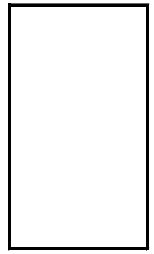
2. 6. 1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the institution are stated and				
Name of the pr	Name of course	course code	Course outcomes	Programme outcomes
	Diversity of microbes	B - 101	After the completion of the course the students will be able to 1. understand the diversity of Bacteria, Viruses, and Fungi; 2. Know the systematic, morphology, and structure of Bacteria, Viruses, and Fungi; 3. Know About the different life cycles of Bacteria, Viruses, and Fungi. 4. Know both the beneficial and harmful aspect of Bacteria, Viruses, and Fungi.	
	Diversity of algae, lichens & Bryophytes	B - 102	After the completion of the course the students will be able to 1. Get the knowledge of the systematics, morphological diversity, structure, reproduction and life cycles of the lower plants such as algae, bryophytes and Lichens. 2. understand the useful and harmful activities of Algae. 3. Understand the characteristics and lifecycles of selected genera.	
	Diversity of pteridophytes & gymnosperms	B - 103	After the completion of the course the students will be able to 1. develop understanding on morphology, anatomy and life cycle of pteridophytes and gymnosperms. 2. develop understanding of plant evolution and their transition to seed habits. 3. know about plant diversity and their economic values. 4. understand importance of fossil plants and techniques used to study the fossils.	

Practical	B - 401	
Inorganic chemistry	B - 106	1. On completion of this course, students will develop the understanding about bonding theory for inorganic molecules. 2. Students will gain the knowledge about periodic properties of elements and their basic trends.
Organic chemistry	B - 107	After completion of course, students will develop an understanding of basics of organic chemistry of saturated and unsaturated hydrocarbons along with knowledge of different types of reaction, reaction mechanisms and stereochemistry of compounds.
Physical Chemistry	B - 108	After completion of course, students will develop an understanding of various states of matter including colloidal state. They will be also able to predict the rate of chemical reactions by applying the principles of chemical kinetics and catalysis.
Practical	B - 406	Students will be able to perform qualitative and quantitative analysis of chemical substances.
Lower non chordata (Protozoa Helminths)	B - 120	
Higher non chordata (Annelida-Echinodermata)	B - 121	
Cell biology and genetics	B - 122	
Practical	B - 420	



	Fundamentals of Microbiology	B - 113	
	Microbial Physiology and Bio-chemistry	B - 114	
	Tools and Techniques in Microbilogy	B - 115	
	Practical	B - 413	
	Mechanics and wave motion	B - 116	
	Kinetic theory and therrnodynamics	B - 117	
B. Sc. I Year	Circuit fundamentals and basic electronics	B - 118	
A. Biology group	Practical	B - 416	
B. Mathematics Group	Algebra and trigonometry	B - 126	
C. Statistics Group	Calculus	B - 127	
D. Microbilogy Group	Geometry and vector calculus	B - 128	

E. Industrial Chemistry Group	Statistical methods	B - 194	1: Understand the concept of a statistical population and a sample from a population. 2: Classification and tabulation of data. Different types of data. Diagrammatical and graphical representation of data. 3: Measures of central tendency, Dispersion, Skewness and Kurtosis and Moments. 4: Concept of correlation, correlation coefficients - Karl Pearson's correlation coefficient, Spearman's rank correlation coefficient, multiple and partial correlation coefficients, Intraclass correlation.
	Probability	B - 195	1: Understand discrete and continuous distributions and identify their characteristics. Students will be able to identify the type of statistical situation to which different distributions can be applied. Use the different distributions in solving statistical problems.
	Probability distribution and theory of attributes	B - 196	2: Basic idea of Box Plot, QQ Plot and PP Plot. 3: Gain knowledge in sampling distribution theory and their applications in statistical inference. Chi- square, t and F distribution, Chebyshev's inequality, Weak Law of Large numbers and the Central Limit Theorem. 4: Gain knowledge in the concepts of Theory of estimation and distinguish various types of estimation. Know the properties of estimators and construction of
	Practical	B - 494	

Industrial aspects of organic and inorganic chemistry	B - 153	1. From this course students will gain the knowledge and skills related to various industrial/ natural gases, petroleum refining process and extraction of organic compounds from petroleum. 2. Student will get knowledge about types of coal, their properties and chemical derived from it. 3. Students will gain an understanding of basic metallurgical operations & principles of extraction of some metals like Iron, Copper, Lead, Silver, Sodium, Aluminium and Zinc. 4. This course also gives insight to natural resources like Cellulose, Starch regarding their properties, modification, important industrial chemicals derived from them. 5. Students will gain an understanding of inorganic materials of industrial importance regarding structure and modifications of – alumina, silicates, clays, mica, carbon, zeolites.
Industrial aspects of physical Chemistry, Material and Energy balances	B - 154	1. Students will gain an understanding of chemical calculations, material and energy balances. 2. Upon completion of this theory course students would gain knowledge of surface chemistry, colloidal state and interfacial phenomena.
Unit operations, utilities, fluid flow and heat transport in chemical industry	B - 155	1. From the course students will gain knowledge and skill related to utilities of processes in industries such as distillation, evaporation, absorption, filtration, extraction and drying etc. 2. This course also gives an idea regarding fluid flow and heat transfer methods/ techniques used in industries.

	Practical	B - 453	From this lab course students should be able to know about 1. preparation of standard solutions, estimation of concentrations through volumetric analysis 2. determination of viscosity, surface tension of liquids 3. determination of distribution coefficient, Refractive index of materials and 4. Chromatographic separations.
	Foundation Course : Bhartiya Sanskrity Evam Rastra Gaurav	B - 009	
	Qualifying Course: Environmental Studies	B - 008	
	Qualifying Course: Sports and Physical Education	B - 001	

	Diversity of angiosperms: systematics, development & Reproduction	B - 201	After the completion of the course the students will be able to: 1. understand the principles of angiospermic classification and plant nomenclature. 2. Differentiate between different systems of angiosperm classification. 3. recognize various angiosperm species and genera. 4. Know about herbarium techniques and importance of botanical gardens. 5. differentiate between the different angiospermic plants. 6. spot the economic significance of angiosperm plants. 7. Understand the importance of Anatomy and Embryology and the scope of its application. 8. Understand the various plants tissue systems. 9. Understand the reasons of normal and abnormal secondary growth in plants. 10. carry out the anatomy techniques. 11. Able to understand the differences between micro-sporogenesis and mega-sporogenesis as well as reproductive behavior for plant breeding. 12. identify endosperm, embryogeny and polyembryony for further development of plants.

Cytology, Genetics, Evaluation & Ecology	B - 202	After the completion of the course the students will be able to 1. understand the structure and function of various cell organelles and learn the process and significance of Mitosis and Meiosis 2. gain the knowledge about chromosome structure, chromosome models and study the structural and numerical chromosomal aberrations and their consequences 3. Learn about Mendelian principles and non- Mendalian genetics. 4. Familiarize with Evolution & Emergence of evolutionary thoughts. 5. Understand the process of plant succession, Ecosystems, and adaptations in plants.
Plant physiology and biochemistry	B - 203	After completion of the course the students will be able to 1. understand the operations of all physiological, biochemical and enzymological processes in plants. 2. know the disorders associated with mineral deficiency and their management. 3. understand the various processes associated with production of different metabolites, dietary supplements etc. 4. understand the relation of plants with their environment and changes in physiology of plants due to altered environmental conditions.
Practical	B - 501	

Inorganic chemistry	B - 206	1. On completion of this course, students will be able to understand about coordinated bond in transition metals and basic bonding theory like VBT and Werner theory. 2. Students will gain knowledge about different type of properties of lanthanide and actinides metal and their application.
Organic chemistry	B - 207	After completion of course, students will develop an understanding on Alcohols, Ethers, Aldehydes, Ketones along with introduction of Aromatic Compounds. Carboxylic acids, nitro compounds and carbohydrates.
Physical Chemistry	B - 208	Students will develop an understanding of basic principles and applications of Chemical Thermodynamics and Electrochemistry. .
Practical	B - 506	Students will be able to perform qualitative and quantitative analysis of chemical substances.
Chordata	B - 220	
Animal distribution, evolution and developmental biology	B - 221	
Physiology and bio-chemistry	B - 222	
Practical	B - 520	
Microbial genetics and molecular biology	B - 213	

B.Sc. II a. Biology Group b. Mathematics Group c. Statistics Group d. Microbilogy Group e. Industrial Chemistry Group	Environmental microbiology	B - 214		
	Computer, bioinformatics and Biostatics	B - 215		
	Practical	B - 513		
	Physical optics and lasers	B - 216		
	Electromagnetics	B - 217		
	Elements of quantum mechanics, atomic and moleculars speetra	B - 218		
	Practical	B - 516		
	Linear algebra and matrices	B - 226		
	Differential equations and integral transforms	B - 227		
	Mechanics	B - 228		
	Statistical inference	B - 294	Statistical inference: Drawing conclusions about the whole population on the basis of a sample. Statistical inference is the process of deducing properties of an underlying probability distribution by analysis of data. Inferential statistical analysis infers properties about a population, this includes testing hypotheses and deriving estimates.	On successful completion of this programme, 1. Students will be skilled in problem solving, critical thinking and analytical reasoning as applied to scientific problems. 2. Students will be able to function as a member of an interdisciplinary

Survey Sampling	B - 295	Survey Sampling provides the tolls/ techniques for selecting a sample of elements from a target population keeping in mind the objectives and nature of population. Most of the research work is done through Sample Survey. The students are able to know about Indian Official Statistical System	member of an interdisciplinary problem solving team. 3. Student can further prepare for competitive exams such as IFS, UPSC, SSC, CGL, etc.
Analysis of Variance abd Design of Experiment	B - 296	DOE is a tool to develop an experimentation strategy that maximizes learning using a minimum of resources. Extensively used by engineers and scientists involved in the improvement of manufacturing processes to maximize yield and decrease variability. It is widely used in many fields with broad application across all the natural and social sciences, to name a few: Biostatistics, Agriculture, Marketing, Software engineering. Industry etc.	
Practical	B - 594		
Material science and industrial pollution	B - 253	1. Upon completion of this theory course, students would gain knowledge about various materials like metals and alloys, cement, ceramics, glass and advanced materials like polymer and composite materials; and corrosion. 2. Students will gain knowledge regarding various pollutants, their statutory limits and pollution evaluation methods in respect to air pollution, water pollution, pesticide pollution, noise pollution and radiation pollution.	

