



R. C. Patel Educational Trust's  
**R. C. Patel Arts, Commerce and Science College**  
Shirpur-425405, Karvand Naka, Dist.- Dhule (Maharashtra)  
E-mail - principal@rcpasc.ac.in

**Affiliated to: K. B. C. North Maharashtra University, Jalgaon-425001**

## **Self Study Report (SSR): 2024 (4<sup>th</sup> Cycle)**



**Criteria - 2**  
**Teaching- Learning and Evaluation**

**Key Indicator - 2.6**  
**Student Performance and Learning Outcome**

**Metric No. - 2.6.1 (Q1M)**  
**Programme Outcomes (POs) and Course Outcomes (COs) for all Programmes offered by the institution are stated and displayed on website**

**Submitted to**  
**National Assessment and Accreditation Council, Bangalore**



R. C. Patel Educational Trust's

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Karvand Naka, Shirpur 425405, Dist - Dhule, Maharashtra

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**President**

Hon. Bhupeshbhai Patel

**Principal**

Dr. D. R. Patil

**Date:** 15/06/2024

## Declaration

This is to declare that, the information, reports, true copies of the supporting documents, numerical data etc. submitted in these files is verified by Internal Quality Assurance Cell (IQAC) and it is correct as per the office record.

This declaration is for the purpose of NAAC accreditation of the HEI for the 4<sup>th</sup> cycle assessment period 2018-19 to 2022-23.

**Place:** Shirpur

**Date:** 15/06/2024

**Dr. Sandip P. Patil**

**IQAC Co-ordinator**

**IQAC Coordinator**

R. C. Patel Educational Trust's

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Shirpur, Dist.-Dhule (M.S.) 425405



**Dr. D. R. Patil**

**IQAC Chairman & Principal**

**PRINCIPAL**

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<b>DEF-112- Disaster Management and Security-I</b>	CO1: Learning and understanding the basic knowledge of Disaster Management concept and different approaches to reduce the impact of disaster.
	CO2: Understand the types of disaster their origin causes and their management and the disaster profile of India.
	CO3: Learning to apply the knowledge of technology for monitoring and management of the disaster
	CO4: Drill based learning of disaster management.
	CO5: Understand the role of State and Central Government in Disaster Management.
<b>DEF-122 - Disaster Management and Security-II</b>	CO1: To understanding the basic knowledge of Disaster Management act.
	CO2: Students will develop advanced skills in risk assessment, vulnerability analysis, and the design of effective disaster mitigation and preparedness strategies.
	CO3: Students will explore advanced concepts of crisis leadership and decision-making during disasters, including the ethical and moral dimensions of emergency response.
	CO4: Students will examine strategies for engaging communities in disaster preparedness and building social resilience, particularly in marginalized or vulnerable populations
<b>DEF-113- Military History of India-I</b>	CO1: Students will demonstrate an advanced and nuanced understanding of the military history of India, focusing on specific historical periods, events, and developments.
	CO2: Students will analyze the geopolitical factors that shaped military conflicts, alliances, and territorial changes in Indian history.
	CO3: To acquire knowledge about Vedic and Epic military traditions.

<b>DEF-115- Road Safety and Traffic Management –I</b>	CO1: Learning importance of multidisciplinary approach to planning for traffic safety and rehabilitation.
	CO2: Understand the types of Gain information and knowledge about people responsible for accidents and their duties.
	CO3: Generate awareness about number of people dying every year in road accidents, traffic rules and characteristics of accident.
	CO4: To understanding of the causes and consequences of accidents and responsibilities in ensuring road safety understand military system and war tactic of various empire in India.
<b>DEF-121- Conceptual Aspects of War –II</b>	CO1: Students will explore complex ethical dilemmas related to the conduct of war, including just war theory, civilian protection, and the use of emerging technologies in warfare.
	CO2: Students will develop advanced strategic thinking skills, including the ability to assess national security strategies, military doctrines, and geopolitical considerations.
	CO3: Students will analyze the concept of national and international security, including threats, risk assessment, and the role of military and non-military instruments in safeguarding security

**UG – B.A. (Economics)**

<b>Class: F. Y. B. A.</b>	
<b>FYBA Eco G- 101(B) – Economy of Maharashtra Eco G- 201(B) – Economy of Maharashtra</b>	CO1: Students will Introduce the various issues i.e. Main features and Significance of the Economy of Maharashtra, Human Resource , Agriculture, Irrigation, Industrial Development, Infrastructure, Co-operative Movement, Cooperative Financial System and Marketing, Transport and Communication, State Finance Commission, State revenue and state expenditure, Budget , Right to Information Act, etc. and various policy and programs implemented by the Govt. of Maharashtra in the Economy of Maharashtra.
	CO2: Students knowledge will enhance about the Social and Economic Problems before the Economy of Maharashtra like low female population, Low agriculture Productivity, Suicides of farmers, Corruption, Problems of Local bodies, etc.
<b>Class: SYBA</b>	
<b>SYBA DSC Eco231 C – Indian Economy Since 1980 –I DSC Eco241 D – Indian Economy Since 1980 –II</b>	CO1: Students will Introduce various Contemporary Issues in Indian Economy which will provide basic knowledge. Such Issues i.e. Human resources, Cooperative System, Cooperative Banking, agricultural, industrial, Infrastructure, Poverty, Economic inequity and Unemployment, Economic Planning and Five year plans etc. and economic development.
	CO2: Students knowledge will enhance about the Economic and Social Problems before the Indian Economy like problems of over population, low female population, Problems of Transport, Crisis of Energy , defects in agricultural marketing, Low agriculture Productivity, Suicides of farmers, Problems of Industries, etc.
	CO3: The students will able to understand the recent changes or implemented policies in Economy i.e. D.C.T.S., Jan Dhan Yojna, Mudra Bank Yojna, Make in India, NITI Ayog, function and role of related with the economy of India and develop the students' understanding about the organization and policy

**TYBA**

<p style="text-align: center;"><b>DSC-1(E) -Eco- 351</b> <b>Indian Economy Since</b> <b>1980 –III</b></p>	<p>CO1: Students will enable to various issues of Indian Economy, Students analyzing capability will develop in the context of Indian Economy. It also help understands the empirical aspects such as Indian financial System, Inflation, The students will able to understand the function and role of Banks and financial institutions ,trade reforms and their impact on India economy. Contemporary Issues in Indian Economy shall provide basic knowledge on various issues involved in India.</p>
<p style="text-align: center;"><b>DSC-1(F)-Eco- 361</b> <b>Indian Economy Since</b> <b>1980 –IV</b></p>	<p>CO2: Considering the increasing role of Government in economy, this syllabus will generate theoretical and empirical understanding of students about different aspect of Governmental activities and their rationality. It covers fundamental concepts of public economics, finance commission, public revenue, public expenditure, and public debt, deficit financing with special reference of Indian economy.</p>

UG – B.A. (English)

<b>Class: F.Y.B.A.</b>	
<b>Comp. English</b>	CO1: The students use basic skills of languages
	CO2: They learn values through literatures
	CO3: Students acquire the competency in grammar
<b>Opt. English</b>	CO1: The course will introduce the basic forms of literature to the students.
	CO2: The course will develop the liking of reading in the students.
	CO3: The course will inspire students to develop their creative ability.
	CO4: Consequently, the course will develop reading skill and creative and expressive ability of the students.
<b>Class: S.Y.B.A.</b>	
<b>Comp. English</b>	CO1: The students understand, read, write the English through the oral and written communication.
	CO2: The students acknowledge the values.
<b>DSC I &amp; II English GII The Study of English Novel and Drama</b>	CO1: The students understand the aspects, elements and nature of drama and fiction.
	CO2: They understand the origin and development of drama and fiction.
	CO3: They critically study and appreciate the drama and fiction.
<b>DSE 1 A &amp; B English SI The Study of 16th and 17th Century English Literature</b>	CO1: The students are able to understand the origin and development of English literature of 16 century.
	CO2: The students analyze and appreciate the 16 and 17 century literature.
	CO3: The students critically examine the works agonist the historical background and the find out the elements and aspects of the poetry, drama and novel of 16 and 17 century.
<b>DSE 2 A &amp; B English SII The Study of 18th and 19th Century English Literature</b>	CO1: The students are able to understand the origin and development of English literature of 18/19 century.
	CO2: The students analyze and appreciate the 18 and 19 century literature.
	CO3: The students critically examine the works agonist the historical background and the find out the elements and aspects of the poetry, drama and novel of 18 and 19century.
<b>SEC 1&amp; 2 – Skill based paper</b>	CO1: Students acquire English language abilities necessary in the competitive examinations
	CO2: The comprehension ability of the students increase.

