BLJS COLLEGE, TOSHAM

AFFILIATED TO CBLU, BHIWANI

UNDER BANWARI LAL JINDAL SUIWALA
EDUCATIONAL TRUST, NEW DELHI

PROGRAM OUTCOMES
PROGRAM SPECIFIC OUTCOMES
COURSE OUTCOME

2022-2023

BANWARI LAL JINDAL SUIWALA COLLEGE, TOSHAM

PROGRAM OUTCOMES (PO), PROGRAM SPECIFIC OUTCOMES (PSO), COURSE OUTCOMES (CO) for Session 2022-2023

Program: Bachelor of Arts (B.A.)

This Course is a Govt. Aided Course to meet the demands of the students who are interested to pursue their career in humanities with various subject combinations such as Political Science, Economics, Sanskrit, Psychology, Geography, History, Mathematics, Physical Education, Computers, Environmental Science with English and Hindi as the compulsory subjects.

Compulsory Subjects:

हिन्दी

हिन्दी हमारी राष्ट्रीय भाषा ,राजभाषा एवं मातृभाषा होने के नाते प्रत्येक भारतीय को हिन्दी का ज्ञान होना अति आवश्यक है।हिन्दी स्नातक डिग्री के लिए एक अनिवार्य विषय है।स्नातक डिग्री पास करने के बाद हिन्दी विषय में विद्यार्थी एम०ए० बी०एड० की डिग्री प्राप्त कर सकते हैं।बी० एड० पास के बाद विद्यार्थी एक अच्छा अध्यापक बन सकता है या फिर अन्य क्षेत्र में नौकरी प्राप्त कर सकता है।

विद्यार्थी कबीरदास, सूरदास,तुलसीदास जैसे सुप्रसिद्ध कवियों की मानवीय मूल्यों की शिक्षा को जीवन में उतारकर हिन्दी साहित्य के इतिहास को पढ़कर परम्परागत रूढ़ियों का अध्यन कर समाज को जागरूक करके समाज की राजनीतिक ,धार्मिक,सामाजिक,जाग्रति में अपनी भूमिका अदा कर सकता है।

विद्यार्थी प्रेमचंद,जयशंकर प्रसाद,अज्ञेय जैसे सुप्रसिद्ध कहानियों को पढ़कर लेखन के क्षेत्र में व सरकारी और निजी क्षेत्र में अनुवादक,रेडियो वाचक व सोशल मीडिया में अच्छा रोजगार प्राप्त कर सकता है।

English

- English is a global language and it is needed most everywhere and the subject English helps in improving communication skills.
- literature reading prepares students for better understanding of life. It also instills in them critical analytical power , flair for the language, enrich expressive ability etc.
- Grammar section of the subject build up there grammatical ability and they become better equipped to communicate their thoughts and emotions.
- As far as the scope of the subject is concerned. We can ignore it at our own risk. Better communication is a must in every sphere of life. So English language teaching has a bright future even in the coming years

Course Outcome: English

Semester I **Course Code :20UENG01** **Course Name: Language And Literature- I**
To initiate the students into the word of literature through value based writings of Indian and English authors. To enhance the grammatical and writing skills of the students.
Semester II **Course Code :20UENG02** **Course Name: Language And Literature- II**
To initiate the students into the word of literature through value based writings of Indian and English authors. To enhance the grammatical and writing skills of the students.
Semester III **Course Code :20UENG03** **Course Name: Language And Literature- III**
To enhance the linguistic and literary skills of the students by making them familiar with the important literary works in different genres like modern prose, poetry and grammatical rules.
Semester IV **Course Code :20UENG04** **Course Name: Language And Literature- IV**
To enhance the linguistic and literary skills of the students by making them familiar with the important literary works in different genres like modern prose, poetry and grammatical rules.
Semester V Generic Elective Course A (i) **Course Code :20UENG051** **Course Name: Academic Writing and Composition**
To make student learn to develop the skill of intelligent argument and accomplish it successfully by understanding proper format and technical use that can be used to write effectively.
Semester V Generic Elective Course A (ii) **Course Code :20UENG052** **Course Name: English for Competitive examination**
To enhance the grammatical and writing skills of students and prepare them for the competitive exams at different levels and in different fields.

Semester VI Generic Elective Course B (i) **Course Code :20UENG061** **Course Name: Partition Literature**
To Introduce the students with the term patition literature and literature of remarkable writers of

that era.
Semester VI Generic Elective Course B (ii) **Course Code :20UENG062** **Course Name: Women's writing and Women's empowerment**
To develop, promote and disseminate knowledge about women's struggle and their role in society and makes students understand how women voice their issue through writing.

Semester I/II Ability Enhancement Compulsory Course **Course Code :21ENG1000** **Course Name: Communicative English**
Course Objectives: 1. To familiarize the students with the nature and importance of communication. 2. To orient the students towards theory and practice of communication skills. 3. To impart knowledge of common courtesies and conversational practices. 4. To acquaint students with positive attributes of personality. **Course Outcome:** 1. Student should be able to understand the nature and importance of communication skills. 2. Students would gain knowledge of common courtesies and conversational practices in various situations. 3. Students would be acquainted with the knowledge of skills necessary for personality development. 4. Students would be able to demonstrate the skills and knowledge of effective communication.

Subject combinations Available:

A student can opt one of the following subject combinations, being Hindi and English as compulsory subject in each semester and Computers and Environmental Science in either of odd sessions of their education.

1. History and Political Science
2. History and Geography
3. History and Physical Education
4. Geography and Mathematics
5. Geography and Psychology
6. Psychology and Political Science
7. Psychology and Economics
8. Sanskrit and Physical education
9. Physical Education and Economics
10. Economics and Mathematics
11. Sanskrit and Political Science
12. Sanskrit and Mathematics

PROGRAM OUTCOME (PO)

PO 1.	The expected outcome of the program is to give students a multidisciplinary approach that helps them build their social analytical skills and in pursuing multitasking courses and profession
PO 2	The students acquire knowledge in the field of social sciences, literature and humanities which make them sensitive and sensible enough.
PO 3	The B.A. graduates will be acquainted with the social, economical, historical, geographical, political, ideological and philosophical tradition and thinking.
PO 4	The program also empowers the graduates to appear for various competitive examinations or choose the postgraduate programme of their choice.
PO 5	The program enables the students to acquire the knowledge with human values framing the base to deal with various problems in life with courage and humanity.
PO 6	The students will be ignited enough to think and act over the solution of various issues prevalent in human life to make this world better than ever.
PO 7	Programme provides the base to be a responsible citizen.

PROGRAM SPECIFIC OUTCOMES (PSO)

PO 1	Different set of subject combinations suitable for rural students
PO 2	Provides ample opportunities based on the choice of the student and their interest.
PO 3	Students with this course can go for higher education
PO 4	Students would be able to use critical thinking to evaluate and interpret evidence, and to apply various concepts, theories, and research findings to individual, social, and cultural issues.
PO 5	This course has high potential which enables a student to mould according to the career path / higher studies options available throughout the nation.

COURSE OUTCOME: ECONOMICS

Semester I **Course Code :20UECO-201** **Course Name: Micro Economics I**	
CO 1	It gives the foundation for economic analysis and problem solving.
CO 2	Students would be able to analyse consumer behaviour and consumer decisions.
CO 3	A thorough understanding on firm's production processes and decisions
CO 4	Know how to solve basic micro economic problems.
CO 5	Learn to apply micro economic tools and techniques in the operation of real economy
Semester II **Course Code :20UECO-202** **Course Name: Micro Economics II**	
CO 1	The student will be able to understand market and factor pricing patterns.
CO 2	Familiarise students to Welfare Economics
CO 3	Provide an understanding of micro economic concepts and how to use that concept to solve specific questions
CO 4	Helps to understand the behavioural pattern of consumers in various market situations
CO 5	Enable the students to use economic tools and principles in the analysis of economic policies
Semester III **Course Code :20UECO-203** **Course Name: Macro Economics I**	
CO 1	Provides a thorough understanding of economic issues and how to treat them in macro perspectives
CO 2	Provides an understanding of system of accounts of Government of India
CO 3	Helps to understand National income, National income accounting and GDP and its measurement
CO 4	Helps to understand the factors of determination of National income like consumption function, investment function etc
CO 5	Better understanding of Government policies regarding expenditure and taxation
Semester IV **Course Code :20UECO-204** **Course Name:Macro Economics II**	
CO 1	Provides the understanding of demand and supply and theories regarding rate of interest, credit creations by commercial banks and monetary policy of the government, role of monetary and fiscal policies to address economic issue

CO 2	Helps to understand the trade cycles in the economy and models regarding growth of the economy
CO 3	To understand the public finance and the public expenditure and good taxation system in the country
CO 4	Thorough understanding of post Keynesian schools of thought
CO 5	To know about the various factors contributing to inflationary and deflationary pressures
Semester V **Course Code: 20U ECO-205** **Course Name: Development Economics**	
CO 1	Student acquaint with the basic concepts and issues of growth and development
CO 2	Provide an insight into the modern approaches to economic development
CO 3	Know how to measure National Income.
CO 4	An insight into the need for sustainable economic development
CO 5	Study about Human Development Indicators and their role in designing development programmes
Semester VI **Course Code : 20 UECO-210** **Course Name: International Economics**	
CO 1	Thorough understanding of Domestic and International Economic System.
CO 2	Learn global economic issues and role of international institutions in tackling them
CO 3	To understand the mechanism of devaluation and depreciation of currencies and its impact on nations BOP
CO 4	Study fundamental theories in International Economics and examine the relative economic problems in the light of models and theories.
CO 5	Know how about the functioning of foreign exchange markets and exchange rate systems

COURSE OUTCOME: PSYCHOLOGY

Semester I **Course Code :20UPSY101** **Course Name: Foundation of Psychology (CC)**	
CO 1	The student will learn about history of psychology, its emergence and subject matter of psychology.
CO 2	Will acquire knowledge of various methods used in study of psychology
CO 3	Will know about sensory processes, structure and functions of sense organs
CO 4	Know about perception, perceptual organisation, cues involved in perception, figure background organization
CO 5	Will get knowledge of various emotions, bodily changes in emotions and different theories of emotion
CO 6	Learn about process of motivation and different biological and psychological motives
CO 7	Will come to know about nature of personality factors affecting and various approaches to personality
CO 8	Understand nature of Intelligence and its different theories
CO 9	Acquire knowledge about process of learning, factors affecting learning different theories of learning and conditioning

CO 10	Understand meaning of memory, stages and types of memory and methods to study memory, forgetting
Semester II **Course Code : 20UPSY201** **Course Name: Social Psychology (CC)**	
CO 1	The student will learn about basic nature and subject matter of social psychology.
CO 2	Will come to know about social groups its types and functions of various social groups.
CO 3	Learn about social attitude and its measurements.
CO 4	Acquire knowledge about various social motives .
CO 5	Learn about various interpersonal processes, Like person perception and interpersonal attraction.
CO 6	Learn about prosocial behaviour: altruism and cooperation .
Semester III **Course Code : 20UPSY301** **Course Name: Psychological Disorders (CC)**	
CO 1	Will understand concept of normality and abnormality.
CO 2	Come to know about various models of psychopathology.
CO 3	Learn about classification of psychopathology it's neat and DSM system.
CO 4	Learn about learning disabilities like dyslexia, dysphrasia and discalsulia.
CO 5	Get detailed knowledge of anxiety based disorders: generalized anxiety disorder, obsessive compulsive disorder and phobic disorders.
CO 6	Learn about substance abuse, its causes, consequences and rehabilitation.
CO 7	Know about mood disorders- unipolar and bipolar, schizophrenia its nature types and causes.
Semester III **Course Code : 20UPSY401** **Course Name: Statistical Methods and Psychological Research (CC)**	
CO 1	Will be acquinted with the concept of statistics and Measurement
CO 2	Learn about frequency distribution and graphical representation of data
CO 3	Learn about several techniques of data analysis measures of Central tendency, standard deviation and correlation
CO 4	Will understand meaning of psychological testing, concept of Reliability and validity
CO 5	Learn about normal probability curve (NPC)
	Will understand norms and standardization
	Will be able to use qualitative methods of testing, for example interview, observation and case study.
Semester V **Course Code : 2001531** **Course Name:Psychopathology**	
CO 1	Will understand concept of normality and abnormality.
CO 2	Come to know about various models of psychopathology.
CO 3	Learn about classification of psychopathology it's neat and DSM system.
CO 4	Get detailed knowledge of anxiety based disorders: generalized anxiety disorder, obsessive compulsive disorder and phobic disorders.
CO 5	Learn about substance abuse, its causes, consequences and rehabilitation.
CO 6	Know about mood disorders- unipolar and bipolar, schizophrenia its nature types and causes.

CO 7	Will get knowledge of rank difference and product moment method of correlation.
Semester VI **Course Code :2001631** **Course Name: Applied Psychology**	
CO 1	The student will get knowledge of meaning of applied psychology, history, field and career in psychology.
CO 2	Will come to know about nature scope objectives and development of organisational psychology.
CO 3	Learn about objectives, principles and types of guidance and Organisation of guidance programme.
CO 4	Acquire knowledge of counselling, its need, principles special areas and types of counselling.
CO 5	Get knowledge of health psychology, concept of health and anus factors involved in physical illness, stress and coping.
CO 6	Understand the meaning of forensic psychology, relationship between psychology and law, eyewitness memory.
CO 7	Will get knowledge of rank difference and product moment method of correlation.

COURSE OUTCOME: HISTORY

Semester I **Course Code: 20 UHIS 101** **Course Name: History of India from earliest times up to 300 CE**	After studying this course the student will acquire knowledge regarding the primitive life and cultural status of the people of ancient India. They can gather knowledge about the society, culture, religion and political history of ancient India as well. They will learn about the origin of the Indian empire, trade and urbanizations of ancient civilization, like Harappan civilization, Vedic civilizations, later Vedic civilizations etc. The students will also learn about Harappan Civilization, Vedic Culture, Janism, Buddhism, Mauryan, Post Mauryan Period.
Semester II **Course Code: 20 UHIS 201** **Course Name: History of India from 300 AD to 1256 AD**	The student will get knowledge of positive and negative points of Mediaeval India and so he can be aware of future outcomes of such kinds of events.They will come to know about rise and growth of the Guptas empire, Polity, society, economy and culture of South India, changes in early mediaeval period in society economy and culture, evolution of different political structures. They will also know about the emergence of Rajput states in Northern India and invasion of Arabs in Sindh.
Semester III **Course Code: 20 UHIS 301** **Course Name: History of India from 1206 To 1707 AD**	After studying this course the student will come to know aboutDelhi saltanat in detail. They will get knowledge of Bhakti and Sufi movement, come to know about provincial Kingdoms of Mewar, Bengal, Vijaynagar etc and also emergence and consolidation of Mughal state.Learn about the weaknesses of India of that time And come to know why the India was conquered by foreign powers

Semester IV **Course Code: 20 UHIS 401** **Course Name: History of India from 1707 to 1950**	The student will get knowledge of Colonial power and Revolution of 1857. They will learn about social religious movements in the 19th century. They will get insight of freedom struggle of India.
Semester V **Course Code: 20 UHIS 501 Option I** **Course Name: History of Haryana**	After studying this paper the student will get knowledge of his own state's culture and history. Learn about culture, Civilization, emperors, Arts and architecture , religious movements and contribution in freedom movement of Haryana.
Semester VI **Course Code: 20 UHIS 601 Option I** **Course Name: Modern World**	After studying this paper the student will get ample knowledge of political,social and economic changes of modern world. They will study about economic development, different revolutions and stages of development. They will also know about political development in world, emergence Of colonialism in India and other countries, first and second world war and non alignment movement. In addition to this will be able to mark all this on maps as well.

COURSE OUTCOME: GEOGRAPHY

Semester I **Course Code: 20 UGEO 101** **Course Name: Geography of India**
The basic aim of the course is to provide comprehensive understanding of the geographical profile of India and establishing linkages with systematic and regional geography. Along with this course also provides understanding about geographical attributes in determining social and economic structure of the country.
Semester I **Course Name: Basic Cartography (Practical)**
Geography is an amalgam of physical as well as social sciences. This course aims to provide basic understanding of particular techniques of drawing cartograms to show physical, climatic and socio-economic attributes of a region. To achieve this objective, the concept of scale is to be understood at the initial stage of learning.
Semester II **Course Code: 20 UGEO 201** **Course Name: Economic Geography**
Main objective of this course to provide the basic understanding of spatial organization of economic activities, their types and basic determents.
Semester II **Course Name: Statistical Techniques & Representations of Socio-economic Data (Practical)**
To provide basic understanding to the students about basic statistical techniques and representation of socio-economic data on map with the help of various diagram.

Semester III **Course Code: 20 UGEO 301** **Course Name:Physical Geography**	
Main objective of this course is to introduce the students to basic and fundamental concepts of physical geography and geomorphology.	
Semester III **Course Name: Topographical Sheets & Map Projections (Practical)**	
Topographical Sheets & Map projections are necessary for accurate transformation of 3D Earth to 2D surface. The aim of this course is to develop basic understanding of Topographical Sheets, their interpretation and selection of suitable projection for map making.	
Semester IV **Course Code: 20 UGEO 401** **Course Name: Human Geography**	
This course aims to acquaint the students with nature of man-environment relationship and human capability to adopt and modify the environment under its varied conditions from primitive life style to the modern living, to identify and understand environment and population in terms of their quality and spatial distribution pattern and to comprehend the contemporary issues faced by the global community.	
Semester IV **Course Name: Chain and Tape, Plane Table & Prismatic Compass Survey (Practical)**	
The main aim of this course is to provide the basic understanding about different types of surveying instruments and their application in geographical mapping.	
Semester IV Course Code: 2001424 **Course Name: Human Geography**	
CO 1	Understand the meaning, scope, approaches and basic concepts of human Geography.
CO 2	Know about various environments and their contribution to the changes in the environment.
CO 3	Students will be educated on the distribution and growth of population
CO 4	They will acquire knowledge about rural and urban settlements and environmental degradation and sustainable development
Semester V Course Code: 2001524 **Course Name: Economic Geography**	
CO 1	Understand the meaning, scope, approaches and basic concepts of Economic Geography.
CO 2	The student will acquire knowledge of world's natural resources , their conservation and utilization
CO 3	They will know about the special distribution of agricultural and mineral resources
CO 4	Students will attain knowledge about industries , transport and trade of the world
Semester VI Course Code: 2001624 **Course Name: GIS and Remote Sensing**	
CO 1	The student will attain knowledge about aerial photographs, their interpretation and advantages.
CO 2	They will know about remote sensing, imageries and their applications in various fields.
CO 3	Will know about Geographical Information system (GIS), its advantages and software/hardware requirements and its applications in various fields of geography
CO 4	Will learn use of various statistical tools/techniques in Geography

COURSE OUTCOME: PHYSICAL EDUCATION

- After completion of this course graduate students will be able to apply knowledge of physical education for growth and development, to play sports games
- Will be able to use understanding of the history of yoga, ashtanga yoga effectively in everyday life.
- After the completion of this course the student will learn about health, personal hygiene, different health problems- prevention and control, physical fitness and Wellness and first aid management.
- The student will be able to understand the basics of anatomy, physiology and different body systems.
- On completion of this course a student can have his hands of experience to perform in various sports like long jump, highjump, discus throw, javelin throw etc. They will be having concept of track and field events also.
- After completing graduation the student can get help in his career as weightage at entry level of various government jobs. They can be a sports person or get a degree in yoga for being a yoga teacher. Simply they can be a sports teacher in schools, colleges and universities.

