and negatively in different environmental conditions were studied. Students learned about the bacterial metabolism and energy production. They learned structure and cultivation of viruses. They studied structure and replication of DWP.
	 They learned about genetic code, transcription and translation Mutation of bacteria was studied by the students. Types of plasmids and their applications. Methods of bacterial recombination were studied by the students.
Paper VII	 Students learned immune mechanism of human body. Role of antigen and antibody. Basic techniques used in clinical microbiology were studied. Pathogenicity of microorganisms was studied in detail. Few bacterial, fungal and bacterial diseases were

	studied by students.
Paper VIII	 Basics of Industrial Microbiology. Students learned about different fermentation. Different techniques of screening and strain improvements learned by the students. Included microbiological essay. Specific fermentations were learned by students.
Practical Course –	 Different staining procedures performed by students. They learned how to prepare culture media, reagents and solutions. They performed different biochemical tests for identification of bacteria. Students studied effects of environment on microbial growth. They performed industrial screening procedures. They learned techniques in pathological labs for identification of pathogens. They learned determination of blood group, widal tests, estimation of glucose protein, isolation of DNA and growth phases of bacteria.

Dr. M.D. Chavan

Department of Microbiology

DEPARTMENT OF PHYSICS

Learning Outcomes		
Sr.No.	Name of the program	Program outcomes
1	B.Sc. Physics	 PO1:Acquired the knowledge with facts and figures related to Physics. PO2:Understood the basic concepts, fundamental principles, and the scientific theories related to various scientific phenomena and their relevancies in the day-to-day life. PO3:Acquired the skills in handling scientific instruments, performing in laboratory experiments Program specific outcomes
2	B.Sc. I Physics	 PSO1: Attained a common level in basic mechanics, properties of matter. PSO2: Understood some phenomenon of optics and basic principles of LASER POS3:Understood the principles of heat and thermodynamics to complement the core for their future courses POS4: Introduced some principles of electricity, magnetism and basic electronics PSO5: Developed their experimental and data analysis skills through a wide range of experiments through practical at laboratories
	B.Sc. II Physics	 PSO6: Introduced to a wide range of topics in General Physics , heat and Sound with additional relevant mathematical techniques to complement the core . PSO7: Understood some principles of electronics. PSO8: Understood the phenomenon of optics PSO9: Understood the principles of modern physics PSO6: Developed their experimental skills through a series of experiments which also illustrate major themes of the lecture courses.

B.Sc. I Physics Paper I (Mechanics and properties of matter)	 CO1:Determine moment of inertia of a body about different axes. CO2: Use various types of pendulums to determine acceleration due to gravity (g) CO3: Describe the basics of elasticity CO4: Understand and determine the surface tension of liquid. CO5: Identify the type of flow of fluid and apply Bernoulli's theorem
B.Sc. I Physics Paper II	CO6:State Fermat's principle and explain reflection and
(Optics and Laser)	 refraction of light .Identify the type of aberration. CO7: Identify various parts of optical instruments (spectrometer, optical bench) CO8:Describe the phenomenon of Interference and diffraction of light. CO9: Understand basic principles of laser and describe He-Ne and Ruby lasre
B.Sc. I Physics Paper III	CO10: Understand transport phenomena associated with gas
(Heat and	molecules.
Thermodynamics)	CO11: Describe different methods of liquefaction of gas.CO12: Understand basics of thermodynamics and its lawsCO13: Describe principle of working of heat enginesCO14: Understand principle of refrigerator
B.Sc. I Physics Paper IV	CO15: Understand basics of alternating current and AC
(Electricity, Magnetism	circuits.
and BasicElectronics)	CO16: Understand magnetostatics and use B.G.CO17: Understand basic electronic components and devices.CO18: Explain the principles of BJT
B.Sc. II Physics Paper V	CO19: Apply the theory of vectors
(General physics ,Heat and Sound)	 CO20: Describe precessional motion CO21: Understand bending moment and theory of flat spiral spring CO22: Determine viscosity highly viscous liquids CO23: Understand concept of entropy CO24: Understand acoustics of buildings and reverberation
	B.Sc. I Physics Paper I (Mechanics and properties of matter) B.Sc. I Physics Paper II (Optics and Laser) B.Sc. I Physics Paper III (Heat and Thermodynamics) B.Sc. I Physics Paper IV (Electricity, Magnetism and BasicElectronics) B.Sc. II Physics Paper V (General physics ,Heat and Sound)

B.Sc II Physics Paper VI	CO25: Understand different types of transistor amplifiers
(Elctronics)	CO26: Understand different types of Oscillators
	CO27: Understand unipolar devices (UJT, FET)
	CO28: Understand basics of digital electronics
	CO29: Understand and use electronic instruments
B.Sc.II Physics Paper	CO30: Understand the lens system and draw cardinal points.
	CO31: Describe Michelson and Fabry perot interferometer
(Optics)	CO32 : Understand the phenomena of diffraction of light.
	CO33: Understand the term Resolving power.
	CO34: Understand the phenomena of polarization.
	CO35: Understand the principle of optical fiber
B.Sc. II Physics Paper	CO36: Understand theory of relativity
VIII (Modern Physics)	CO37: Describe concept of matter waves
	CO38: Understand vector atom model
	CO39: Understand Compton effect
	CO40: Understand nuclear fission, nuclear energy and

Head of Department Dept. of Physics

DEPARTMENT OF ZOOLOGY

Sr. No.	Name of the program	Program outcomes
1	B Sc III -Zoology	 Acquire the ability to engage in independent and life-long learning in the broadest context sociotechnological changes Understand the issues of environmental contexts and sustainable development.
Sr. No.	Name of the program	Program specific outcomes
1	B Sc I	Understand the nature and basic concepts of Cell biology, Taxonomy, genetics, Ecology, applied Zoology
2	B Sc II	 Analyse the relationships among animal and environment, basic biochemistry Understand the applications of Zoological sciences in Apiculture, sericulture, poultry ,dairy, fishery, goat and reproductive biology , immunology, basic histology of human
3	B Sc III	• Understanding and performing procedures as per laboratory standards in the areas of animal physiology, endocrinology, toxicology, Taxonomy, Economic Zoology, Ecology, embryology
Sr. No.	Name of the program	Course outcomes
	B Sc Zoology	 Learners will develop conceptual clarity with regard to the anatomy of animals at different levels. Learners shall know the evolutionary perspective of each level of organization. Learners will know the importance of the significance and advantages of each level of organization Learners will understand that scientific classification of animals is based on certain characteristics they have in common. Learners will be able to recall characteristics features and examples of each phylum. Classification, general characters, ecological significance of animal representatives of invertebrates and vertebrates Learners will be able to understand the processes
		involved in embryonic development and its application Page 67 of 9 6

	•	Learners would appreciate the well planned organization of tissues and cells in the organ systems.
	•	The course will prepare learners to develop broad understanding of the different areas and significance of toxicology. Moreover, it will also develop critical thinking and assist students in preparation for employment in pharmaceutical industry and related areas.
	•	Learners will be able to understand the different factors affecting environment, its impact and laws governing environmental management.