<b>Class: T.Y.B.A.</b>	
<b>Comp. English- AEC: Developing Communication Skills</b>	CO1: The students read with understanding and respond to the problems based on texts.
	CO2: The students perfects in Group discussion, public Speaking and Interviews.
	CO3: The students understand the use of language through literature and reproduce it.
<b>DSC English GII Indian Writing in English</b>	CO1: The students understand the genre of drama with its origin and development.
	CO2: The students read the drama and understand all the aspects and elements of drama.
	CO3: The students study the drama practically and can critically appreciate it.
<b>DSE 3 A&amp; B - SIII :Twentieth Century English Literature</b>	CO1: The students know and study the Indian/American novel and drama in English.
	CO2: He gets acquainted with the origin and development of Indian/American Creative Prose and Dramatic writings.
	CO3: He students Indian novels and dramas and critically analyze and appreciate.
<b>English SIV DSE 4 A &amp; B The Study of English Language</b>	CO1: The students understand the origin and development of language.
	CO2: They learn sounds in English and they are trained to pronounce the sounds and words correctly.
	CO3: The students are aware of word formation and develop their ability to use the words properly by studying semantic and syntactic features.
<b>SEC ENG: English for Practical Purposes 3 &amp; 4</b>	CO1: The students learn English usages
	CO2: They use English usages in day to day life.
	CO3: They learn the hard and soft skills necessary for the job attainment.
<b>Generic Elective Course GE-1(A and B) GE Eng A and B: Film and Literature</b>	CO1: Students understand the various genres of arts.
	CO2: They understand the similarities and dissimilarities between films and novel/drama as genres
	CO3: They acquire the knowledge of adaptation from a work of literature into films.
	CO4: They can analyze film adaptation of literary text.
	CO5: They comprehend and appreciate the novels, drama, short story and movies.



UG – B.A. (Geography)

<b>Class: F. Y. B. A.</b>	
<b>Gg. -101 (DSC A -1) – PHYSICAL GEOGRAPHY</b>	CO1: Students find the location and extent of a region using graticule.
	CO2: Understand the composition the earth and distribution of the continents and oceans.
	CO3: Students identify the characteristics of various rocks and explain the process of weathering.
	CO4: Explain the formation of various geographical features
	CO5: Explain the structure and composition of the atmosphere.
	CO 6: Elaborate the causes of uneven distribution of insolation and temperature.
	CO7: Understand the pressure belts and global as well as local wind system.
	CO8: Explain the forms of condensation and types of precipitation.
	CO9: Understand the structure of ocean floor and mechanism of ocean currents.
<b>Class: S. Y. B. A.</b>	
<b>Gg. 232 (DSE 1 A): GEOGRAPHY OF TOURISM</b>	CO1: To develop and communicate basic conceptual frame work of Geo Tourism.
	CO2: To realize its potentials and against achieved in the Indian context.
	CO3: To understand the various Geo tourism.
	CO4: To know the role and responsibilities, economic growth of Tourism industry in India.
	CO5: To evaluate the role of various organization of tourism.
	CO6: To know the importance of the sustainable tourism.
	CO7: To develop Socio cultural aspects for the Tourism geography.
<b>Gg. 242 (DSE 1 B): GEOGRAPHY OF INDIA</b>	CO1: To make the students able to understand Geographical Personality of India.
	CO2: To study minerals and power resources in the specific regions of India.
	CO3: To study the nature of industries and their development in India.
	CO4: To aware the students about agricultural and demographic problems and make them able to find remedial measures on those problems.
<b>Gg. 233 (DSE 2): PRACTICAL</b>	CO1: To give basic information about various tools and techniques used in making maps.

<b>GEOGRAPHY</b>	CO2: To understand the concept of scale at the initial stage and enable know the scale and distance of surveying.
	CO3: To know how to draw the maps on various scale hence acquaint the students with basic of Scale, Map Projections and cartographic Techniques
	CO4: To enable the students to use Scale, Map Projections and cartographic techniques to acquire knowledge of survey language and sense of technique of surveying.
	CO5: To know how to draw layout by surveying of region. to acquaint the students with basic
	Knowledge and technique of ground survey.
	CO6: To acquire the knowledge of survey instruments to provide basic information about Mechanism of survey instruments.
	CO7: To acquaint the knowledge how to use survey instruments and the importance of surveying and survey instruments.
<b>Gg. 234 (SEC 1): REGIONAL PLANNING AND DEVELOPMENT</b>	CO1: Student will become well aware about the Regional Planning and Development.
	CO2: Students will get the knowledge of planning, its limitation.
	CO3: Students will be able to participate in planning and regional development.
	CO4: Students will get knowledge about various approaches and models of regional planning and development.
	CO5: Students will be aware of the Special area development plans and argo Ecological Zones of Maharashtra.
<b>Gg. 244 (SEC 2): REMOTE SENSING AND GPS BASED PROJECT REPORT</b>	CO1: To understand the principles of Remote Sensing.
	CO2: To acquaint the students with fundamental concepts of Aerial Photography.
	CO3: To introduce students with advance techniques for data collection.
	CO4: To learn principles and applications of GPS.
	CO5: To learn basics of GPS based survey.
<b>Gg. 245 (DSC 3D): MINOR STUDY PROJECT</b>	CO1: To motivate the students towards Research.
	CO2: To understand the various problems in the field of Geography.
	CO3: To introduce research methodology and to inculcate research aptitude.
	CO4: To enhance analytical thinking and report writing ability of the students.
<b>Class –T. Y. B. A.</b>	
<b>Gg. 351 (DSC 1E)</b>	CO1: To create the environmental awareness amongst the students.

<b>Environmental Geography</b>	CO2: To acquaint the students with fundamental concepts of Environmental Geography.
	CO3: To aware the students about the processes and patterns in the natural environment.
	CO4: To acquaint the students with potentials of Environmental Geography.
	CO5: To aware the students about use of resources with prudence.
	CO6: To acquaint the students with different environmental policies.
<b>Gg. 352 (DSE 3A) Economic Geography</b>	CO1: To acquaint the students with the knowledge of economic realm in the world.
	CO2: To highlight the different economic activities.
	CO3: To study mineral and power resources in the specific regions of the world.
<b>Gg. 353 (DSE) Practical Geography</b>	CO1: To introduce the practical approach of Human Geography.
	CO2: To introduce the importance of statistical techniques in Human Geography.
	CO3: To introduce some basic research methods to the students.
	CO4: To introduce the students with Survey of India's toposheets and to acquire the knowledge of interpretation.
	CO5: To acquaint the students with Indian Meteorological Department's weather maps and to gain the knowledge of weather Map interpretation.
<b>Gg. 354(SEC 3) Field Techniques and Introduction to Project Report.</b>	CO1: To introduce the analytical skill of field-work.
	CO2: To develop the skill of selection of appropriate technique for field study.
	CO3: To enable the student to frame different types of questionnaires to conduct a field study.
	CO4: To develop the analytical interpretation and report writing based upon the data collected during a field study.
<b>Gg. 355 (GE 1A) Disaster Risk Reduction.</b>	CO1: To introduce the concept of disaster risk.
	CO2: To prepare DRM Plans and its implementation.
	CO3: To aware the students about the Disaster Risk Reduction/Mitigation strategies.
<b>Gg. 361 (DSC 1F) Population Geography.</b>	CO1: Understand the components of population change.
	CO2: Develop skills to use population information in the planning process.
	CO3: Understand the impact of planning activities on population size, composition, and distribution

	CO4: Population is an important resource. The development of any nation is depending on human resource. It is a prime deity to acquaint with the human resource of the nation.
	CO5: To understand the recent problems of population in the world as well as nation.
<b>Gg.362 (DSE 3B) Political Geography</b>	CO1: To enable students to acquire knowledge of Political Geography
	CO2: To understand basic concepts of Political Geography.
	CO3: To study various theories of Political Geography.
	CO4: To understand the frontiers and Boundaries.
<b>Gg. 364 (SEC 4) Geographical Information System.</b>	CO1: To introduce the fundamentals and components of Geographic Information System
	CO2: To provide details of spatial data structures and input, management and output processes.
	CO3: To aware about the application of GIS in various fields.
<b>Gg. 365 (GE 1B): SUSTAINABILITY AND DEVELOPMENT</b>	CO1: It brings to attention the students about the issues which surround Sustainable Development, including its Principles, Processes and Concepts, its Deciding factors, and Potentials it holds.
	CO2: Students will get the information and Importance of the MDGS.
	CO3: Students will be aware about National Environmental Policy.