COURSE OUTCOME: POLITICAL SCIENCE

Semester I **Course Code :20UP0L 101** **Course Name: Indian government and Politics**	
CO 1	The student will acquire knowledge about Indian constitution, fundamental rights and directive principles.
CO 2	Will study about Federalism and center state relations.
CO 3	The student will able to understand Institutional structure and functioning of President, Prime minister, Governor and Indian Parliament.
CO 4	Will come to know about Judicial system, judicial review and judicial activism etc
CO 5	Gain knowledge of electoral politics, party system in India.
CO 6	Will come to know about social movements in India
Semester II **Course Code :20UP0L 201** **Course Name: Introduction to Political Theory**	
CO 1	The student will learn about Meaning of dimensions of politics, will come to know about Political Theory, its nature, scope and relevance.
CO 2	will acquire knowledge about stay its elements relations with other organisations and different theories of the state
CO 3	The student will understand the meaning and types of Liberty,Meaning and types of equality and its relationship with Liberty.
CO 4	will come to know about democracy and its various models
CO 5	will get knowledge about citizenship, civil society, rights and gender

Semester III **Course Code :20UP0L 301** **Course Name: Comparative Government and Politics**	
CO 1	The student will get insight into political analysis, its nature, scope and methods.
CO 2	The student will be able to compare authoritarian and democratic regimes.
CO 3	The student will acquire knowledge about classification of various political systems.
CO 4	Will get knowledge about Electoral system and party system.
CO 5	Will get insight into contemporary debates on the nature of state from state centric to human centric security and emerging nature of nation state in the context of globalization
Semester IV **Course Code :20 UP0L 401** **Course Name: Introduction to International Relations**	
CO 1	The student will know about international relations and various approaches to International relations
CO 2	Will come to learn about cold war and post cold war era and emerging centres of power after the collapse of the Soviet Union
CO 3	The student will learn about India's foreign policy and its basic determinants, India's policy of non alignment and India as an emerging power
CO 4	Will get knowledge about emerging challenges in international relations like terrorism climate change and global warming
CO 5	Will study about globalisation and its challenges.
Semester V **Course Code :20 UP0L 501** **Course Name: Public Policy and Governance**	
CO 1	The student will learn about meaning types and significance of public policy along with its various models
CO 2	Will know about Institutions of policy formulation and implementation like Niti AAyog and major parliamentary committee
CO 3	The student will acquire knowledge about governance, good governance and e governance.
CO 4	the student will come to know about decentralisation in India,Its impact and challenges of decentralization
CO 5	The student will learn about evolution of local government in India and 73rd and 74th constitutional amendments.
Semester VI: **Course Code :20UP0L 601** **Course Name: International Organizations**	
CO 1	The student will learn about nature, scope and evolution of international organisations and regional organisations.
CO 2	The student will get insight into objectives and principles of United Nations Organisation, structure and functions of its principal organs
CO 3	Will understand connection between India and regional organisations such as SAARC, ASEAN AND BIMSTEC etc
CO 4	The student will study about various International non-governmental Organisation like ICJ, AI and Human Rights Watch and Greenpeace.

COURSE OUTCOME : SANSKRIT

विभिन्न विषय संयोजनों में छात्र संस्कृत के रूप में एक विषय का चयन कर सकते हैं। संस्कृत साहित्य के अध्ययन से विभिन्न प्रकार की पौराणिक एवं वैदिक शिक्षाओं का ज्ञान विद्यार्थियों को मिलता है ताकि वर्तमान समय में प्राचीन-अर्वाचीन शिक्षाओं में सामंजस्य स्थापित कर जीवन को सुचारू रूप से चला सके। संस्कृत विषय में विद्यार्थी विभिन्न पुस्तकों का अध्ययन अलग-अलग सत्रों में करते हैं जिन की उपयोगिता जीवन में निम्न प्रकार से है-

स्नातक प्रथम वर्ष

Semesterl **Semester IV**

Course Code: 21USKT101 **Course Code: 21USKT201**

Course Name: Poetry(CC) **Course Name: Prose (CC)**

1. हितोपदेश- इस ग्रंथ को पढ़ने से विद्यार्थियों को लोक व्यवहार के ज्ञान के साथ-साथ नैतिकता का भी ज्ञान होता है।
2. व्याकरण- व्याख्यान पढ़ने से विद्यार्थियों को भाषा की शुद्धि व अशुद्धि का ज्ञान होता है तथा उच्चारण एवं लेखन की शुद्ध जानकारी प्राप्त होती है।
3. दूतवाक्यं - दूतवाक्यं से विद्यार्थियों को उद्दंड जीवन शैली का ज्ञान होता है तथा बड़े बुजुर्गों की बात हो अनसुना करने का परिणाम दुखदाई होती है। यह भी जानकारी मिलती है
4. शुकनासोपदेश - इससे विद्यार्थियों को जीवन में यौवनमद, लक्ष्मी मद एवं रूप मद से बचने की बात बतायी गई है तथा एक राजा के क्या कर्तव्य होने चाहिए इसकी सुंदर जानकारी मिलती है

स्नातक द्वितीय वर्ष

Semester III **Semester IV**

Course Code: 21USKT301 **Course Code: 21USKT401**

Course Name: Drama(CC) **Course Name: Grammar(CC)**

1. रामायण - रामायण के अध्ययन से विद्यार्थियों को पारिवारिक,सामाजिक,आर्थिक एवं राजनीतिक ज्ञान होता है।
2. श्रीमद् भगवद गीता-कर्म के महत्व के साथ साथ नियंत्रित जीवन जीने की शिक्षा मिलती है तथा समत्व की भावना का भी दिग्दर्शन होता है।

स्नातक तृतीय वर्ष

Semester V	Semester VI
Course Code: 21USKT501	Course Code: 21USKT601
Course Name: Literature-I(DSE)	Course Name:Literature-II(DSE)

अभिज्ञान शाकुन्तलम- नैतिकता के साथ साथ सामाजिक जीवन दर्शन एवं पर्यावरण संरक्षण का ज्ञान भी होता है।

संस्कृत साहित्य का सामाजिक, आर्थिक, सांस्कृतिक, वैज्ञानिक न, नैतिक एवं राजनीतिक दृष्टि से विशेष महत्व है। संस्कृत के अध्ययन के उपरांत एक विद्यार्थी भारतीय सेना में धर्म शिक्षा के लिए योग्य हो जाता है। विद्यार्थी भारतीय प्रशासनिक सेवा में संस्कृत विषय ले सकते हैं। विद्यालय, महाविद्यालय एवं विश्वविद्यालय में संस्कृत शिक्षक लग सकते हैं । कर्म कांड एवं ज्योतिष विज्ञान में भी जा सकते हैं । इसके अतिरिक्त संस्कृत पत्रकारिता में भी भविष्य हैं

B.A. (Mathematics)

Programme Outcome

Enabling students to develop a positive attitude towards mathematics as an interesting and valuable subject of study.

A student should get a relational understanding of mathematical concepts and concerned structures, and should be able to follow the patterns involved, mathematical reasoning. Ability to analyze a problem, identify and define the computing requirements, which may be appropriate to its solution. Introduction to various courses like group theory, ring theory, field theory, metric spaces, number theory.

Enhancing students' overall development and to equip them with mathematical modeling abilities, problem solving skills, creative talent and power of communication necessary for various kinds of employment.

Ability to pursue advanced studies and research in pure and applied mathematical science.

Programme Specific Outcome

- Think in a critical manner.
- Know when there is a need for information, to be able to identify, locate, evaluate, and effectively use that information for the issue or problem at hand.
- Formulate and develop mathematical arguments in a logical manner.

- Acquire good knowledge and understanding in advanced areas of mathematics and statistics, chosen by the student from the given courses.
- Understand, formulate and use quantitative models arising in social science, Business and other contexts

COURSE OUTCOME:

Semester I
Course: 20UMTH101
Course Name: Algebra
The student will be able to find the rank, eigen values of matrices and solve the homogeneous and non homogeneous systems, solution of cubic and bi – quadratic equations**.**

Course : 20UMTH102
Calculus
The student will be able to understand basic properties ofLimit, continuity and derivability of functions, series expansion Indeterminate forms, tracing of curves with the help of asymptotes and singular points.

Course: 20UMTH 103 Mathematical Lab
The students will learn to use mathematical Problem solving techniques based on Algebra and calculus, and they will also learn to use solving problems using programming software.

Semester II
Course: 20UMTH201
Course Name: Number theory and trigonometry
The students will be able to find quotients and remainders from integer division, understand the definitions of congruence, residue classes and least residues add and subtract integers, modulo n, multiply integers and calculate powers, modulo n Determine multiplicative inverses, modulo n and use to solve linear congruence. They will also learn Fermat's theorem, Wilson's theorem and De Moivre's theorem and its applications.

Course: 20UMTH202
Course Name: Vector calculus and Geometry
The student will be able to find directional derivatives, Gradients, Curls. Laplacian operator, two and three dimensional geometry.

ɒurse: 20UMTH203
Course Name: Mathematical Lab II
The students will learn to use mathematical Problem solving techniques based on number Theory & Trigonometry and Vector Calculus And Geometry. They will also learn to solve related problems using programming software.

Semester III

Course Code: 20UMTH301

Course Name: Differential equations

After completing this the students will be able to understand concept of differential equations and Orthogonal trajectories. they will be able to deal with concept of PDE. They will be able to do classification of PDE and also know about the special functions.

Course Code: 20UMTH301

Course Name: Numerical methods with Programming in C

The students would be able to use computer and will learn programming in C. They will learn about strings, Standard string handling functions, Arithmetic operations on characters, Using structures.

they will also learn Solution of algebraic and Transcendental equations. They will also be able to solve Simultaneous linear algebraic equations.

Course Code : 20UMTH303

Course Name: Mathematical Lab III

The students will learn solving problems with the use of programming in C. The problems will be based on nuerical methods and differential equations.

Semester IV

Course Code: 20UMTH401

Course Name: Mechanics

This course enables students to know about the general concepts of Mechanics such as forces,Movements and couples, Velocity, Newton's law, Work , Power and Energy etc.

Course Code: 20 UMTH402

Course Name: Groups and Rings

After studying this course the students will be able to Relate group theory with real life using symmetric group and to solve basic problems related to Rings, Groups and Fields.

Course Code: 20 UMTH402

Course Name: Mathematical lab IV

Students will be able to solve problems related to Mechanics and Groups and Rings using programming software like Excel or C.

Semester V

Course Code: 20UMTH 502 (DSE)

Course Name: Statistical Inferences

After going through this course the student will be able to have a fundamental understanding of Parametric models for developing relevant inferences on associated parameters. They will get knowledge of point and interval estimation, procedures and different methods of point estimation. They will learn about Null and alternative hypothesis, will come to know about level of significance, one-tailed and two-tailed test, student's t distribution, Testing for the mean and Variance of univariate model distribution, ANOVA for one way and two way classifications.

Course Code: 20UMTH 504 (DSE)
Course Name: Linear algebra
Students will know about vector spaces, Subspaces, and solve linear system and characterize the set of vector.Linear Algebra will help to understand the properties of high dimensional geometry.

Course Code: 20 UMTH 505
Course Name: Mathematical lab IV
Students will be able to solve problems related to Statistical Inferences and Linear Algebra using programming software preferably Mathematica or MS Excel

Semester VI

Course Code: 20UMTH 601 (DSE)
Course Name: Special Functions and Integral Transforms
The student will be able to understand Series solution of differential equations, Bessel equation and functions, Legendre differential equations and their functions. They will know in detail about Laplace transforms and Fourier transforms**.**

Course Code: 20UMTH 601 (DSE)
Course Name: Real Analysis
Students will be able to understand the concept of metric space, Baire's theorem, Abel's and Dirichlet's tests , improper integral and topology of complex numbers, continuity and analyticity of functions.

CO 1	Complex analysis helps us to study the different type of functions that live in complex planes.
CO 2	Linear algebra helps us to understand geometric concepts such as planes.
CO 3	Dynamics are very important for analysing systems consisting of single bodies or multiple bodies interacting with each other.
CO 4	Linear Algebra helps us understand the properties of high dimensional geometry .

Program: Bachelor of Commerce (B.Com)

We offer the B.Com. Pass Course for the students who are interested to make their career in the realm of Commerce. Like B.A. this is also a Govt. Aided Course with limited seats. The option of Vocational B.Com with Computer Application or ASM is also available.

PROGRAM OUTCOME (PO)

PO 1	Develop an understanding of various commerce functions such as Finance, Accounting, Financial analysis, project evaluation, and cost accounting
PO 2	Develop self-confidence and awareness of general issues prevailing in the society
PO 3	Have global exposure of complex commerce problems and find their solution, process information by effective use of IT tools.

PROGRAM SPECIFIC OUTCOMES (PSO)

PSO 1	There is high demand for these graduates in Manufacturing Companies, Export, Trading houses , Financial concerns, Banks, Financial Institution, Insurance Industry, PSUs, NGOs, Multinational corporations, Service Industry, Marketing Industry, Education , Health etc.
PSO 2	Students will learn relevant financial accounting skills by applying both quantitative and qualitative knowledge to their future career in business
PSO 3	Enables the students about entrepreneurship and capable of making decisions at personal and professional level.
PSO 4	Perform all accounting activities and handling business well.
PSO 5	Develop communication skills and computer awareness and rules of income tax Act.
PSO 6	Students will be familiarized with the provisions of Company Law and Business Law.

COURSE OUTCOMES

Semester I **Course Code: 19BC-101** **Course: Financial Accounting I**	
CO 1	Students can understand and ascertain: Meaning of Accounting - its objectives, scope, advantages, disadvantages and its principles.
CO 2	The Accounting Process – Identifying the types of accounts, Recording (journal) and Posting (ledger). And understanding the contemporary issues in Accounting
CO 3	The Different types of books (purchase book, sales book, cash book etc.). Bank Reconciliation Statement its Meaning, Need and Ascertainment of correct cash book balance.
CO 4	Meaning of Trial balance and its objectives. Rectification of Errors before and after preparation of Final Accounts.
CO 5	Preparation of Manufacturing , Trading, Profit and loss Account and Balance Sheet along with adjustments and Closing Entries
Semester I **Course Code: 19BC-102** **Course: Business Management**	

CO 1	Apply managerial roles and managerial skills
CO 2	Evaluate different approaches for organizational control
CO 3	Recognize the theory of management and manager's role in organization
CO 4	To understand the evolution and importance of globalization in today's business world.
CO 5	Understanding of Management theories including motivation and leadership
Semester I **Course Code: 19BC-103** **Course: Business Economics**	
CO 1	Understand the theories of demand and their applications in real world.
CO 2	Be clear about the law of the supply and its criticism and evaluate concept of cost
CO 3	Be conversant about the concepts of cost, nature of production and its relationship to Business operations
CO 4	Analyze the causes and consequences of different market conditions
CO 5	Grab the understanding of the concepts related to elasticity of demand.
Semester I **Course Code: 19BC-104** **Course: English**	
After studying this course the student will get the knowledge of – ● literature work of some renowned litterateur ● Parts of speech ● Basic grammatical concepts and common errors. ● Basics of communication like listening, conversational English, speech and oration	
Semester I **Course Code: 19BC-105** **Course: Fundamentals of Computers**	
● After studying this paper the student will be able to to know more about computer system, internet and networking, email and security system. ● Will get better understanding of MS Office 2010 ● Will learn more about data communicatrion and networks.	
Semester II **Course Code: 19BC-201** **Course: Financial Accounting II**	
CO 1	Students can understand the terms of the hire purchase system and installment payment system.
CO 2	Students aware about branch accounting including foreign branch and departmental account
CO 3	This paper gets knowledge about amalgamation and sale of partnership firms, dissolution of partnership firms.
CO 4	Insolvency of partner (including Garner vs Murray Rule), gradual realisation and piecemeal distribution.
CO 5	This paper provides Wide range of joint venture account, royalty accounts.
Semester II **Course Code: 19BC-202** **Course : Indian Economy and Business Environment**	

CO 1	Students can understand the term of business environment: meaning, elements importance of business environment, current Indian business environment.SWOT/SWOC analysis with special reference to Indian industry.
CO 2	Dimensions of business environment: National institution for transforming India's economic environment.
CO 3	This paper provides knowledge about inflation, industrial sickness and religion in balances, industrial policy for the growth of industries (latest).
CO 4	Students will be aware of economic policies, monetary policy and fiscal policy in globalization, privatisation and globalisation, WTO and World Bank.

Semester II
Course Code: 19BC-203
Course: Business Mathematics

CO 1	Matrix and determination: definition of a Matrix, types of matrices, algebra of matrix calculation of value of determinants up to third order.
CO 2	Basic knowledge of differentiation, application of differentiation, compound interest and annuities, certain different types of interest rate concept of present value and amount of a sum.
CO. 3	Paper provides the basic knowledge of ratio proportion and percentage profit and loss.

Semester II
Course Code: 19BC-204
Course: Hindi

- पत्र लेखन,प्रारूपण, टिप्पण, प्रतिवेदन, पत्राचार: अर्थ एवं प्रकार, व्यवहारिक, एवं सरकारी पत्र लेखन अनुवाद: परिभाषा, विशेषता एवं उपयोगिता.
- मुहावरे एवं लोकोक्तियां: अर्थ परिभाषा एवं विभिन्न मुहावरे तथा लोकोक्तियां; शब्द शुद्धि वाक्य शुद्धि और शब्द ज्ञान.
- पर्यायवाची एवं विलोम शब्द: अनेकार्थी, वाक्य या वाक्यांश के लिए एक शब्द अथवा अनेक शब्दों के लिए एक शब्द; देवनागरी लिपि: अर्थ, नामकरण विशेषताएं, वैज्ञानिकता मानकीकरण एवं सुधार के उपाय.
- कंप्यूटर में हिंदी प्रयोग: कंप्यूटर की संरचना, वर्तनी संशोधन: पारिभाषिक शब्दावली, कार्यालय हिंदी और अनुवाद: विशेषताएं अनुवाद प्रक्रिया, समस्याएं एवं कठिनाइयां.

Semester II
Course Code: 19BC-205
Course: Business Communication Skills

CO 1	Students can understand Business Communication - essentials of a good business letter, etc. Making Presentations - Effective presentation strategies - Persuasive speaking
CO 2	Business Correspondence - Purchases - Sales -preparation of market survey reports; drafting of advertisements.
CO 3	Accounts: correspondence with various agencies -Inter/ Intra -departmental Communication
CO 4	Report Writing - Individual and committee reports - Essentials of good report writing - Business letters - Effective business correspondence - Drafting a resume.
CO 5	Media Communication - Ways and means of managing governing power; Crisis communication - Do‘s and don'ts in the wake of a crisis.