Unit processes in organic chemicals manufacture	B - 254	1. This course enriches the students with knowledge regarding various chemical process of organic chemistry such as nitration, sulphonation, halogenation, oxidation, hydrogenation, alkylation, ammination, esterification and hydrolysis. 2. These organic chemical processes are important tools to synthesis of important pharmaceuticals or drug molecules and other industrially important organic compounds.
Effluent treatment, waste management and process in strumentation	B - 255	1. This course gives an idea regarding effluent treatment & solid waste management; and the process instrumentation for aerobic and anaerobic treatments. 2. From this course student will get theoretical knowledge of thermal instrumentations, pressure measuring devices, liquid level measurement, viscosity, density, pH and conductivity measurement.
Practical	B - 553	Students gain knowledge and skill related to this paper are as follows- 1. Instrumental methods for water analysis involving volumetric analysis of solid content, hardness, COD etc. 2. Instrumental methods of analysis using pH metric and conductivity methods. 3. Fuel analyses in terms of flask point, ignition point, smoke point etc. 4. Laboratory synthesis using unit processes such nitration, sulphonation, Friedel Crafts reaction, esterification, hydrolysis, oxidation, halogenations, reduction and polymerization.

	Foundation Course : Language Comminucation and Writing Skill : Hindi /English / Sanskrit	B - 011/ B - 112/ B - 113	
	Qualifying Course: General Awareness	B - 010	
	Qualifying Course: Sports and Physical Education	B - 002	
	Plant resources utilization palynology, plant pathology & Biostatistics	B - 301	After completion of the course the students will be able to 1. know the various plant products important to humans. 2. know about medicinal values of plants and plant parts. 3. Develop knowledge of the morphology, structure and function of the pollens and spores and the applications of the pollen analysis in taxonomy, ecology, geology, medicines etc. 4. Get the skill of identification of the economically important plants and management of plant pathogens. 5. apply the basic statistical concepts in research studies.

Molecular biology & biotechnology	B - 302	After the completion of the course the students will be able to: 1. to know about structure and properties of polysaccharides, amino acids, proteins, vitamins and hormones. 2. gain knowledge about enzymes and enzyme kinetics. 3. understand basic laws of thermodynamics and bioenergetics of biomolecules 4. understand DNA &RNA their specific roles in the cell. 5. understand about the genetic code, protein synthesis and its regulation. 6. understand the mechanism of DNA replication in prokaryotes as well in eukaryotes. 7. understand the mechanism of transcription and gene expression and gene regulation at various levels of central dogma. 8. understand the basics of biotechnology and it uses in healthcare and environment. 9. understand the basic concepts of recombinant DNA technology, transgenic methods in plants.
Environmental Botany	B - 303	After the completion of the course the students will be able to: 1. identify different types of natural resources and their conservation 2. become aware of different sources, effects and control of environment pollutants. 3. Understand about the plant population, communities and phytogeography. 4. understand the biodiversity and the methods of biodiversity conservation.

Practical	B - 601	
Inorganic chemistry	B - 306	1. On completion of this course, students will develop the understanding about crystal field theory in coordinated compound and provide the knowledge of the color for transition metal complexes. 2. This course will also help to understand the role of metals in biology through bioinorganic chemistry. Provide knowledge about enzyme function and protein functions by metals.
Organic chemistry	B - 307	Students will gain theknowledge of stereochemistry, chromatography, and hetero-cyclic compounds. Bio-molecules and their chemical synthesis.
Physical Chemistry	B - 308	Students will develop an understanding of basic principles and applications of Quantum Chemistry, Spectroscopy, Photochemistry and Colligative properties.
Practical	B - 606	Students will be able to perform qualitative and quantitative analysis of chemical substances.
Applied and Economic zoology	B- 320	
Biotechnology, Immunology, biological tools and techniques and biostatistics	B- 321	
Ecology, Microbiology animal behavior and pollution and toxicology	B- 322	

	Practical	B - 620	
	Immunology and medical microbiology	B - 313	
	Agriculture & food microbiology	B - 314	
	Industrial microbiology	B - 315	
	Practical	B - 613	
	Relativity and statistical physics	B - 316	
	Solid state & nuclear physics	B - 317	
	Solid state electronics	B - 318	
	Practical	B - 616	
B.Sc. III	Analysis	B- 326	
a. Biology Group	Linear programming	B- 327	
b. Mathematics Group c. Statistics Group	Numerical methods and fundamentals of computer	B- 328	
d. Microbilogy Group e. Industrial Chemistry Group	Non- parametric Methods and Numerical Analysis	B - 394	The learning objectives include: 1) Study of theoretical concepts of Bivariate Normal and Multivariate Normal Distributions along with their properties. 2) Analyze multivariate data. 3) Application of Wald's SPRT and Non-Parametric methods of testing of hypothesis.

Applied Statistics	B - 395	1. This course will help students to know the applications of Statistics and learn and apply these techniques in the core course of their study. 2. This course will give exposure to four applied fields of statistics viz. Time Series, Index Numbers, Statistical Quality Control and Demographic methods. 3. They will be having hands on practice of working on the data and interpreting the results related to above mentioned fields.
Linear Programming & computational Techniques	B - 396	1. In this course students learn to write code in C to do statistical computing and its role in problem solving. C is a powerful, structured programming language widely used in all areas of study. 2. Student will understand basic data structures and develop logics which will help them to create well-structured programs using C language. It develops the analytical as well as logical thinking of the student. 3. It also opens the adaptability to learn any other programming language and using computer languages/software as a tool to analyze data statistically.
Practicals	B - 693	
Industrial chemistry analysis	B - 353	On successful completion of course, students will gain the knowledge of important topics of industrial chemistry regarding modern instrumental analysis 1. chromatographic techniques such as paper chromatography, TLC, GLC, HPLC; and 2. spectroscopic methods like UV-visible spectroscopy, IR – Raman spectroscopy, NMR Spectroscopy, ESR spectroscopy, Atomic absorption spectroscopy, Neutron diffraction etc.

Chemical process economics and Entrepreneurship	B - 354	This course gives the basic knowledge of factors involved in project cost estimation, capital formation, methods of determining depreciation and some aspects of marketing, pricing policy, profitability criteria and entrepreneurship.
Any two of the following		
(a) polymers	B - 455	Students gain knowledge and skills related to this paper are as follows. 1. The science of large molecules, types & general classification of polymers, molecular weight and its distribution. 2. Synthesis, chemistry, properties and applications of thermosetting and thermoplastics polymers. 3. This course also includes study of polymers synthesis, polymer properties, polymer processing, polymer degradation etc.

(b) pharmaceuticals	B - 457	This course will impart knowledge and skills to students related to - 1. Introduction related to pharmaceutical industry and various types of pharmaceutical excipients, raw materials and process of manufacture of the drugs such as sulpha drugs, antimicrobial, antalgesic- anti-inflammatory, steroidal hormones, vitamins, blockers, cardiocascular agent and antihistamines. 2. Chemical constitution of plants – including carbohydrates, amino acids, proteins, fats, waxes, volatile oils, terpenoids, steroids, saponins, flavonoids, tannins, glycosides, alkaloids. 3. Brief idea of microorganisms and Enzyme systems.
(c) heavy and fine chemicals	B - 459	On successful completion of thiscourse, students will gain the knowledge and skills related to manufacture of heavy organic chemicals, heavy inorganic chemicals, fine chemicals with reference to (i) Raw material, (ii) production process, (iii) quality control, (iv) hazards and safety, (v) Effluent management.

	Practical	B - 653	From this course, students will learn about 1. Synthesis of common industrial compounds involving two step reactions such as 4-amino benzoic acid, 4-nitro benzoic acid, paracetamol, oils of winter green etc. 2. Determination of acid value, Iodine value and saponification value. 3. Instrumental methods of analysis – colorimeter, flame photometer. 4. Preparation of urea formaldehyde resin. 5. Industrial analysis of common raw materials as per the industrial specifications such as phenol, aniline, formaldehyde, hydrogen peroxide, acetone, etc. 6. Analysis of drugs regarding heavy metal content, chlorine content, sulphate ash and identification of drugs by TLC.	
	Qualifying Course: Sports & Physical Education	B - 003		
	Principles of Agronomy	D - 191		
	Fundamental of Soil Science	D - 192		
	Elements of Genetics	D - 193		
	Elementary Statistica and Applied Mathematics	D - 194		

B.Sc. (Ag.) I Sem	Agricultural meteorology	D - 195		
	Rural sociology and educational psychology	D - 196		
	Fundamental of horticulture	D - 197		
	Physical education (NA in Th.)	D - 198		
	Structural and spoken English	D - 199		
	Foundation Course: Bhartiya sanskrit evem gaurav	D - 009		
	Qualifying Course: Environmental Studies	D - 008		
	Irrigation and water management	D - 291		
	Fundamental of extension education and rural development	D - 292		

B.Sc (Ag.) II Sem	Elementary crop-physiology	D - 293		
	Introductory entomology	D - 294		
	Introduction plant pathology	D - 295		
	Elementary plant biochemistry and chemistry of plant products	D - 296		
	Introduction to Agricultural and natural resource economics and farm management economics	D - 297(old)		
	Introduction to Agricultural economics, agricultural marketing and co-operation	D - 297(new)		
	Cereals, millets and pulses crops (Field crops-I)	D - 391		

B. Sc. (Ag.) III Sem	Principles of plant breeding	D - 392		
	Farm structures, power and machinery	D - 393		
	Environmental science and agro ecology	D - 394		
	Natural resource economics and farm management economics	D - 395(new)		
	Agriculture marketing, export and cooperation	D - 395(old)		
	Vegetable production	D - 396		
	Elementary microbiology and soil microbiology	D- 397		
	Oil seeds and commercials crops (field crops-II)	D - 491		
	Breeding of field crops	D - 492		

B.Sc. (Ag.) IV Sem	Principles of soil physics and soil conservation	D - 493		
	Livestock production and management	D - 494	Basic understanding and knowledge of Dairy cattle Breed, feed and fodder management and Prevention of disease	
	Economic entomology	D - 495		
	Fruit production	D - 496		
B.Sc. (Ag.) V Sem	Introduction to plant biotechnology	D - 591		
	Milk and milk processing	D - 592	Learning and understanding of different processing methods of milk for longer storage and quality	
	Post harvest management of fruits and vegetables	D - 593		
	Crop pests and integrated pest management	D - 594		
	Weed management	D - 595		
	Crop disease and their management	D - 596		