Dr. K. R. Rao Dept. of Zoology

DEPARTMENT OF SOCIAL WORK

Sr.	Name of Specific	Program Specific Outcomes
No.	Program	
1	Human Resource Management-HRM (Gr.A)	 Manage own professional development and provide leadership to others in the achievement of ongoing competence in human resources professional practice. Analyze the key issues related to administering the human elements such as motivation, compensation, appraisal, career planning, diversity, ethics, and training etc.
2	Urban and Rural Community	• To acquaint with community development and development practices
	Development-URCD (Gr.B)	 To comprehend with importance of modern development practices and innovative people participation strategies Develop perspectives for critical understanding the issues and concerns of Urban , Rural and Tribal Communities
3	Family and Child Welfare - FCW (Gr.D)	 The programme prepares and equip the masters of social work to directly work with people, develop their capacities to conceive the concepts, principles and theories related to human development and social development in the fields of different social domains such as women, children, disadvantaged group etc and provide guidance and counseling to the target group// community. The course has a lot of scope in government projects, educational and health care institutions and in many more local and international NGOs. Acquire skills social work intervention with children , youth, women, disabled and aged
4	MedicalandPsychiatricSocialWork-MPSW(Gr.E)	 To develop skills, knowledge and values regarding medical & psychiatric issues among students. To create trend and professional social work in the field of health and mental health

MSW-I (Sem. I) Course Outcomes: (Subject and Unit wise)

Sr.	Paper	Name of Course	Course Outcomes	
No.	No.	(i.e Subject &		
		Unit)		
1	P-I	Indian Society and Social Institution		
		Unit No. 1 -	To understand the concept of society and Social Institutions.	
		Unit No. 2	Develop a broad understanding of Indian society and	

			intercultural literacy through cultural immersion		
		Unit No. 3	Explain how the self develops sociologically and compare		
			this to psychological, economic and other approaches with		
			the help of social institutions.		
		Unit No. 4	Understand and describe the primary perspectives on social		
			stratification		
		Unit No. 5	To creates law abiding citizens with human values and		
			rights through legal education.		
2	П	History and	1. To understand the historical context of social work		
		Ethics of Social	education.		
		Work Profession	2. To comprehend the ideologies of social work.		
			3. To understand the western and Indian ideologies for		
			social change.		
		Unit No. 1 -	To understand the context of emergence of social work.		
		Unit No. 2	To comprehend the history of social work and social education		
		Unit No. 2	education		
		Unit No. 3	To know various concepts pertaining to social work.		
		Unit No. 5	To understand western history of ideologies		
3	III		Stages of Human Development		
5		Unit No. 1 -	 To understand concepts of stages of the life span 		
			 To understand the role of hereditary and environment. 		
		Unit No. 2	> To be aware of personal to pubertal growth		
			> To be aware of physical, physiological, psychological,		
			emotional and social development.		
		Unit No. 3	To get awareness about various concept adulthood.		
			To get awareness of significance of neighborhood, peer,		
			school, community, work place and other larger context		
		Unit No. 4	of the society and culture.		
		Unit No. 4	 To get orientation about Aging. To understand the concent of psychosocial development 		
		Unit No. 5	To understand the concept of psychosocial development.		
			perspectives		
			\succ To understand various aspects Economic, Political,		
			Ecological and feminist perspectives of human		
			development		
4	IV		Introduction to Social Work Research		
		Unit No. 1 -	• Develop understanding about scientific approach to		
			human inquiry		
		Unit No. 2	Acquired skills and techniques for doing research		
		Unit No. 3	• Comprehend the scope and importance of social work		
			research		
		Unit No. 4	• Gain Knowledge about various steps in social Work		
			research		

		Unit No. 5	• Able to know the various tools, levels of measurement and types of sampling methods applied in social work
			research
5	V		Introduction to Social Casework
_		Unit No. 1 -	To understand basic concepts of social case work
			\succ To understand the historical development of social
			casework.
		Unit No. 2	To be aware of social functioning of social casework.
			\succ To be aware of process and components of social
			casework.
		Unit No. 3	To get awareness about tools and techniques of social casework.
			To get awareness of skills needed in social casework.
		Unit No. 4	To get orientation about interview in social casework.
			\succ To understand the importance of recording in social
			casework.
		Unit No. 5	To understand the settings of social casework.
			To understand various settings: schools, family, industry
	X 7 X		health and mental health of social work.
6	VI		Introduction to social group work
		Unit No. 1 -	To enumerate the importance of group in social work
		Unit No. 2	To understand the concept of group work while working in
		Omt 110. 2	group
		Unit No. 3	Learn the process of forming groups
		Unit No. 4	To Develop the different skills and techniques while
			working in groups.
		Unit No. 5	Understand about the techniques and dynamics to be
			followed while working in group.
7	VII		Community Organization and Social action
		Unit No. 1 -	To understand the concept of community practice
		Unit No. 2	To acquaint with the knowledge of community power
			structure and dynamics
		Unit No. 3	To comprehended with the knowledge of models and
			strategies of community organization
		Unit No. 4	To gain clarity of process and steps of community
			organization
		Unit No. 5	To study the relevance of community organization method
			across the sphere of social work

MSW-I (Sem. II) Course Outcomes: (Subject and Unit wise)