Semester III
Course Code: 19BC-301
Course: Corporate Accounting I

CO 1	Understand the share capital meaning types and treatment of issues forfeiture and reissue of shares.
CO 2	Basic knowledge of Debentures: meaning, types, Issues And redemption of debentures
CO 3	Make students aware about the invasion of goodwill meaning of determinants and main methods .
CO 4	Valuation of shares:Meaning of objectives, determinants and main methods
CO 5	Explaining the final accounts of companies.
Semester III **Course Code: 19BC-302** **Course: Business Regulatory framework**	
CO 1	Understand the rules regarding offer, acceptance, consideration and capacity to contract
CO 2	Explaining the rules pertaining to Sale of Goods Act, 1930
CO 3	To make students aware about the rights under Consumer Protection Act, 1986
CO 4	Understanding of RTI act 2005
CO 5	Basic knowledge of Haryana Service rules and Labour Laws
Semester III **Course Code: 19BC-303** **Course: Human Resource Management**	
CO1	Introduction to human resource management, its importance objective and scopes.
CO 2	Basic Knowledge of managerial and operative functions qualification and qualities of human resource manager in our organisation.
C0 3	Evolution and growth of Human Resource Management in India.
CO 4	To understand the basic knowledge of recruitment, selection and training and its importance in our businesses.
CO 5	Will understand the concept, importance and objectives of Industrial Relation,participants of industrial relation and recruitment of good industrial selection programs.
Semester III **Course Code: 19BC-304** **Course: Environmental Science**	
CO 1	Student will be able to understand about the multidisciplinary nature of environmental studies, its definition, scope and importance, need for public awareness.
CO 2	Will come to know about various natural resources and role of an individual in conservation of natural resources.
CO 3	Acquire knowledge about Ecosystem concept,structure and function of an ecosystem; producers, consumers and the composer's energy flow in the ecosystem.
CO 4	Students will know about causes, effects and control measures of air pollution, water pollution, soil pollution, marine pollution, noise pollution, thermal Pollution.
CO 5	Will understand various Social issues and environment, environmental ethics issues and possible solutions to climate change, global warming, acid rain, ozone layer depletion.
Semester III **Course Code: 19BC-305** **Course: E-Commerce**	
CO 1	Student will acquire knowledge of basic models of e-commerce, e commerce models- B2B, b2c, c2b, g2c. Applications of e-commerce: Service industry, Financial Services, travel and tourism.

CO 2	Acquire knowledge about ready to use internet networking, network topologies: TCP/IP address, domain name, URL, E-mail protocol HTTP, WWW, search engine, internet intranet and extranet.
CO 3	Will gain ability to deal with online payment mechanism, electronic payment system , payment gateways, risk management options for E payment system.
CO 4	Learn about threats in e-commerce, security of clients and service providers, service issues over the web.
Semester III **Course Code: 19BC-306** **Course: Computerised Accounting System**	
CO 1	Students can understand Manual accounting and computerized accounting difference Between manual accounting and computerized accounting.
CO 2	Acquire knowledge about ready to use accounting packages various accounting software in trends entry Level, ERP software.
CO 3	Will gain ability to deal with tally designing and creating outer sales purchase sales , Return, purchase return, general and practical.
CO 4	Learn Data entry through vouchers processing for reports to prepare measure accounts, balance sheet and with the help of a workbook.
Semester IV **Course Code: 19BC-401** **Course: Corporate Accounting II**	
CO 1	Students can understand provisions for accounting standard 14 external reconstruction in the nature of merger and purchase.
CO 2	Knowledge about accounting standard 21 ICAI: accounts of holding companies consolidated balance sheet.
CO 3	Knowledge about accounting standard 21 ICAI: accounts of holding companies consolidated
CO 4	Know about the final account of banking companies.
CO 5	Basic movtives of liquidation of a company: financial reporting for Financial Institutions, Understanding of international financial reporting standards.
Semester IV **Course Code: 19BC-402** **Course: Corporate Law**	
CO 1	Students can easily understand the meaning , characteristics and nature of a company. Lifting company VAIL, Meaning and characteristics of private company.
CO 2	Promotion and incorporation of company memorandum of association and article of Association.
CO 3	Will get knowledge of directors' appointments and power position of directors.
CO 4	Will learn about share and stock share certificate and share warrants.
CO 5	Come to know about Company meetings, their importance and types, resolution and minutes ,case studies regarding company meetings
Semester IV **Course Code: 19BC-403** **Course: Marketing Management**	
CO 1	Will learn about basic models of marketing , concept of traditional and modern marketing.
CO 2	Will get basic information of marketing segmentation, targeting and Positioning.

CO 3	Student will get insight of consumer behaviour and its factors, product planning and development
CO4	Understanding of Product life cycle, types of brand branding , its policies and strategies.
CO 5	Students will be able to understand the main role of advertisement in marketing, Media of advertisement and sales promotions.
Semester IV **Course Code: 19BC-404** **Course: Business Statistics**	
CO 1	Students can understand and ascertain: Importance and Scope of Statistics, Sampling methods and Tabulation of data
CO 2	To provide insights for primary and secondary data and methods of collection of data
CO 3	To understand Central tendency and measurements of dispersion
CO 4	Student will get insight about correlation, regression and analysis of time series, theory of probability
CO 5	To develop the student's ability to deal with numerical and quantitative issues in business
Semester IV **Course Code: 19BC-405** **Course: Banking And Banking Law**	
CO 1	Students will know about the meaning and importance of banks,functions and problem of non performing assets, structure of commercial banking system in India.
CO 2	Will get basic knowledge of regional rural banks and Cooperative banking in India.
CO 3	Will learn about determination and regulation of interest rates in India, banks rights, special types of bankers, consumer (minors, married women, illiterate persons), Trusty as executive administrator and customers, Attorney, joint accounts.
CO 4	Will learn about Negotiable Instrument,Negotiable Instrument holder and holder in due course.
Semester IV **Course Code: 19BC-406** **Course: Business Ethics**	
CO 1	Understanding Business ethics and development
CO 2	Awareness regarding corporate social responsibility
CO 3	Knowledge of corporate governance and sustainable development
CO 4	Implications of ethics and values in business
CO 5	Importance of institutionalization of ethics
Semester IV **Course Code: 19BC-407** **Course: Statistical Analysis through Software**	
CO1	Students can understand SPSSin detail along with its advantages and disadvantages
CO 2	Awareness regarding savings of data variables,types and rules for variables, data analysis, procedure.
CO 3	Will get Knowledge of custom tables, general linear model, correlation, regression, time series auto correlation, cross correlation.
CO 4	Understand the procedure of data analysis and sequences reports.
Semester V **Course Code: 19BC-501** **Course: Income Tax Law**	

CO 1	Student will get knowledge of Income Tax, important agriculture income, expected income and Residential income.
CO 2	Understand Income from salaries and from House properties.
CO 3	Students will gain knowledge about profit and loss, Business and professions.
CO 4	Will know about Models of income from other sources, clubbing of incomes and aggregation of incomes.
Semester V **Course Code: 19BC-502** **Course: Cost Accounting I**	
CO 1	Students can understand Cost Accounting concepts, systems, classification and preparation of cost sheet
CO 2	Essential of stores, control of purchase dept. records, pricing methods.
CO 3	Understand essentials of stores, machine turnovers, time keeping, bookkeeping, over time, and idle time
CO 4	Understand the Methods of Costing, and process of profits
CO 5	Understand the need of Reconciliation of Costing and Financial Accounts, reasons for disagreement in profit
Semester V **Course Code: 19BC-503** **Course: Management Accounting**	
CO 1	Students can understand meaning, features, scope, importance and functions of Cost accounting.
CO 2	Will get knowledge of material control, labour cost control and its models.
CO 3	Basic knowledge of Overheads meaning And types Collection classification and apportionment and absorption of overheads: main methods.
CO 4	Will go through Unit and output Costing.
CO 5	Will understand meaning, performa and types of Cost sheet.
Semester V **Course Code: 19BC-504** **Course: Auditing**	
CO1	Students will get basic knowledge of auditing: its meaning. definition, its functions and types.
CO2	Will learn about auditing procedure: routine checking, Verification and valuation of Assets and liabilities.
CO 3	Get knowledge of audit report and investigation.
CO 4	Understand the basic concept of Audit report and Audit investigation
Semester V **Course Code: 19BC-505 (A)** **Course: Advertising and Sales Management**	
CO1	Students will be acquinted with advertising and promotion, marketing communication strategies and types & role of advertising agencies.
CO2	Know about sales management,its characteristics and responsibilities, role of sales manager, sale planning and theories of selling
CO 3	Learn about territory management, time management, sales quota, management of sales force-recruitment, selection and training.

CO 4	Get knowledge of control process and distribution channels, ethical issues in sales management and web marketing
Semester V **Course Code: 19BC-506 (B)** **Course:Retail Management**	
CO1	Students will be acquinted with retail management, its characteristics, development and functions.know about Career, technology in retailing
CO2	Will learn about types of retailing, wheel of retailing, different formats of retailing, cash and carru business.
CO 3	Will Know about management of retailing operations.
CO 4	Get knowledge of retail planning, retailing and retail pricing strategies, retail locations.
Semester VI **Course Code: 19BC-601** **Course: Tax procedure and Practices**	
CO 1	Students can understand Clearance Procedure: procedure Filing and filling of relevant documents,Shipping bill for export of suitable goods, duty free goods duty free goods Ex.bond.
CO 2	Customer processes :Import procedure And documents,export procedure and documents.
CO 3	Assessment and provisional assessment relevant date.
CO 4	Understanding exemptions from custom duty and general exemptions, remission on lost and pilfered goods and relinquished goods.
CO 5	Going through export incentives and EOU you and SEZ.
Semester VI **Course Code: 19BC-602** **Course: Cost Accounting II**	
CO 1	Basic knowledge of Budgetary controls and its techniques
CO 2	Understanding of Contract, Job and Batch costing
CO 3	Knowledge of process costing including inter-process profit transfer
CO 4	Understanding Labour and material variances under standard costing
CO 5	Going through break even analysis, P/V ratio etc under marginal costing
Semester VI **Course Code: 19BC-603** **Course: Financial Management**	
CO 1	Students can understand Goals of Financial Management, Agency Problem, Changing Role of Finance Manager (Theory). Time value of money
CO 2	Accounts Receivable Management, Cost Benefit Analysis, Inventory Management: Meaning Tools and Techniques of Inventory Control
CO 3	Understanding of Classification of Costs, Computation of Specific Cost of Capital, Cost of Debt and Leverages, Capital Structure Theories
CO 4	Detailed Knowledge of Dividend decisions, Dividend Policy, Forms of Dividends
CO 5	Helps the student to learn management of finance at various business levels. Further there may be a continuous demand in future for the financial managers
Semester VI **Course Code: 19BC-604** **Course: GST**	
CO 1	The student will acquire knowledge about Salient features, Scope and importance of GST

CO 2	Knowledge of Goods and service tax helps the student to understand the indirect tax
CO 3	Will come to know about process of registration and issue of invoices, provisions of TDS and TCS
Semester VI **Course Code:19BC-605 (B)** **Course: Financial market operations**	
CO1	Basic knowledge of money market: Indian money market, capital market: New market and secondary market ,National Stock Exchange.
CO 2	Understand SEBI its role, scope ,functions and importance in businesses
CO 3	Students can understand about Investors Protection :Grievances,Dealing and their removal .
CO 4	Understand the Functionaries on stock exchange: Brokers, Sub brokers,market makers,jobbers , Institutional Investors.
CO 5	Knowledge of Product and services offered by IDBI, IFCI, SIDBI, IDBI NABARD and ICICI.
Semester VI **Course Code: 19BC-606(B)** **Course: Entrepreneurship and small scale business**	
CO 1	Basic concept of Entrepreneurship: Enterprises conceptual issues.Role and function of entrepreneur in relation to the enterprise and in relation to the economy.
CO 2	Knowledge of Scouting and Idea generation: Role of creativity, Innovation and business research.Sources of business ideas.
CO 3	Understand the term of entrepreneurial opportunity in contemporary business environment and Network marketing.
CO 4	Managerial roles and its function in small business .Basic Awareness of the issues of impugning quality productivity and environment.
CO5	Learn about the concept and application of product life cycle in businesses, advertising and & publicity, Sales and distribution management.

PROGRAM: B.Sc. NON MEDICAL

We are running this course under the Self Financing Scheme having options of B.Sc. Non-Medical with or without Computer Science. This course also has limited seats and provides opportunities for the students to make their career in the realm of Science.

PROGRAM OUTCOMES

1. Students become eligible to join as Quality Control Manager in private Sector (Industries) as well as government sector.
2. Students can join as Medical Representative.
3. Students can join M.Sc. in Physics, Chemistry, Mathematics, Information Technology and Nuclear Medicines.
4. Students become eligible to serve in DRDO, defense, public sector and private Sector.

PROGRAM SPECIFIC OUTCOMES

1. They can pursue Post Graduation in any subject which they have studied in B.Sc.
2. Students can go for higher studies in courses like B.Ed, MA, MBA, LLB, etc.

COURSE OUTCOMES: B.Sc. CHEMISTRY

Semester I **Course code: CH-101** **Course name: Inorganic Chemistry(Theory)**
After the completion of this course the student will be able to understand ● Atomic structure, Radial and angular wave functions and probability distribution curves, shapes of s, orbitals ● General principles of periodic table, electronic configuration of the elements, electron affinity and electronegativity. ● Covalent bond in detail ● Ionic solids, ionic structures, polarising power and polarizability of ions fajans rule
Course code: CH-102 **Course name: Physical Chemistry(Theory)**
The student will get knowledge of- ● Gaseous states, maxwell's distribution of velocities and energies, deviation of real gases from Ideal behaviour derivation and application of Vandor Waal's equation of state and its application ● Critical temperature, critical pressure, critical value and their determination ● PV isotherms of real gases, the law of corresponding states and liquefaction of gases ● Structure and properties of liquids Learn about classification of solids laws of crystallography. Derivation of Bragg equation, difference between solid liquid and liquid crystals.

Course code: CH-103
Course name: Organic Chemistry(Theory)

- Will know about structure and bonding :localised and delocalized chemical bond, resonance, its effects and applications
- Stretochemistry of organic compound
- Mechanism of organic reactions
- Know about Nomenclature of branched and unbranched alkaline, cycloalknes, their synthesis and derivatives

Course code: CH-104
Course name: Practical

By this course students will able to learn about

- Volumetric Analysis: redox titration, iodometric titration , Complexometric titrations
- Specific reaction rate of the hydrolysis of methyl acetate/ethyl acetate catalyzed,determine the surface tension , to determine the viscosity ,determine the specific refractivity

Semester II
Course code: CH-201
Course name: Inorganic Chemistry (Theory)

The student will come to know about-

- Hydrogen Bonding & Vander Waals Forces
- Metallic Bond and Semiconductors
- Comparative study of the elements including , diagonal relationships, salient features of hydrides, solvation and complexation tendencies including their function in biosystems. Chemistry and Chemical properties of Noble Gases with emphasis on their low chemical reactivity
- Comparative study of properties of p-block elements (including diagonal relationship and excluding methods of preparation)
- Chemical properties and structure of Borone family elements

Course code: CH-202
Course name: Physical Chemistry (Theory)

After studying this course students will be able to understand

- Rate of reactions, factors influencing the rate of reactions, order of reaction , Methods to determine the half life period and order of reaction
- Theories of reaction rate: collision theory , Arrhenius equation, Transition state theory
- Electrolytic conduction and factors affecting , Arrhenius theory of ionization, Ostwald's dilution law, Debye Huckel- Onsager's equation
- Kohlarausch's law , Application of law in calculation of conductance, Application of conductivity measurement, Buffer solution, Buffer action, buffer mechanism

Course code: CH-203
Course name: Organic Chemistry (Theory)

After completion of the course students will be able to know about the following:

- Nomenclature of alkenes, mechanism Dehydration of alcohols, the Saytzeff rule, Hofmann elimination, Physical properties and relative stability of alkenes, Various chemical reactions of alkenes
- Nomenclature of arenes, Aromaticity ,The huckel rule, aromatic electrophilic substitution, energy profile diagram
- Nomenclature of dienes, Classification and structure of Dienes, nomenclature, structures and bonding in alkynes ,Chemical reactions and mechanism of electrophilic and nucleophilic addition of alkynes
- Nomenclature, method of formation, chemical reactions and mechanism of alkyl halide, SN1 and SN2 reaction with energy profile diagram, method of formation of Aryl halides, relative reactivity of alkyl and aryl halides

Course code: CH-204
Course name: Practical

- Qualitative analysis: using paper chromatography techniques of different inorganic anion and cation
- Preparation and purification through crystallization or distillation and ascertaining of different organic compounds
- Study the process of sublimation of camphor and phthalic acid.

Semester III
Course code: CH-301
Course name: Inorganic Chemistry (Theory)

After studying this course student will be able to-

- Understand the transition metal, position in periodic table, general characteristics and properties of first transition elements including structures and properties of transition elements- TiO_2 $vocl_2$, copper chloride and Nickel tetracarbonyl
- Know general characteristics and properties of the second and third transition elements, comparison of properties of 3d elements with 4d and 5d elements including ionic radii, Oxidation State, magnetic and spectral properties and stereochemistry

- Explain Werner coordination theory, effective atomic number concept and nomenclature of coordination compounds, isomerism in coordination compounds and valence bond theory in transition metal complexes
- know non-aqueous solvent, their physical properties and their general characteristics, reactions in non-aqueous solvent solvents with reference to liquid Ammonia and liquid SO_2

Course code: CH-302
Course name: Physical Chemistry (Theory)

The students will get knowledge of

- Thermodynamics terms: system, type of system, surroundings, Intensive and extensive properties ,state and path functions
- Thermodynamics process, Zeroth law of thermodynamics, first law of thermodynamics , Joule's law

- Calculations of work, heat and dU,dH Ideal gases, isothermal and adiabatic processes bond energy, application of bond energies
- Equilibrium constant, free energy, concept of chemical potential, Van't Hoff Reaction Isotherm and isochore
- Le-Chatelier's principle,Clausius-Clapeyron equation and its Application
- Nernst Distribution law-Thermodynamics derivation,Modification of distribution law and application of distribution law
- Determination degree of hydrolysis, determination of equilibrium constant of potassium tri-iodide complex

Course code: CH-303
Course name: Organic Chemistry (Theory)

After studying this course student will be able to understand-

- Monohydric alcohol and dihydric alcohol in a detailed manner.
- Synthesis of epoxides , acid and base catalysed ring opening of epoxide, orientation reaction of Grignard and organolithium reagent with epoxides
- Phenols nomenclature, structure and bonding, preparation of phenols, physical properties and acidic character, reactions of phenols; Electrophilic aromatic substitution, mechanism fries rearrangement etc
- Ultraviolet absorption spectroscopy: absorption law, presentation and analysis of UV spectra, types of electronic transitions, concept of chromophore and auxochrome, chemical shift ,Woodward fieser rule, calculation of Lambda maximum application of UV spectroscopy in structure elucidation of simple organic compound
- Carboxylic acid structure, nomenclature, bonding, physical properties, acidity carboxylic acid, effect of substituents on acid strength, preparation of carboxylic acid, reaction of carboxylic acid
- Mechanism of decarboxylation. Structure , nomenclature and preparation of acid chlorides, esters, amides and acid anhydrides. Relative stability of acyl derivatives. Physical properties, interconversion of acid derivatives by nucleophilic acyl substitution. Mechanisms of esterification and hydrolysis

Course code: CH-304
Course name: Practical

The students will get practical knowledge of -

- Gravimetric Analysis: Quantitative estimations of different inorganic compounds
- Systematic identification of different organic compounds

Semester IV
Course code: CH-401
Course name: Inorganic Chemistry (Theory)

After studying this course the students will be able to know about-

- Electronic structures, oxidation states, ionic radii of Lanthanides and Lanthanide contraction, complex formation occurrence and isolation.
- General features and Chemistry of actinides, separation of Np.