	Soil fertility, fertilizers and integrated nutrient management	D - 597		
B.Sc. (Ag.) VI Sem		D - 691		
	Dairy products technology	D - 692	Learning of techniques for quality milk products production	
	Post harvest engineering	D - 693		
	Farming systems and sustainable agriculture	D - 694		
	Agriculture finance, business management and export	D - 695(new)		
	Agriculture finance, business management and trade	D - 695(old)		
	History and development of agri. Research and communication and difiusion of agri. Innovation	D - 696		

	Practical- plant pathology	D - 697		
	Ornamental horticulture	D - 698		
B.Sc. (Ag.) VII Sem	Rained agriculture dry land forming and water shed management (ICAR)	D - 791		
	Silviculture and agroforesrty agro forestry and special forestry (ICAR)	D - 792		
	Production technology of medicinal aromatic and spice crops plants crops spices medicinal and aroma crops (ICAR)	D - 793		
	Management of problems soild and water land	D - 794		

	Dairy chemistry and animal nutrition animal nutrition including fortage and grasses (ICAR)	D - 795	Understanding and learning of constituents of milk and cattle Feed, fodder and testing for their quality	
	Computer applications	D - 796		
B.Sc. (Ag.) VIII Sem	Agriculture extension	D - 891(a)		
	Agriculture economics	D - 891(b)		
	Agriculture botany	D - 891(c)		
	Agriculture chemistry	D - 891(d)		
	Agriculture dairy	D - 891(e)	Understanding and learning of livestock owner experience in field/village condition	
	Agriculture engineering	D - 891(f)		
	Agriculture horticulture	D - 891(g)		
	Agriculture soil conservation	D - 891(h)		
	Agriculture agronomy	D - 891(i)		
	Agriculture plant pathology	D - 891(j)		
	Agriculture entomology	D - 891(k)		

	Principles of economic analysis	A - 145		
	Indian economic problems	A - 146		
	Poetry	A - 109		
	Prose	A - 110		
	Physical Geography	A - 111		
	Hurnan Geography	A - 112		
	Practical	A - 711		
	Prachin evem madhyakaleen kavya	A - 113		
	Hindi natak & rangmunch	A - 114		
B. A. I (Economics/ English/ Geography/ Hindi/Library	Political history of Ancient India (B.C. 600 - A. D. 606)	A-115	Political History of Ancient India will give the student a basic knowledge of the pastoral and nomadic Indo-Aryans spread from the Punjab into the Gangetic plain, large swaths of which they deforested for agriculture usage. The composition of Vedic texts ended around 600 BCE, when a new, interregional culture arose. This course will help the students to understand what ancient history was and this will definitely help them to analyze and explain problems in the past.	

Hindi/Library & Information Science/ Political Science/ Sanskrit/ Sociology)	Political history of Ancient India (A.D. 606 - A. D. 1206)	A-116	Political History of Ancient India will give the student a basic knowledge and idea of the capital of Harshavardhana's Empire was Kannuaj. He ruled from 606 AD to 647 AD. His Empire extended from Punjab to northern Orissa. This course will help the students to understand what ancient history was and this will definitely help them to analyze and explain problems in the past.	
	Fundamentals of librarianship	A - 121		
	Information sources and services (theory)	A - 122		
	Political theory	A - 138		
	National movement and constitution of India	A - 139		
	Sanskritkavyam kavyashastrancha	A - 130		
	Vyakaranam, Anuvadeh, Sanskritsahityetihasshcha	A - 131		
	Introduction to sociology	A - 132		

	Society in India-structure and change	A - 133		
B. A. I	Foundation Course : Bhartiya Sanskrity Evam Rastra Gaurav	A - 009		
	Qualifying Course: Environmental Studies	A - 008		
	Qualifying Course: Sports and Physical Education	A - 001		
	National income analysis, money and banking	A - 245		
	Public finance and international trade	A - 246		
	Drama	A - 209		
	Fiction	A - 210		
	Economic Geography	A - 211		
	Geography of India	A - 212		
	Practical	A - 811		

	Adhunik Hindi kavya	A - 213		
	Hindi katha sahitya	A - 214		
B. A. II (Economics/ English/ Geography/ Hindi/ Library & Information	Political history of Medieval India (A.D. 1206 - A. D. 1526)	A- 215	Political History of Medieval India will give the student a basic knowledge of the past and a lot of learnings. The period between 1206 AD and 1526 AD in Indian History is known as the Delhi Sultanate. The period between 1206 AD and 1526 AD in Indian History is known as the Delhi Sultanate. THE DELHI SULTANATE PERIOD The period between 1206 AD and 1526 AD in Indian History is known as the Delhi Sultanate. During this period of over three hundred years five dynasties, (32 kings) ruled in Delhi. These were: The Slave Dynasty (1206 - 1290) The Khilji Dynasty (1290 - 1320) and so on. . This course will help the students to understand what ancient history was and this will definitely help them to analyze and explain problems in the past.	

Science/ Political Science/ Sanskrit/ Sociology)	Political history of Medieval India (A.D. 1526 - A. D. 1740)	A-216	Political History of Medieval India will give the student a basic knowledge and idea of the significance of Mughal Rule. The Mughal Empire at its zenith commanded resources unprecedented in Indian history and covered almost the entire subcontinent. From 1556 to 1707, during the heyday of its fabulous wealth and glory, the Mughal Empire was a fairly efficient and centralized organization, with a vast complex of personnel, money, and information dedicated to the service of the emperor and his nobility.	
	Knowledge organisation in libraries	A - 221		
	Information storage	A - 222		
	An outline history of western political thought	A - 238		
	Comparative government	A - 239		
	Natakam, Natya-shaityetihasashcha	A - 230		
	Indian Society-Issues and Problems	A - 231		

	Social change and social control	A - 232		
	Indian society-issues and problems	A - 233		
B. A. II	Foundation Course : Language Comminucation and Writing Skill : Hindi /English / Sanskrit	A - 011/ A - 112/ A - 113		
	Qualifying Course: General Awareness	A - 010		
	Qualifying Course: Sports and Physical Education	A - 002		
	Economics of growth and development	A - 345		
	Quantitative methods	A - 346		
	History of English literature	A - 309		

Indian writings in English	A - 310		
Environmental Studies	A - 511		
Any one out of the following			
(a) South West Asia	A - 512		
(b) South East Asia	A - 513		
(c) Far East Asia	A - 514		
(d) South Asia	A - 515		
Practical	A - 911		
Adhyatan Hindi Evan kaurvi lok kavya	A - 313		
Hindi nibandh and Anaya gandh vidyaye	A - 314		

B. A. III (Economics/ English/ Geography/ Hindi/ Library & Information Science/ Political Science/ Sanskrit/ Sociology)	Political Histroy of India (1740 - 1947)	A- 315	Political History of India will give the student a basic knowledge of the past that is in 1740 India appeared to be relatively tranquil. In the north the Persian Nadir Shah's invasion (1739) had proved to be only a large-scale raid. In the Deccan the Niẓām al-Mulk provided some measure of stability. In western India the Marathas were dominant. However, there was competition between Marathas, Mughals, and local rulers for political supremacy in the Deccan. There was a sense of impending change in the air; the Mughal emperor was sickly, the nizam was aged, and the Marathas were active and ambitious.	
	History of Indian Culture	A- 316	Political History of India will give the student a basic knowledge and idea of modern history. History of Modern India presents an authoritative overview of the	
	History of Modern world	A- 317		
	Computer applications in libraries	A - 321		
	Library management	A - 322		
	Principles of public administration	A - 338		
	(a) Indian political thought	A - 339		
	(b) International politics			

	Veda-Upnishad-Arshkavyam-Alankarashcha	A - 330		
	Gadyakavyam-Neetikavyam-Vayakaranam-Chandashcha	A - 331		
	Functions of sociological thought	A - 332		
	Social research methods	A - 233		
B. A. III	Qualifying Course: Sports & Physical Education	A - 003		
	History, Principles and Foundation of Physical Education	CC-101		
	Anatomy and Physiology	CC-102		
	Health Education and Environmental Studies	CC-103		
	Yoga Education	CC-104		

	Educational Technology and Methods of Teaching In Physical Education	CC-105		
	Organization and Administration	CC-106		
	Officiating and Coaching	CC-107		
	Sports Nutrition and Weight Management	CC-108		
	Track and Field (Running & Jumping Events.)	PC-101		
	Swimming/Gymnastics/Shooting (Any one)	PC-102		
B. P. Ed. I Yr	Yoga/Aerobics	PC-103		
	Indigenous Sports: Kabaddi / Malkhambh/ Kho-Kho etc. (Any one)	PC-104		

	Mass Demonstration Activities: March past / Dumbbells /Tipri / Wands/ Lezim / Hoop/Umbrella.	PC-105		
	Racket Sports: Badminton/ Table Tennis/Squash/ Lawn Tennis (Any one)	PC-106		
	Teaching Lesson Class Room Teaching (05 Lessons)	TC-101		
	Teaching Lesson	TC-102		
	a. General Lesson Plan (05 Lessons)			
	b. Lessons in outdoor Sports & Game activities (05 Lessons)			
	Sports Training	CC-201		

Computer Applications in Physical Education	CC-202		
Sports Psychology and Sociology	CC-203		
Measurement and Evaluation in Physical Education.	CC-204		
Kinesiology and Biomechanics	CC-205		
Research and Statistics in Physical Education	CC-206		
Sports Medicine, Physiotherapy and Rehabilitation.	CC-207		
Sports Management	CC-208		
Track and Field (Throwing Events)	PC-201		

Combative Sports :Martial Art/ Karate/ Judo/Fencing/Boxing/Taekwondo/ Wrestling, etc.,(Any two out of these)	PC-202		
Team Games Specialization: Baseball/Cricket/ Football/Hockey/Softball/Volleyball/Handball/ basketball/ Netball etc (Any two out of these)	PC-203		
Sports Specialization Track and Field /Swimming /Gymnastics (Any one)	PC-204		