Sr. No.	Paper No.	Name of Course (i.e Subject & Unit)	Course Outcomes
1	D.I.		
1	P-1	Indian Social Problems	
		Unit No. 1 -	To prepares students for socialisation by participating in a
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			social group by teaching them its norms and expectations
			for bringing social change.
		Unit No. 2	Describe the functionalist view of deviance in society and
			compare Durkheim's views with social disorganization
			theory, control theory, and strain theory
		Unit No. 3	Create awareness of social conditions through life
			experiences and through reports in the media
		Unit No. 4	To bring out conformity, solidarity and continuity of a
			particular group or society through Social Control.
		Unit No. 5	Understand degree to which, in a given society, an
			individual's, family's, or group's social status can change
			throughout the course of their life through a system of social
			hierarchy or mobility.
2	II		Ideologies of Social Work
		Unit No. 1 -	To understand the religious ideologies and social work.
		Unit No. 2	To comprehend the various social work approaches of social
			work.
		Unit No. 3	To know the contemporary ideologies of social work.
		Unit No. 4	To understand the work of social reformers and their
			ideologies of social change.
		Unit No. 5	To imbibe various concepts related to professional social work
3	Ш		Theories of Human Development
		Unit No. 1 -	To understand concepts of mind, brain and behavior
			> To understand the concepts in health and mental health.
		Unit No. 2	To be aware of personality development
			To be aware of various types of personality.
		Unit No. 3	To understand about the process of becoming.
			> To get awareness of self through different cognitive
		Unit No. 4	paradigms.
		UIIIt No. 4	development
			 To understand the theories of learning's.
		Unit No. 5	 To understand the cognitive development theory.
			> To understand humanistic theories of development.
4	IV		Social Work Research and Statistics
		Unit No. 1 -	• Acquire skills for data analysis
		Unit No. 2	• Learn SPSS for statistical analysis of the data .
		Unit No. 3	• Orient the students about application of various
			statistical tests or data analysis
		Unit No. 4	Study the various steps in report writing
		Unit No. 5	Prepare synopsis for research project

5	V		Theories and Skills in Social Casework
		Unit No. 1 -	> To understand basic theories in social casework
			> To understand the defense mechanisms.
		Unit No. 2	> To be aware about importance of client-worker
			relationship in social casework
			\succ To be aware of characteristics of client-worker
			relationship in social casework
		Unit No. 3	To get awareness about basics of counseling.
			To get awareness of process and areas of counseling.
		Unit No. 4	To get orientation about crisis.
			> To understand the importance of crisis intervention.
		Unit No. 5	To understand the concept of professional self.
			To understand role & qualities of social case worker.
6	VI		Social Group Work and Leadership
		Unit No. 1 -	Learn to develop values appropriate to working with groups
		Unit No. 2	Develop the skills of programme plannings and plan
			programs.
		Unit No. 3	Understand the importance of Leadership and develop the
			qualities of a leader.
		Unit No. 4	Utilize the skills in empowering the weaker sections while
			working in the field of social work
		Unit No. 5	To acquire skills of working with different population
			across a variety of settings.
7	VII		Community Development and Social Action
		Unit No. 1 -	To acquaint with the knowledge of community development
		Unit No. 2	To study the community development institutions and
			programs
		Unit No. 3	To acquaint with the knowledge of social action
		Unit No. 4	To acquaint with the knowledge of social reforms
			Advocacy and lobbying
		Unit No. 5	To study the social movements in India

MSW-II (Sem.III) Course Outcomes: (Subject and Unit wise)

Sr.	Paper	Name of Course	Course Outcomes
No.	No.	(i.e Subject &	
		Unit)	
1	P-I	Administration of	Human Services Organization
		Unit No. 1 -	To understand concepts of administration
			To understand welfare administration
		Unit No. 2	To be aware of process of administration
			> To be aware of human resource policy
		Unit No. 3	To get awareness about concept of NGO.
			To get awareness of GOs and NGOs.

		Unit No. 4	> To get orientation about leadership.
			> To understand the concept of team building.
		Unit No. 5	> To understand the concept of time management.
			To understand various aspects of time management.
2	II	Project	To understand the concept of project management
		Management and	To Comprehend the important skills in project management
		skills in	
		Communication	
		Unit No. 1 -	To understand the concepts of project mangement
		Unit No. 2	To gain the knowledge about various concept of project life
			cycle
		Unit No. 3	To acquire skills by understanding the tools in project
			management
		Unit No. 4	Understanding the importance of skills in communication
		Unit No. 5	To gain the knowledge about various approaches n
			communication.
3	III		Social Policy and Social Legislation-I
		Unit No. 1 -	To acquaint with the knowledge of social policy and social
			legislation
		Unit No. 2	To study the historical perspectives of social policies
		Unit No. 3	To comprehend with the concept of social legislation
		Unit No. 4	To study the legal practices in social work
		Unit No. 5	To study the importance of provisions for social workers
		1	Gr. A (HRM)
4	IV	HRM & Social Wo	ork in Industry-I
		Unit No. 1 -	Explain the importance of human resources and their
			effective management in organizations.
		Unit No. 2	Understand the organizational, societal and individual costs
			and benefits of training and development along with its
			different types.
		Unit No. 3	Justify how each area of Human Resources Information
			System interrelates with each other and how crucial proper
			design and management are to the success of the system.
		Unit No. 4	State the importance of relations in Human Resource
		CIIIt 1101 4	function in planning and staffing organizational manpower
			requirements.
		Unit No. 5	Summarize the variety of forms that conflict in work
			organizations take with emphasis on conflict of interest and
			trying to resolve them by counseling
5	N/	Dowgowy of Manager	mont & Industrial Dalations I
3	V	Fersonnel Manage	The understand basic objective of nerconnel management is
		Unit 100. I -	to halp the realization of the organizational coals
		Unit No. 3	to help the realization of the organizational goals.
		Unit 1NO. 2	indoment in supply demond forecasting and supply
			judgment in supply-demand forecasting and supply

			programs in determining HR planning.
		Unit No. 3	To understand established the rules and regulations for
			maintaining an equitable wage and salary system.
		Unit No. 4	Analyze core issues, policies and practices surrounding
			employee relations and legal issues.
		Unit No. 5	Differentiate between cooperation and management of
			conflict within an organization and provide strategic
			policies relating to the changes that occur in employer-
			employee relations.
6	VI	Labor Welfare & I	Labor Laws : I
		Unit No. 1 -	To know how Labor Welfare helps to foster a sense of
			responsibility in the industry.
		Unit No. 2	To increase the standard of living of the. Working class
			laborer is more prone to exploitation from the capitalists if
			there is no standardized way of looking after their welfare.
		Unit No. 3	To learn the fair labour Standards Act to regulates employee
			wages and establishes the minimum wage and overtime
			payments.
		Unit No. 4	To Interpret: analyze the International Industrial Relation
			issues and performance management.
		Unit No. 5	To discuss the different labor laws and case studies
			pertaining to factory.
			Gr. B (URCD)
7	IV		Governance and Rural Community Development
		Unit No. 1 -	Gain Knowledge about rural realities and problems in rural
			areas
		Unit No. 2	Understand the concept and significance of democratic
			decentralization and its impact on local self governance
		Unit No. 3	Get acquainted with various government initiatives and
			voluntary organizations efforts for community development
		Unit No. 4	Develop a broad understanding about the importance of
			cooperative societies and impact of LPG on cooperatives
		Unit No. 5	Develop an understanding about cooperative sector in India.
8	V		Urban and Tribal Community Development -I
-		Unit No. 1 -	To acquaint with the knowledge of urban community
		Unit No. 2	To acquaint with the knowledge of social Institutions of
			urban community
	1	Unit No. 3	To gain clarity of tribal problems and development
			programs
		Unit No. 4	To comprehend the importance of urban local self
			governance
	1	Unit No. 5	To acquaint with the knowledge of urban Policies and
			programs related to urban development
9	VI		Social Work and Ecology
	1	Unit No. 1 -	To acquaint with the knowledge of ecology and