- Pu and Am,from U, comparison of properties of lanthanides and actinides with transition elements
- Theory of qualitative and quantitative-IN inorganic analysis-II

Course code: CH-402
Course name: Physical Chemistry (Theory)

The students will understand-

- Second law of thermodynamics, its need and statements.
- Carnot's cycles and its efficiency, Carnot's theorem, Thermodynamics scale of temperature,Concept of entropy,Entropy of mixing of ideal send mixing of gases
- Third law of thermodynamics: Nernst heat theorem, statement of concept of residual entropy, evaluation of absolute entropy from heat capacity data. Gibbs and Helmholtz functions; Gibbs function (G) and Helmholtz function (A), variation of G and A with T,V and P
- Electrolytic and Galvanic cells in detail
- Types of reversible electrodes – metal- metal ion gas electrode, metal –insoluble salt- anion and redox electro, electrochemical series and it's application
- Concentration cells with and without transference, liquid junction potential,application of EMF measurement,Determination of pH using Hydrogen electrode, Quinhydrone electrode and glass electrode by potentiometric methods.

Course code: CH-403
Course name: Organic Chemistry (Theory)

This part of chemistry will able to make understand the following topics-

- Infrared (IR) absorption spectroscopy Molecular vibrations, Hooke's law, selection rules, intensity and position of IR bands,measurement of IR spectrum, fingerprint region, applications of IR
- Structure and nomenclature of amines, physical properties,Separation of a mixture of primary, secondary and tertiary amines,Preparation of alkyl and aryl amines
- Gabriel Phthalimide reaction, Hofmann bromamide reaction, electrophilic aromatic substitution in aryl amines, reactions of amines with nitrous acid.
- Mechanism of diazotization, structure of benzene diazonium chloride, Replacement of diazo group by H, OH, F, Cl, Br, I, NO_2 and CN groups, reduction of diazonium salts to hydrazines, coupling reaction and its synthetic application.
- Preparation of nitro alkanes and nitroarenes and their chemical reactions. Mechanism of electrophilic substitution reactions
- Nomenclature and structure of the carbonyl group. Synthesis of aldehydes and ketones with particular reference,advantage of oxidation of alcohols with chromium trioxide (Sarett reagent) pyridinium chlorochromate (PCC) and pyridinium dichromate
- Oxidation of aldehydes, Baeyer–Villiger oxidation of ketones,Cannizzaro reaction,MPV, Clemmensen, Wolff-Kishner, $LiAlH_4$ and $NaBH_4$ reductions.

Course code: CH-404
Course name: Practical

The students will be able to demonstrate practically-

- Colorimetry:To verify Beer - Lambert law for $KMnO_4$ /$K_2Cr_2O_7$,
- Preparations: of different inorganic compounds

- CST of phenol ,determine the solubility of benzoic acid,determine the enthalpy of neutralisation,enthalpy of solution

Semester V
Course code: CH-501
Course name: Inorganic Chemistry (Theory)

After completion of this course students will be able to

- Know the limitation of valence bond theory, the elementary idea of Crystal Field theory in octahedral, tetrahedral and square planar complexes and the factors affecting Crystal Field parameters, Thermodynamics and chemical aspects of metal complexes
- Understand magnetic properties of transition metal complexes including magnetic susceptibility and their method of determination, LS coupling orbital contribution to magnetic moment and application of magnetic moment for 3d metal complexes.
- Know the type of electronic transition, selection rule for d-d transition Spectroscopic ground States, Spectrochemical series, orgel energy level diagram for d1 and d9 states

Course code: CH-502
Course name: Physical Chemistry (Theory)

After Completion of this course students will be able to know about the

- Black-body radiation, Plank's radiation law, photoelectric effect, heat capacity of solids, Compton effect,wave function and its significance of Postulates of quantum mechanics , quantum mechanical operator, commutation relations, Hamiltonial operator, Hermitian operator
- Determination of wave function & energy of a particle in one dimensional box, Pictorial representation and its significance
- Spectroscopy: Introduction: Electromagnetic radiation, regions of spectrum, basic features of spectroscopy, statement of Bornoppenheimer approximation
- Rotational Spectrum: Diatomic molecules. Energy levels of rigid rotator (semi-classical principles),selection rules, spectral intensity distribution using population distribution (Maxwell-Boltzmann distribution), isotopic effect

- Vibrational spectrum,Infrared spectrum: Energy levels of simple harmonic oscillator, selection rules,pure vibrational spectrum, intensity, effect of anharmonic motion, idea of different vibrational frequencies of different functional groups
- Raman Spectrum: Concept of polarizability, pure rotational and pure vibrational Raman spectra of diatomic molecules, selection rules, Quantum theory of Raman spectra.

Course code: CH-503
Course name: Organic Chemistry (Theory)

This part of chemistry will able to make understand the following topics-

- Principle of nuclear magnetic resonance, the PMR spectrum, number of signals, peak areas, equivalent and nonequivalent protons positions of signals and chemical shift, shielding and deshielding of protons.

- PMR spectra of the molecules: ethyl bromide, n propyl bromide,isopropyl bromide, 1,1-dibromoethane, 1,1, 2- tribro- moethane. Simple problems on PMR spectroscopy for structure determination of organic compounds.
- Classification and nomenclature of Carbohydrates, Monosaccharides, mechanism of osazone formation,
- Interconversion of glucose and fructose, chain lengthening and chain shortening of aldoses.
- Configuration,Open chain and cyclic structure of D(+)-glucose & D(-) fructose. Mechanism of mutarotation. Structures of ribose and deoxyribose
- An introduction to disaccharides (maltose, sucrose and lactose) and polysaccharides (starch and cellulose)
- Organomagnesium compounds: formation, structure and chemical reactions of the Grignard reagents,Organozinc compounds and Organolithium compounds.

Course code: CH-504
Course name: Practical

The students will be able to demonstrate practically-

- Salt Analysis:Semimicro qualitative analysis of mixture containing not more than four radicals (including interfering, Combinations and excluding insolubles) Inorganic compounds
- Laboratory Techniques:Steam distillation,Column chromatography ,Thin Layer Chromatography for separating the different pigments

Semester VI
Course code: CH-601
Course name: Inorganic Chemistry (Theory)

After studying this course the students will be able to

- Understand organometallic compounds, their preparation, properties and bonding of alkyl Li, Al, Hg and Sn compounds, Metal ethylenic complexes mononuclear carbonyl compounds and nature of bonding in metal carbonyls
- Know the concept of acid and base including Arrhenius, Bronsted- Lowry, the solvent system concept of acid and base, relative strength of acid and bases, concept of hard and soft acids and bases, Symbiosis electronegativity and hardness and softness, Bioinorganic chemistry Including- haemoglobin and myoglobin, biological role of alkali and alkaline earth metal ions with special reference to calcium ion, Nitrogen fixation
- Know about silicones and phosphazenes including their preparation properties and uses.

Course code: CH-602
Course name: Physical Chemistry (Theory)

After studying the course student will be able to understand the following topics:

- Electronic Spectrum:Concept of potential energy curves for bonding and antibonding molecular orbitals, qualitative description of selection rules and Franck- Condon principle,molecular orbital (MO) their energy level and respective transitions
- Photochemistry:Interaction of radiation with matter, difference between thermal and photochemical processes, Laws of photochemistry: Grotthus-Draper law, Stark- Einstein law (law of photochemical equivalence) Jablonski diagram.

- Fluorescence,phosphorescence, non-radiative processes (internal conversion, intersystem crossing),quantum yield, photosensitized reactions-energy transfer processes
- Ideal and non-ideal solutions, methods of expressing concentrations of solutions,activity and activity coefficient. Dilute solution,Colligative properties, Raolut's law
- Osmosis law of osmotic pressure and its measurement, Thermodynamic derivation of relation between molecular weight and elevation in boiling point and depression in freezing point, Abnormal molar mass,degree of dissociation and association of solutes.
- Phase Equilibrium: Statement and meaning of the terms – phase component and degree of freedom,thermodynamic derivation of Gibbs phase rule, phase equilibria of one component system –Example – water and Sulphur systems.
- Phase equilibria of two component systems solid-liquid equilibria, simple eutectic Example Pb-Ag system, desilverisation of lead

Course code: CH-603
Course name: Organic Chemistry (Theory)

Students will learn from this part

- Introduction to condensed five and six- membered heterocycles. Preparation and reactions of indole, quinoline and isoquinoline with special reference to Fisher indole synthesis,Mechanism of electrophilic substitution reactions of, quinoline and isoquinoline
- Organosulfur Compounds:Nomenclature, structural features, Methods of formation and chemical,reactions of thiols, thioethers, sulphonic acids, sulphonamides and sulphaguanidine, Synthetic detergents alkyl and aryl sulfonates
- Organic Synthesis:Acidity of -hydrogens, alkylation of diethyl malonate and ethyl acetoacetate,Synthesis of ethyl acetoacetate
- Synthetic Polymers:Addition or chain-growth polymerization, Free radical vinyl polymerization, ionic vinyl polymerization, Ziegler-Natta polymerization and vinyl polymers, Condensation or step growth polymerization
- Classification of amino acids,Acid-base behavior, isoelectric point and electrophoresis,Preparation of -amino acids.Structure and nomenclature of peptides and proteins
- Classification of proteins,Peptide structure determination, Structures of peptides and proteins.

Course code: CH-604
Course name: Practical

The students will be able to demonstrate practically-

- Conductometrically: determine the strength, determine the solubility and solubility product
- Potentiometrically: determine the strength of given acid pH metrically
- Synthesis of different types of organic compounds

COURSE OUTCOME: B.Sc. PHYSICS

Course name	Outcomes
Semester I **Phy-101** **Mechanics I**	Student Will be able to gain following knowledge- ° Mechanics of single and many particle ° Conservation laws linear momentum, angular momentum and energy ° Constrained motion ° Degree of freedom ° Generalized coordinates ° Hamilton variational principle ° Langrange equation of motion Linear Harmonic oscillator, simple pendulum, Atwood's machine. ° Rotation of rigid body moment of inertia, torque, angular momentum, kinetic energy of rotation °Moment of inertia of solid sphere, hollow sphere, spherical shell, solid cylinder, hollow cylinder and solid bar of rectangular cross-section.
Semester I **Phy-102** **Electricity and Magnetism**	Students will be able to understand- °Mathematical Background : vector and scalar °Electrostatic Field : Derivation of field E from potential as gradient, derivation of Laplace and Poisson equations. °Magnetostatistics : Magnetic Induction, magetic flux, solenoidal nature of Vector field of induction. Properties of B (i) .B = 0 (ii) xB= J °Electronic theory of dia and para magnetism (Langevin's theory). Domain theory of ferromagnetism. Cycle of Magnetisation - Hysteresis (Energy dissipation, Hysteresis loss and importance of Hysteresis curve) °Electromagnetic Theory : Maxwell equation and their derivations
Semester I **PHY-103** **Practical**	Students would gain practical knowledge about mechanics and electronics,such as Moment of inertia of a fly- wheel,Young's modulus,forward and reverse bias characteristics of diode, solar cells.
Semester II **PHY-201** **Properties Of Matters, Kinetic Theory And Relativity**	After studying the course student will be able to understand the following topics: °Properties of Matter (Elasticity) Elasticity, Hooke's law, Elastic constants and their relations, Poisson's ratio °Bending of beam (bending moment and its magnitude) cantilevers, Centrally loaded beam. ° Kinetic Theory of Gases ° Theory of Relativity ° Gallilean invariance and Conservation laws °Newtonian relativity principle, Michelson - Morley experiment °Lorentz transformations °variation of mass with velocity and mass energy equivalence.

Semester II **PHY-202** **Electromagnetic Induction and Electronic Devices**	The student will learn about- °Electromagnetic Induction : Growth and decay of current in a circuit with (a) Capacitance and resistance (b) resistance and inductance (c) Capacitance and inductance (d) Capacitance resistance and inductance °Semiconductor Diodes °Diode Rectifiers : P-N junction half wave and full wave rectifier. Types of filter circuits °Transistors °C.R. O. (Principle, construction and working) °Transistor Amplifers °Classification of amplifers °Oscillators
Semester II **PHY-203** **Practical**	Students would gain practical knowledge of mechanics and electricity, for example 'g' value by bar pendulum, impendance of an AC circuit, about photo cell.
Semester III **PHY-301** **Computer Programming, Thermodynamics**	The student will learn about- °Computer Programming - Computer organisation, Binary representation, Algorithm development, flow charts and their interpretation. °Fortran Preliminaries executable and non-executable statements. ° Thermodynamics-I : Second law of thermodynamics, Carnot theorem °Entropy, show that dQ/T=O, T-S diagram Nernst heat law, Joule's free expansion, Joule Thomson (Porous plug)Liquefication of gases °Thermodynamics-II : Derivation of Clausius - Claperyron latent heat equation. Phase diagram and triple point of a substance °Application of Maxwell relations in the derivation of relations between entropy, specific heats and thermodynamic variables °Thermodynamic functions : Internal energy (U), Helmholtz function (F), Enthalpy (H), Gibbs function (G) and the relations between them. °Derivation of time dependent Schrodinger wave equation
Semester III **PHY-302** **Optics I**	After studying the course student will be able to understand the following topics:- °Fourier Analysis and Fourier Transforms °Fourier Analysis of complex waves and its application for the solution of triangular and rectangular waves, half and full wave rectifier outputs °Geometrical Optics °Derivation of thin lens and thick lens formulae ° Interference by Division of Wavefront and by Division of Amplitude °Newton's rings °Michelson's interferometer and its application to (I) Standardisation of a meter (II) determination of wave length. °Fresuel's Diffraction °Fraimhoffer diffraction °Polarisation and Double Refraction, Huytgen's wave theory of double refraction
Semester III **PHY-303** **Practical**	Students would gain practical knowledge about Optics, Electronics and computers. Such as resolving power of telescope, transistor, ripple factor etc.

Semester IV **PHY-401** **Statistical Mechanics**	After studying the course student will be able to understand the following topics:- °Probability & distribution of molecules in two boxs microstates and macrostates °Postulates of Statistical Physics °Division of Phase space into cells °Bose-Einstein statistics, Application of B.E. Statistics to Plancks's radiation law, B.E. gas °Fermi-Dirac statistics, Degeneracy and B.E., Condensation. F.D. Gas, electron gas in metals. Zero point energy
Semester IV **PHY-402** **Optics II**	The students will be able to understand:- °Interference by Division of Amplitude °Interferometers °Fresuel's Diffraction and Fraimhoffer diffraction ° Polarisation and Double Refraction ° Analysis of Palorised light
Semester IV **PHY-403** **Practicals**	Students would gain practical of electronics. They will be able to- i) draw frequency response curve of transistorised R.C. coupled amplifier. Ii) Study of series and parallel resonance circuits.iii) find out the frequency of a tuning fork by Melde's experiment. Besides this computer experiments will enable them to-i) Find the roots of a quadratic equation. Ii) Find intergration of a definite integral by trapezoidal rule.iii) Find the area of a triangle, sphere and cylinder.
Semester V **PHY-501** **Solid State Physics**	° Crystalline and glassy form and Crystal structure °Unit cell and primitive cell °Bravais lattices in two and three dimensions, Crystal planes and Miller indices °Crystal structures of Zinc sulphide, Sodium Chloride and diamond °X-ray diffraction, Bragg's Law and experimental x-ray diffraction methods, K-space. °Reciprocal lattice and its physical significance, Reciprocal lattice to a simple cubic lattice, b.c.c and f.c.c. °Specific heat : Specific heat of solids, Einstein's theory of specific heat, Debye model of specific heat of solids
Semester V **PHY-502** **Quantum Mechanics**	°Old quantum theory °Photoelectric effect and Einsteins photoelectric equation compton effect (theory and result) °De-Broglie hypothesis. Davisson and Germer experiment °G.P. Thomson experiment. °Heisenberg's uncertainty principle °Uncertainty principle from de-Broglie wave, (wave-partice duality) °Derivation of time dependent Schrodinger wave equation
	°Eigenvalues, eigen functions °Wave functions and its significance. Normalization of wave function. °Solution of Schrodinger equation for harmomic oscillator ground states and excited states.