B. P. Ed. II Yr	Games Specialization Kabaddi/ Kho-Kho/Badminton / Table Tennis/Squash/ Tennis etc (Any one out of these)	PC-205		
	Teaching Practices/Internship Teaching (4 week School) Teaching Lesson Plans for Racket Sport/ Team Games/Indigenous Sports (out of 10 lessons 5 internal and 5 external at practicing school)	TC-201		

Teaching Practices/Internship Teaching(4 week School) Sports Specialization: Coaching lessons Plans(One for Sports 5 lessons) (out of 10 lessons 5 internal and 5 external at practicing school)	TC-202		

	Teaching Practices/Internship Teaching(4 week School) Games Specialization: Coaching Lessons Plans(One for Sports 5 lessons) (out of 10 lessons 5 internal and 5 external at practicing school)	TC-203		

	Angiosperm taxonomy, plant resources and utilization	H- 1001	After the completion of the course the students will be able to: 1. understand the history, principles of angiospermic classification and plant nomenclature and ICBN. 2. Differentiate between different systems of angiosperm classification and different taxonomic evidences. 3. Understand the concept of species, taxa delimitation and rank attribution. 4. Know about PhyloCode and APG 5. recognize various angiosperm species and genera. 6. Know about herbarium techniques and importance of botanical gardens. 7. Range of floral structure and phylogeny in selected Dicotyledons and monocotyledons. 8. differentiate between the different angiosperm plants. 9. spot the economic significance of angiosperm plants as fibres, medicines NWPPs,	
	Biology and diversity of viruses and bacteria	H- 1002	1. Able to understand the diversity and identification of Bacteria, Viruses, and Fungi; 2. Able to recognize prokaryotic and eukaryotic microorganisms. 3. Able to understand how bacteria, yeast, fungus, and viruses are purified and cultured. 4. To understand microbial flora of air soil and water. 5. Able to recognize the concept, principle, and procedure of different types of sterilization techniques. 6. To understand the defense system of the body against different kind of antigens.	

Biology and diversity of algae and bryophytes	H- 1003	1. Comprehend the diversity of lower cryptogams (Algae and Bryophyte). 2. Gain adequate knowledge to know about the structure, reproductive parts and their development, mechanism of reproduction and life cycle pattern of algae 3. Understand the morphological, anatomical and developmental diversity in the bryophyte. 4. Familiarize the Positive and negative aspects of Algae. 5. Gain adequate knowledge on comparative account of various divisions of lower plants to identify the algae and bryophytes up to the generic level in different localities. 6. Familiarize ecology and the distribution of bryophytes in India.
Biology and diversity of pteridophytes, gymnosperms and palaeobotany	H- 1004	1. To impart Knowledge of the systematics, morphological, anatomical and developmental diversity in of various divisions of Pteridophytes. 2. To gain knowledge stelar evolution, heterospory and origin of seed habit in Pteridophytes. 3. Gain adequate knowledge to know the evolutionary trends and affinities of living gymnosperms with respect to external and internal features. 4. To familiarize the diversity of Gymnosperms in India. 5. Understand types of fossils, methods of fossilization and know the scope of Paleobotany, its role in paleobotany and geological time scale.
Practical	H - 501	

Fungal Bio-diversity and Elementary Plant Pathology	H- 2001	1. Students are able to understand the early stages of plant disease development and the role of various pathogens. 2. The students have a general understanding of the properties of fungi that cause plant diseases. 3. Able to recognize the importance and scope of Plant Pathology. 4. Able to Know how to deal with plant disease and how to prevent them. 5. Able to learn about the nutritional and therapeutic properties of edible and poisonous mushrooms. 6. Know about organisms and causal factor responsible for plant diseases & methods of studying plant diseases, get familiarized with some common plant diseases of India 7. Gain knowledge on host parasite interaction process	Master of Science (M.Sc.) in Botany is a two years postgraduate programme with science Students seeking admission in this programme must have BSc Biology with Botany as subject. This programme is beneficial for

Cell and molecular biology	H- 2002	After the completion of the course the students will be able to: 1. Understand the structural organization and structural dyna mics of the plant cell. 2. Understand the Principles of microscopy and different types of advanced microscopes and their utility. 3. Get familiar with Ultra structure of Cytoplasmic organelles & their functions. 4. Understand Chromatin organization and special types of chromosomes and their functions. 5. Understand Cell cycle and programmed cell death. 6. Know about Nucleic acids and their functions. 7. Understand DNA Replication and repair mechanisms. 8. Proteins synthesis, gene repression and gene regulation and chromatin remodeling.	This programme is beneficial for students having interest in plant Sciences. The programme structure has been designed by subject experts keeping in view the carrier prospects of students. A student acquiring M.Sc. (Botany) degree will be skilled in the following. fields: Theoretical Knowledge: Student will gain the theoretical knowledge of diversity, origin and evolution of viruses, bacteria, fungi, Algae, Bryophytes, pteridophytes and gymnosperms, Student will gain the theoretical knowledge of anatomical, embryogenesis, physiological,

Genetics, Cytogenetics and Plant Breeding	H- 2003	1. Students are able to understand the basic principles of inheritance biology. 2. They get in depth knowledge about of gene interaction, sex determination, and cytoplasmic inheritance and are able to understand multiple allelic inheritances. 3. To know the linkage and recombination and learn about the gene mapping methods 4. Understand the various mechanisms of chromosomal aberrations and numerical changes followed by their consequences and significant role in the characteristics of an individual. 5. Familiarize to mutations and mutagens 6. Understand the concept of gene and gene structure. 7. Knowledge on the basic processes of plant breeding using different breeding technique and know about exploitation of Heterosis, hybrid and variety development and their release through artificial hybridization.	biochemical, genetic, evolutionary mechanisms in different plant groups. Advancements in plant biotechnology, plant tissue culture, biodiversity conservation, modern phyto-techniques and biostatistics. Practical knowledge: 1. Plant Taxonomy and Identification: Student will be able to identify and classify major group of plants with their characteristic features. 2. Student will learn to carry out practical in the field and Laboratory with minimal risk. 3. Student will get the broad category of skills while getting exposures

M. Sc. I-IV Sem Programme Specialisation: Botany	Anatomy and Reproduction in Angiosperms	H- 2004	1. Understand the various forms of angiosperms in reference to anatomy and floral characters 2. Understand the importance of Anatomy and Embryology and the scope of its application 3. Learn how to distinguish between normal and aberrant secondary development in plants, as well as the reasons for the same. 4. Able to execute the necessary anatomical operations. 5. Able to understand the differences between micro-sporogenesis and mega-sporogenesis as well as reproductive behavior for better plant breeding. 6. Able to understand concept of fertilization, endosperm, and embryogenesis.	through various events organized by department of Botany to enhance their communication skills like Seminars, Power point presentations, Project Reports and Viva-voce. 4. Conservation of Botanical Gardens: Through field work in the Botanical Gardens, students are able to learn Integrated Conservation Approaches for plants. Students will also be able to learn Plant Propagation Techniques. 5. Environment Sustainability: Students will be able to understand the ecological impact of plants. environmental Protection: Students will learn about environmental protection theory and practice 6. Sustainable Development: Students will be able to contribute towards sustainable development. 7. Scientific Ethics: Students will be able to understand and commit to scientific and environmental ethics such as proper crediting of sources of information, data and ideas like honesty in reporting and analysis of results, responsibilities and norms of the biodiversity conservation.
	Practical	H - 601		
	Plant - soil-water relations, Growth and Development	H- 3001	1. Understand the significance and extent of plant water relation in detail. 2. Able to learn about the movement of sap and water absorption by the plant. 3. Able to understand the absorption mechanism of minerals, impact of their deficiency on plants. 4. Able to understand Plant adaptations to biotic and abiotic stress at the molecular and physiological levels. 5. Able to know Genes involved in plant stress tolerance, their genetic engineering. 6. Able to know different kinds of movement in plant and their mechanisms. 7. To understand different kinds of plant hormones and their activities in plants	

Phytochemistry and Metabolism	H- 3002	After completing this course the students will be able to 1. Understand the biomolecules at atomic level and their relationship with the cellular activities. 2. gain the knowledge of metabolism of carbohydrates and lipids through various anabolic and catabolic pathways. 3. understand the nitrogen and sulphur assimilation in living beings through various biochemical Pathways. 4. know the production of various secondary metabolites produced by the plants and their importance for human being. 5. explain how energy is used in human body to create work and power	8. Communication Skills: Students will learn the botanical jargons used in plant sciences and will be able to communicate scientific knowledge with scientific language 9. Modern Tool Usage: Students will be able to apply appropriate tools & techniques and other resources for Biochemical, Physiological, Molecular, biotechnological works in Plants. 10. Ethnobotany: Students will be able to understand and learn Importance

Plant Ecology and Phytogeography	H- 3003	After completing this course the students will be able to: 1. know about different ecological factors. 2. Understand the ecological species concept, ecological niche and genecology. 3. Get familiar with population and community ecology its structure and dynamics. 4. Understand the process of ecological succession, ecosystem ecology. 5. Understand the methods and measurements in production ecology. 6. Know about different international ecological programs. 7. Know about recycling of organic and inorganic waste disposal, biodiversity conservation, soil conservation, reforestation etc. 8. Understand about the Concept and utilization of phytogeography. 9. Know about concept, principle and applications of remote sensing.	and Utilization of Economically Important Plants. Attaining M.Sc. Biology degree opens doors to the following Professions: 1. Pharmaceutical, Horticulture, Floriculture, Vermiculture, Pisciculture, Sericulture, Silviculture, Hospitals, Veterinary, Aquaculture, Biotechnology, Microbiology, Beverage Industries, Sugar Mill, Pathological Laboratory. 2. Student can work in Government sectors as well private sectors related to Agriculture, Forestry and Food & Beverages industry. 3. Student can choose teaching profession in private or government Educational Institutions 4. Students can join higher education

Elementary Biotechnology	H- 3004	After completing this course the students will be able to: 1. Know about the basic concepts, principle and scope of biotechnology. 2. Know about the basic concepts, principle of recombinant DNA technology. 3. Know about different types of coning vehicles their roles and limitations. 4. Understand basic concepts of DNA fingerprinting, gene therapy, genetic counselling. 5. Know about Gene libraries, types of genomic libraires 6. Know about transgenic plants and methods of plant transgenic production. 7. Know about intellectual property rights and their significance. 8. The basic concepts of plant tissue culture, methods of different types of PTC and soma clonal variation. 9. Know about different biotechnological methods used in plant germplasm conservation.	4. Students can join higher education institutions for gaining further knowledge in a specific field such as M.Sc. Botany, Zoology, Microbiology, Biotechnology, Biochemistry, Genetics and Chemistry, B.Ed., Diploma in Lab technician 5. Students may start Microbusiness such as Nursery, Vermiculture, Organic farming, Coaching Institutes 6. Student can further prepare for competitive exams such as IFS, UPSC, SSC, CGL 7. Student can further prepare for CSIR NET, and can go for further studies in different fields of research in life sciences.
Practical	H - 701		

Modem Phyto techniques and Biostatistics	H- 4001	After completing the course the student will be able to 1. use appropriate molecular technique required in plant Sciences. 2. gain the technical knowledge about instrument of cell fractionation, section cutting, herbarium preparation etc. 3. Analyze the biochemical compounds qualitatively as well as quantitatively. 4. Develop the knowledge about basic concepts of statistics viz collection, presentation and analysis of data. 5. find out the appropriate statistical method required for a particular Research Design.