			environment
		Unit No. 2	to gain clarity of Human and Environmental relation and
			interdependency
		Unit No. 3	To comprehend the importance of Natural resources and
			diversity
		Unit No. 4	To understand the importance of Government role and
			responsibility and initiatives
		Unit No. 5	To study the environmental movements national and state
			Gr. D (FCW)
10	IV		CHILD DEVLOPMENT
		Unit No. 1 -	To develop an understanding on the concept of pre natal
			care and child growth.
		Unit No. 2	To get exposure to the importance of immunization
			programme in the life of a child as a social worker.
		Unit No. 3	Explore factors related to the beginning of the parenting
			needs during the various life developemental stages.
		Unit No. 4	Get acquainted towards the aspects and behavior problems
			of the children.
		Unit No. 5	Learn to cater to the needs / solve the problems of the
			beneficiaries
11	V	Family and	To understand the theories and approaches to family and
		Women	social institution.
		Development	To gain the knowledge about the ender issues and women
			development.
		Unit No. 1 -	To understand various concepts related to family and
			theories.
		Unit No. 2	To know the impact of various socio economic factors on
			family.
		Unit No. 3	Understanding various theories and prepositions of marriage
		Unit No. 4	To know various alternative family patterns
		Unit No. 5	To understand gender issues and need of women
			development.
12	VI	Social work Interv	ention with Children , Youth and Aged
		Unit No. 1 -	Develop understanding about the needs and Problems of
			Children and Youth
		Unit No. 2	Learn the concept of Gerontology and School social work
		Unit No. 3	Gain Knowledge about various national and International
			agencies working efforts for children, youth and aged
		Unit No. 4	Develop holistic perspectives for social work practice in the
			field of child development, Youth development
		Unit No. 5	Able to understand the various policies, programmes and
			enactments related to Child Rights, Youth development and
			Aged Welfare
	1		Gr. E (MPSW)
13	IV		Medical Social Work

		Unit No. 1 -	> To understand concepts of medical social work
			> To understand a need for medical social work in India
		Unit No. 2	> To be aware of concept of patient
			\succ To be aware of hospitalization process
		Unit No. 3	> To get awareness about health care delivery system
			To get awareness of management of hospital
		Unit No. 4	> To get orientation of emergence of medical social
			worker
			\succ To understand the roles, functions, and limitations of
			medical social worker
		Unit No. 5	\succ To understand the concept of multidisciplinary treatment
			To understand various needs of patients
14	V		Preventive and Social Medicine-I
		Unit No. 1 -	\succ To introduce basic concepts of health and disease.
			To understand the indicators of health and disease.
		Unit No. 2	\succ To be aware of various communicable diseases.
			To be aware of non-communicable diseases.
		Unit No. 3	To get awareness about occupational hazards.
			To get awareness of food and hygiene.
		Unit No. 4	To get orientation of public sector health care.
			To understand the private sector health care.
		Unit No. 5	To understand the concept of nutrition
			To understand problem of Malnutrition in India.
15	VI		Psychiatry and Mental Health-I
		Unit No. 1 -	To introduce basic concepts in field of Psychiatry
			To understand the DSM and ICD classification.
		Unit No. 2	\succ To be aware of various concepts in psychiatric history
			taking (MSE).
			To be aware of neurosis and psychosis.
		Unit No. 3	To get awareness about childhood psychiatric disorders
			To get awareness of psycho-somatic disorders
		Unit No. 4	To get orientation of personality disorders.
			To understand major psychotic disorders.
		Unit No. 5	To understand the concept of geriatrics
			To understand problems of organic brain disorders.

MSW-II (Sem.IV) Course Outcomes: (Subject and Unit wise)

Sr.	Paper	Name of Course	Course Outcomes
No.	No.	(i.e Subject &	
		Unit)	
1	Ι	Social Welfare Ad	ministration
		Unit No. 1 -	> To understand basic concepts of human resource
			development
			> To understand a need for performance appraisal.
		Unit No. 2	> To be aware of concept of organizational effectiveness.
			> To be aware of basic managerial skills.

		Unit No. 3	> To get awareness about civil society organizations
			 To get awareness of corporate social responsibility.
		> Unit No. 4	> To get orientation of major legal provisions applicable
			to NGOs, Trusts.
			> To understand the importance of public relations.
		Unit No. 5	> To understand the concept of financial administration
			> To understand social audits for organizations.
2	II	Project	> To understand the concept of project development.
		Implementation	> To gain the knowledge about project implementation.
		and	> To get acquainted with various communicational media.
		Communicationa	
		l Media	
		Unit No. 1 -	To understand the process of project development
		Unit No. 2	To know the importance of project implementation.
		Unit No. 3	\succ To understand the organizational communication and
			planning.
		Unit No. 4	To gain knowledge about various audio video media.
		Unit No. 5	To know various skills in communication.
3	III		Social Policy and Social Legislation-II
		Unit No. 1 -	To acquaint with the knowledge of social policy and
			planning
		Unit No. 2	To study the linkage between social policy and planning
		Unit No. 3	To acquaint with five years plans and programms
		Unit No. 4	To study the legislation related to health
		Unit No. 5	To study the legislation related to community development
Gr. A (HRM)			
4	IV	HRD & Social Wo	rk in Industry-II
		Unit No. 1 -	Learn the cost-benefit analysis of HRD and its sub-
		TT ' NT O	system.
		Unit No. 2	Define, describe how to support and/or control change and
			Initiate and respond to change by understanding industrial
			psychology.
		Unit No. 3	Explain, evaluate the main practices and process of
			Organizational Development
		Unit No. 4	Outline the nature and sources of conflict and explain the
			different strategies and approaches used in the resolution of
			conflict.
		Unit No. 5	State the need and significance of CSR for the benefits of
			employers, employees and community as well as govt.
5	V	Personnel Manage	ement & Industrial Relations – II
_		Unit No. 1 -	Define the concept of performance management and outline
		–	its role in contemporary organizations.
	1	Unit No. 2	Develop the ability to use different performance
			management techniques by the means of personnel audit
			and research.