Semester V **PHY-503** **Practical**	Students would gain practical knowledge about solid state electronics like transistor amplifier, plateau of GM counter.The students will learn more about computers in their experiments.
Semester VI **PHY-601** **Atomic Molecular And Laser Physics**	°Vector atom model, quantum numbers associated with vector atom model °Spectral lines in different series of ailkali spectra °LS or Russel-Saunder Coupling jj coupling °Zeeman effect (normal and Anormalous) Zeeman pattern of D 1 and D2 lines of Na-atom °Paschen, Back effect of a single valence electron system °Weak field Strak effect of Hydrogen atom. °Raman effect (Quantitative description) Stoke's and anti Stoke's lines °Main features of a laser : Directionality, high intensity, high degree of coherence, spatial and temporal coherence °Einstein's coefficients and possibility of amplification °He-Ne laser and RUBY laser (Principle, Construction and Working) °Applications of laser in the field of medicine and industry.
Semester VI **PHY-602** **Nuclear Physics**	°Nuclear mass and binding energy °Nuclear size, spin, parity, statistics magnetic dipole moment, quadrupole moment (shape concept). °Determination of mass by Bain-Bridge, Bain-Bride and Jordan mass spectrograph °Determination of charge by Mosley law Determination of size of nuclei by Rutherford Back Scattering. ° Interaction of heavy charged particles (Alpha particles), alpha disintegration and its theory °Geiger-Nuttal law °Introduction of light charged particle (Beta-particle). °Types of beta decay and energetics of beta decay °Interaction and Energetics of Gamma Ray °Asborption of Gamma rays (Mass attenuation coefficient) and its application. °Nuclear Reactors,Nuclear fission and fusion reactors °Linear accelerator, Tendem accelerator, Cyclotron and Betatron accelerators. °Ionization chamber, proportional counter, G.M. counter detailed study, scintillation counter and semiconductor detector.
Semester VI **PHY-603**	Students would gain practical knowledge about electronics and optics such as Thomson method ,B-H Curve,hall effect ,Fresnol biprism ,grating element

COURSE OUTCOME : B.Sc. MATHEMATICS

Semester I **Course: Algebra,Calculus, Solid geometry**	
CO 1	It increases Disciplinary knowledge, critical and analytical thinking and develops professional application skills and problem solving.
CO 2	In Algebra Algebraic concept Generalized by using symbols to represent basic mathematical operations.
CO 3	Abstract algebra courses introduce students to advanced mathematical concepts such as group theory and lattices.
CO 4	Calculus is used to improve the Architecture note only of buildings but also of important infrastructure such as bridges.
CO 5	In Electrical engineering calculus is used to determine the exact length of power cables which are miles away from each other.
Semester II **Course : Number theory and trigonometry,ODE, Vector calculus**	
CO 1	Trigonometry is a branch of mathematics which focuses on the relationship between the sides and angles of a triangle.
CO 2	The student will study about various Number theory encoded properties of the integers primes or other number theoretic objects in some fashion.
CO 3	Ordinary differential equations are important for many scientific field because they arise whenever a relation is given for the change of a system.
CO 4	Ordinary Differential Equation is used for finding the solution of one or more functions of one independent variable and the derivative of those functions.
CO 5	Plays an important role in Differential Geometry and in the study of partial differential equations.
Semester III **Course: Advanced calculus, Partial differential equations and Static**	
CO 1	Circular provides a method for study of continuous change.
CO 2	Differential calculus provides a method for studying the slope of curves.
CO 3	Integral calculus provides a method of finding area under or between a curves.
CO 4	Partial differential equation is a method for finding the solution problems involving function as several valuables such as heat equation.
Semester IV **Course: Sequence and series, Special functions and integral Transformers, Programming in C and numerical method**	
CO 1	Sequence and series are used in business and financial analysis to assist in decision making and find the best solution to a given problems.
CO 2	Integral transform and special functions are used for the study of Differential and integral equations.
CO 3	The aim of integral transforms and special function is to Foster further growth by providing only used for the publication of important research on all aspects of the subject.
CO 4	Numerical methods provide a way to solve problems quickly And easily compare to analytical solutions
CO 5	Programming languages that control commands, Software can do it automatically and accurately.

Semester V **Course: Real Analysis, Groups and rings, Numerical analysis**	
CO 1	Real Analysis helps to study the behaviour of real numbers sequence and series of real numbers and real functions.
CO 2	Group study IQ objects called groups which can be used to model and study the symmetries of a certain object.
CO 3	Rings are important for many areas but in particular for number theory and its methods from commutative algebra And algebraic geometry.
CO 4	The purpose of numerical analysis research is to develop actual computer codes to solve real problems.
CO 5	Numerical analysis is the design and analysis of technique to give approximate but accurate solutions to the hard problems.
Semester VI **Course: Complex Analysis, linear algebra, dynamics**	
CO 1	Complex analysis helps us to study the different type of functions that live in complex planes.
CO 2	Linear algebra helps us to understand geometric concepts such as planes.
CO 3	Dynamics are very important for analysing systems consisting of single bodies or multiple bodies interacting with each other.
CO 4	Linear Algebra helps us understand the properties of high dimensional geometry .

PROGRAM: M.A. HISTORY

We are running M.A. History under the Self Financing Scheme at our College. Admissions are available on merit basis. The Master's program currently enrolls 30 Master's students, who in pursuit of their degrees complete course work, learn methods of historical analysis, a variety of historical interpretations, and practical applications of the field.

PROGRAM OUTCOME

The master's programme in History trains students to specialise in a particular sub-field of history. In the course of the programme, students are trained to become academics who can answer research questions arising from the latest developments in academic thinking in a critical, creative and innovative way. Moreover, after completing this programme, students will have the knowledge and competence required for positions outside the university that require an academic level of thinking. After completion of the master's program a student can become teachers, researchers, administrators, politicians, historians, archaeologists and entrepreneurs and can transform the society by applying, practicing and imparting rational thinking.

PROGRAM SPECIFIC OUTCOME

PSO 1	Capacity to explain how and why important events happen
PSO 2	Understanding of the historical study and research method of study
PSO 3	A clear understanding of evidence collected from historical sources
PSO 4	Critical understanding of developments in historiography
PSO 5	Knowledge of the history of the India and Modern World
PSO 6	Informed familiarity with multiple cultures and diversity
PSO 7	Understand the skills that historians use in research

COURSE OUTCOME

Course	Course Outcome
Semester I **Course: 19HIS-101** **Principles of History**	● The student will obtain knowledge about meaning, scope and nature of history, same time he will come to know its relation with other social sciences ● Will learn about history of ideas, tradition and folklore etc ● Will gain insight into fundamentals of history, Periodization, historical facts, analysis and interpretation ● Learn about use and misuse of history

Semester I **Course:19HIS-102** **Ancient World**	● Will learn about stone age and Palaeolithic culture, bronze age civilization ● Learn about Harrapan Cilvilization, Chinese Cilvilization and Maya Civilization ● Will know about origin of state structure, society, economy, religion and contribution to world civilization.
Semester I **Course:19HIS-103** **Medieval World**	● The student will get detail knowledge of Europian history-political structure, economic, religious and cultural history and Feudalism in Europe ● Will learn about Growth of Islam, evaluation of Islamic State under Umayyad Dynasty and Abbasid Dynasty
Semester I **Course:19HIS-104** **Modern World**	● Will know about Mercantilism and the Beginning of Capitalism ● Will get insight into Non-Political Revolutions in Western Europe ● Know about various Political Revolutions in Modern World- American Revolution (1775-1783). French Revolution (1789). Russian Revolution (1917). Chinese Revolutions (1911-12, 1931 and 1949) ● Learn about Development of Imperialism in Asia and Africa, liberalism in Britain and Nationalism in Itly and Germany ● Get detailed knowledge of first and second world war and cold war
Semester I **Course:19HIS-105** **History of Haryana**	● The student will get detailed knowledge of Historical background of Haryana-culture, republic states, regime, battles. ● Role of Haryana in independence war and National movements ● Learn about various religious movements and contribution of Unionist party in eduction and agriculture reforms
Semester I **Course:19HIS-106** **Rise of Modern China (1834-1967 AD)**	● The student will get detailed knowledge of Historical background of China, emergence and re-emergence of nationalism in China, various movements and its consequences, cultural revolution in China
Semester I **Course: AEC** **Fundamental of Information Technology**	Student will learn ● Fundamental of computer ● Introduction to internet and networking ● Fundamental of mobile communication ● Business data processing ● application and packages
Semester II **Course:19HIS-201** **Archive of History**	● Will learn about The archive as an institution of social memory, history and experience, Narrative and history The colonial archive ● To Explore significance of records to individuals and organizations, Identify the basic concepts and theories influencing archives and records management ● Writing and documentation Law, evidence and the archive ● Will know about managing electronic records

Semester II **Course:19HIS-202** **Environmental History**	● Will understand nature and scope of ecology and its relation with other subjects ● Better understanding of environment, its components. Management of conservation of living and non- living resources of environment for sustainable development. Environmental degradation and its impact on present and future ● Know about Environment and Ecological Consciousness in Ancient India ● Environmental and Ecological Consciousness in Medieval and British India- exploitation and various policies
Semester II **Course:19HIS-203** **Iron Age Civilization**	● Understand about **b**eginning of Iron Age in the World-problem and issue, role of Iron technology in Ancient Civilizations ● Learn about the role of Iron technology in Ancient India, Megalithic culture and Painted Grey ware culture ● Learn about contribution of Greek and Roman civilization
Semester II **Course:19HIS-204** **Diaspora in Colonial India**	● Learn about Diaspora-its concept; origin; evolution and contemporary usage; Diasporic identities and their nature; categories of Indian Diaspora ● Will get knowledge about different Stages of Colonial Migrations ● Will know about Migrations in the 20th Century: Indian Diaspora in Western Countries (USA, UK and Canada) ● Learn about Indian Diaspora, Social and Economic Position and India's policy towards her Diaspora
Semester II **Course:19HIS-205** **Nationalism theories and Historical exploration**	● The student will learn about State and Nation, Civic nationalism, Ethnic/Romantic nationalism ● Will get insight into thoughts of early theorists and modern theorists ● Study about Non-Western nation states and the templates of Western nationalism,Turkey and Japan as derivative nationalisms
Semester II **Course:19HIS-206** **History of USA (1820-1973 AD)**	● The student will get detailed knowledge of Historical background of USA, Growth of sectionalism, causes and consequences of the Civil War, growth of industrialisation and new technologies, Big Business, Emergence as a World Power, movements, role in and impact of first and second world war.
Semester II **Course: SEC** **Communication Skill**	● To introduce the theory and practice of communicative skills so as to enable the students to communicate effectively and conduct themselves graciously in the business of life.
Semester III **Course: 19HIS-301** **Histography: Concept , Methods and Tools**	● Students will learn about meaning , nature, scope and relation of historiography with other subjects ● Will know about early Trends in History: Greeco-Roman, Chinese historiography and ancient Indian historiography ● Will acquire knowledge of various western and Indian approaches.

Semester III **Course:19HIS-301 GB** **Political history upto 326BC**	● Learn about Sources of Ancient Indian History: Archaeological & Literary and Main Features of the Stone Age ● Know about Indus Civilization , its Origin & extent, Town Planning and Drainage system, Political System and its Decline ● Get knowledge of Vedic and Post Vedic Civilization ● Insight into Rise of Magadhan Empire and Political Condition of India on the eve of Alexander's Invasion
Semester III **Course:19HIS-302 GB** **Political History 326 BC-320 AD**	● Learn about the Mauryan Empire-rulers, their administration and achievements. ● Know about-New Political Development, The Sungas, The Satavahanas and The Indo-Greeks ● Rise of New Powers : a) The Saka-Kshatrapas b) The Pahlavas c) The Kusanas ● Know about Republics of The Yaudheyas, The Kunindas, The Audumbras and Political Condition of India before the rise of Gupta
Semester III **Course:19HIS-303 GB** **Society and Culture of India from earliest time to 1200 AD**	● Will learn about Socio-Cultural life of Harappan People, Vedic Society , Society at Buddha's Time ● Will get detailed knowledge of various Social Institutions-Family Organisation ,Varna system, Asrama system, Samskaras, Purusarthas, Marriage , Caste system , Slavery etc
Semester III **Course:19HIS-304 GB** **Economic History of India upto 1200 AD**	● Student will acquire knowledge about silent features of Indian economy from Stone Age to Later Vedic Age and P.G.W to Post Mauryan Economy. ● Come across Land types, land rights, irrigation system and revenue system from 600B.C. to 600 A.D.; feudal economy and land grants in ancient India; peasantry in ancient India. ● Know about Inland trade of northern and southern India; trade routes: inland or foreign (land or sea); foreign trade and temple economy of south India
Semester III **Course:19HIS-305 GB** **Art and Architecture of Ancient India**	● The student will know about Rock art of India, Harappan art & architecture, town planning; regional style of art and architecture. ● Gain insight into Shilpa and Kala in Indian societies with special reference on artists and their activities ● The art of devalays, chaityas, pratimas/murtis and bhiti-chitras-300 B.C.E. to 600 A.D,evaluation of temple architecture in India ● Learn about General outline of art & architecture: Khajuraho-kandariya and mahadeva; Vijayanagar, Jaunpur, Gujarat, Rajputana, Bharatpur and Malwa.
Semester III **Course:19HIS-306 GB** **Gender and Women in Ancient India**	● Students will learn about various types of historiography like colonial, Nationalist Marxist and others ● Will get an overview of women in various religious traditions ● Will get a picture of women in ancient Indian literary tradition, in inscriptions

Semester IV **Course:19HIS-401** **Research Methodology and Historical investigation**	● The student will get knowledge about research Methodology , its objectivity, causation, generalization ● Critical analysis of primary sources and secondary sources. ● Come to know about Selection of theme, hypothesis, methods of data collection, arrangement of bibliography, footnotes/references, glossary & appendix. ● Learn about Making of Research Proposal, review of literature according to selected theme
Semester IV **Course:19HIS-401 GB** **Political History of India**	● Will get detailed knowledge of Gupta Empire & Vakatakas Empire, post Gupta empire-Maukharis and Sri-Kanth Janpad ● Administration and polity of early medieval India rulers.
Semester IV **Course:19HIS-402 GB** **Knowledge and culture in Ancient india**	The student will get knowledge about- ● Genesis of Ancient Indian Knowledge like Vedas, Upnishads and growth of astronomy ● Development of Knowledge in a stratified Society-Buddhist and Jainist epitomology, Dharma and Karma ● Evolution of Classical Philosophical systems- – Contestations with Budhists, Jainas and Lokayatikas, Ritualism of PurvaMimamsa , Evolutionism of Samkhya and Yoga. ● Theoretical Concepts ● Growth of science, technology and arts of the Bronze Age and Iron Age cultures ● Knowledge in South India and Others part of the World ● Early interactions with West Asia
Semester IV **Course:19HIS-403 GB** **Society , culture and Religious changes in Ancient India**	● The student will learn about ancient Indian education system and major educational institutions. ● Learn about - Evolution of Brahamanical Religion. Spread and Schism-Vaisanavism, Shaivism, Hetrodox Sects-Buddhism, Jainism-Emergence, Causes, Teachings, Spread and Tantricism. ● Understand Religious Beliefs and Social Stratification: A Study of Vedism. Violence and non-violence- Killing, sacrifice and war, Dynamics of Religion.
Semester IV **Course:19HIS-404 GB** **Historical Geography of Ancient India**	● Learn about Sources of ancient Indian historical geography and their importance: Archaeological and Literary ● Acquire knowledge of main geographical divisions of India Himalayas, Eastern India, South India, Central India ● Will gain knowledge about mountains, rivers, cities and towns.
Semester IV **Course:19HIS-405 GB** **Science and Technology in Ancient India**	● Will understand meaning, scope and sources of history of science and technology in ancient India ● Learn about science and technology of astronomy and mathematics ● Will get insight into Science & technology in Harappan civilization ● learn about Metal technology: Harappan copper tools; coins minting; invention of iron plough and wars weapons special reference of Maurya and Gupta age
Semester IV **Course:19HIS-402 (CC)** **Seminar**	Every candidate will have to deliver a seminar of 30 minutes duration on a topic (not from the syllabus) which will be chosen by him / her in consultation with the teacher of the department.

PROGRAM : M.A. (HINDI)

PROGRAM OUTCOME

साहित्य में रुचि रखने वाले विद्यार्थियों के लिए हमारा महाविद्यालय स्वनिधि पोषित विषय के रूप में एम ए हिंदी कार्यक्रम का संचालन भी करता है। इस विषय में दाखिला मेरिट के आधार पर होता है तथा सीटों की संख्या सीमित है। हिंदी हमारी राष्ट्रीय भाषा, राजभाषा एवं मातृभाषा होने के नाते प्रत्येक भारतीय के लिए हिंदी का ज्ञान होना अति आवश्यक है । हिंदी विषय में परास्नातक डिग्री एक विद्यार्थी को भारतीय तथा विदेशी साहित्य की समझ के साथ स्थानीय तथा राष्ट्र की संस्कृति को समझने का अवसर भी प्रदान करती है।

PROGRAM SPECIFIC OUTCOME

- हिंदी में परास्नातक करने के बाद छात्र देश के सर्वोच्च पदों पर नियुक्ति पा सकता है।
- छात्र शोध कार्य हेतु इस विषय को गहनता से पढ़कर शोध कार्य पूर्ण कर सकता है।
- छात्र में हिंदी की डिग्री प्राप्त करके अनुवादक के पद पर नियुक्ति प्राप्त कर सकता है।
- छात्र शिक्षण के क्षेत्र में जा सकता है।

COURSE SPECIFIC OUTCOMES

प्रथम सत्र आधुनिक हिंदी कविता(१८५७-१९३६)	इस विषय के अध्ययन से तत्कालीन राजनीतिक सामाजिक व अन्य समस्याओं से मुक्ति के लिए किए गए संघर्ष की जानकारी मिलेगी ।इसके अध्ययन से भविष्य के समाज में शोषण से संघर्ष की प्रेरणा मिलेगी।
साहित्य की समझ	समाज में साहित्य की बड़ी भूमिका है,साहित्य जीवन को समृद्ध करता है।इस पेपर के अध्ययन से विद्यार्थी समाज में चलती सोच,दस्तूर बदलना या स्थापित करना आदि प्रकार के कार्यो से समाज को स्वस्थ रखने में अच्छी भूमिका अदा कर सकता है।
हिंदी कहानी	हिंदी गद्य लेखन की एक विधा है। 19वीं सदी के अंत में गद्य में एक नई विधा का विकास हुआ जिसे कहानी के नाम से जाना गया मनुष्य जन्म के साथ ही साथ कहानी का भी जन्म हुआ और कहानी कहना और सुनना मानव का आदि स्वभाव बन गया है जो छात्रों को अपने समाज से संबंधित हर स्थिति का ज्ञान करवाता है।
हिंदी साहित्य का इतिहास आदिकाल से रीति काल तक	साहित्य की विकास मान परंपरा उसके उद्भव से आज तक की स्थिति का क्रमबद्ध अध्ययन किया जाता है।