**UG – B.A. (Hindi)****Class: - FYBA**

<b>Hindi-G-121-a)</b>	छात्रो को गद्य तथा पद्य कि विविध रचनाओके मध्यम से मानवीय मूल्य , भाषिक और लेखन क्षमता, सामाजिक संवेदना जागृत करना ।
<b>Class :- SYBA</b>	
<b>Hindi-231</b>	छात्रो को गद्य विधा का विकास ,कालजयी रचना के मध्यम से मूल्य संवर्धन सामाजिक संवेदनशीलता को बढ़ावा देना ।
<b>Hindi-232</b>	छात्रो को काव्यशास्त्र का सामान्य परिचय ,विविध विधाओ से परिचय एवं अलंकारो से परिचय कराना ।
<b>Hindi-233</b>	छात्रो को उपन्यास के माध्यम से समय का महत्व एवं सामाजिक उत्तरदायित्व से परिचित कराना।
<b>Hindi-234</b>	हिंदी भाषा के भाषिक स्वरूप ,संप्रेषण के विविध रूपो से छात्रो को अवगत कराना।
<b>Hindi-235</b>	छात्रो को अभिव्यक्ति के विविध क्षेत्र लेखन कौशल ,मानवीय मूल्य संवर्धन एवं सामाजिक संवेदनशीलता को बढ़ावा देना।
<b>Class :- TYBA</b>	
<b>Hindi-A-351</b>	यात्रा साहित्य विधा के विकास ,प्रमुख साहित्यकार तथा यात्रा वर्णन ,साहित्य लेखन की कला से परिचय कराना।
<b>Hindi-352</b>	छात्रो को भाषा के विविध रूप ,बोलिया ,भाषा की व्युत्पत्ति के सिद्धांत , साहित्यकरो का परिचय एवं विविध संस्थाओ का परिचय कराना ।
<b>Hindi-353</b>	हिंदी साहित्य का काल विभाजन ,नामकरण ,आदिकाल ,भाक्तीकाल एवं रीतिकाल की प्रमुख रचना तथा रचानाकारो से परिचय कराना ।
<b>Hindi-354</b>	छात्रो को हिंदी भाषा की व्याकरणिक संरचना ,शब्द संसाधन ,संक्षेपण , पल्लवन ,वकृत्व कला ,वादविवाद ,कला कौशल से परिचित कराना ।
<b>Hindi-355</b>	छात्रो को संपादन कला ,संपादक की योग्यता और लेखन तत्व से परिचित कराना ।
<b>Hindi-356</b>	हिंदी की राष्ट्रीय काव्यधारा के प्रमुख कवि ,राष्ट्र के प्रति अस्मिता ,स्वाभिमान तथा गौरव भाव को जागृत कराना ।

UG – B.A. (History)

<b>Class: F. Y. B. A.</b>	
<b>History of Indian Freedom Movement</b>	CO1: Make a familiar the various sources of Economic History of modern India.
	CO2: Examine the Economic policies during mid-18 <sup>th</sup> centuries
	CO3: Analyze the impact on Indian Economy and society.
	CO4: Evaluate the responses of Indians and growth of Nationalism in Colonial India.
<b>Class: S. Y. B. A.</b>	
<b>DSC - HIS - 231 History of the Marathas (A.D.1605-1750 A.D.)</b>	CO1: Student will develop the ability to analyses sources for Maratha History.
	CO2: Student will learn significance of regional history and political foundation of the region.
	CO3: It will enhance their perception of 17th century Maharashtra and India in context of Maratha history.
	CO4: Appreciate the skills of leadership and the administrative system of the Marathas.
<b>DSE-HIS-232 History of United States of America (A.D.1776 - A.D. 1945)</b>	CO1: Student understands the importance of America (USA) in the world history.
	CO2: Student studies the foreign policy of America (USA).
	CO3: Student understands the Role of America (USA) in world politics.
	CO4: Student evaluate the progressive era of America (USA) and its important the world.
	CO5: Student study and the Role of America between two world wars.
	CO6: Human Rights Movement in America (USA).
<b>DSE-HIS-233 History of Ancient India (B.C 3000 to B.C 600)</b>	CO1: Students of history will acquire knowledge regarding the primitive life and cultural status of the people of ancient India. 2They can gather knowledge about the society, culture, religion and political history of ancient India as well. 3They will learn about the origin of the Indian empire, trade and urbanizations of ancient civilization, like Harappa civilization, Vedic civilizations, later Vedic civilizations etc.
	CO2: Student Know Various Sources to study of ancient India and Harappa civilization
	CO3: Understand the Philosophy of Jainism and Buddhism. 3) Comprehended the history of vaidic period
<b>SEC-HIS-234</b>	CO1: Students understand about the role of Archives in the

<b>Research Methodology in History</b>	preservation of Heritage.
	CO2: Students understand the importance of Archives in study of History.
	CO3: To create awareness to conserve the historical records in their local areas.
	CO4: Interest was created among student to pursue career in the field of Archives.
<b>DSC - HIS - 241 History of the Marathas (A.D.1605 - A.D 1750 )</b>	CO1: Students will be able to analyze the Marathas policy of expansionism and its consequences.
	CO2: They will understand the role played by the Marathas in the 18th century India.
	CO3: They will be acquainted with the art of diplomacy in the Deccan region.
	CO4: It will help to enrich the knowledge of the administrative skills and profundity of diplomacy
<b>DSE - HIS - 242 History of United States of America (A.D. 1776 - A.D.1945)</b>	CO1: Student understands the importance of America (USA) in the world history.
	CO2: Student studies the foreign policy of America (USA).
	CO3: Student understands the Role of America (USA) in world politics.
	CO4: Student evaluate the progressive era of America (USA) and its important the world.
	CO5: Student study and the Role of America between two world wars.
	CO6: Human Rights Movement in America (USA).
<b>DSE-HIS- 243 History of Ancient India (B.C 600 - A.D 1206)</b>	CO1: Learn innovative study techniques in the study of History of Ancient India to make it value based, conceptual and thought Provocative.
	CO2: Understand the importance of past in Exploration of present context.
	CO3: Understand the Socio –economic, cultural and political and architecture background of Post Mauryan to the Age of the Rashtrakuta
	CO4: Acquire knowledge of various Empire after the age of Mouryas.
<b>Class: T.Y.B.A.</b>	
<b>DSC 1 E HIS 351 History of Modern</b>	CO1: Understand the concept and meaning of the` History of Modern Europe`.