		Unit No. 3	Interpret analyze the mechanisms of Industrial relation
			issues and performance management.
		Unit No. 4	To learn about safeguard security of tenure and improve
			conditions of service through trade union.
		Unit No. 5	To suggest ways of responsive co-operation in improving
			levels of production and productivity, discipline and high
			standards of quality.
6	VI	Labour Welfare &	Labour Laws : II
		Unit No. 1 -	To increase the aspects standard of living of the by working
			class.
		Unit No. 2	To protect the employees and their family members by
			providing social security mechanism.
		Unit No. 3	To learn about minimum wages act, payment of wages act
			and payment of bonus act.
		Unit No. 4	To know how to safeguard employee by proving PF,
			gratuity and pension scheme.
		Unit No. 5	To develop understanding about ESI act, compensation act,
			maternity benefit acts and mathadi act and its amendment.
			Gr. B (URCD)
7	IV	Strategies and Tre	nds in Rural Community Development
		Unit No. 1 -	Gain insight about importance of peoples participation in
			rural development
		Unit No. 2	Learn concept and process of five year plan
		Unit No. 3	Understand the development of different approaches in
			rural development
		Unit No. 4	Study the role of social work practice in rural community
			development
		Unit No. 5	Understand the impact of LPG on rural community.
8	V	Strategies And	Approaches For Tribal And Urban Community
		Development	
		Unit No. 1 -	To acquaint with the knowledge of socialization and tribal
			society
		Unit No. 2	To study the problems of tribal community
		Unit No. 3	To study the programs and strategies related to tribal
			development
		Unit No. 4	To study the policies affecting the tribal community
		Unit No. 5	To understand the working of NGS and civil societies
0	X 7 X		working for urban community development
9	VI	TT 1/ NT 4	Disaster Management
		Unit No. 1 -	To understand the concept of disaster and its types
		Unit No. 2	10 acquaint with the knowledge of impact of disaster on
		TL-24 NL O	communities
		Unit No. 3	10 study the disaster management cycle and management
		Unit No. 4	To study the policy issues involved in disaster management

in disaster management Gr. D (FCW) 10 IV CHILD WELFARE SERVICES Unit No. 1 - To gain knowledge on the various policies for children established by the government. Unit No. 2 To get exposure to Child Rights which are a component or human rights Unit No. 3 To understand the current concerns with regard to child rights in various fields.
Gr. D (FCW) 10 IV CHILD WELFARE SERVICES Unit No. 1 - To gain knowledge on the various policies for childrer established by the government. Unit No. 2 To get exposure to Child Rights which are a component or human rights Unit No. 3 To understand the current concerns with regard to child rights in various fields.
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unit No. 3 human rights Unit No. 3 To understand the current concerns with regard to child rights in various fields.
Unit No. 3 To understand the current concerns with regard to child rights in various fields.
rights in various fields.
Unit No. 4 To know the child related laws and policies and to
ameliorate the conditions of children in India.
Unit No. 5 To gain knowledge about the schemes advocating child
protection in India.
11 V Family Issues To understand the various legislations pertaining to family
and Social Work and marriage.
Intervention To know the policies and programmes related to family and
women and development.
To acquire knowledge and skills regarding social work
interventions in family setting.
Unit No. 1 - To know the concepts and programmes of family life
education
Unit No. 2 To gain the understanding of population policy.
Unit No. 3 To gain the conceptual understanding of family violence
and its implications.
Unit No. 4 To know various legislations related to family and marriage.
Unit No. 5 To understand the ideologies related family, internationa
and national policies and programmes.
12 VI Social Work Intervention with Women and Disabled
Unit No. 1 - Strengthen the professional competency of social work
practice with women and disabled
Unit No. 2 Gain greater understanding about the concept of gender
equality and women empowerment
Unit No. 3 Able to analyse the situation of girl child and women in
India Unit No. 4 Cat acquainted with the efforts of different volunter
Unit No. 4 Get acquainted with the efforts of different voluntary
development and Pights of the disabled
Unit No. 5 Acquire various skills for social work intervention with
women and disabled
Cr F (MDSW)
13 IV Psychiatric Social Work
Is Isychiatric Social Work Init No. 1. > To understand concents of psychiatric social work
To understand a need for psychiatric social work in
India

		Unit No. 2	> To be aware of emergence of psychiatric social work
			\succ To understand the roles, functions, and limitations of
			psychiatric social worker
		Unit No. 3	\succ To get awareness about concept and need of counseling.
			\succ To get orientation of various behavior therapies.
		Unit No. 4	> To get orientation of CBT and REBT.
			\succ To understand the humanistic therapies.
		Unit No. 5	\succ To understand applications of therapies in different
			settings and issues.
			> To address psycho-social issues through psycho-
			therapies.
14	V		Preventive and Social Medicine-II
		Unit No. 1 -	\succ To understand family planning and its scope.
			To understand sociology involved in family planning.
		Unit No. 2	➤ To be aware of MCH services.
			To understand child related health, human rights issues.
		Unit No. 3	To get awareness about care and rehabilitation.
			\succ To get orientation of various GOs and NGOs efforts in
			the field of disability care and rehabilitation.
		Unit No. 4	\succ To get orientation of health education and promotion
			\succ To understand approaches of health education and
			promotion.
		Unit No. 5	To understand legal aspects of general health.
			To get orientation of medico-legal offences.
15	VI		Psychiatry and Mental Health-II
		Unit No. 1 -	To introduce basic concepts of mental health.
			To understand the prevalence of CMD.
		Unit No. 2	To be aware of various laws related to mental health
			To be aware of mental health policy.
		Unit No. 3	\blacktriangleright To get awareness about level of preventions in mental
			health
			To get awareness of relation between civil society and
			mental health
		Unit No. 4	 To get orientation of mental health education.
			> To understand the need of promotion of mental health
	-	TI:4 NI 7	education
		Unit No. 5	▶ 10 understand different models of mental health
			education
			rounderstand different models of mental health
			intervention

Head of Department

Department of M.S.W

DEPARTMENT OF BIOTECHNOLOGY (B.SC.)