भाषा विज्ञान एवं हिंदी भाषा	इस विषय के अध्ययन से विद्यार्थी सरकारी कार्यालयों में राजभाषा अधिकारी के रूप में कैरियर बना सकता है और सोशल मीडिया से लेकर तमाम प्लैटफ़ॉर्म जैसे फ़ेसबुक ,ट्विटर ,यू ट्यूब आदि में शानदार कैरियर उपलब्ध है।
विशिष्ट रचना कार	इस पेपर में विद्यार्थी क़लम के सिपाही प्रेमचंद के साहित्य का विस्तृत अध्ययन करता है प्रेमचंद के साहित्य में समाज की समस्याओं का विस्तृत चित्रण है समाज में व्याप्त कुरीतियों रूढ़िवादिता और तत्कालीन सामाजिक और राजनीतिक परिस्थितियों का चित्रण प्रेम चंद ने अपने साहित्य में किया है, अन्यत्र कहीं नहीं प्राप्त होता।
कंप्यूटर का हिंदी में अनुप्रयोग	वर्तमान समय कंप्यूटर का युग है और किसी भी क्षेत्र में कंप्यूटर के बिना कार्य असंभव सा हो गया है। इस पेपर के अध्ययन के बाद विद्यार्थी हिंदी भाषा में कंप्यूटर के उपयोग के बारे में समझ सकेगा। विद्यार्थी कंप्यूटर प्रणाली के परिचय एवं विकास के बारे में जानकारी प्राप्त करेगा। साथ ही इंटरनेट के उपकरणों से परिचित होगा।इसके अतिरिक्त विभिन्न हिंदी वेबसाइट का परिचय भी उसे मिलेगा,साथ ही विभिन्न सोशल साइट्स के उपयोग व महत्व के बारे में जानकारी प्राप्त करेगा।
द्वितीय सत्र आधुनिक हिंदी कविता (१९३६-१९६७)	इसके अध्ययन से विद्यार्थियों को आधुनिकता व आधुनिक कवियों की जानकारी मिलती है।इसमें नवजागरण के अध्ययन से किये गए संघर्ष की जानकारी मिलेगी व भविष्य के समाज में शोषण से संघर्ष की प्रेरणा मिलेगी।
हिंदी नाटक एवं रंगमंच	हिंदी रंगमंच लोक एवं पारसी रंगमंच की पृष्ठभूमि का आधार लेकर विकसित हुआ। ध्यातव्य है कि भरत मुनि ने नाट्य शास्त्र में नाटक शब्द का प्रयोग केवल नाटक के रूप में ना करके व्यापक अर्थ में किया था। जिसके अंतर्गत रंगमंच,अभिनय, नृत्य,संगीत, वेशभूषा, रस, शिल्पदर्शन आदि सभी पक्ष आ जाते हैं। इस पेपर के अध्ययन के द्वारा छात्र को इन सभी पक्षों की विस्तृत जानकारी मिल जाएगी।
हिंदी उपन्यास	इस पेपर के अध्ययन से समाज विकास में बाधक रूढ़िवादी विचारधारा के बारे में जानकारी मिलेगी।इसके अध्ययन से विभिन्न पात्रों के जीवन की घटनाओं की जानकारी मिलेगी ताकि मानव मन का मनोवैज्ञानिक विश्लेषण कर व्यक्ति की समस्या को समझने में सहायता मिलेगी।
लोक साहित्य संदर्भ एवं पाठ हरियाणा का हिंदी साहित्य	किसी भी राष्ट्र का साहित्य उसके लोक साहित्य के बिना अधूरा है। यही कारण है कि हिंदी साहित्य के एक अंग के रूप में लोक साहित्य का अध्ययन किया जाता है जो कि विद्यार्थी को अपने क्षेत्र के साहित्य से परिचित कराता है।
अनुवाद: सिद्धांत एवं प्रयोग	इस पेपर में विद्यार्थी अनुवाद के बारे में विस्तृत जानकारी अर्जित करता है अनुवाद की प्रकार अच्छी अनुवादक की योग्यताएं अनुवाद की भारतीय परंपरा कंप्यूटर अनुवादित अनुवाद की समस्याएँ आदि जानकारी विद्यार्थी प्राप्त करता है और परिणाम स्वरूप विद्यार्थी एक अच्छी अनुवाद के रूप में विकसित हो सकता है।

संप्रेषण कौशल	ये पेपर विद्यार्थी में संप्रेषण कौशल के विकास के लिए है ।संप्रेषण निरंतर चलने वाली प्रक्रिया है,संप्रेषण में विचारों का आदान प्रदान होता है। संप्रेषणसंगठन के व्यक्तियों एवं। समूह का वाहक एवं विचार अभिव्यक्ति का माध्यम है।संप्रेषण के कई प्रकार हैं जैसे ऊर्ध्वमुखी,अधोमुखी,समूह जन संप्रेषण आदि का ज्ञान प्राप्त अपने लेखन और वाचन को शुद्ध कर सकता है और निजी और सरकारी संस्थानों में रोज़गार प्राप्त कर सकता है।
तृतीय सत्र **समकालीन हिंदी कविता**	इस पेपर में विद्यार्थी समकालीन हिंदी कविता के स्वरूप, प्रवृतियों ,प्रमुख कवियों के बारे में जानकारी प्राप्त करता है। समकालीन समय की कविता की सौंदर्य चेतना, हिंदी बोध,भाषा और कवियों के बारे में विस्तृत जानकारी प्राप्त करता है।
कथेतर गद्य विधाएँ	भाषा में तत्वों की जानकारी का सुगम तरीका गद्य है। उच्चारण, बलाघात, वर्तनी, शब्द रूपान्तरण, उपसर्ग, सन्धि, समास ,मुहावरे,पदबंध आदि भाषिक तत्वों का ज्ञान इस पेपर के माध्यम से सुगमता पूर्वक प्राप्त कर विद्यार्थी सरकारी संस्थानों व निजी क्षेत्र जैसे रेडियो वाचक,समाचार संवाददाता आदि पदों पर जा सकता है।
हिंदी की संस्कृति (संस्थाएं, आंदोलन, केंद्र)	इस पेपर के अध्ययन से विद्यार्थी हिंदी की प्रमुख संस्थाओं में जैसे नागरी प्रचारिणी सभा बनारस ,हिंदी साहित्य सम्मेलन ,प्रयाग ,दक्षिण भारत हिंदी प्रचार सभा ,चेन्नई केन्द्रीय हिन्दी संस्थान, आगरा आदि संस्थानों व उनके उद्देश्य की जानकारी प्राप्त करता है। विद्यार्थी हिन्दी भाषा के क्षेत्र में हुए विभिन्न आंदोलनों के बारे में विस्तृत जानकारी भी प्राप्त करता है।
भारतीय काव्यशास्त्र	इसके अध्ययन से विद्यार्थी काव्य के लक्षण ,उद्देश्य के साथ साथ अलंकार ,रस ,रीति आदि का ज्ञान प्राप्त कर व्याकरण सम्मत भाषा प्रयोग कर काव्य लेखन कर सकता है।
आधुनिक भारतीय साहित्य/ प्रवासी साहित्य	साहित्य की विकास मान परंपरा उसके उद्भव से आज तक की स्थिति का क्रमबद्ध अध्ययन किया जाता है।इस पेपर में आधुनिक भारतीय साहित्य और प्रवासी साहित्य के बारे में विद्यार्थी को जानकारी मिलती है।
जनसंचार माध्यम एवं हिंदी	यह पेपर विद्यार्थी को जनसंचार की अवधारणा, उपयोगिता, चुनौतियों और सम्भावनाओं से परिचित कराता है। साथ ही विभिन्न प्रकार के जन संचार माध्यमों, प्रिंट मीडिया, इलेक्ट्रॉनिक मीडिया और सोशल मीडिया माध्यमों में लेखन, भाषा, प्रस्तुतिकरण आदि से भी अवगत कराता है।
चतुर्थ सत्र **आदिकालीन और मध्यकालीन कविता**	इस पाठ्यक्रम को उद्देश्य विद्यार्थियों को आदिकालीन और रीतिकालीन काव्य की पृष्ठभूमि और प्रवृतियों से परिचित कराना है।विद्यार्थी तत्कालीन काव्य और कवियों के बारे में विस्तार से जानकारी प्राप्त करता है।
अस्मितामूल मूलक साहित्य चिंतन (स्त्री आदिवासी किसान आदि)	अस्मितामूलक विषय के अंतर्गत वे सभी विषय आ जाते हैं जिन्हें मनुष्य की अस्मिता से जोड़कर देखा जाता है, जिन्हे हाशिए पर लाकर छोड़ दिया गया। भाषा, धर्म, लिंग,जाति, वर्ण आदि विषय अस्मितामूलक विमर्श के आधार हैं। स्त्री विमर्श, दलित विमर्श तथा आदिवासी विमर्श आदि अस्मितामूलक विषय के उदाहरण हैं।

पाश्चात्य काव्यशास्त्र	इस पेपर के अध्ययन से पश्चिमी कवियों के लेखन की जानकारी प्राप्त होती है।पश्चिमी लेखकों की सकारात्मक व रचनात्मक विचारधारा की उपयोगिता भावी पीढ़ी समझ सकती है।
हिंदी आलोचना	आलोचना साहित्य की एक प्रमुख विधा है और प्रस्तुत पाठ्यक्रम में विद्यार्थी हिंदी साहित्य में आलोचना की अवधारणा एवं उसके स्वरूप,विकास,वैचारिकता और वर्गीकरण के बारे में जन अध्ययन करता है ।साथ ही हिन्दी साहित्य के प्रमुख आलोचकों और रचनाकारों के बारे में भी ज्ञान प्राप्त करता है।
समकालीन साहित्य चिंतन मार्क्सवाद से विखंडनवाद विचारधाराओं केसंदर्भ में	इस पाठ्यक्रम में विद्यार्थी साहित्य चिन्तन की विभिन्न विचारधाराओं से परिचय प्राप्त करते हैंऔर हिंदी साहित्य में उनके प्रभाव का अध्ययन करता है जिनमें से प्रमुख हैं - गांधीवादी साहित्य चिंतन, अम्बेडकरवादी साहित्य चिंतन, मार्क्सवादी साहित्य चिन्तन, मनोविश्लेषण वादी साहित्य चिन्तन, अस्तित्ववादी साहित्य चिन्तन,आधुनिकता वादी साहित्य चिंतन और संरचनावादी साहित्य चिंतन आदि।
विशिष्ट रचनाकार कबीर दास	इस पेपर के अध्ययन से कबीरदास की विचारधारा की जानकारी मिलेगी । वर्तमान व भविष्य की सामाजिक ,धार्मिक ,आर्थिक,राजनीतिक समस्याओं के हल में कबीर साहित्य से शिक्षा ली जा सकती है।

PROGRAM : M Com (MASTERS IN COMMERCE)

To meet the demands of Industry and Academics, the college is offering PG Course in Commerce under Self Financing Scheme having limited number of seats.

PROGRAM OUTCOME

PO 1	To inculcate the knowledge of business and the techniques of managing the business with special focus on marketing, Insurance and banking theory law and practices
PO 2	To impart the knowledge of basic accounting principles and the latest application oriented corporate accounting methods.
PO 3	To develop the decision making skill through costing methods and practical application of management accounting principles.
PO 4	To enhance the horizon of knowledge in various fields of commerce through advertising and sales promotion, auditing and entrepreneurial development.
PO 5	To enhance computer literacy and its applicability in business through the latest version of tally and e-commerce principles.
PO 6	To create awareness in application oriented research through research for business decisions.

PROGRAM SPECIFIC OUTCOMES

PSO 1	After Completing Masters in Commerce students the student gets a better understanding of all core areas, specifically Advanced Accounting, International Accounting, Management, Security Market Operations and Business Environment, Research Methodology and Tax planning.
PSO 2	They are able to Develop an ability to apply knowledge acquired in problem solving
PSO 3	The student gets ability to work in teams with enhanced interpersonal skills and communication.
PSO 4	The students can work in different domains like Accounting, Taxation, HRM, Banking and Administration.
PSO 5	Achieve Ability to work in MNCs as well as pvt, and public companies.
PSO 6	Get ability to start their own business.
PSO 7	Useful for To develop team work, leadership and managerial and administrative skills.
PSO 8	A Students can go further for professional courses like CA/ CS/CMA/CFA

COURSE SPECIFIC OUTCOMES

Semester 1 **Course code: 19MC-101** **Course: Management Process and organisational behaviour**	• The student will obtain basic knowledge of Management , different thoughts and processes . • Learn about Attitude learning Perception and behaviour application in management. • Will know about motivational leadership theories and their use in management. • Organisational development groups and group cohesiveness. • Subject helps the student in developing skills. We also have to help the freshers in getting opportunities in industry.
Semester 1 **Course code: 19MC-102** **Course: Financial accounting**	• The student will get Broad knowledge of financial accounting practices in India and its Different components. • Basic accounting concepts and conventions and principles. • Financial statement Analysis and interpretation. • Cash flow statement and its use in businesses. • It is a combination of econometric And Statistical Techniques and it helps the student to term numerical approaches to increase their use in solving business problems.
Semester 1 **Course code: 19MC-103** **Course: Business Economics**	• Understanding about business economics, its use, nature and function in Economy. • Business objectives like profit maximization and wealth maximization. • Demand analysis and its forecasting, Law of demand and elasticity of demand. • Production function and isoquant curve and its use in businesses • Different market forms like Perfect marketing Monopoly market monopolistic market and Pricing policies.
Semester 1 **Course code: 19MC-104** **Course: Business environment**	• The student will understand the basic concept of the business environment and its components organisational policies. • Environment scanning Reforms in the Indian economy. • different economic policies Like Monetary policy fiscal policy industrial policy. • To Understand theLegal environment of business Like competition at Consumer Protection Act and environmental . • business environment Increase the knowledge of their students .Changes and opportunities develop in the environment for all businesses of national level.
Semester 1 **Course Code: 19MC-105** **Course: IT fundamental**	• The student will furnish The use of It in business operations. • Concept of Data and information. • Information system and Organisational strategies. • Organisational application and decision support like SCM and CRM,ERP. • E business and current trends Designing of e-commerce sites.

Semester 1 **Course Code: 19MC-106** **Course: Business communication**	• This will make the student learn and practice in constructive presentation meetings dealing with conflict and improve communication skills. • Basics of communication listening techniques of presentation. • Presentation skills and different forms of communications • Writing skills And use of different reports. • Interview and its preparation, Ethics in business.
Semester 2 **Course Code: 19MC-201** **Course: Quantitative techniques for Business Decisions**	• The objective of this course is to increase the extent to which statistical thinking is embedded in value for decision making. • Understanding the concept of correlation And regression in decision making. • Basic concept of theory of testing of hypotheses. • Analysis of variance for testing the differences between different groups of data for Homogeneity. • Concept of association of attributes.
Semester 2 **Course Code: 19MC-202** **Course:Accounting for managerial decisions**	• This will expose the student The basic concept of managerial accounting And analyse financial statement and its interpretation • Management Accounting Management Accountant and its position in business. • Contemporary issues in Management Accounting. • Standard costing, variance analysis And transfer pricing. • Responsibility accounting Ethics in management accounting.
Semester 2 **Course Code: 19MC-203** **Course: Financial management**	• This paper will acquaint The student with the broad framework of financial decision In business organisation . • Financial Management planning and time value of money. • Capital budgeting and capital structure decisions. • Cost of capital and dividend decision. • Working capital management management
Semester 2 **Course Code: 19MC-204** **Course: E commerce**	• The objective of this is to provide analytical Framework and understanding of e-commerce. • E-Commerce system and different service provider internet and its role in e-commerce. • Electronic payment system Bhim UPI, Paytm Google Pay etc. • E marketing E auction, E ticketing, E Brokers etc. • Digital economy and its impact on Indian businesses Future of e-commerce Indian context.

Semester 2 **Course Code: 19MC-205** **Course:Marketing management**	• This will make the student able to examine the basic marketing management concepts, its role and and importance with marketing mix. • The important concept of every marketer is marketing strategies targeting and Positioning. • Every business applies the process of product life cycle and its impact on our economy. • Pricing and promotion mix like advertising, personal selling, sales promotion and public relation. • Distribution channel and its determinants and Marketing research.
Semester 2 **Course Code: 19MC-206** **Course: Computerised accounting system**	• This paper will enhance the skill required for computerised accounting system and to develop knowledge of basic accounting applications specially with the Tally ERP 9 • Computerized accounting creation of groups account designing and creating vouchers • Installation of Tally ERP 9 stop group category and ledger creation • Preparing reports in Tally ERP 9 and working with payroll vouchers • Taxation with the help of Tally ERP 9 calculating VAT GST in Tally ERP 9
Semester 3 **Course Code: 19MC-301** **Course: Research methodology**	• Student will be able get detailed knowledge about research methodology, Process of research methodology and report writing • Significance of research in business and research process • Developing research proposal formation of research hypothesis and Research Design • Various methods of data collection, sampling and sampling design • Data processing and interpretation and report writing and documentation
Semester 3 **Course Code: 19MC-302** **Course: Human Resource Management**	• This paper will provide broad knowledge of human resource management, recruitment process trade unions and industrial relations. • Human resource techniques, evaluation and growth in India. • Need of training and development Different techniques and workers participation in management. • Role of Employee moral,industrial productivity and Collective bargaining in india. • Industrial Relation and industrial unrest.

Semester 3 **Course Code: 19MC-303** **Course: Corporate law**	• learn about The basic concept of Corporate Law and changing dimensions of Corporate Laws. • Company formation, corporate veil and promotion of company. • Incorporation of Business and memorandum of association and its applicability. • Article of association,share of capital and paperless trading. • Winding up of a company and its consequences.
Semester 3 **Course Code: 19MC-304** **Course: Corporate banking (Elective paper)**	• Understanding the meaning and importance of Corporate Banking and various services provided by corporate banks. • Corporate banking, credit management and policies. • Credit appraisal process and qualities of Credit officers. • project Finance, infrastructure financing, RBI guidelines Regarding financing. • Documentation, monitoring and supervision of advances.
Semester 3 **Course Code: 19MC-305** **Course:Insurance and Risk management (Elective paper)**	• This paper will enhance theoretical and empirical Knowledge of Insurance and risk management. • Risk types and prediction techniques. • Concept of Insurance,re- insurance co insurance and bancassurance. • Legal aspects of insurance principle of utmost good faith interest,Proximate cause and contribution and subrogation. • Pricing of insurance and claim settlement IRDA act 1999.
Semester 3 **Course Code: 19MC-306** **Course: Investment management analysis (Elective paper)**	• This paper will acquaint and practices of Security Analysis and to understand the process of values market intermediation. • Investment Speculation, investment process,SEBI and its role. • Fundamental analysis and technical analysis. • Portfolio Management and its Basic concept, Risk and return of a Portfolio. • Assets pricing model, ArbitragePricing theory and its evaluation
Semester 4 **Course Code: 19MC-401** **Course: Strategic management**	• About the concept of strategic management decision making And Aware about the strategic evaluation and control. • School Thoughts of strategy formation, Decision making. • Vision mission statement and SWOT analysis. • Strategy formulation Business level Strategies and tactics. Bhoot • Strategic evaluation and control Types and limitations.
Semester 4 **Course Code: 19MC-402** **Course: Entrepreneurship**	• To equip the student with the basic Theoretical and practical Knowledge Required to start and be entrepreneurial in india. • Entrepreneurship concept, function and prerequisites. • business planning, principle of business planning and process. • Project appraisal economic, Technical, managerial and financial. • Women Entrepreneurship and rural entrepreneurship in India.

Semeste 4 **Course Code: 19MC-403** **Course: Business ethics and corporate governance**	• The student will able to understand about the concept of Business Ethics, corporate governance and the understanding of Influences of ethics in business. • Corporate governance SEBI guidelines and reforms in Company Act. • Corporate management vs corporate governance, Chairman quality power and responsibility. • Business Ethics models and principles.. • Ethics in finance, HRM,marketing production and operational management.
Semester 4 **Course Code: 19MC-404** **Course: International Finance** **(Elective paper)**	• The aim of this paper is to provide Basic concept Of international Finance Current trends in international trade and Finance. • National investment modes balance of payment and current account deficit. • International Monetary system and transfer pricing and tax evasion. • International liquidity creation of SDR European monetary system bonds Euro GDR and ADR. • Parity Conditions in International Finance and currency forecasting.PPP Theory and the fisher effect.
Semester 4 **Course Code: 19MC-405** **Course: Banking and Banking Law** **(Elective paper)**	• To expose the students to the basic concept of Banking commercial banks and Banking Regulation Act. • Banking function recent development in banks Indian banks versus foreign banks. • Structure of cooperative banks in India regional rural bank SIDBI and Exim Bank. • Banking sector reforms in India NPA Management. • Banking RegulationAct 1949 digital payment system, internet banking and mobile banking.