<b>Europe (AD 1781 - AD 1913)</b>	CO2: Explain important information of the `History of modern Europe`.
	CO3: introduce various perspectives of the History of modern Europe.
	CO4: Cover an Important topic of the `History of Modern Europe` 1781 to 1945.
	CO5: To inculcate Liberty, Equality and fraternity among the students.
<b>DSE 2 C HIS 353 History of India (AD 1206 – AD 1526)</b>	CO1: Students learn about the various polity and sultanate period's (1206-1526) in India.
	CO2: Students understand and review about the social, Economic and cultural information during the Sultanate period in Medieval India.
	CO3: Students understand and review detail about the agricultural, trade and commerce position of women and religious condition in sultanate period.
<b>SEC 3 HIS 354 Travel and Tourism in India</b>	CO1: Understand the concept and types of Tourism.
	CO2: Acquire adequate knowledge about various aspects in Tourism planning.
	CO3: Explain important information of some Historical tourist places.
	CO4: Develop career in Tourism industry.
<b>DSC 1 F HIS 361 History of Modern Europe (AD 1914 - AD 1945)</b>	CO1: Understand the concept and meaning of the ` History of Modern Europe`.
	CO2: Explain important information of the `History of modern Europe`.
	CO3: To introduce various perspectives of the History of modern Europe.
	CO4: Cover an Important topic of the `History of Modern Europe` 1781 to 1945
	CO5: To inculcate Liberty, Equality and fraternity among the students.
<b>DSE 2 D HIS 363 History of India (AD 1526 – AD 1707)</b>	CO1: Students learn about the various polity and sultanate period's (1206-1526) in India.
	CO2: Students understand and review about the social, Economic and cultural information during the Sultanate period in Medieval India.
	CO3: Students understand and review detail about the agricultural, trade and commerce position of women and religious condition in



	sultanate period.
<b>SEC 4 HIS 364 An Introduction to Museums in India</b>	CO1: Acquire adequate knowledge about Historical Importance of Museums as Sources of History.
	CO2: Understand Management of Museums.
	CO3: Acquire important information of some Famous Museums in India

**पदवी व पदव्युत्तर स्तर मराठी (BA and MA)**

<b>Class :- FYBA</b>	
<b>Mar-(G-1)</b>	मराठी वाङ्मयातील आधुनिक गद्य पद्य साहित्यप्रकार व संकल्पना समजून घेतली. आधुनिक काळातील गद्य-पद्य स्वरूप विचारात घेऊन साहित्यिकांच्या परिचय झाला.
<b>Class :- SYBA</b>	
<b>Mar-(G-2)</b>	मराठीतील वैचारिक गद्य लेखनाचा परिचय करून घेतला. महात्मा ज्योतीराव फुले जीवन, कार्य व वैचारिक जडणघडण लक्षात घेतली. शेतकऱ्यांच्या असूड मधील वैचारिक आशयाची स्वरूप वैशिष्ट्ये लक्षात घेतली.
<b>Mar-(S-1)</b>	कादंबरी या आधुनिक वाङ्मय प्रकाराचे स्वरूप वैशिष्ट्ये लक्षात घेतली. अवकाळी पावसाच्या दरम्यानची गोष्ट या कादंबरीचे वाङ्मयीन मूल्य लक्षात आले. चरित्र व आत्मचरित्र लेखनाचे सामाजिक व वाङ्मयीन दृष्ट्या महत्त्व लक्षात घेतले. मराठीतील चरित्र व आत्मचरित्र लेखनाच्या परंपरेच्या परिचय झाला.
<b>Mar-(S-2)</b>	भारतीय आणि पाश्चात्य साहित्य विचारांचा परिचय करून झाला. साहित्याच्या भाषेचे स्वरूप लक्षात घेतले.
<b>Mar-(SEC)</b>	लेखनकौशल्य मुद्रित शोधनाचे स्वरूप व आवश्यकता लक्षात आली. सर्जनशील लेखनाचे स्वरूप व त्याची वैशिष्ट्ये लक्षात घेतली.
<b>Mar-(MIL)</b>	माध्यमांसाठी लेखन व संवादाचे स्वरूप लक्षात घेतले. वृत्तपत्र या मुद्रित माध्यमाचे कार्य लक्षात आले. नभोवाणी या श्राव्य माध्यमाचा परिचय झाला.
<b>Class :- TYBA</b>	
<b>Mar-(G-3)</b>	ललित गद्य या वाङ्मय प्रकाराची संकल्पना त्याचे स्वरूप व त्याची वैशिष्ट्ये लक्षात घेतली. ललित गद्य लेखनाची वाटचाल लक्षात घेतली. एकाकिका लेखनाचे स्वरूप, वाटचाल समजली.
<b>Mar-(S-3)</b>	मध्ययुगीन मराठी वाङ्मयाचा इतिहास, निर्मिती प्रेरणा समजल्या. महानुभाव व शाहिरी काव्याचे स्वरूप लक्षात आले.
<b>Mar-(S-4)</b>	भाषा स्वरूप, कार्य, लक्षणे, वैशिष्ट्ये समजून घेतल्या. भाषाअभ्यासाच्या विविध परंपरा, भाषाकुल संकल्पना समजून घेतल्या.
<b>Mar-(SEC)</b>	लेखनकौशल्य- निबंध लेखन व ग्रंथ परीक्षण लेखनाचे स्वरूप, महत्त्व व आवश्यकता लक्षात आली.
<b>Mar-(MIL)</b>	दूर-श्राव्य माध्यमांसाठीचे लेखन व संवादाचे स्वरूप समजून घेतले. दूरचित्रवाणीचे स्वरूप लक्षात आले. आधुनिक समाजमाध्यमांचा परिचय करून घेतला.
<b>Mar-Generic</b>	लोकरंगभूमी संकल्पना, स्वरूप समजून घेतली. लोकरंगभूमीची पारंपरिक रूपे कीर्तन, भारुड, खानदेशी वही या लोकरंगभूमीच्या प्रादेशिक प्रकारांची स्वरूप वैशिष्ट्ये समजली.
<b>Class-FYBsc</b>	
<b>Marathi</b>	ललित गद्य लेखनाचा परिचय झाला. 'चांदण्यात भिजायचे राहून जाऊ नये म्हणून..' मधील ललित गद्य आशयाचे आकलन झाले.
<b>Class- SYBsc</b>	
<b>Marathi</b>	विज्ञानकथा या कथा प्रकाराचा परिचय झाला. कथेतील विविध प्रकारांचे आकलन झाले. कथांतून वैज्ञानिक दृष्टिकोन विकसित झाला.
<b>Class- M.A.-I</b>	
<b>Mar-1</b>	मध्ययुगीन समाज-संस्कृतीचे स्वरूप आणि वाङ्मय निर्मिती व विशिष्ट कालखंडाचा अनुबंध लक्षात आला.

<b>Mar-II</b>	साहित्याविषयी चिकित्सक दृष्टी विकसित होऊन साहित्याचे वाङ्मयीन मूल्यमापन व समीक्षा दृष्टी विकसित झाली.
<b>Mar-III</b>	भाषेचे स्वरूप, भाषा व्यवहार, आधुनिक भाषाविज्ञान संकल्पना लक्षात घेऊन भाषेची आंतरिक रचना लक्षात आली.
<b>Mar-IV</b>	ग्रामीण साहित्य निर्मितीच्या प्रेरणा लक्षात आल्या.
<b>Mar-V</b>	दलित साहित्य निर्मिती मागील पार्श्वभूमी व विचार लक्षात आला.
<b>Mar-VI</b>	मराठी भाषा व कौशल्य विकास लेखनकौशल्य, लेखनाचे स्वरूप, महत्त्व व आवश्यकता लक्षात आली.
<b>Class- M.A.-II</b>	
<b>Mar-1</b>	मराठी साहित्यातील निवडक चळवळी व त्यांचे स्वरूप व त्यांच्या निर्मितीमागील पार्श्वभूमी लक्षात आली.
<b>Mar-II</b>	भाषाभ्यास पद्धती, आधुनिक भाषाविज्ञानातील मूलभूत संकल्पना व भाषाअभ्यासक्षेत्रे लक्षात आली.
<b>Mar-III</b>	चरित्र व आत्मचरित्र लेखनाचे सामाजिक व वाङ्मयीन दृष्ट्या महत्त्व लक्षात घेतले. मराठीतील चरित्र व आत्मचरित्र लेखनाच्या परंपरेच्या परिचय झाला.
<b>Mar-IV</b>	लोकसाहित्याची संकल्पना व स्वरूप समजून घेतली. लोकरंगभूमीची पारंपरिक रूपे कीर्तन, भारुड, खानदेशी वही या लोकरंगभूमीच्या प्रादेशिक प्रकारांची स्वरूप वैशिष्ट्ये समजली.
<b>Mar- VI</b>	Human Rights- To make students aware about human rights and human values.