Bio-diversity Conservation & Plant Resources	H- 4002	1. Gain adequate knowledge to know the all the types and levels of biodiversity. 2. Global biodiversity patterns and factors affecting biodiversity in terrestrial, marine, and aquatic ecosystems and emphasis are placed on regional diversity hotspots. 3. To gain knowledge about biodiversity of India and they get in depth knowledge about the biodiversity of different ecosystems in India. 4. To analyze the current threat to biodiversity and suggest conservative measures. 5. Understand the role and principles of operation of different types of protected areas and important conservation areas including IUCN classified protected areas, RAMSAR sites, Biosphere Reserves and other systems of global significance. 6. Aware of the relevant legislation and recent initiatives taken at national and world level for the conservation of biodiversity.

Recombinant DNA technology	H-4003	After completing the course the student will be able to: 1. Understand the advanced genetic engineering concepts, 2. Differentiate between cloning and expression vectors. 3. Know about different methods of cloning in bacterial and eukaryotic systems. 4. Know about different methods of molecular probe preparation. 5. Understand the principle, utility and variants of PCR. 6. Know about RFLPs, RAPD and cDNA .libraries, chemical synthesis of DNA. 7. Understand the concept and utility of protein engineering. 8. Understand the concept and utility of drug designing.

	Environmental Biotechnology	H-4006	After completing the course the student will be able to: 1. Know about different kinds of pollutions, their effects on plant and ecosystems and cost of pollution. 2. Get familiar with climate change and its consequences. 3. Understand about concept of ecosystem stability& ecological perturbations and ecosystem restoration. 4. Know about environmental impact assessment, environment auditing/ 5. Know about sustainable development and natural resource management. 6. About different methods of phytoremediation for mitigation of adverse effects of weedicides and pesticides and chemical fertilizers. 7. Know about biotechnological advances in pollution control.	
	Practical	H - 801		
	Inorganic Chemistry- 1	H- 1007	1. On completion of this course, students will develop the understanding about various theory of metal ligand bond and develop the interest in metal ligand back bonding by adjusted crystal field theory. 2. This course will be helpful in understanding the catalytic property of transition metal by reaction mechanism and stability factors. 3. Students will gain knowledge about the electron transfer reaction and helpful to elaborate various systems where electrons transfer mechanism can be applied.	

Organic chemistry- 1	H- 1008	On completion of this course, students will be able to 1. understand various methods of Carbanion generation and their applications in Organic Synthesis. 2. correlate the reaction mechanisms with practical procedures. 3. understand mechanisms in biological reactions that will help students to understand Nature better 4. differentiate between various organic reactive intermediates. 5. develop interest in writing and finding mechanisms of new reactions 6. understand various terminologies in stereochemistry. 7. draw the stereo chemical structures of different molecules. 8. understand the isolation of racemic mixtures. 9. draw various organic reactive intermediates with stereochemistry.
Physical Chemistry- 1	H- 1009	Students will be able to apply concepts of Quantum Chemistry, Classical Thermodynamics and Statistical Thermodynamics in describing and predicting the physical and chemical behavior of microscopic and macroscopic chemical systems using appropriate methodologies.
Mathematics for Chemists	H- 1010	On completion of this course, students with bio background will learn vectors, matrix, Determinant, Simple differentiation, simple Integration, Logarithms, Probability and straight line etc, which are useful in learning the physical chemistry broadly.

Biology for Chemists	H - 1011	On completion of this course, students with math background will learn about cell structure and functions, Carbohydrates, Lipids, Amino-acids, Peptides, Proteins & Nucleic Acids, which are useful in learning the bio-chemistry broadly.	
Computer for Chemists	H - 1012	On completion of this course, students will learn about computers and its functions, different operating system as Windows, DOS, UNIX, Computer language as FORTRAN, BASIC, C, etc, MS OFFICE, Molecular Modelling, Scientific Software like AMBER, CPMD, etc.	
Practical	H - 507		
Inorganic chemistry - II	H- 2007	1. On completion of this course, students will gain advance knowledge on transition metals chemistry and they will Understand the reason of colour and magnetic property of transition metals. 2. This course will develop the understanding about metal-metal multiple bond by using d orbitals. 3. Students will gain the knowledge about bonding in organometallic compound like metals carbonyls, metal nitrosyls and their application. 4. Students will gain knowledge about various technique which use in structure determination of compounds. 5. This course will also helpful to develops the basic knowledge about radioactivity and their application in field of medical and energy.	On completion of this programme, 1. students will develop the understanding about chemistry of

Organic chemistry - II	H- 2008	After the completion of this course, students will be able to 1. understand the concepts and mechanisms of various reactions and rearrangements such as aromatic electrophilic & nucleophilic substitution reactions, free radical & pericyclic reactions. 2. in depth knowledge about organic chemical reactions with a focus on principles for effective synthetic strategies.	understanding about chemistry of inorganic compounds and their application. Demonstrate broad knowledge of transition metals chemistry. 2. students will develop the understanding with the most recent and upcoming frontier areas of knowledge in Chemistry expected from a Post Graduate in Chemistry. Besides, also making them aware of the recent frontier areas of knowledge and the tools/techniques/methodologies needed for research in Chemistry. 3. the students can pursue a career in Chemical Sciences. 4. the students can easily understand the concept of theoretical chemistry. 5. the students can easily understand the concept of bio-chemistry. 6. the students can easily understand the concept of computational chemistry. 7. Students will be familiar with the most recent and upcoming frontier areas of knowledge in Photo Chemistry expected from a post Graduate student
Physical Chemistry - II	H- 2009	Students will develop an understanding of basic principles and applications of Chemical Kinetics, Surface Chemistry and Electrochemistry.	
Group theory & Solid state	H- 2010	From this course content, students will learn about 1. Symmetry and symmetry operations; their application in spectroscopic analysis. 2. Various techniques of spectroscopy like IR, Raman, Electronic spectroscopy (Atomic, molecular & photoelectron), NMR and ESR spectroscopy regarding their principle and application in illustrating structure of molecules. 3. X-ray diffraction describing the procedure for X- ray structure analysis, absolute configuration of molecule etc.	
Practical	H - 607		

M. Sc. I -IV Sem Programme	Photochemistry	H- 3007	On completion of this course, students will be able to 1. understand various Pericyclic and photochemical reactions and rearrangements. 2. understand and write mechanism of reactions and their applications. 3. understand how to synthesize five, six and seven-membered organic compounds via photochemical reactions. 4. utilize their knowledge in predicting various photochemical conversions.	in chemistry. Besides, also making them aware of the recent frontier areas of knowledge and the tools/techniques/methodologies needed for research in Photo Chemistry. 8. students will develop the laboratory competence in relating chemical structure to spectroscopy phenomena and demonstrate the ability to synthesize and characterize compounds using modern instrument and techniques. 9. students will learn about the application of group theory in spectroscopic analysis related to structural illustration. 10. students will learn about various
	Spectroscopy	H- 3008	1. On completion of this course, students will gain knowledge about principle of different spectral techniques and their application in chemistry. 2. This course will be helpful to develop the understanding about structure determination of organic compounds by using different spectral method like NMR, IR, UV-Visible and Mossbauer spectroscopy.	

Specialisation: Chemistry	Analytical Chemistry	H- 3009	1. On completion of this course, students will be able to develop the understanding about new technologies and methods for analysis of inorganic and organic substances. 2. By this course students will acquire the knowledge about various methods for tracing and measuring new substances and develop some theoretical and practical understanding of advanced analytical instrument their application. 3. On completion of this course, students will be able to develop the understanding about new technologies and methods for analysis of inorganic and organic substances. 4. By this course students will acquire the knowledge about various methods for tracing and measuring new substances and develop some theoretical and practical understanding of advanced analytical instrument their application.	techniques of spectroscopy like IR, Raman, Electronic spectroscopy (Atomic, molecular & photoelectron), NMR and ESR spectroscopy regarding their principle and application in illustrating structure of molecules. 11. students will develop the basic analytical and technical skills to work effectively in the various field of chemistry. 12. Students will learn and demonstrate how to the structure of biomolecules determined, chemical properties, reactivity and biological uses. Understand biological processes like replication, transcription, translation. 13. Students will understand the application of chemistry in biological system. 14. the students may have some soft corner towards environment and can inspire the society to reduce the pollutions to save nature.
	Elective -I			
	(Any one of the following)			
	(a) Bio-inorganic chemistry	H- 3010		

(b) Bio-organic chemistry	H- 3011	Student will acquire knowledge on completion of this course about 1. metabolic process in all living organism. 2. various pathways like role of enzymes, coenzymes structure, synthesis and role of amino acids properties. 3. structure of DNA and RNA, nucleosides, nucleotides, transfer of genetic information from one generation to another generation. 4. understanding various bio chemical reactions - addition , elimination, electrophilic, nucleophilic, phase transfer etc.	15. students will be familiar with the most recent and upcoming frontier areas of knowledge in organic synthesis expected from a post Graduate student in Chemistry. Besides, also making them aware of the recent frontier areas of knowledge and the tools/techniques/methodologies needed for research in synthetic Organic Chemistry. 16. the students can move towards pharmaceutical chemistry, drug designing, QSAR technology etc. 17. This programme is career oriented and can provide various opportunities in the field of different chemical based industries like pharmaceutical, drug industries, cosmetics, pesticide, polymer industries etc.
(C) Bio-physical chemistry	H- 3012		
Practical	H - 707		
Environmental chemistry	H- 4007	On completion of this course students will learn about the earth atmospheric system, biogeochemical cycles, hydrosphere, pollution and its control, analytical methods for measuring pollutants, soils, environment toxicology etc.	
Special Papers of Organic Chemistry (Any three out of five)			

Organic Synthesis	H - 4013	On completion of this course, students will gain advance knowledge of 1. various rearrangements of synthetic importance 2. different methods of oxidation of various classes of organic compounds by important oxidizing reagents. 3. different types of reduction methods of various organic compounds by reducing agents. 4. Metallocenes, Benzenoids and non benzenoids compounds and their aromaticity, craig rule 5. the use of Transition and main group metals in organic synthesis.
Medicinal Chemistry	H - 4014	On completion of this course students will learn about the medicine (drugs), its designing through computer software, combinatorial chemistry, QSAR, metabolism and excretion of drugs, neuroactive agents (for psychological problems), cardiovascular agents (for heart disease), antineoplastic agents (for cancer and tumour), anti-infective drugs (antibiotic, antimalarial, etc). This course will introduce the students that how drugs work in the human body.