PROGRAM : M.Sc. (MATHEMATICS)

Our College is running M.Sc. program in the subjects of Mathematics under the Self Financing Scheme with 30 seats. Admission is done purely on merit basis.

PROGRAMME OUTCOME

• Inculcate critical thinking to carry out scientific investigation objectively without being biased with preconceived notions.
• Equip the student with skills to analyze problems, formulate an hypothesis, evaluate and validate results, and draw reasonable conclusions thereof.
• Prepare students for pursuing research or careers in industry in mathematical sciences and allied fields.
• Imbibe effective scientific and/or technical communication in both oral and writing.
• Continue to acquire relevant knowledge and skills appropriate to professional activities and demonstrate the highest standards of ethical issues in mathematical sciences.
• Create awareness to become an enlightened citizen with commitment to deliver one's responsibilities within the scope of bestowed rights and privileges.

PROGRAMME SPECIFIC OUTCOMES

• Understanding of the fundamental axioms in mathematics and capability of developing ideas based on them.
• Inculcate mathematical reasoning
• Prepare and motivate students for research studies in mathematics and related fields.
• Provide knowledge of a wide range of mathematical techniques and application of mathematical methods/tools in other scientific and engineering domains.
• Provide advanced knowledge on topics in pure mathematics, empowering the students to pursue higher degrees at reputed academic institutions.
• Strong foundation on algebraic topology and representation theory which have strong links and application in theoretical physics, in particular string theory.
• Good understanding of number theory which can be used in modern online cryptographic technologies.
• Nurture problem solving skills, thinking, creativity through assignments, project work.
• Assist students in preparing (personal guidance, books) for competitive exams e.g. NET, GATE, etc.

COURSE SPECIFIC OUTCOMES

Semester I **Course : 18 MTH 101** **Abstract Algebra**	Abstract AlgebraA branch of mathematics in which algebra concepts are generalized by using symbols to represent basic arithmetical operations .Abstract Algebra course introduces students to advanced Mathematical concepts such as group theory and lattice.
Semester I **Course:18 MTH 102** **Ordinary Differential Equation**	Ordinary Differential Equations have important applications and are a powerful tool in the study of many problems in the natural Sciences and Technology, they are extensively employed in mechanism astronomy physics and in many problems in Biology and Chemistry.

Semester I 18 MTH 103 **Course: Mechanics**	Mechanics help us to study the motion of bodies as stars, planets and satellites can be predicted with great accuracy thousands of years before they occur.
Semester I 18 MTH104 **Course: Measure And Integration**	Measure and integration provides methods for modelling the location of Rain drops, infinite Sequence of coin hips, statistical test acceptor. It is also important in geometry where having a notion that generalizes surface area is very useful.
Semester I 18 MTH 105 **Course: Mathematical Statistics**	Statistics is a branch of Mathematics that deals with the collection, analysis,interpretation and the presentation of the numerical data.It is defined as The collection of quantitative data the main purpose of statistics is to make an accurate conclusion using a limited sample about a greater population.
Semester I **Course: Open Elective Yoga Health and Nutrition**	After the completion of the course the student will get good knowledge of : ● Our body system, dimensions and determinants of the health, various health problems and communicable diseases, their prevention and control ● Better understanding of food and nutrition ● Meaning and classification of Yoga , yogic practice, techniques and benefits ● Will come to know about the impact of yoga on the human body and about meditation.
Semester II **Course 18 MTH 201** **Abstract Algebra II**	A branch of mathematics in which algebra concepts are generalized by using symbols to represent basic arithmetical operations .Abstract Algebra course introduces students to advanced Mathematical concepts such as group theory and lattice.
Semester II **Course 18 MTH 202** **Complex analysis**	This paper helps us to study the different types of functions that live in complex planes.
Semester II **Course 18 MTH 203** **Topology**	Used in many branches of mathematics Which ASM differential equation.
Semester II **Course 18 MTH 204** **Operation research technique**	● Operation research is important because it is a helpful tool used to solve complex problems. ● Problems under uncertainty.In business very few things are certain and managers. ● Must often make decisions based on their instincts instead of being able to use reliable data.

Semester II **Course 18 MTH 205** **Computational techniques**	Computational methods are a valuable tool for solving more and more Complex design and manufacturing problems. Computational techniques are reliable and efficient methods for solving mathematical, scientific, engineering, geometrical, geographical and statistical problems.
Semester II **Course 18 CS 100** **Communication Skills**	To introduce the theory and practice of communicative skills so as to enable the students to communicate effectively and conduct themselves graciously in the business of life.
Semester III **Course : 18 MTH 301** **Partial differential equation**	Partial Differential equation are used in physics and Engineering,quantum mechanics, fluid dynamics,electrodynamics etc.
Semester III **Course : 18 MTH 302** **Differential Geometry**	It is branch of mathematics that studies the geometry of curves , surfaces and manifold in structured geology Differential Geometry is used to analyse and describe geologic structures in computer vision, Differential Geometry is used to analyse shapes.
Semester III **Course : 18 MTH 303** **mechanics of solids**	It helps us to study the behaviour of solid materials, especially their motion and deformation under the action of forces, temperature changes, phase changes. It has specific applications in many other areas such as understanding the and Tommy of living beings and surgery in plants.
Semester III **Course : 18 MTH 304** **Fluid Dynamics**	Provides methods for studying ocean currents, weather patterns.
Semester III **Course : 18 MTH 306** **analytic number theory**	Class applications in mathematics as well as in practical application including security memory management coding theory etc. Increase in number theory being applied by physicists to solve physical problems.
Semester III **Course : Open elective** **Swacch Bharat internship Program**	Swachh Bharat Abhiyan is the most significant cleanliness campaign by the Government of India. students have to train their younger ones to keep things clean.they can also visit areas and bring out the importance of mission and encourage them in contributing to it.
Semester IV **Course : 18 MTH 401** **Functional analysis**	Functional analysis is a methodology that is used to explain the working of a complex system. It is used to identify the environmental context in which aberrant behaviour is likely and unlikely to occur. functional analysis plays an important role in the applied science as well as in mathematical system
Semester IV **Course : 18 MTH 402** **Integral equation and calculus of variations**	The calculus of variations is a field of mathematical analysis that uses variations, which are small changes in function and functions to find maxima and Minima functionals. Integral equations are important to calculate oscillation problems, radiative transfer and oscillation of a string.

Semester IV **Course : 18 MTH 403** **Mechanics of solids II**	It helps us to study the behaviour of solid materials, especially their motion and deformation under the action of forces, temperature changes and phase changes. It has specific applications in many other areas such as understanding the antonym of living beings and surgical implants.
Semester IV **Course : 18 MTH 404** **Advanced fluid dynamics**	Fluid Dynamics provides methods for studying the evolution of stars, ocean currents, weather patterns, plate tectonics and even blood circulation. Some important Technological Applications of fluid dynamics include rocket engines, wind turbines, oil pipelines and air conditioning systems.
Semester IV **Course : 18 MTH 408** **Statistical inference**	Statistical Inference is a branch of Mathematics that deals with the collection, analysis,interpretation and the presentation of the numerical data.It is defined as The collection of quantitative data the main purpose of statistics is to make an accurate conclusion using a limited sample about a greater population.

PROGRAM : M. SC (PHYSICS)

Our College is running the Courses of M.Sc. in the subject of Physics, under the Self Financing Scheme with Limited No. of seats.

PROGRAM OUTCOME

The Master of Science in Physics program provides the candidate with knowledge, general competence, and analytical skills on an advanced level, needed in industry, consultancy, education, and research. On completion of program, the post graduates will:

- Apply the knowledge and skill in the design and development of Electronics circuits to fulfill the needs of Electronic Industry.
- Become professionally trained in the area of electronics, optical communication, nonlinear circuits, materials characterization and lasers.
- Pursue research related to Physics and Materials characterization.
- Demonstrate highest standards of Actuarial ethical conduct and Professional Actuarial behavior, critical, interpersonal and communication skills as well as a commitment to life-long learning.

PROGRAM SPECIFIC OUTCOMES

PSO 1	Understanding the basic concepts of physics particularly concepts in classical mechanics, quantum mechanics, statistical mechanics and electricity and magnetism to appreciate how diverse phenomena observed in nature follow from a small set of fundamental laws through logical and mathematical reasoning
PSO 2	Learn to carry out experiments in basic as well as certain advanced areas of physics such as nuclear physics, condensed matter physics, nanoscience and electronics.
PSO 3	Understand the basic concepts of certain sub fields such as nuclear and high energy physics, atomic and molecular physics, solid state physics, plasma physics, general theory of relativity, nonlinear dynamics and complex system.
PSO 4	Gain hands on experience to work in applied fields
PSO 5	Gain a through grounding in the subject to be able to teach it at college as well as school lever.
PSO 6	Viewing physics as a training ground for the mind developing a critical attitude and the faculty of logical reasoning that can be applied to diverse fields.

COURSE SPECIFIC OUTCOMES

Semester I **Code: 19PHY-101** **Course: Mathematical Physics**	● The student will acquire knowledge of matrics and various integral transformers, their property, derivatives and methods. ● Learn about differential equations ● Will know about Special functions like Bessel function, Legendre function, Hermite P{Olynomials and Laguerre Polynomials ● Understand Complex algebra, Functions of a complex variable, Analytic function, evaluation of definite integrals
Semester I **Code: 19PHY-102** **Course: Classical Mechanics**	● The student will acquire knowledge about Classical Mechanics ● Learn about Lagrangian and Hamiltonian formulations ● Will get detailed knowledge of Poisson bracket and theory of small oscillations ● Understand Two-body central force problem and H-J theory
Semester I **Code: 19PHY-103** **Course: Quantum Mechanics I**	This course enables the student to understand in detail- ● General formulation of Quantum Mechanics ● Matrix formulation of Quantum Mechanics ● Solution of three-dimensional systems ● Quantum theory of Angular Momentum.
Semester I **Code: 19PHY-104** **Course: Electronic Devices and Circuits I**	The student will learn about : ● Basics of semiconductor devices ● Field Effect Transistor (FET) –basic circuits and operations ● Feedback in Amplifiers and various network theorems ● Power amplifiers and regulators: introduction and functioning.
Semester I **Code: 19PHY-105** **Course: Communication Skill**	● The course helps the student to understand basics of the human communication, barriers of the communication and measures of effective communication. ● Learn about various communication skills like correct mode of request , greeting, conversation, formal speech etc ● Will come to know about Science communication ● Acquire knowledge of personality development skills
Semester I **Code: 19PHY-106** **Course: IT fundamentals**	● This course aims to provide the student basic knowledge of information technology by introducing basic concepts of IT to the students. ● The student will also acquire knowledge of Basic tools(MS Office) ● Will come to know about MATLAB ● Will get knowledge about Social media: measuring and monitoring, Applications of Internet, web browsers , search engines etc
Semester II **Code: 19PHY-201** **Course: Quantum Mechanics II**	After successful completion of this paper, the student will be well-versed in- ● Approximate methods for bound states ● Quantum theory of Scattering- ● Many-particle systems
Semester II **Code: 19PHY-202** **Course: Nuclear and Particle Physics**	On completion of this course the student will learn about : ● have a basic knowledge of nuclear size ,shape , binding energy.etc and also the characteristics of nuclear force in detail. ● be able to gain knowledge about various nuclear models and potentials associated. ● Grasp knowledge of Radioactive Decays, Nuclear Forces and Nuclear Reactions ● Detail of Particle Physics

Semester II **Code: 19PHY-203** **Course:** **Solid State physics**	• Students will know about basic concepts via diffraction methods, lattice vibrations and free electrons, Hall effect. • Their introduction to the band structures of solids for studying different materials • Knowledge of Superconductivity and lattice defects
Semester II **Code: 19PHY-204** **Course:** **Electronic Devices and circuits II**	The student will gain knowledge of : • Operational amplifier. Its applications • Multivibrators and Oscillators • Optoelectronic devices
Semester II **Code: 19PHY-208** **Course: Yoga, Health and Nutrition** **(Open elective)**	After the completion of the course the student will get good knowledge of : • Our body system, dimensions and determinants of the health, various health problems and communicable diseases, their prevention and control • Better understanding of food and nutrition • Meaning and classification of Yoga , yogic practice, techniques and benefits • Will come to know about impact of yoga on human body and about meditation.
Semester III **Code: 19PHY-301** **Course:** **Electrodynamics**	After successful completion of the course, the student is expected to : • Understand Electrostatics and Magnetostatics • Electromagnetic Waves and Radiation by Moving Charges • Potential, fields and Radiations • Electrodynamics and Relativity
Semester III **Code: 19PHY-302** **Course:** **Atomic and Molecular Physics I**	After successful completion of the course, the student is expected to : • know about different atom model and will be able to differentiate different atomic systems, different coupling schemes and their interactions with magnetic and electric fields. • Understand Diatomic molecules and their rotational spectra, Rotational and Vibrational spectra of diatomic molecules in deatail • Electronic Spectra of diatomic molecules and Fluoescence
Semester III **Code: 19PHY-303 C** **Course:** **Physics of Nano material** **(Discipline Specific Elective I)**	• This course will enable the student to have basic knowledge about preparation of quantum nanostructures • To learn about Micro electromechanical Systems and Nanoelectrochemical systems. • Will learn about Synthesis/Fabrication of Nanomaterials/Nanostructures • To Study carbon nanotubes and their applications.
Semester III **Code: 19PHY-304 C** **Course: Electronics I** **(Discipline Specific Elective II)**	On completion of this course the student will learn about : Operational amplifiers, comparator and applications, Voltage regulators

Semester III **Code: 19PHY-308** **Course: Swacch Bharat(Open elective)**	The student will get knowledge of- ● Concept of Swacchhata, Ways of awareness forSwachhata and Personal Hygeine ● Health and Health Education, Balance diet and Sanitation practices ● Solid waste management, Segregation, Disposal,Non-Biodegradable and Biodegradable waste ● Compost pits, Biogas plants ,ways of campaigning and Role of Gram panchayat in Swachhta
Semester IV **Code: 19PHY-401** **Course:** **Statistical Mechanics**	● Define and discuss the concepts of microscopic and macroscopic states. ● Explain the significance and value of condensed matter physics, both scientifically and in the wider community. ● Explain statistical physics and thermodynamics as logical consequences of the postulates of statistical mechanics. ● Understand the quantum mechanical formulation of statistical mechanics. ● Discuss the concept and role of indistinguishability in the theory of gases ● Apply the Bose-Einstein distribution to the calculation of properties of black body radiation. ● Discuss current research topics in statistical mechanics
Semester IV **Code: 19PHY-402** **Course:** **Atomic and Molecular Physics II**	● Know about The origin of X-Rays, X-Ray emission spectra, Dependence of position of Emission lines onthe atomic number ● Be able to apply the principle of Raman spectroscopy and its applications in the different field of science & Technology. ● To become familiar with different NMR and ESR spectroscopic techniques and its applications
Semester IV **Code: 19PHY-403 C** **Course:** **Experimental Techniques** **(Discipline Specific Elective III)**	● The student will get insight into Experimental Techniques to observe the defects in Lattice, Electron microscopy, OpticalTechniques. ● Learn about Surface Analytical Techniques: Electron Spectroscopies-Auger, XPS (ESCA), UV-photoemission, X-ray absorption techniques: EXAFS, NEAFS, SIMS, RBS and low Energy electron diffraction techniques ● Understand Spectroscopic and Scanning Probe Techniques in detail
Semester IV **Code: 19PHY-404 C** **Course:** **Electronics II** **(Discipline Specific Elective IV)**	● The student is able to gain knowledge of Amplitude Modulation and Frequency modulation which are basics of communication . ● Students are able to gain the fundamental of IC fabrication which is advanced technology in this decade and upcoming future. ● Student can take knowledge of M F technology which is advanced technology. ● Students are able to gain the knowledge UJT, STR and tunneling phenomena.which is today knowledge of unipolar device.

PROGRAM : M.SC. (CHEMISTRY)

PROGRAM OUTCOMES

On completion of M.Sc. Chemistry programme, graduates will be able to

PSO1: Apply advanced concepts of organic, analytical, physical and inorganic chemistry to solve complex problems to improve human life.

PSO2: Design experiments, analyze, synthesize and interpret data to provide solutions to different industrial problems by working in the pure, inter and multi-disciplinary areas of chemical sciences.

PSO3: Able to independently carry out research / investigation to solve practical problems and write / present a substantial technical report/document.

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO1: Gains complete knowledge about all fundamental aspects of all the elements of chemistry

PSO2: Understands the background of organic reaction mechanisms, complex chemical structures, instrumental method of chemical analysis, molecular rearrangements and separation techniques.

PSO3: Appreciates the importance of various elements present in the periodic table, coordination chemistry and structure of molecules, properties of compounds, structural determination of complexes using theories and instruments.

PSO4: Gathers attention about the physical aspects of atomic structure, dual behavior, reaction pathways with respect to time, various energy transformations, molecular assembly in nanolevel, significance of electrochemistry, molecular segregation using their symmetry.

PSO5: Learns about the potential uses of analytical industrial chemistry, medicinal chemistry and green chemistry.

PSO6: Carry out experiments in the area of organic analysis, estimation, separation, derivative process, inorganic semi micro analysis, preparation, conductometric and potentiometric analysis.

COURSE OUTCOMES

Semester I **19CHE-101: Inorganic Chemistry-I** **(Concepts in Inorganic Chemistry)**
● After studying this course students will be able to understand the concept of symmetry in molecules and its application in determining point group of molecules ● explain metal ligand bonding in coordination compounds and their stability (thermodynamic and kinetic stability) ● Splitting of the orbitals in octahedral, square planar, square pyramidal and trigonal pyramidal complexes, John Taylor distortion and Molecular orbital theory of octahedral, tetrahedral and Square planar complexes

- Explain various type of hydrolysis reaction (acid and base hydrolysis) and anion reactions, racemisation of the chelate complexes reactions without metal ligand bond cleavage

19 CHE-102: Physical Chemistry-I
(Principles of Physical Chemistry-I)

- Introduction to Quantum Mechanics, Postulates ,Quantum mechanical operators and their commutation relation, Hermitian operators, eigen function and eigen values,Angular momentum operators and their commutation relation (Lx, Ly, Lz & L2) ladder operators and its effect on angular momentum operator. Derivation of uncertainty principle (x & p)
- Schrodinger wave equation for a free particle and for particle in one dimensional box; evaluation of average position, average momentum and average energy, pictorial representation , concept of degeneracy of energy levels
- Thermodynamics: First and second Law of thermodynamics including Carnot cycle, Refrigerator, Entropy changes in reversible and irreversible processes; variation of entropy with temperature, pressure and volume
- Partial molar quantities (free energy, volume, heat capacity), Gibbs-Duhem equation, variation of chemical potential with temperature and pressure, chemical potential for an ideal gas, thermodynamic functions of mixing (free energy, entropy, volume and enthalpy)
- Brief description of integrated rate laws of zero, first and second order reactions with graphical representation, Lindemann – Hinshelwood mechanism of unimolecular reactions. Rate law for opposing reactions (Ist & IInd order), Rate law for consecutive reactions, Kinetics of parallel reactions
- Chain reactions (Formation of HBr & HCl, decomposition of acetaldehyde & ethane), apparent activation energy, chain length, Rice- Herzfeld mechanism (acetaldehyde)
- Debye -Huckel theory of ion- ion interactions (ionic cloud, Poisson's equation, excess charge density, Linearization of Boltzmann equation, Linearized Poisson Boltzmann equation and its solution, excess charge density and potential as a function of distance from the central ion
- Debye-Hückel limiting law,Debye – Huckel -Onsager treatment for aqueous solutions and non-aqueous solutions, Debye - Falkenhagen effect, Wein effect.