UG – B.A. (Political Science)

<b>Class: F. Y. B. A.</b>	
<b>DSC 1 A POL - G - 101 - A –Introduction to Indian Constitution</b>	CO1: High Lights of the Paper This paper deals with major fundamental concepts and dimension in Indian Constitution and political system. It highlights various aspects of political system.
	CO2: This paper would be assets of any kind of educational institutions as well as beneficial to all types of competitive exams.
<b>Class: S. Y. B. A.</b>	
<b>Pol – (DSC 1 C) Introduction to Administration of Maharashtra</b>	CO1: To Develop the right concepts about Public Administration. Theory building properly Identify what real problems are and why the research is needed in development Administration.
	CO2: Illustrate types of concepts related to Political Science & Pub-Administration research After completing this course student will be able to Looking for the UPSC/MPSC Competitive exam.
<b>Class: S. Y. B. A.</b>	
<b>DSC-1 E Indian Political Thinker Part I&amp;II</b>	CO1: Tracing the evolution of Indian political thought from ancient India to modern India. - Critical evaluation of social, economic and political variables for a proper understanding of the plurality of Indian.
	CO2: This paper aims to provide students a sound understanding of political science, including various approaches, ideological perspectives and relationship with other Social Sciences.
	CO3: Acknowledging the importance of state in the contemporary political discourses, the students will be able to comprehend the function of the state in society and how it rules and regulates the power structure by learning various theories of origin and functioning of the state.
	CO4: Learners would be able to describe and comprehend various key concepts related to the discipline and develop their own understanding of politics. They will understand what power is and how it functions in society and politics.
	CO5: They will be able to explain various theories of Justice. They will learn to comprehend and explain various theories and contemporary debates in democracy. Also, they will come to know how liberal.

**Class: B. A. (Psychology)**

<b>Psy101-Foundations of Psychology</b>	CO1: To impart knowledge and understanding of the basic concepts, theories of psychology. CO2: Explain the different theoretical concepts to understand human behavior.
<b>Psy201- Introduction To Social Psychology</b>	CO1: Clarify similarities and differences between social psychology, personality psychology, and sociology. Outline the history of social psychology. CO2: Identify ways in which social psychologists can connect with one another.
<b>PSY-231 Human Developmental Psychology- Early Life</b>	CO1: Describe the basic periods of human development CO2: Describe the basic periods of human development CO3: Explain the basic concepts, issues related to the field of Developmental Psychology as well as the basic theories of lifespan development. CO4: explain how different aspects of human development as progress through different stages of life
<b>PSY-241 Human Developmental Psychology- Later Life</b>	CO1: Describe the basic periods of human development CO2: Explain the basic concepts, issues related to the field of Developmental Psychology as well as the basic theories of lifespan development. CO3: explain how different aspects of human development as progress through different stages of life
<b>PSY-351(A) Modern Applied Psychology</b>	CO1: Apply the knowledge of Psychological principles and theories in their respective area of specialization in Applied Psychology.
<b>PSY-361(A) Applied Psychology &amp; Modern Life</b>	CO1: Understand how psychological theories and principles relate to everyday life and applied Knowledge of Behaviour modification and life skill training. CO2: Students are exposed to basic scientific research methods, techniques, counseling skills, ethics and evaluate skills of Psychology. CO3: Apply psychological principles to personal and social issues and problems.
<b>PSY-351 Management of Interpersonal Relations</b>	CO1: Understand how to maintain healthy interpersonal relations in the organization through transactional analysis. CO2: Understand how to maintain healthy interpersonal relations in the organization through transactional analysis, appreciate the concept of life positions, which is an important part of TA as a way of understanding individual's behavior in the organization. CO3: Know the importance of Johari window in improving the interpersonal relationships in the organization.
<b>PSY-361 Adjustment in Life Span</b>	CO1: Analyze each situation rationally and take decisions better and faster than others
<b>Psy - 101 Basic Principles in Psychology</b>	CO1: Develop a working knowledge of Psychological contents, areas and applications of psychology. CO2: Develop a base in cognitive psychology with the help of relevant examples of everyday life.

	<p>CO3: Comprehend and analyze situations in real life appropriately and enable others to exercise in the same way.          Appreciate and apply various theories of learning in the practical world.          Identify the importance of experiments in the field of memory and other cognitive aspects and analyze the way it shaped cognitive psychology</p>
<p><b>Psy - 201 Fundamental Concepts of Psychology</b></p>	<p>CO1: Understanding and application of psychological principles, theories and methods of different psychological areas (like learning, memory, etc.) to understand the complexity of human behaviour.          CO2: Knowledge of the fundamental physiological functional mechanism behind the Nervous system in the human body.          CO3: It also correlates to the understanding of historical context of different studies and researches.</p>

UG – BCA

<b>S.Y.BCA</b>	
<b>BCA 301 Mathematics and Statistics for Managers</b>	CO1: Understanding of all terms related to mathematical logic.
	CO2: Ability to know the types of sets, method of representation, operations, and laws related to it.
	CO3: Ability to solve problems related to matrices.
	CO4: Understand the basic concepts of Statistics.
	CO5: Analyze statistical data using measures of central tendency.
	CO6: Performing mathematical and statistical functions using MS-Excel.
<b>BCA 302 Management Information System</b>	CO1: To impart the knowledge of MIS among students
<b>BCA 303 Java Programming</b>	CO1: To apply object oriented programming features and concepts for solving given problem.
	CO2: Develop reusable programs using the concepts of inheritance, polymorphism, interfaces and packages.
	CO3: To develop simple interactive applications.
<b>BCA 304 Linux Operating System</b>	CO1: To get aware of the main components, computer organization interface, and system calls of OS.
	CO2: Ability to apply process management and threading.
	CO3: To Make understand the features of Linux OS
	CO4: To Learn the basic Linux command
<b>BCA 305 Practical on Java</b>	CO1: To understand basics of Java Programming.
	CO2: Implement different applications using Java.
<b>BCA 306 Practical on Linux</b>	CO1: Apply Linux operating system commands.
	CO2: Understand different Linux shell scripts and execute various shell programs.
<b>BCA 307 Practical on Tally ERP</b>	CO1: To practically train students in Accounting using Tally ERP
<b>BCA 401 Introduction to Information System Audit</b>	CO1: To impart the knowledge and importance of Information System and Audit among Students for Quality Management.
<b>BCA 402</b>	CO1: To prepare students in using and managing Relational

<b>RDBMS</b>	databases and its applications
<b>BCA 403 C#.NET</b>	CO1: To impart the knowledge of object oriented programming using C# among student.
<b>BCA 404 Data Structure</b>	CO1: To analyse algorithms and algorithm correctness. CO2: To summarize searching and sorting techniques. CO3: To describe stack, queue and linked list operation. CO4: To have knowledge of tree and graphs concepts.
<b>T.Y.BCA(2017-18)</b>	
<b>BCA 501 Entrepreneurship Development</b>	CO1: Learn about Entrepreneurship Development
<b>BCA 502 Cyber Security</b>	CO1: To impart the knowledge of Cybercrime and cyber security among students.
<b>BCA 503 ASP.NET</b>	CO1: Design Web application / Website using ASP.NET and .NET Framework. CO2: Use ASP.NET controls in web applications CO3: Create event driven ASP.NET web application. CO4: State Management for user and application data. CO5: Create web application to manage data from data base using ADO.NET.
<b>BCA 504 Software Engineering</b>	CO1: To design and develop a software in learned language. CO2: To prepare software requirement specification. CO3: Estimate the size and cost of software product. CO4: Get knowledge of different types of software testing
<b>BCA 505 Practical on ASP.Net</b>	CO1: Use .NET IDE for ASP.NET web application development and form development using standard .NET Controls. CO2: Develop web application handling different events. CO3: Use validation controls for validating page data. CO4: Create and use master page, apply theme and skin for web pages. CO5: Develop web applications using data from database.
<b>BCA 506 Practical on CASE Tool with MS- VISIO and Software Testing</b>	CO1: practically train students in using CASE tools for designing real time system diagrams.