Sr.No.	Name of the program	Program outcomes
1	B Sc III - Biotechnology	• To attain the capability to employ in independent and life-long learning in the broadest context
		socio-technological changes and use recent techniques betterment of mankind
		• Understand the issues of environmental, pharmaceutical, agricultural, medicinal, industrial contexts and uphold development.
		• To inculcate research attitude among the students
		• To initiate skill oriented entrepreneur leadership
Sr.No.	Name of the program	Program specific outcomes
1	B Sc I Biotechnology	Understand the nature and basic concepts of Cell biology, Taxonomy, genetics, Ecology, Animal and plant development, Biostatistics, Computer science, Biochemistry and metabolism, Chemical and physical science, Microbiology
2	B Sc II	 Acquaint the students with new techniques in the field of animal, plant, microbial genetics and basic Immunology and immune-techniques Acquaint the students with biochemical techniques used to isolation, screening use plant and animal extracts
3	B Sc III	 Understand the applications of Biotechnology and genetics in Agriculture, Pharmaceuticals, Medicine, food industries, Apiculture, sericulture, poultry ,dairy, fishery, goat and reproductive biology , immunology Acquaint the students with the processes and standard procedures in the industries
Sr. No.	Name of the program	Course outcomes
	B Sc Biotechnology	 Learners will develop conceptual clarity with regard to the new ideas in the genetic engineering. Learners shall know the importance of enzymes. Learners will know the importance of the significance and advantages of each each industrially important enzyme isolated from gage 82 of generation.

	•	Learners will understand that scientific use of microorganism and GMOs. Learners will be able to recall applications and uses of GM plants and animals.
	٠	Learners will be able to understand the processes involved in developmental processes and its genetics and its application
	•	Learners would appreciate the well planned organization of animal and plant tissue culture systems.
	•	The course will prepare learners to develop broad understanding of the different areas and significance of genetic engineering, food and dairy technology, bioinformatics, drug designing, nanotechnology. Moreover, it will also develop critical thinking and assist students in preparation for employment in pharmaceutical, food, diary, agricultural, medicinal industry and related areas.
	•	Learners will be able to understand the different issues regarding GMOs, patenting, its impact and laws governing environmental safety and management.

Dr. N. B. Patkar Dept. of Biotechnology

DEPARTMENT OF BIOTECHNOLOGY (M.SC.)

Sr.	Name of the program	Program outcomes
No.		
1	M. Sc Biotechnology	 Programme outcome of M. Sc Biotechnology is to produce competent biotechnologist's who can employ and implement their knowledge base in premium processes and applications which will profoundly influence or utilized for existing paradigm of agriculture, industry, healthcare and restoration of degraded environment to provide sustainable competitive edge to present society. Students will exhibit contemporary knowledge in Biotechnology and students will be eligible for doing jobs in various sectors of pharmaceutical and biotechnological industry. Understand the foundational concepts of molecular biology, and how these impact biotechnology research and development in the diverse fields that span healthcare and agriculture. To inculcate research attitude among the students
		• To initiate skill oriented entrepreneur leadership
Sr. No.	Name of the program	Program specific outcomes
1	M. Sc Biotechnology	 Students will be able design, conduct experiments, analyze and interpret data for investigating problems in Biotechnology and allied fields. Higher studies (M. Phil, Ph. D) can be pursued in order to attain research positions. Various examinations such as CSIR-NET, GATE, ICMR, DBT and many other opens channels for promising career in research. Some of the major pharmaceutical and drug companies' highering biotechnological professionals include Ranbaxy, Hindustan Lever and Dr Reddy's Labs, food processing industries, chemical industry and textile industry as well. Beside this industries also employ bio-technological professionals in their marketing divisions to boostup business in sectors where their products would be required. Entrepreneurship ventures such as consultancy and training centres can be opened. Page 84 cf

		in academics as well.
		• Several career opportunities are available for students
		with biotechnology background abroad especially in
		countries like Germany, Australia, Canada, USA and
		many more where biotechnology is a rapidly
Sr	Name of the program	Course outcomes
51. No	Name of the program	Course outcomes
190.	M. So I Distashu alagu	Minuchialagu
	NI. SC I Diotechnology	• This course will aid students to acquire skills and
	Sem-1	 This course will ad students to acquire skins and competency in microbiological laboratory practices applicable to microbiological research or clinical methods, including accurately reporting observations and analysis. Students will gain awareness about the microbes
		present in the environment and their impact
		Concept of Biochemistry
		• Students will be imparted complete knowledge
		about structure and function of different
		biomolecules (proteins, lipids, nucleic acids, and carbohydrates) found in living cells.
		• Also the course will provide the knowledge how
		biomolecules are synthesized and metabolized inside
		living cells
		Inheritance Biology
		• After completing the course on inheritance complete
		knowledge as how genes are transmitted in plants
		and animals from one generation to another will be
		imparted
		• Along with this the course will highlight the role of
		genetics / mutations in animal and plant breeding
		Biostatistics and Bioinformatics
		• The primary goal of this course is to upcover how
		• The primary goar of this course is to uncover now various tools and techniques of bioinformatics can be
		utilized in studies pertaining to macromolecules
		(DNA DNA protein)
		(DNA, KNA, protein).
		• After completing this course students will be able to
		analyze, interpret and study biological data
		(sequence, structure, etc) stored in various databases
	0. 11	available on internet.
	Sem-II	• In particular, this course will focus on different
		• In particular, this course will locus on different

	attributes of living cells, how cells are formed, how
	cells interact along with the cell adhesion and cellular
	signaling.
	• Specific knowledge will be imparted about role of
	cell division and its regulation on diseases like
	concer
	Engume technology
	• Upon successful completion of this course, the
	student will learn the major classes of enzyme and
	their functions in the cell.
	• The course also provides information pertaining to
	role of co-enzyme cofactor in enzyme catalyzed
	reaction, properties of enzymes and regulation of
	biochemical pathways.
	• Differentiate between equilibrium and steady state
	kinetics and analyzed simple kinetic data and
	estimate important parameter (Km. Vmax. Kcat etc).
	Molecular Cell Processing
	• Course on molecular cell processing will enhance the
	knowledge base about functional and structural
	organization of nucleic acid
	The source particularly sime at understanding
	• The course particularly aims at understanding
	structure, synthesis and replication of nucleic acids.
	Immunology and Immunotecnniques
	• The course will provide technical knowledge as to
	how different diseases are caused and various
	responses mediated by living cells to combat
	pathogen attack.
	• At The course will provide sound knowledge of how
	immune system deals with various pathogens,
	different processes and cell types involved in
	prevention of disease.
	• Along with this the students will become aware about
	concept, synthesis and action mechanism of vaccines
M. Sc II Biotechnology	Industrial and Environmental Biotechnology
Sem-III	• Learning outcome of Environment Biotechnology is to
	describe existing and emerging technologies that are
	important in the area of environment and the
	principles and techniques which underline the
	application of biosciences address environmental
	issues including pollution mineral resource
	renewable energy and water recording
	Course will have a specific force on biogeneralistics
	• Course will have a specific focus on bioremediation
	and treatment of polluted effluent.
	• The course will also provide conceptual knowledge