19CHE-103: Organic Chemistry-I
(Conceptual Organic Chemistry & Stereochemistry)

- Nature of Bonding in Organic molecules: Delocalized chemical bonding –conjugation, cross conjugation,Concept of aromaticity; Huckel's rule,Bonds weaker than covalent, addition compounds
- Structure and Reactivity: Types of mechanisms, types of reactions, Relationship between thermodynamic stability and rates of reactions,The Hammett equation and linear free energy relationship, substituent and reaction constants
- Aliphatic Nucleophilic and Electrophilic Substitution: The SN1, SN2, mixed SN1and SN2, SNi and SET mechanisms,The neighbouring group mechanisms, neighbouring group participation by p and s bonds, anchimeric assistance
- Phase transfer catalysis; The SE1 mechanism,Bimolecular mechanisms- SE2and SEi., Electrophilic substitution accompanied by double bond shifts, Effect of substrates, leaving group and the solvent polarity on the reactivity
- Introduction to molecular symmetry and chirality. D-L, R-S, E-Z and threo-erythro nomenclature, interconversion of Fischer, Newman, Sawhorse and flying wedge formulae,Conformational analysis, enantiomers and diastereomers of simple acyclic, cyclic

system

- Optical activity in the absence of chiral carbon (biphenyls, allenes, ansa compounds, cyclophanes, hemispiranes and spiranes); Stereochemistry of the compounds containing nitrogen, sulphur and phosphorus
- Topicity of ligands and faces, their nomenclature and prostereoisomerism,stereogenicity, chirogenicity, pseudo asymmetry and prochiral centre. stereospecific and stereoselective reaction
- Asymmetric synthesis: Enantiomeric excess, % enantioselectivity, optical purity, % diastereomeric excess and % diastereoselectivity. Asymmetric synthesis (basic principle, auxiliary, substrate, reagent and catalyst controlled)

19CHE-104: Spectroscopy-I

- Introduction and understanding of UV-Visible phenomenon, theory of electronic spectroscopy, instrumentation and sampling, solvents effects, conjugation effects, the chromophore and auxochrome concepts, rules for prediction of wavelength, applications of electronic spectroscopy
- Principle, units of frequency, wavelength and wavenumber; molecular vibrations,factors influencing vibrational frequencies, Instrumentation – dispersive and interferometric instruments;sampling techniques, applications of IR – identity by fingerprinting and functional groups of different organic molecules
- Nuclear Magnetic Resonance Spectroscopy: Introduction, nuclear spin states, nuclear magnetic moments,resonance, population densities, chemical shift and shielding mechanism; instrumentation, chemical equivalence, integrals and integration, chemical environment & chemical shift, local diamagnetic shielding, magnetic anisotropy, spin-spin splitting
- Pascal's triangle,survey of typical proton NMR absorptions of organic compounds,Discussion on simplification techniques – deuterium exchange, chemical shift reagents, chiral resolving agents, spin decoupling methods, double resonance and NOE difference spectra.
- Mass Spectrometry: Introduction, ion production - EI, CI, FD and FAB, factors affecting fragmentation,ion analysis, ion abundance. Mass spectral fragmentation of organic compounds, common functional groups, molecular ion peak, metastable peak
- Fragmentation pattern,analysis of biomolecules by mass spectrometry
- General considerations, carbon-13 nucleus, chemical shift and its calculation, proton-coupled and -decoupled carbon-13 spectra, nuclear overhauser enhancement, cross-polarization, problems with integration, molecular relaxation process
  IR, NMR, electronic and conjoint IR-UV/VIS-NMR-Mass spectrometry numerical problems

Open Elective-I
Yoga, Health and Nutrition

After the completion of the course the student will get good knowledge of :

- Our body system, dimensions and determinants of the health, various health problems and communicable diseases, their prevention and control
- Better understanding of food and nutrition
- Meaning and classification of Yoga , yogic practice, techniques and benefits
- Will come to know about the impact of yoga on the human body and about meditation.

19 CHE-105
Practical I- Inorganic Chemistry

The student will learn doing-

- Qualitative Analysis of Less common metal ions, Insolubles-Oxides of different types of inorganic compounds
- Quantitative Analysis:Cerimetric / Iodometric/ Oxidimetry titrations

19 CHE-106
Practical II-Physical Chemistry

- pH metry: to find out strength of a given acid and base
- Conductometry: to find out the strength of given acid and base
- Thermochemistry: to determine the heat of neutralization
- Chemical Kinetics:Study kinetics of hydrolysis of an ester in the presence of acid,Saponification of ethyl acetate,Compare the relative strength of acids

19 CHE-107
Practical III-Organic chemistry

- General experimental techniques:Common laboratory glasswares, Purification of organic solids,Purification of organic liquids ,Determination of melting point of solid organic compounds,Determination of boiling point of liquid organic compounds, separation by TLC
- Organic Synthesis: Preparation of different organic compound

Semester II
19CHE-201: Inorganic Chemistry-II
(Principle of Inorganic Chemistry)

After studying this course students will be able to

- Understand mechanism of ligand displacement reaction in square planar complexes, trans effect, theories of Trans effect,mechanism of electron transfer reactions and various magnetic properties of transition metal
- Electronic arrangement of microstates, calculation of the number of microstates, Spectroscopy term symbols, determining ground state term, correlation and spin Orbit coupling in free ions, Orgel and Tanabe sugano diagrams for metal complexes,B and beta parameters, Spectrochemical and nephalauxetic series, charge transfer spectra Anomalous magnetic moment.
- Metal Pi complexes, valence electron count, compliance and violation of 18 electron rule, total election count metal carbon structure and bonding vibrational spectra of metal carbonyls for bonding and structure insulation, important reactions of metal carbonyls, preparation, bonding, structure and important reactions of transition metal nitrosyl and tertiary phosphinie as ligand and structure of many clusters including metal carbon, carboranes complexes, higher boranes, metalloboranes, halide clusters and crystal structures of various compounds.

19CHE-202: Physical Chemistry-II
(Principles of Physical Chemistry-II)

- In thermodynamics they will learen about third law of thermodynamics, Nernst heat theorem, concept of absolute entropy, Heterogeneous equilibrium, Phase rule, Clausius-Clapeyron Equation, Phase diagram for one component system (H2O & S), two completely miscible components, two component system
- Effect of temperature on reaction rates, Arrhenius equation, Collision theory of reaction rates, thermodynamic formulation of activated complex theory, correlation between various theories of reaction rates
- Learn more about Enzymatic reaction
- In statistical mechanics will study thermodynamic probability & most probable distribution for Maxwell Boltzmann statistics, Bose-Einstein & Fermi Dirac statistics, identification of the constant α and β, partition function and its significance
- Application of Bose Einstein and Fermi Dirac statistics,Partition function,Thermodynamic properties in terms of partition function
- Will study Laws of photochemistry ,Jablonski diagram, photophysical processes, Kinetics of photophysical processes Kinetics of quenching.

19CHE-203: Organic Chemistry-II
(Reaction Mechanism & Rearrangements)

- Aromatic Electrophilic Substitution: The arenium ion mechanism, orientation and reactivity, energy profile diagrams. The ortho/para ratio, ipso attack, orientation in other ring systems. Diazonium coupling,Gattermann-Koch reaction, Vilsmeir-Haak reaction, Reimer-Tiemann reaction, Fries rearrangement
- Aromatic Nucleophilic Substitution: The ArSN1, ArSN2, Benzyne and SRN1 mechanisms. Reactivity – effect of substrate structure, leaving the group and attacking nucleophiles
- Elimination Reactions: The E1, E2 and E1cB mechanisms. Orientation Effects, reactivity,Saytzeff and Hoffman rules, Stereochemistry of E2 elimination reactions and eclipsing effects in E2 eliminations
- Mechanistic and stereochemical aspects of addition reactions involving electrophiles, nucleophiles and free radicals,Hydrogenation of double and triple bonds, hydrogenation of aromatic rings. Hydroboration. Michael's reaction. Sharpless asymmetric epoxidation
- Reactivity of carbonyl compounds towards,Addition of Grignard reagents, organozinc and organolithium reagents to carbonyl and α, β-unsaturated carbonyl compounds, Wittig reaction
- Mechanism of condensation reactions involving enolates – Aldol, Knoevenagel, Claisen, Mannich, Robinson, Reformatsky, Benzoin, Perkin and Stobbe reactions. Hydrolysis of esters and amides
- Rearrangements: Classification and general mechanistic treatment of nucleophilic, free radical and electrophilic rearrangement, Wagner-Meerwein, Pinacol-pinacolone, Benzil-benzilic acid, Favorskii,Steven, Wittig, Neber, Wolff, Beckmann, Hoffmann, Curtius, Lossen, Schmidt, Bayer-Villger.

19 CHE-204: Statistics for Chemists

- The student will learn about measures of central tendancy, measures of dispersion.
- Know about probability theory and various theorems
- Can understand discrete and continuous variables
- Will know discrete probability distributions and continuous probability distributions
- Will be able to test hypotheses
- Get knowledge of sampling distributions-t test, f test, chi square, ANOVA etc
- Can calulate correlation
- Will be acquinted with regression analysis and curve fitting.

19CHE-205 IT Skills

The student will get knowledge of-

- Fundamentals of computers
- Introduction to internet and networking
- Business data processing
- Various applications and packages like file management, MS Office, dealing with tables and data analysis.

19CHE-206
Practical-IV-Inorganic Chemistry

- Spectrophotometric Method:Determination of some metal ions
- Quantitative Analysis:Separation and determination of two metal ions of different inorganic compounds involving volumetric and gravimetric methods

19CHE-207
Practical V-Physical Chemistry

- Chemical Kinetics:To determine the temperature coefficient,Determination of activation energy
- Ultrasonic Interferrometry : to determine the speed of sound
- Potentiometry: to determine the strength of acid and base
- Refractometry : Determine the refractive index of the given liquids

19CHE-208
Practical VI - Organic Chemistry

- Qualitative Analysis:Separation, purification and identification of compounds of binary mixtures
- Organic Synthesis: Preparation of different types of organic compounds,recrystallized product along with m.p.

19CHE-209 Summer Training

The he objective of Summer training is to render the students to work environment in the field of Chemistry at industry, academic institute and research institute. It helps them to learn the latest technologies, skills, methodologies and to build a strong foundation for their career growth. It will provide learning platform to students where they can enhance their ability, skills and become job ready.

Semester III
19 CHE-301 Spectroscopy-II

- Rotational Spectra: Introduction, rotational spectra of rigid diatomic molecules,spectral lines, isotopic effect, non-rigid rotator
- Will learn in detail about Vibrational and Vibrational-Rotational Spectra
- Raman Spectra: Classical and quantum theories, polarization of light and the Raman effect, depolarization of Raman lines, pure rotational Raman spectra of linear molecules use of symmetryto determine selection rules
- Electronic Spectra:diatomic molecules,The Franck Condon Principle, intensity of vibrational electronic band,dissociation energy
- Electron Spin Resonance Spectroscopy: Basic principles,experimental technique,Instrumentation
- Mossbauer Spectroscopy: Basic principles, spectral parameters,Application of the technique
- Atomic Absorption Spectroscopy: Introduction,basic principles, Applications
- Flame photometry: Theory ,application of flame photometry
- Spectrophotometry and Colorimetry: Fundamental concepts, instrumentation, application,Colorimetry to analysis of inorganic substance

19CHE-304 Organic Chemistry Special-I
(Concerted Reactions and Photochemistry)

- Pericyclic Reactions : Molecular orbital symmetry,Woodward - Hoffmann correlation diagram,FMO & PMO approach, cycloadditions and cheletropic Reactions
- Sigmatropic Rearrangements-suprafacial and entarafacial shifts of H,detailed treatment of Sommelet-Hauser, Claisen and Cope rearrangements introduction to reactions. Simple problems on Pericyclic reactions, Group transfers and eliminations
- Franck-Condon Principle, Jablonski diagram, photochemistry of carbonyl compounds
- Di-pi methane rearrangement, enone and dienone rearrangements, photochemistry of aromatic compounds,Hofmann-Loffler-Freytag reaction.Synthesis of vitamin D

19CHE-307
Organic Chemistry Special-II
(Reagents for Organic Synthesis)

- Oxidation reagents: Principle, reactions and mechanism of oxidising agents:Manganese oxidants,Chromium oxidants,Miscellaneous oxidants
- Reduction reagents: Principle, reactions and mechanism of different types of reducing agents
- Organometallic reagents: Preparation, properties and applications of different types of reagents in organic synthesis with mechanistic details
- Principle, preparations, properties and applications of theorganic synthesis with mechanistic detail- Metal mediated C-C and C-X coupling reactions: Heck, Stille, Suzuki, Negishi and Sonogashira

19CHE-310
Organic Chemistry Special-III
(Advanced topics in Organic Chemistry)

- Green Chemistry : Basic Principle of Green chemistry and its applications, need of green chemistry,Role of biocatalysts in green synthesis,synthesis of adipic acid and BHC synthesis of Ibuprofen
- Renewable energy resources: fossil fuels, biomass, solar power, fuel cell,chemical from renewable feedstocks,Waste management: production, problem and prevention,degradation of DDT & surfactant, polymer recycling
- Chromatography: Types-Ion exchange chromatography, planar chromatography -paper and Thin Layer Chromatography,Gas chromatography – Theory, instrumentation and applications,(HPLC),Reverse phase chromatography, Hyphenated techniques
- Computational Chemistry: Introduction, history, approximations to the Schrödinger equation – basic idea of the Hartree–Fock method,density functional theory,computational approaches to solvation, application of these methods in computational chemistry

Open Elective- II
Swach Bharat Internship

Swachh Bharat Abhiyan is the most significant cleanliness campaign by the Government of India. Students have to train their younger ones to keep things clean.They can also visit areas and bring out the importance of mission and encourage them in contributing to it.

19CHE-313
Practical-VII - Organic Chemistry Special

Separation and identification of organic mixtures of polyfunctional compounds containing two components using TLC,IR and NMR spectroscopy

19CHE-316
Practical- VIII Organic Chemistry Practical

Estimations of different organic compounds like glucose, phenol by brominating mixture , glysicine ,formaldehyde , cane- sugar, number of acetyl groups, saponification value of a fat or oil ,iodine value of a fat or oil

19 CHE-319
Practical-IX Organic Chemistry Special

- Multi-step synthesis of different organic compounds,recrystallised product along with melting point for all the stages of preparation

Semester IV
19CHE-403
Organic Chemistry Special-IV
(Bioorganic and Medicinal Chemistry)

- Amino Acids, Peptides and Proteins: Introduction, classification and structure, General methods of preparation
- Enzymes: Remarkable properties,Nomenclature and classification, extraction and purification, inhibition,Michaelis-Menten and Lineweaver-Burk plots, reversible and irreversible inhibition
- Biological function of different types of coenzyme

- Carbohydrates: Introduction, nomenclature, monosacharides & their configuration , elementary idea of structures of different type of carbohydrates,Fatty acids, essential fatty acids, structure and functions of different fatty acid
- Introduction, historical development, factors affecting development of new drugs, Concepts of prodrugs and soft drugs,Drug metabolism,Structure based drug design ,Enzyme Inhibitors
- Introduction, general mode of action, synthesis and medicinal uses of important drugs : Antipyretic analgesics,Antineoplastic, antimalarials, antitubercular, anthelmintic & sulfa drug

19CHE-406
Organic Chemistry Special-V
(Heterocyclic Chemistry and Disconnection Approach)

- Replacement and Systematic Nomenclature of heterocyclic compounds,Classification Aromaticity,reactivity, tautomerism
- Bond angle and torsional strains of non aromatic heterocyclic compounds,Three-membered and four-membered heterocycles-synthesis
- Methods of synthesis and reactions including mechanism of five membered heterocyclic compounds,Methods of synthesis and reactions including mechanism of six membered heterocyclic compounds like purines and pyrimidines
- Introduction to synthons and synthetic equivalents, disconnection approach, functional group inter-conversions, importance of organic compounds synthesis
- Protecting Groups: Principles of protection of alcohol, amine, carbonyl and carboxyl groups
- One and Two Group C-C Disconnections: Alcohols and carbonyl compounds,aliphatic nitro compounds in organic synthesis,Diels-Alder reaction, Michael addition and Robinson annelation etc.

19CHE-409
Organic Chemistry Special-VI
(Chemistry of Natural Products)

- Definition, nomenclature and physiological action, occurrence, isolation Structure elucidation of alkaloids
- Classification, general aspects of structure determination of terpenoids, General method of structure elucidation and synthesis of β-carotene, Vitamin A and Abietic acid
- Isolation, nomenclature, basic skeleton of steroids, Prostaglandins: Introduction, nomenclature and biological role of prostaglandins. Synthesis of PGE2 and PGF2α
- Occurrence nomenclature and general methods of structure determinations, isolation and synthesis of Cyanin, Quercetin, Diadzein, and Chrysin

19CHE-410 Communication skills (DSE)

To introduce the theory and practice of communicative skills so as to enable the students to communicate effectively and conduct themselves graciously in the business of life-

- Human Communication, Verbal and Non Verbal Communication, Barriers to communication, mass communication
- Will learn more about greetings and introducing, permissions, participating in conversations, making speech, giving descriptions
- More understanding of telephonic communication and etiquettes.
- Learn personality development skills and know about emotional intelligence.

19CHE-413 **Practical-X Organic Chemistry Special**
Isolation of natural products: like caffeine from tea leaves, piperine from black pepper,β-carotene from carrots ,lycopene from tomatoes ,limonene from lemon peel , euginol from cloves, nicotine from tobacco,casein and lactose from milk
19CHE-416 **Practical-XI Organic Chemistry Special**
• Spectrophotometric (UV-vis) Estimations :like Amino acids ,Proteins ,Carbohydrates ,Ascorbic acid , Aspirin ,Caffeine, Cholesterol • Synthesis and characterization of some organic compounds of medicinal interest Paracetamol,aspirin, phenyltoin, phenylbutazone or any other relevant drugs
19CHE-419 **Practical-XII Organic Chemistry Special**
Preparation and characterization organic compounds prepared in two and three steps of different types of organic compounds like,Synthesis of acridone from anthranilic acid , Synthesis of picric acid from cholorobenzene,Synthesis of saccharin from toluene or any other relevant synthesis
19CHE-420 **Seminar /Journal Club (AECC)**
19CHE-421 **Self Study (AECC)**
To motivate the students for innovative , research and analytical work , they are supposed to choose the topic of their interest with the help of their teacher and deliberate their approach in original and creative way .