<b>BCA 507</b> <b>Field work on IT Project</b> <b>Assessment</b>	CO1: Students will understand the issues in implemented IT project by assessing it using research methodology.
<b>BCA 601</b> <b>E-Commerce &amp; M-Commerce</b>	CO1: To impart the knowledge of e-Commerce & m - Commerce among students.
<b>BCA 602</b> <b>Cloud Computing</b>	CO1: This course will help the students to get familiar with cloud computing fundamentals, architecture, services, implementation and deployment techniques etc
<b>BCA 603</b> <b>Android Application</b> <b>Development</b>	CO1: to know that how mobile communication works and how to build mobile apps for android operating system. CO2: To understand mobile communication and to develop Android Applications.
<b>BCA 604</b> <b>Server Side Scripting using</b> <b>PHP</b>	CO1: Design Web applications / Website using HTML and PHP. CO2: Use PHP script with functions, Arrays, and Strings in web applications. CO3: Use Forms and Handle Files using PHP Script. CO4: Create web applications using MySQL database.
<b>BCA 605</b> <b>Practical on Android &amp; PHP</b>	CO1: Design web site / web applications using HTM and PHP script CO2: File and directory handling using PHP for web applications. CO3: Create web application using MySQL database.
<b>BCA 606</b> <b>Practical on Employability</b> <b>Skills</b>	CO1: To practically train students in developing required employability skills
<b>BCA 607</b> <b>Project Report and Viva</b>	CO1: Learn to use applications of the theory and practical learned during the course and prepare the project.

UG – B.COM

<b>Class: F. Y. B.Com</b>	
<b>101</b> <b>English for Business</b>	CO1: To introduce communication theory to students.
	CO2: To inculcate various communication skills in English among students.
	CO3: To introduce various soft skills to students.
	CO4: To improve oral and written competency in English of students.
<b>102</b> <b>Hindi</b>	CO1: To introduce various famous entrepreneurs to commerce students.
	CO2: To develop Hindi reading and linguistic comprehension of students
	CO3: To improve professional and entrepreneurial attitude of students through success stories.
	CO4: To Acquaint Students with special challenges of starting new ventures
<b>103</b> <b>Micro Economics</b>	CO1: To introduce Microeconomics
	CO2: To develop Indifference Curve Analysis of Demand
	CO3: To develop Theory of Production
<b>104</b> <b>Financial Accounting and Costing</b>	CO1: To lay a foundation for understanding the Accounting Standards issued by the ICAI.
	CO2: To gain the ability to solve problems relating to settlement of obligations on dissolution of partnership firm and also relating to their business combinations
	CO3: To introduce the concepts used in Cost Accounting, elements of costs and the concept of cost sheet.
<b>105</b> <b>Computing Skills</b>	CO1: To familiarize the Students with basics of Internet.
	CO2: To understand the use of Office application.
	CO3: To know the role of word processor, Spread sheet, presentation in industry.
	CO4: To understand the how of accounting software works.
<b>106</b> <b>Modern office Management</b>	CO1: To understand the concept of office management.
	CO2: To know the secretarial procedure.
	CO3: To acquire operational skills of office management.
	CO4: To develop the interest in methods and procedures of office management.
<b>107</b> <b>Principles &amp; Practices of Banking</b>	CO1: To understand the concept of Banking.
	CO2: To know the Banking procedure.
	CO3: To develop the interest in methods and procedures of Banking.
<b>201</b> <b>English for Business</b>	CO1: To improve oral and written competency in English of students.
	CO2: To introduce communication theory to students.
	CO3: To inculcate various communication skills in English among students.

	CO4: To introduce various soft skills to students.
<b>202 Hindi</b>	CO1: To introduce various famous entrepreneurs to commerce students. CO2: To Acquaint Students with special challenges of starting new ventures CO3: To develop Hindi reading and linguistic comprehension of students. CO4: To improve professional and entrepreneurial attitude of students through success stories.
<b>203 Micro Economics</b>	CO1: To understand Concept of Market CO2: To Study of Market of Perfect Competition CO3: To develop students for MPSC and UPSC Exams
<b>204 Financial Accounting and Costing</b>	CO1: To lay down a theoretical foundation for the recording of financial transactions concerning specialized area related to non-corporate entities and for preparing the related accounts or statements. CO2: To lay a foundation for the preparations of financial statements from incomplete record. CO3: To lay a foundation for understanding the Accounting procedure for Material cost and price methods.
<b>205 Quantitative Techniques</b>	CO1: To develop and employ mathematical models CO2: To develop and employ mathematical , theories
<b>206 Modern Office Management</b>	CO1: To understand the concept of office management. CO2: To know the secretarial procedure. CO3: To acquire operational skills of office management. CO4: To develop the interest in methods and procedures of office management.
<b>207 Principles &amp; Practices of Banking</b>	CO1: To understand the concept of Banking. CO2: To know the Banking procedure. CO3: To develop the interest in methods and procedures of Banking. CO4: To study of Multiple Credit Creation by a Commercial Ban
	Class: S.Y BCOM
<b>301 Macro Economics</b>	CO1: To make students Familiar with the basic concepts of macro Economics CO2: To enable the students to Understand objectives of macro Economics The ones and Policies CO3: To develop students for MPSC and UPSC Exams
<b>302 Business &amp; Tax Laws</b>	CO1: Learn The Law & Legal Principals OF Contract Act 1872. CO2: Draft legal documents including partnership deed & service tax returns. CO3: Understand the basic structure, rules & powers of consumer protection act. CO4: To know the provision regarding strikes and lock outs under industrial

	dispute act.
<b>303 Business Management</b>	CO1: To introduce the concept of management to the students. CO2: To acquaint the student with modern management practices CO3: To develop leadership skills and communication skills. CO4: To familiarize the students with the nature and scope of management.
<b>304 Corporate Accounting and Costing</b>	CO1: To develop an understanding of the rules of measurement and reporting relating to various components of corporate financial transactions. CO2: To introduce the relevant Accounting Standards issued by the Institute of Chartered Accounts of India. CO3: To introduce different methods of Costing. CO4: To lay a foundation for understanding the Labor & Overheads Accounting procedure.
<b>305 Computing Management</b>	CO1: To Understand the Objectives of Computerized Accounting. CO2: To Know the Principles Of Tally Software. CO3: To acquire Computing Skills. CO4: To Study Various features of Tally.
<b>306 Business Entrepreneurship</b>	CO1: To understand the concept of entrepreneurship. CO2: To know the qualities of entrepreneur. CO3: To describe the types of entrepreneur CO4: To identify the new business opportunities.
<b>307 Modern Banking &amp; Financial System</b>	CO1: To acquaint students with the new concepts of Banking CO2: To update the students about new changes in Banking CO3: To know the relevance Banking practices in modern competitive world CO4: To make understandable of Banking operations
<b>401 Macro Economics</b>	CO1: To make students Familiar with the basic concepts of macro-Economic CO2: To enable the students to Understand objectives of macro Economics The ones and Policies CO3: To develop students for MPSC and UPSC Exams
<b>402 Business Tax and Laws</b>	CO1: To understand the basic structure, rules & powers of the Consumer Protection Act. CO2: To know the provision regarding strikes and lock-outs under the Industrial Disputes Act. CO3: To be acquainted with the Environment Protection Act. CO4: To be acquainted with the Goods and Services tax Act.
<b>403 Business Management</b>	CO1: To introduce the concept of management to the students CO2: To acquaint the student with modern management practices. CO3: To develop leadership skills and communication skills. CO4: To familiarize the students with the nature and scope of management.