	and significance of genetically modified microbes
	Genetic Engineering
	 Learning outcomes of this course are technical knowhow on versatile techniques in recombinant DNA technology. An understanding on application of genetic engineering techniques in basic and applied experimental biology and proficiency in designing and conducting experiments involving genetic manipulation. The course will provide techniques involved in production of transgenic plants and animals and their
	pros and cons.
	 Flant Biotechnology The student will acquire knowledge about the range of approaches to manipulate and improve plants. Students will demonstrate the ability to develop, interpret, and critically evaluate modern approaches to scientific investigation in field of agriculture.
	 Computational structure biology & Drug designing This course offers the students comprehensive information and insights in understanding disease mechanism through biomolecular. The students will gain an understanding in both scientific knowledge of designing and developing navel drug for emerging diseases, and business challenges in biopharmaceutical companies, including regulatory issues.
Sem-IV	 Animal biotechnology & Stem cell technology The course is designed to give students a perspective on recent advances in Animal Biotechnology. Students will get familiarized with the different approaches to generate transgenic animals for various applications. The concept of transfer of new genes in animal cells and animal cloning along with gene therapy and its significance will be imparted to the students. To know how stem cells are utilized in medical applications.
	 Advanced analytical Techniques Upon successful completion, students will have the knowledge and skills to explain the theoretical aspects of key analytical techniques and instruments used in industries including electron microscopy, X-ray diffraction, mass spectrometry and spectroscopy.

 Strategically plan analytical campaigns t different types of samples and research including selection of the most technique/instrumentation for the student project. Undertake the correct sample prepar characterization prior to analysis by t techniques or instruments. Design an analytical work-flow to acquin achieve the research objectives of their pro 	to apply to objectives, appropriate ts' research ration and the chosen re data and oject.
Research Methodology and IPR	
Course on research methodology wi knowledge base as to how to design project and about different aspects in carrying out research.	a research in nvolved in
• Students will learn the methods of reviewing a research objective,	sampling, conducting
experiments and interpretation of results.	
• The concept of patent, forms of patent	and patent
procedures in India.	1
Medical Biotechnology and Bio-nanotechno	ology
• To enlighten the knowledge of the S	tudents on
different areas of Medical Biotechnology	
• To train the Students in a hospital based	l setup and
familiarize them with the clinical diag	gnostics of
To make Students acquainted with the f	undomantal
• To make students acquainted with the fill concepts of nanotechnology and de	evelop an
understanding to employ its principles	in modern
biotechnology applications.	
Dissertation	
This course will include allotment of an	individual
research work to each student to be car	ried out in
fourth semester.	
This will not only enhance knowledg	ge base of
students but also provide them exposure a	s to how to
andust and some out a response has diss	
conduct and carry out a research based task	K.
 Students will also learn how to compile an 	k. nd interpret

Dr. N. B. Patkar Dept. of Biotechnology

DEPARTMENT OF BIOINFORMATICS

Sr.	Name of the program	Program outcomes
No.		
1	M. Sc Bioinformatics	 This course will provide the knowledge of bioinformatics to interpret the rapidly expanding amount of biological information & discuss the basic concepts of bioinformatics and focus how to identify, seek, establish, maintain and exchange research information in biology. Students will exhibit contemporary knowledge in developing new and more accurate algorithms and the development of High Performance Computing coupled with DNA sequencing, serial analysis of gene expression, microarrays, and new mass spectrometry Understand the foundational concepts & review the major scientific databases needed for research problems in biology.
Sr	Name of the program	Program specific outcomes
No.	Name of the program	rogram specific outcomes
1	M. Sc Bioinformatics	 Students will be able to access several open resources in the form of biological databases and tools for the analysis of experimentally generated biological data and will also be equally capable to develop high throughput databases and many tools to be applied in bioinformatics. Higher studies (M. Phil, Ph. D) can be pursued in order to attain research positions. Various examinations such as CSIR-NET, GATE, ICMR, ICAR, DBT & BINC and many other opens channels for promising career in research. Employment opportunities in various industries in the applied aspects of Biotechnology, Microbiology, Molecular biology, Pharma & Biopharma, Drug discovery and Drug design Information technology and Healthcare IT. Ample opportunities to take up consultancy and contract research in the field of biology for the management and analysis of molecular data. Several career opportunities are available for students with bioinformatics background abroad

		especially in Europe, USA, Japan and Malaysia.
Sr. No.	Name of the program	Course outcomes
	M. Sc I Bioinformatics	 In particular, this course will focus on different attributes of living cells, how cells are formed, how cells interact along with the cell adhesion and cellular signaling. The course will introduce the basic concepts of genetics and much molecular process including central dogma of molecular biology. This course will aid students to acquire skills and competency in microbiological laboratory practices applicable to microbiological research or clinical methods, including accurately reporting observations and analysis. Students will gain awareness about the microbes present in the environment and their impact. The primary goal of this course is to uncover the basic and advanced tools and biological databases to the students and make them familiar with the same. The course also introduces students with the concepts of basic and object oriented computer programming languages and their respective applications in biological sciences. Students will be imparted complete knowledge about structure and function of different biomolecules (proteins, lipids, nucleic acids, and carbohydrates) found in living cells. The course will provide sound knowledge of how immune system deals with various pathogens, different processes and cell types involved in prevention of disease. An understanding on application of genetic engineering techniques in basic and applied experimental biology and proficiency in designing and conducting experiments involving genetic manipulation.
	M. Sc II Bioinformatics	• This course offers the students comprehensive information and insights in understanding disease
		mechanism through biomolecular.
		scientific knowledge of designing and developing navel drug for emerging diseases, and business challenges in biopharmaceutical companies,