Polymers	H - 4015	Students gaining knowledge and skills on completion of the course are as follows. 1. Knowledge about science of large molecules, types & general classification of polymers, molecular weight and its distribution, polymer solutions, structure and morphology. 2. Develop skills regarding synthesis and applications of thermosetting and thermoplastics polymers, conducting polymers, and biodegradable polymers. 3. Knowledge about polymer processing, polymer degradation mechanisms etc.
Chemistry of Natural Products	H - 4016	
Heterocyclic Chemistry	H - 4017	
Special Papers of Physical Cheimistry (Any three out of five)		
Solid State Chemistry	H - 4018	On completion of the course, the student should be able to describe the principles and applications of solid state reactions, crystal defects, electronic properties and band structure.

	Advanced Quantum Chemistry	H - 4019	On completion of the course, the students will develop an understanding of basic principles and applications of Hartree- Fock Theory and post Hartree- Fock Theory including Density Functional Theory. Additionally, the students will be able to carry out computer experiments (simulations) using Quantum Chemistry packages.	
	Liquid State	H - 4020		
	Physical Chemistry ibn Organic Reactions	H - 4021	On completion of the course, the students should be able to apply the principles of Quantum Chemistry and Thermodynamics in describing the properties and reactivity of organic compounds in different medium.	
	Computational Chemistry	H - 4022	On completion of the course, the students should be able to use molecular modeling and mathematical tools to simulate and understand various chemical processes.	
	Practical	H - 807		
	Mathematical physics	H- 1027		
	Classical mechanics	H- 1028		
	Quantum mechanics	H- 1029		
	Electronics devices	H- 1030		
	Practical	H - 527		
	Quantum mechanics- II	H- 2027		
	Statistical mechanics	H- 2028		

M.Sc I-IV Sem Programme Specialisation: Physics	Electrodynamics & plasma physics	H- 2029		
	Atomic and molecular physics	H- 2030		
	Practical	H - 627		
	Condensed matter physics	H- 3027		
	Nuclear and particle physics	H- 3028		
	(i) Electronics-special paper- I	H- 7027		
	(ii) solid state physics- special paper-I	H- 7028		
	(iv) Spectroscopy-special paper-I	H- 7029		
	(i) Electronics-Special paper-II	H- 7030		
	(ii) Solid state physics- Special paper-II	H- 7031		
	(iv) Spectroscopy-Special paper-II	H- 7032		
	Practical	H - 727		

	Computational methods & programming	H- 4027		
	Physics of Nanomaterial	H- 4028		
	(i) Electronics	H- 8027		
	(ii) Solid state physics	H- 8028		
	(iii) Nuclear physics	H- 8029		
	(iv) Spectroscopy	H- 8033		
	(i) Electronics	H- 8030		
	(ii) Solid state physics	H- 8031		
	(iii) Nuclear physics	H- 8032		
	(iv) Spectroscopy	H- 8034		
	Practical	H - 827		
	Economics zoology and taxonomy	H- 1062		
	Evolutionary biology	H- 1063		
	Non- chordata	H- 1064		
	Cell and molecular biology	H- 1065		
	Practical	H - 562		

M.Sc. I - IV Sem Programme Specialisation: Zoology	Biostatistics and bio- informatics	H- 2062		
	Genetics	H- 2063		
	Mammalian physiology	H- 2064		
	Bio-chemistry	H- 2065		
	Practical	H - 662		
	Chordata	H- 3062		
	Developmental biology	H- 3063		
	Environmental biology	H- 3064		
	Animal behavior	H- 3065		
	Practical	H - 762		
	Gen.Fish Biology	H-4066		
	Morphology and Physiology of Fishes	H-4067		
	Fish culture and importance of fishery science	H-4068		
	Applied Fisheries	H-4069		
	Practical	H - 862		

	Probability Theory	H - 1032	The students will be able to distinguish between probability models appropriate to different chance events and calculate probability according to these methods.	In our day-to-day lives, we deal with the uncertainties. Scientists and Researchers cope-up with these doubts by using the concept of probability. Probability theory and its models serve as a link between the descriptive and inferential statistics, methodologies for assessing and quantifying chance
	Statistical Distributions	H - 1033	The students will be able to formulate the mathematical/statistical models for real data set arising in various fields in order to analyse in respect of various useful characteristics of the populations.	After studying the concept of random variable; in probability theory, the knowledge of Statistical distributions is of prime need. It gives the idea, how the total probability is distributed among the possible values of random variables.
	Sampling Techniques	H - 1034	The course will equip a student with the knowledge of adopting a suitable sampling plan in a variety of situations and develop statistical inferences about the population.	Sampling is that part of statistical practice concerned with the selection of individual observations intended to yield some knowledge about a population of concern, specially for the purpose of Statistical Inference.
	Anv one of the followino -			
	(a) Computer Fundamentals and Fortran Programming	H - 1035		

(b) Computer Fundamentals and Programming in C Language	H - 1036	After this course a student will be fully equipped with the techniques of developing his own computer programmes for most of the mathematical as well as Statistical methods.	In the modern age of computing, Statistician uses computers for large and fast calculations. The advanced knowledge of computers and a scientific programming language is must for a student of Statistics.
Practical	H - 532		
Design of Experiments aand Linear Estimation	H - 2032	Students should be able to understand the random behavior of experimental processes, particularly, scientific, engineering and industrial.	In many areas like Industrial, Biological, Agricultural, etc, the prime focus is to formulate the layout of the design of experiment so that appropriate information regarding the population can be gathered and analyzed. Thus, it is must to have the knowledge of the experimental techniques such as CRD, RBD, LSD, BIBD and factorial designs.
Inference-I Theory of Estimation and Testing of Hypothesis	H - 2033	This course will make a student learn the various properties of a good estimator as well as techniques to develop such estimators from both classical and Bayesian point of view.	In Statistics population parameters describe the characteristics under study. These parameters need to be estimated on the basis of collected data called sample.
Matrices and Linear Difference Equations	H - 2034	After studying this course the students will be able to understand the basic concepts of matrices, their types and their mathematical operations leading to the estimation of parametric models.	This programme forms the mathematical background for programmes such as multivariate analysis, design of experiments, quadratic forms etc. So, the study of the programme is of prime need.

M. Sc. I-IV Sem Programme Specialisation: Statistics	Real and Complex Analysis	H - 2035	The students will be able to apply the tools studied in the course in his further studies of statistical courses and research investigation.	It is a branch of mathematical analysis dealing with the set of real and complex numbers which plays the vital role to follow the complexities of statistical topics in their research studies.
	Practical	H - 632		
	lnfercnce - ll: Internal Estimation, Sequential Analysis & non - parametric inference	H-3032	The students will be able to demonstrate knowledge and understanding of the principles and theory of statistical inference and the ability to formulate statistical hypothesis and to use theory to estimate model parameters.	Sometimes, the number of observations required by the procedure to reach a decision is not fixed in advance of the experiment. In such cases, inferences can be drawn by the use of the sequential procedure. More so, when we do not know the form of the population, non-parametric statistical tools like Sign, Run, Median, Mann-Whitney, K-S and Chi-squire tests are used to infer about the characteristics of the population.
	Englneering Statistica, Quality control and rellability	H-3033	The students will be able to apply the fundamental tools/methods in various industrial plants.	In engineering and manufacturing, the knowledge of this programme deals with assurance and failure testing in design and production of products or services to meet or exceed customer requirements.
	Operations Research - |	H-3034	The knowledge of the contents of this course will help businessman/industrial managers to take optimum decisions/solutions to the executive type of problem.	It is purely applied programme having wide applicability towards business/industries.
	Any one of the following:			

(a) Declsion Theory & Bayesian Inference	H-3035	After learning this course a student must be able to develop tests and confidence intervals for population parameters.	A part from estimating parameters, Statistics also attempts to test the conventional wisdom or guesses or conjectures made by experienced experimenters. Testing of hypothesis does exactly that.
(b) Stochastic Process & Survival Analysis	H-3036		
Practical	H-732		
Multivariant analysis	H - 4032	The students should be able to demonstrate knowledge and understanding of parametric and nonparametric tests, discriminant analysis, factor analysis, and principal component analysis in medical, industrial, engineering, business and many other scientific areas.	Due to the multi-dimensional nature of the data arising from the various fields, it is then primary need to infer about the multivariate techniques such as factor analysis, discriminate analysis, cluster analysis, and principal component analysis, etc. which are used in reduction, factorization and classification and analysis of the high-dimensional data.
Economic Statistics & Demography	H - 4033	After studying this course one learns the most important technique of forecasting used in economic analysis. It will also equip a student with tools used in population studies.	Time series is a sequence of data points measured at, often uniform, intervals. It is needed to forecast the future events. For social and economic purposes one needs to study the societies or groups in view of their birth and mortality rates. Demography studies the measurement of population processes.