<b>404</b> <b>Corporate Accounting and Costing</b>	CO1: To provide working knowledge of accounting principles and procedures for recording of transactions related to corporate entities, and for preparing the corporate accounts and statements in accordance with the statutory requirements.
	CO2: To introduce the relevant Accounting Standards issued by the Institute of Chartered Accounts of India
	CO3: To introduce different methods of Costing.
	CO4: To lay a foundation for understanding the Labor & Overheads Accounting procedure.
<b>405</b> <b>Business Communication</b>	CO1: To Understand the Concept Process, Importance and Objectives of Communication
	CO2: To Develop Awareness regarding New Trends in Business Communication
	CO3: To Know the Principles Of Effective Communication.
	CO4: To acquire Communication Skills.
<b>406</b> <b>Business Entrepreneurship</b>	CO1: To understand the concept of entrepreneurship
	CO2: To know the qualities of entrepreneur.
	CO3: To describe the types of entrepreneur.
	CO4: To identify the new business opportunities.
<b>407</b> <b>Modern Banking &amp; Financial System</b>	CO1: To acquaint students with the new concepts of Banking
	CO2: To update the students about new changes in Banking
	CO3: To know the relevance Banking practices in modern competitive world
<b>Class: T.Y. Bcom</b>	
<b>501</b> <b>Indian Economic Scenario</b>	CO1: To acquaint students with new concepts of Economics.
	CO2: To update the students about new changes brought in Indian Economy
	CO3: To make students competent to become success in competitive examination.
	CO4: To know the relevance Economic practices in modern competitive world
<b>502</b> <b>Principles &amp; Practices of Auditing</b>	CO1: To know Introduction of Audit
	CO2: To study of Audit Program& Documentation
	CO3: To study of Vouching, Verification and Valuation
	CO4: To study of Audit Evidence
<b>503</b> <b>Income Tax</b>	CO1: know the various provisions relating to Income and Incomes tax computation
	CO2: understand the basic concepts of the Income Tax Act 1961 and get the elementary knowledge of scheme of taxation in India
	CO3: compute Income and Tax of an Individual assessee under the Act

<b>504</b> <b>Human Resource Management</b>	CO1: To introduce the concept, principles and practices of H.R.M. to the students.
	CO2: To familiarize students with concepts of human resource planning, Job Analysis, Recruitment and selection procedures.
<b>505</b> <b>Modern Management Technique- I</b>	CO1: To know the Modern Management Technique
	CO2: To Know Concept of E- Customer relationship management
<b>506</b> <b>Advanced Accounting–I</b>	CO1: To impart the students, knowledge about accounting treatment of functional aspects corporate and Non-corporate undertakings.
	CO2: To appraise the students about need and importance of Accounting Standards concerning the Functional aspects accounting
	CO3: To appraise the students about the application of accounting knowledge in preparation of financial
	CO4: Statements of Farm Activities, and Corporate Sector units.
<b>507</b> <b>Advanced Accounting–II</b>	CO1: To impart the students, knowledge about accounting treatment of corporate undertakings restructuring.
	CO2: To apprise the students about the application of accounting knowledge in preparation of financial statements of Bank Accounts.
	CO3: To appraise the students about application of the AS concerning the aspects in accounting.
	CO4: To appraise the students about the application of accounting knowledge in reading and interpreting the financial statements of corporate entities.
<b>601</b> <b>Indian Economic Scenario</b>	CO1: To acquaint students with new concepts of Economics.
	CO2: To update the students about new changes brought in Indian Economy
	CO3: To make students competent to become success in competitive examination.
	CO4: To know the relevance Economic practices in modern competitive world
<b>602</b> <b>Principles &amp; Practices of Auditing</b>	CO1: To know Introduction of Audit
	CO2: To study of Audit Program& Documentation
	CO3: To study of Vouching, Verification and Valuation
	CO4: To study of Audit Evidence
<b>603</b> <b>Soft Skills Development</b>	CO1: To equip students with the necessary soft skills to enhance their competitive edge in the job market
	CO2: To imbibe in students positive attitude towards life and work
	CO3: To help students excel in their individual and professional lives using

	the soft skills
<b>604</b> <b>Human Resource Management</b>	CO1: To introduce the concept Training and Management Development of H.R.M. to the students.
	CO2: To provide recent trends in Human Resource Management.
	CO3: To develop the total personality of students as future Human Resource of India.
	CO4: To study the various dimensions of Human Resource Management
<b>605</b> <b>Modern Management Technique- II</b>	CO1: To Study Modern Management Technique Skills & Knowledge
	CO2: To know Modern Management Techniques in Functional Area
<b>606</b> <b>Advanced Accounting-I</b>	CO1: To impart the students, knowledge about accounting treatment of functional aspects Corporate and Non-corporate undertakings.
	CO2: To appraise the students about need and importance of Accounting Standards concerning the Functional aspects accounting
	CO3: To appraise the students about the application of accounting knowledge in preparation of financial
	CO4: Statements of Farm Activities, and Corporate Sector units.
<b>607</b> <b>Advanced Accounting-II</b>	CO1: To Impart the students, knowledge about accounting treatment of corporate undertakings restructuring.
	CO2: To apprise the students about the application of accounting knowledge in preparation of financial statements of Bank Accounts.
	CO3: To appraise the students about the application of accounting knowledge in reading and interpreting the financial statements of corporate entities.

PG – M.COM

<b>101</b> <b>Economics Of Industries-I</b>	CO1: To Obtain an understanding of various types pricing methods and procedures
	CO2: To Understand the preparation of the profile of a project.
	CO3: To appraise the students about application of the AS concerning the aspects in accounting.
	CO4: To Obtain a theoretical understanding of Price Wars and Non-price competition, Industrial finance and productivity
<b>102</b> <b>Strategic Management</b>	CO1: To know and understand main concepts & level of Strategic Management.
	CO2: To know the modern techniques concepts of strategic control and evaluation.
	CO3: To understand co-operate level strategies in the competitive situation.
	CO4: To understand co-operate level strategies in the competitive situation and productivity
<b>103</b> <b>Research Methodology</b>	CO1: To study Research Methodology for decision making in business
	CO2: To overview the methods of Data Collection
	CO3: To understand process of research by students for preparation of research report.
<b>104</b> <b>Advanced Accountancy</b>	CO1: Understand elementary knowledge about Accounting Standard
	CO2: Understand different aspects of Value Added Statement and Reporting
	CO3: 3 Understand the advanced aspects of accounting relating to company liquidation, Holding company
	CO4: Understand the method of presenting financial statements by Insurance companies
<b>201</b> <b>Economics Of Industries-Ii</b>	CO1: To study the basic concepts of Industrialization
	CO2: To study the performance and problems of Indian Industry
	CO3: To study the government regulation of firm and industry
	CO4: To study the impact of industrialization on Indian Economy
<b>202</b> <b>Case Studies In Strategic Management</b>	CO1: To understand the different environment of business organization through practical cases
	CO2: To solve the situational problem and understand the importance
	CO3: To observe real life situation through cases
<b>203</b> <b>International Business</b>	CO1: To understand the concept and International Business.
	CO2: To know the International Business Environment.
	CO3: To study the India's International Business.
	CO4: To know the concept of Foreign Collaboration and Joint Venture.