including regulatory issues.
• Upon successful completion, students will have the
knowledge and skills to explain the theoretical
aspects of key analytical techniques and instruments
used in industries including electron microscopy, X-
ray diffraction, mass spectrometry and spectroscopy.
• Students will be able to learn and create, retrieve,
update and manage biological data using Structure
Ouery language and oracle application programming
languages in DBMS.
• Students will be able to learn molecular and
computational modeling and molecular simulations
to study the behavior of molecular molecular
systems ranging from small chamical systems to
large biological and material accomplian
Course on research methodology will meride
• Course on research methodology will provide
knowledge base as to now to design a research
project and about different aspects involved in
carrying out research.
• Students will learn the methods of sampling,
reviewing a research objective, conducting
experiments and interpretation of results.
• The concept of patent forms of patent and patent
procedures in India.
• Students will gain the knowledge of informatics
applied in healthcare or individual health, pathology
and health information system.
• Application of bioinformatics in chemistry,
immunology, personalized medicine, genomics,
proteomics, metabolomics, interactomics and nano
sciences.
• This course will include allotment of an individual
research work to each student to be carried out in
fourth semester.
• This will not only enhance knowledge base of
students but also provide them exposure as to how to
conduct and carry out a research based task.
• Students will also learn how to compile and interpret
results.
• Students will also learn how to compile and interpret results.

DEPARTMENT OF GENETICS

Sr. No	Name of Brogram	Program out come
1	M.Sc. Genetics	 To Inculcate research values among the students Understand the issues of agricultural, genetic disorder, environmental, pharmaceutical, medicinal, industrial contexts and uphold development. To increase awareness about genetic diseases and genetic counselling to prevent genetically transfer of diseases Learners will be able to understand the genetical processes involved in animal and plant development and its application.
Sr. No	Name of Program	Program specific outcomes
1	M.Sc. Genetics	 To Increase the capability to employ in independent sector , in national, international genetic institutes and life-long learning in the broadest context socio-technological changes and use recent techniques betterment of mankind Learners will develop conceptual clarity with regard to the new ideas in the Plant breeding and tissue culture, genetic engineering, Genetic disorders. Learners shall know the importance of genes and their involvement in plant breeding and in development of new disease free plant variety. Learners will know the importance of the significance and advantages of each industrially important enzyme isolated from plants, animals and microbes. Learners will understand scientific use of microorganisms and Genetically Modified Organisms. Learners will be able to recall applications and uses of Genetically Modified plants and animals. Learners will understand Genetic modifications behind disease like Cancer and other inherited diseases.
		Learners would appreciate the well planned organization of animal and plant tissue culture systems.
		• The course will prepare learners to develop broad ,understanding of the different areas and significance of genetic engineering, Agriculture and seed technology, cancer genetics, various genetical disorders, bioinformatics, drug designing, nanotechnology. Moreover, it will also develop critical thinking and assist students in

		 preparation for employment in national and international agricultural research institutes, cancer research, pharmaceutical, medicinal industry and related areas Learners will be able to understand the different issues regarding Genetically Modified plants and animals, patenting, its impact and laws governing environmental safety and management.
Sr. No	Name of	Course Outcome
1	M.Sc. I Genetics	 Understand the nature and basic concepts of Mendelian Genetics, inheritance biology, plant and animal genetics, Biostatistics and population genetics, Cytogenetic and Genome Organization, Cellular and Molecular Biology, Acquaint the students with Clinical Bioinformatics, Regulation of gene expression and developmental, Biochemistry Advanced microbial genetics, Industrial and Environmental Biotechnology, Plant breeding and Tissue culture, Computational Structure Biology and Drug designing
2	M.Sc. II Genetics	 Acquaint the students with new techniques in animal, plant, microbial genetics, Cancer genetics, basic Immunology and immune techniques, Molecular medicine, Advance pharmaceutics, Medical biotechnology and bio-nanotechnology Acquaint the students with biochemical techniques used to isolation, screening and use of plant and animal extracts in gene sequencing, agriculture and seed technology

Dr. Archana S. injal Dept. of Genetics

DEPARTMENT OF NANOTECHNOLOGY

Sr.No.	Name of the program	Program outcomes
1	M.Sc II - Nanotechnology	Upon successful completion of this course students will be able to explain methods of fabricating papostructures
	Nanotechnology	 be able to explain methods of fabricating nanostructures. Relate the unique properties of Nanomaterials to reduce dimensionality of the material. Describe the tools for properties of nanostructures and discuss various applications of Nanomaterials and implications of health and safety related to Nanomaterials. On successful completion of this course, students would have the skills and knowledge to: Explain the fundamental principles of nanotechnology and their application to various fields. Apply Biological and physical concepts to the Nano-scale and Nano domain. Identify and compare state-of-the-art nanofabrication methods and perform a critical analysis of the research literature. Design processing conditions to engineer functional Nanomaterials.
		encountered in living systems.
Sr.No.	Name of the program	Program specific outcomes
1	M.Sc. I	Understand the nature and basic concepts of fundamental
	Nanotechnology	of Nanotechnology in Physics, Chemistry, Biotechnology, nano medicine. To understand the concept of nanomaterial fabrication, properties of Nanomaterials, characterization tools of Nanomaterials and various nanoforms carbon.
2	M.Sc. II	This programme aims to develop awareness &
	Nanotechnology	knowledge of different organizational requirement and subject knowledge through varied subjects and training methodology in students. To inculcate the students capability to work as entrepreneurs and techno managers with strong ethics and communication skills. The specific outcome includes training the students to take up wide variety of roles like researchers, scientists

		consultants, entrepreneurs, academicians, and industry leaders. And finally, to equip students to pursue higher education and research in reputed institutes at national and international level.
Sr No	Name of the program	Course outcomes
51.110.	M Sc	Upon successful completion of this course students will
	Nanotechnology	be able to explain methods of fabricating nanostructures
	Nanotechnology	 Relate the unique properties of Nanomaterials to reduce dimensionality of the material. Describe the tools for properties of nanostructures and discuss various applications of Nanomaterials and implications of health and safety related to Nanomaterials. On successful completion of this course, students would have the skills and knowledge to: Explain the fundamental principles of nanotechnology and their application to various fields. Apply Biological and physical concepts to the Nano-scale and Nano domain. Identify and compare state-of-the-art nanofabrication methods and perform a critical analysis of the research literature. Design processing conditions to engineer functional Nanomaterials. Evaluate current constraints, such as regulatory, ethical, political, social and economical, issues encountered in living systems.

Dr. Mahesh C Partapure Dept. of Nanotechnology