	Opreational Research - II	H - 4034	To develop the ability to formulate fairly complex optimization problems in the context of practical problems.	The programme is designed to introduce students to idea of various types of programming, sequencing and replacement problem of items that deteriorate.
	Any one of the following:			
	(A) Computer oriented statistical methods	H - 4035		
	(b) Advanced experimental Designs	H - 4036	Keeping the knowledge of the course, one can apply the techniques of advanced design in Biological and Agriculture research in order to see the significant effect of different new drugs/treatments.	Experimental designs are those by which the knowledge of various statistical topics can be applied in agriculture field for improving the crop-plants through genetic-techniques.
	Practical	H - 832		
	Basic of Bioinformatics, Computer system & c Programming	BI 101	1. Able to understand the basics of Bioinformatics i.e., human genome project, biological databases and internet applications in biology 2. Able to understand the basics of computers, number systems, logic gates 3. Know about the computer networking and networking topologies and transmission media. 4. Able to understand basic programming in C with special references to arrays in C.	

Biomathematics	BI 102	1. Able to understand matrices, Arithmetic and Geometric Series, Permutation and combinations, set theory, Functions, Polynomials, limits and continuity. 2. Able to understand Differentiation and Integration with standard functions and applications of Integral calculus in biology. 3. To know about - 2D Coordinate Geometry: Equation of a line, circle, ellipse, parabola, and hyperbola as well as 3D geometry: Equation of sphere, cone. 4. Able to understand Numerical Analysis with Gaussian Elimination and Gauss Jordan Methods, solution of Algebraic and Transcendental Equations by Bisection Method and Newton- Raphson Method. 5. To understand Interpolation with Newton's formulae, Lagrange's formula and Curve fitting by Method of least squares. 6. Able to calculate Numerical differentiation using Newton formulae. And Numerical Integration as Trapezodial rule, Simpson's 1/3 and 3/8 rules.
Biological Database System	BI 103	1. Able to understand basics and components of DBMS with reference to data models, architecture and schema of architecture. 2. Able to understand Relational Database with reference to relational data models and to also able to recognize keys of RDBMS. 3. After learning Structured Query Language (SQL) students can able to create databases. 4. To understand various biological databases and retrieval of data from them. Students can able to submit data to the databases.

Microbiology & Immunology	BI 104	1. Students are able to comprehend different concepts about origin of life, different kinds of classification of living beings, microbial evolution and diversity 2. The students have a general understanding about structural organization of Eubacteria and Archaea, their evolutionary relationship 3. The students have a general understanding about viruses e.g., how the viruses have been discovered, their nature, general characters of viruses, their nomenclature and classification 4. Able to understand the basics of immune system e.g., innate and adaptive immunity, natural and artificial immunity, different types of cells and organs involved in immune system. In addition to that the types of antigens, antibodies, their interactions, the concept and types of vaccines, hybridoma technology, monoclonal antibodies and their applications.
Practical	BI 105	
Operating System through Unix/Linux	BI 201	1. Understand basics of various types Operating System, Process & Memory Management in OS with special reference to Process Control Block, Process Scheduling ant their types, Operations on Process, Basic Management of Memory, Swapping Virtual Memory and Paging 2. Understand the significance of Input/Output Management as I/O Devices, Device Controllers, I/O Software; Device Drivers, Deadlock in detail. 3. Able to understand UNIX/LINUX Operating Systems with special reference to VI Editor. 4. Able to understand Shell Programming in detail

Object Oriented Programming with ‘C++’	BI 202	1. Understand the basics and Concepts of object-oriented programming with special reference to Objects, Classes, Data Abstraction, and Data encapsulation, Inheritance, Polymorphism, Advantages of OOP and Application of OOP with C++. 2. Understand the basics of C++ as Token, Keywords, and Identifiers, Data types Variables, Declaration of Variables, Operators, Scope resolution operator, Manipulators, Operator Overloading, Operator Precedence, and Controlling Structures: Sequence structure, Selection structure and Loop structure. 3. Students can able to understand Function Prototyping, Call by reference, Friend function, Inline function, Outside function inline, Private Member functions, Public Member functions, Static class members: Static data member, Static member function, Object assignment, Passing objects to function, Objects as function 4. Able to understand Array Constructor & Destructor, string characteristics, comparing and swapping 5. Able to understand basics of Inheritance, Virtual functions & Polymorphism, Formatted & Unformatted I/O operations.	Develop students with a command on

M. Sc. I- IV Sem Programme Specialisation: Bioinformatics	Sequence Analysis	BI 203	1. Understand sequence analysis as comparison, sequence scoring 2. Able to understand Sequence database similarity searching algorithms as FASTA, BLAST, similarity searching scores and their statistical interpretation. 3. Able to understand Motifs and Domains, Biological motifs. 4. Able to understand Functional genomics Strategies for generating EST and full length insert, EST clustering and assembly, statistical analysis of EST and EST data and micro array. 5. Able to understand phylogenetic prediction with MEGA software.	Develop students with a command on the core concepts of Bioinformatics, students that are able to address the challenges arising from the enormous amounts of various kinds of biological data, design and implementation of relational databases, thereby developing the predictive mathematical models of biological systems i.e., computational biology. Implementation of bioinformatics to define and solve a realistic research issue or real-world problem in various fields e.g., Medicine, veterinary science, crop improvement, gene therapy, evolutionary studies, environmental science etc.
	Molecular Biology & Genetic Engineering	BI 204	1. Understand the significance of nucleic acids as genetic information carrier, their structural features. 2. To have a basic understanding of different aspects of gene expression and its regulations, molecular mechanism of different types of mutations and its repair. 3. Able to understand the basic steps, tools and technologies involved r-DNA technology e.g., restriction endonucleases., cloning vectors, thereby preparation of genomic library and c DNA library. 4. To have a basic understanding about the principles, methods & the applications of different molecular techniques e.g., PCR, Southern Blotting, Northern Blotting, RFLP, RAPD etc., applications of same in designing of DNA vaccines, recombinant vaccines for the diseases like TB & leprosy.	
	Practical	BI 205		

Statistical Analysis and Optimization	BI 301	1. Understand the concept of Frequency distribution, different Measures of central tendency and dispersion, correlation and regression. 2. To have a basic understanding about concepts of population and sample, Estimation, different testing procedures of hypothesis testing. 3. The students have a general understanding about Probability, probability distributions 4. Students gain the skill to do multivariate analysis, with multiple correlation and regression, Principal component analysis, Discriminant analysis and Cluster Analysis, application of same in extracting clusters of functionally related genes from microarray results. 5. Understand the Dynamic Programming, Gibbs sampling, Markov chains, Hidden Markov Model, Simulated annealing, Genetic algorithm and their applications

Biocomputing Programming	BI 302	1. Understand basics of Hyper Text Programming Language as Structure of HTML program, Titles & Footer; Text Formatting Text Styles, Font Style, Colour & Size; Image Tag, Table & Attributes Frames; Forms and Anchors. 2. Understand basics of Java Script its Data Types, Literals, Variables, Arrays, Condition Check, looping, Functions, scope of functions and Dialog Boxes. 3. Understand basics of PERL its Data; Variable; List Data, Operators, Array, Hashes, Conditionals, while loop, for loop; controlling loop, Manipulating Lists and Strings, Pattern Matching and File Handling. 4. Understand PHP Basics, Variables, Strings, Constants, Operators, Conditionals, Loops For, Foreach, While, Functions, string functions, user defined functions. Students also able to learn PHP Array & MySQL

Structural Biology & Molecular Modeling	BI 303	1. Understand the various Macromolecular Structures in detail as Protein, Enzymes, Carbohydrates, lipids and 3D viral structures. 2. Understand various Methods to study 3D structure, Principles of crystallography, Analysis of 3D structures, Methods for 3D structure prediction, and Principles of protein folding and methods to study protein folding. 3. Able to understand basic concept of Bioenergetics; Thermodynamics principle in biology, Computational approaches in structural biology and Macromolecular interactions. 4. Able to understand molecular modelling its methods as Conformational searching, Potential energy maps, Ramachandran maps, Ab-initio methods, Semi-empirical methods, Empirical methods- Conformational analysis, Introduction and Methods, Molecular fitting, Energy Minimization, Non-derivative and derivative methods. 5. Able to understand Global optimization, Applications of energy minimization, Molecular Mechanics, various force fields as MM3, Dreiding, AMBER, CHARMM, Mechanics of Bio-macromolecules, Molecular Dynamics, Verlet and related algorithms, Types of dynamics simulations: adiabatic, constant T, annealed, etc., Conformational searching using MD, Free energy calculations, Dynamics of Bio-macromolecules.

	Genomics, Proteomics & Systems Biology	BI 304	1. Understand the objective and overview of Genome comparison, different kinds of tools used for the same e.g., BLAST2, MUMmer, PipMaker, VISTA. 2. The students have a basic understanding about Comparative Genomics and Comparative Genomic databases, an overview of pharmocogenomics. 3. Able to understand Proteomics, different techniques involved in the same e.g., PAGE, MALDI, NMR spectroscopy, microarrays etc. In addition, students have a basic understanding Protein-Protein Interaction Networks, databases and software. 4. Students have an overview of concept of Systems Biology, Computational modelling in biology	
	Practical	BI 305		
	Project Report include Viva-voce	BI 401		
	Bioinformatics (short questions including Objective type)	BI 402		
	Instrumentation and Microbial Techniques	GM 101		
	Microbial Diversity-Prokaryotes and Viruses	GM 102		
	Microbial Diversity-Eukaryotes	GM 103		

M. Sc. I- IV Sem Programme Specialisation: Microbiology	Biostatistics, Computer Applications and Bioinformatics	GM 104		
	Microbial Physiology and Biochemistry	GM 201		
	Microbial Genetics, Molecular Biology and Genetic Engineering	GM 202		
	Agricultural Microbiology	GM 203		
	Microbial Environmental Technology	GM 204		
	Medical Microbiology	GM 301		
	Molecular Immunology	GM 302		
	Food and Dairy Microbiology	GM 303		
	Industrial Microbiology	GM 304		

	Project Report including Viva-voce (Any one of 4 Given Papers)			
	Medical Microbiology	GM 401		
	Industrial Microbiology	GM 402		
	Agricultural Microbiology	GM 403		
	Environmental Microbiology	GM 404		
	Fundamental of bio-statistics and computer application	J-1004		
	Modern concepts of crop production	J-1005		
	Kharif crops	J-1006		
	Management of problem soil	J-1007		
	Practical	J - 505		
	Statistical methods in agriculture	J-2004		

M. Sc. (Ag) I-IV sem Programme Specialisation: Agronomy	Principles and practices of water management	J-2005		
	Soil fertility management and fertilizers use	J-2006		
	Rabi crops	J-2007		
	Practical	J - 605		
	Principles and practices of weed management	J-3005		
	Agronomy of fodder, forage, medicinal and aromatic crops	J-3006		
	Soil conservation and watershed management	J-3007		
	Organic farming	J-3008		
	Practical	J - 705		
	Dry- land agronomy	J4005		
	Agro- forestry and sustainable agriculture	J-4006		
	Crop ecology and geography	J-4007		

	Seed production agronomy	J-4008		
	Practical	J - 805		
	Fundamentals of bio-statistics and computer application	J-1004		
	Principles of economics in relation to agriculture	J-1041		
	Economic structure, problems and planning of Indian agriculture	J-1042		
	Farm management	J-1043		
	Practical	J - 541		
	Statistical methods in agriculture	J-2004		
	Agricultural marketing and price policy	J-2041		
	Research methods and Agricultural statistics	J-2042		

M. Sc. (Ag) I - IV sem Programme Specalisation: Agriculture Economics	Economics of natural resources environment and sustainability	J-2043		
	Practical	J - 641		
	Agricultural finance & co-operation	J-3041		
	Production resource economics	J-3042		
	Agriculture policy	J-3043(old)		
	Entrepreneurial skill and new venture planning	J-3043(new)		
	Agriculture business management	J-3044(old)		
	Marketing management	J-3044(new)		
	Practical	J - 741		
	Agriculture projects-planning and appraisal	J-4041(old)		

	Stratric Management for Agribusiness	J-4041(new)		
	Marketing management for agriculture	J-4042		
	Economic growth and development	J-4043		
	Organizational behavior and human resource management	J-4044		
	Practical	J - 841		
	Fundamental of bio-statistics and computer application	J-1004		
	Fundamentals of Extension	J-1051		
	Extension techniques and audio- video aids	J-1052		
	Rural sociology	J-1053		
	Practical	J - 551		
	Statistical methods in agriculture	J-2004		

M. Sc. (Ag) I - IV sem Programme Specialisation: Agriculture Extension	Communication techniques	J-2051		
	Psychology of human behaviour	J-2052		
	Research methods	J-2053		
	Practical	J - 651		
	Diffusion and adoption of innovations	J-3051		
	Management in extension	J-3052		
	Rural welfare programmes	J-3053		
	Extension administration & supervision	J-3054		
	Practical	J - 751		
	Programme planning and evaluation	J-4051		
	Agricultural journalism and mass communication	J-4052		
	Disaster management	J-4053		
	Training for development	J-4054		
	Practical	J - 851		

M.Sc.(Ag) I - IV sem Programme Specialisation: Dairy Science & Technology	Fundamental of bio-statistics and computer application	J- 1004	Basic understanding and knowledge of statistical method and designing and computer application	
	Dairy cattle production	J- 1011	Basic understanding and learning of Dairy cattle Breed, feed, management and Treatment / Prevention of disease	
	Chemistry of milk	J- 1012	Learning of basic constituents of milk and testing for quality	
	Introduction to dairy microbiology	J- 1013	Understanding the fact of deterioration of milk and scope of microbes in dairy industry	
	Practical	J - 511		
	Statistical methods in agriculture	J-2004	Application of statistical soft ware in dairy industry	
	Dairy plant engineering	J-2011	Basic learning and understanding about to carryout maintenance of dairy machines/equipment and dairy plant layout and requirement of steam, ice and water	
	Market milk technology	J-2012	Learning of quality of different milk	
	Traditional value added milk products	J-2013	Basic understanding the advance techniques of product manufacturing	
	Practical	J - 611		
	Chemistry of milk products	J- 3011	Learning and understanding of major and minor constituents of milk products and testing for quality control	
	Elementary food science	J- 3012	understanding of food quality	

	Condensed & dried milks and dairy by-products	J- 3013	Basic understanding and Learning of production techniques of condensed dried milk products and concepts of utilization of dairy by product	
	Technology of functional food	J- 3014	Learning and understanding of food processing for prolonged storage and therapeutic and pro-biotic attributes	
	Practical	J - 711		
	Fat rich and frozen milk products	J- 4011	Understanding and Learning of manufacturing of qualitative milk products	
	Microbiology of milk products	J- 4012	learning the microbial deterioration and microbial testing of milk products	
	Dairy process bio- technology	J- 4013	Learning of advance biotechnology process and implemented in dairying	
	Cheese and fermented milk products	J- 4014	Basic knowledge of starter culture Learning of manufacturing techniques of cheese and fermented milk products	
	Practical	J - 811		
	Statistical methods for agriculture	J- 1004(A)		
	General genetics	J-1021		
	Cytology & Cytogenetics	J-1022		
	Principles and mathods of plant breeding	J-1023		
	Practical	J - 521		

M. Sc. (Ag) I-IV sem Programme Specialisation: Genetics & Plant Breedings	Plant genetics resource: conservation and sustainable use	J-2004(A)		
	Diseases and pests of crop plants and their management	J-2021		
	Computer and bio-informatics	J-2022		
	Molecular genetics	J-2023		
	Practical	J- 621		
	Topics in plant breeding	J-3021		
	Bio-technology in crop improvement	J-3022		
	Population and biometrical	J-3023		
	Heterosis and it's exploitation	J-3024		
	Practical	J - 721		
	Advanced genetics	J-4024		
	Molecular basis of quantitative	J-4022		
	Genomics, transcriptomics and proteomics	J-4023		

	Principles and practices of seed production	J-4024		
	Practical	J - 821		
	Fundamentals of bio-statistics and computer applications	J- 1004		
	Fundamental of vegetable production	J- 1061		
	Propegation & nursery management	J- 1062		
	Fundamental of ornamental gardening	J- 1063		
	Practical	J - 561		
	Statistical methods in agriculture	J- 2004		
	Production technology of vegetable crops & spices	J- 2061		
	Orchard management	J- 2062		

M.Sc. (Ag) I-IV sem Programme Specialisation: Horticulture	Production technology of ornamental crops	J- 2063		
	Practical	J - 661		
	Fundamental of fruit production	J- 3061		
	Breeding of vegetable & ornamental crops	J- 3062		
	Fundamental of preservation of horticultural crops	J- 3063		
	Post harvest technology of horticultural crops	J- 3064		
	Practical	J - 761		
	Production of fruit crops	J- 4061		
	Breeding of fruit crops	J- 4062		
	Processing of fruits and vegetables	J- 4063		

	Seed production technology of vegetables and flowers	J- 4064		
	Practical	J - 861		
M. A. I- IV Sem	Micro economics	G-1006		
	Macro economics	G-1007		
	Quantitative methods	G-1008		
	(a) economics of education and health	G-5006		
	(b) Agricultural economics	G-5007		
	(c) Labour economics	G-5008		
	(d) Economics of infrastructure	G-5009		
	(e) Research methodology	G-5010		
	Micro economics-II	G-2006		
	Macro economics-II	G-2007		
	Economics of growth and development	G-2008		

Programme Specialisation: Economics	(a) Econometrics	G-6006		
	(b) Gender economics	G-6007		
	(c) Industrial economics and entrepreneurship	G-6008		
	(d) Economics of insurance	G-6009		
	(e) Computer Applications in economics	G-6010		
	Public economics	G-3006		
	International economics	G-3007		
	Financial institutions and markets	G-3008		
	Indian economy	G-4006		
	Demography	G-4007		
	History of economic thought	G-4008		
	Hindi sahitya ka itihas	G-1025		
	Prachin evem purva madhya kaleen kavya	G-1026		

M. A. I- IV Sem Programme Specialisation: Hindi	Natak evam rangmunch	G-1027		
	Prayojan mulak Hindi	G-1028		
	Uttar madhya kaleen kavya	G-2025		
	Katha sahitya	G-2026		
	Kathater gadh sahitya	G-2027		
	Bhasha vigyan evem Hindi bhasha	G-2028		
	Adhunik kavya (chhayavad pariyant)	G-3025		
	Kavyashastra (bhartiya evem paaschatiya)	G-3026		
	Patrakarita - prashikshan	G-3027		
	Chhayavodottar kavya	G-4025		
	Hindi aallochan	G-4026		
	Vishistha sahitya-dhara	G-4027(a)		
	Vishistha sahitya-dhara	G-4027(b)		
	Vishistha sahitya-dhara	G-4027(c)		
	Vishistha sahitya-dhara	G-4027(d)		

	Laghu sodh prabandh	G825(a)		
M. A. I-IV Sem Programme Specialisation: Political Science	Traditional of political thinking	G-1070		
	Comparative politics	G-1071		
	Indian political system	G-1072		
	International relations	G-1073		
	Political Sociology	G-2070		
	Political thinking since marx	G-2071		
	Comparative politics	G-2072		
	Indian constitutional system	G-2073		
	Western political thought	G-3070		
	Indian administration	G-3071		
	State politics in India	G-3072		
	Concept and issue in political science	G-4070		

	Post cold war international relations	G-4071		
	State politics with special reference to U.P.	G-4072		
	Indian administration	G-4073		
	Sociological concepts	G-1087		
	Classical thinkers	G-1088		
	Methodology of social research	G-1089		
	Rural sociology	G-1090		
	Basic statistics and computer application in social research	G-2087		
	Neo - classical theories	G-2088		
	Social change: processes and theories	G-2089		
	Rural development : concepts and dimensions	G-2090		

M. A. I- IV Sem Programme Specialisation: Sociology	Modern sociological theories	G-3087		
	Social change in India	G-3088		
	Social problems in India	G-3089		
	Sociology in India	G-4087		
	Perspectives on Indian society	G-4088		
	Classification in social science	G-4089		
	(i) Participatory management in community development	G-4090		
	(ii) Political sociology	G-4091		
	(iii) Rural industrialization and entrepreneurship	G-4092		
	(iv) Sociology of disasters and disaster planning	G-4093		

(v) Human resource development	G-4094		
(vi) Sociology of development	G-8087		
(vii) Environmental sociology	G-8088		
(viii) State, society & human rights	G-8089		
(ix) Globalization and society	G-8090		
(x) Urban studies	G-8091		
(xi) Sociology of organization	G-8092		
(xii) Social stratification	G-8093		
(xiii) Career of a concept	G-8094		
(xiv) Sociology of science	G-9087		
(xv) Peace and conflict studies	G-9088		
(xvi) Sociology of social movements	G-9089		
(xvii) Sociology of religion	G-9090		

	(xviii) Medical sociology	G-9091		
	(xix) Sociology of India	G-9092		