<b>204 Advanced Cost Accountancy</b>	CO1: To understand the nature of cost accounting records maintained by manufacturing companies.
	CO2: To figure out how to reconcile Cost and Financial Accounts.
	CO3: To know the legal requirements regarding maintaining the cost accounting records and audit thereof
	CO4: To enable students to gain knowledge the nature of Cost Information System for presenting the cost data to the management.
<b>301 Management Accounting</b>	CO1: Understand the philosophy and rationale of the financial analysis
	CO2: Understand the techniques of analysis and interpretation of financial statements
	CO3: Develop an appreciation about the utility of techniques of financial analysis for management information and decision making process.
	CO4: Evaluate the implications of cash flow and fund flow on financial position of an industrial organisation.
<b>302 Entrepreneurship Management</b>	CO1: To encourage and inspire the students to become an Entrepreneur
	CO2: To acquaint the students with the challenges to start a new venture
	CO3: To provide theoretical foundation for executing various projects.
	CO4: To highlight the support system for Entrepreneurship Management
<b>303 Organizational Behavior</b>	CO1: To get an overview of organizational behaviour and the challenges and opportunities.
	CO2: To understand the concept of behaviour – individual and Organizational Behaviour.
	CO3: To know about perception, learning, attitude, values and emotions.
	CO4: To gain knowledge of Motivation and Leadership and its various theories
<b>304 Advanced Accountancy</b>	CO1: Understand basic knowledge about Accounting Standard
	CO2: Understand the basics of Price Level Change, like Inflation Accounting, etc
	CO3: Understand the advanced aspects of accounting for Lease
	CO4: Understand the method of presenting Financial Statement of Credit Cooperative Societies
<b>401 Management Accounting</b>	CO1: Understand the concept and techniques of financial control used in management accounting
	CO2: Imbibe knowledge about the control techniques namely budgetary control and standard costing.
	CO3: Develop the skill to analyze the cost-variance for effective cost control.
	CO4: Familiarize with the concept, role, and utility of marginal costing, and its implications and utility for

	managerial decision making process
<b>402 Modern Retail Management</b>	CO1: To understand dynamics of modern organized retail trade
	CO2: To overview Retail Development in India and Modern Retail Format
	CO3: To understand the Merchandise Management and Retail Franchising
	CO4: To know the Application of Information Technology in Retailing
<b>403 Information Systems For Business</b>	CO1: Develop conceptual understanding about latest developments in the field of Information Technology and the impact of I.T. in Managing business.
	CO2: Learn to use Information Technology to gain competitive advantage in business
	CO3: Develop students as Cyber Security experts , ERP domain experts and Data Analysts
	CO1: Develop conceptual understanding about latest developments in the field of Information Technology and the impact of I.T. in Managing a Business.
<b>404 Advanced Accountancy</b>	CO1: Know audit skills required for audit of Banks and Co-operative Societies
	CO2: Understand the legal framework governing the audit of various forms of business entities and non-business entities
	CO3: Understand the proper way of making examination of the financial statements of various business entities, and form opinion thereon
	CO4: Understand the way of auditing of different units of service sector

**UG – BMS (e-Com)**

**Class: - FYBMS (e-Com) SEM-I (2017-18)**

<b>E 1.1 Principles of Management</b>	CO1: To understand fundamental concepts Management.
	CO2: To understand the basics of Management.
	CO3: To understand management ethics
<b>E 1.2–Professional Communication I</b>	CO1: To develop his verbal and nonverbal communication ability
	CO2: To communicate with people effectively and confidently.
	CO3: To draft effective business correspondence documents.
	CO4: To make and present well designed and informative presentations
<b>E 1.3 Fundamentals of Accounting</b>	CO1: Acquire the knowledge of fundamentals of Computer and Operating System.
	CO2: Develop problem solving skill through algorithms and flowcharts.
	CO3: Understand the basics of computer networking and internet.
<b>E 1.4 Fundamentals of Computer &amp; Internet</b>	CO1: Acquire the knowledge of fundamentals of Computer and Operating System.
	CO2: Develop problem solving skill through algorithms and flowcharts.
	CO3: Understand the basics of computer networking and internet.
<b>E 1.5 C-Programming</b>	CO1: Acquainted with elements, Tags and basic structure of HTML files.
	CO2: Up skills the knowledge of basic and advanced web designing.
	CO3: Students were implement effective use of List and Tables.
	CO4: Students were implement effective web page navigation.
	CO5: Students were capable to design web page layout
<b>E 1.6 Practical on C Programming</b>	CO1: Students understand the input output functions.
	CO2: Students can understand the use of various operator.
	CO3: Students can understand the use of control statements.
	CO4: Students can design the various expressions in C
	CO5: Students can understand the array and its type.
<b>E 1.7 Practical on Office Automation</b>	CO1: Students can able to understand the installation of operating system.
	CO2: Students can understand basic DOS command, and different browser.

	CO3: Student understand different platforms, Internet, mails, tables
	CO4: Students can learn text formatting and table formatting.
	CO5: Students capable to design power point presentation, tables, shapes, smart arts and charts

**Class:- FYBMS(e-Com) SEM-II**

<b>E 2.1 Introduction to Organization Behavior</b>	CO1: To understand the basics of Organization
	CO2: To understand Interpersonal Relationship among the organization units
<b>E2.2 Professional Communication II</b>	CO1: To communicate with people effectively and confidently.
	CO2: To draft effective business correspondence documents.
	CO3: To make and present well designed and informative presentations
<b>E 2.3 Financial Accounting &amp; Costing</b>	CO1: Acquire the knowledge of fundamentals of Computer and Operating System.
	CO2: Develop problem solving skill through algorithms and flowcharts.
	CO3: Understand the basics of computer networking and internet.
	CO4: Understand the basics of Costing.
<b>E 2.4 Elements of E-Commerce</b>	CO1: To impart the knowledge of e-Commerce among students.
	CO2: To impart the knowledge of m - Commerce among students.
<b>E 2.5 Programming in C++</b>	CO1: Acquainted with elements, Tags and basic structure of HTML files.
	CO2: Up skills the knowledge of basic and advanced web designing.
	CO3: Students were implement effective use of List and Tables.
	CO4: Students were implement effective web page navigation.
	CO5: Students were capable to design web page layout
<b>E 2.6 Practical on C++ programming</b>	CO1: Solve real time problems and isolate and fix common errors in C++ programs
	CO2: Understand the object-oriented approach for the program development and make use of the OOP concepts (data abstraction, encapsulation, polymorphism, overloading, and inheritance) of C++ appropriately in problem solving.

<b>E 2.7 Practical on Tally ERP</b>	CO1: To practically train students in Accounting using Tally ERP
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**SYBMS(e-Com) SEM-III**

<b>E 3.1 Mathematics &amp; Statistics for Managers</b>	CO1: Understanding of all terms related to mathematical logic.
	CO2: Ability to know the types of sets, method of representation, operations, and laws related to it.
	CO3: Ability to solve problems related to matrices.
	CO4: Understand the basic concepts of Statistics.
	CO5: Analyze statistical data using measures of central tendency.
<b>E 3.2 Business Economics</b>	CO1: To understand Nature and Scope of Business Economic.
	CO2: To understand Production Cost and Revenue concepts
<b>E3.3 Business Ethics &amp; Professional Values</b>	CO1: To understand Business Ethics
	CO2: To understand Organizational Ethics
<b>E 3.4 Web Designing Using HTML and CSS</b>	CO1: Acquainted with elements, Tags and basic structure of HTML files.
	CO2: Up skills the knowledge of basic and advanced web designing.
	CO3: Students were implement effective use of List and Tables.
	CO4: Students were implement effective web page navigation.
	CO5: Students were capable to design web page layout
	CO6: Students were understood and implement use of style sheet.
<b>E 3.5 Java Programming</b>	CO1: To apply object oriented programming features and concepts for solving givenproblem.
	CO2: Develop reusable programs using the concepts of inheritance, polymorphism, interfaces and packages.
	CO3: To develop simple interactive applications.
	CO1: To apply object oriented programming features and concepts for solving givenproblem.
	CO2: Develop reusable programs using the concepts of inheritance, polymorphism, interfaces and packages.
<b>E 3.6 Practical on Java Programming</b>	CO1: To understand basics of Java Programming.
	CO2: Implement different applications using Java.

<b>E 3.7 Practical on HTML &amp; CSS</b>	CO1: Students were able to design consistent look and feel web pages.
	CO2: Students were capable to use multimedia in web page.
	CO3: Students were implement effective web page navigation.
	CO4: Students were capable to design web page layout
	CO5: Students were implement use of style sheet.

**Class:- SYBMS(e-Com) SEM-IV**

<b>E 4.1 Management Information System</b>	CO1: To impart the knowledge of MIS among students
	CO2: To understand hierarchy and structure of Management
<b>E 4.2 Research Methodology</b>	CO1: To impart the knowledge of Basic Concepts of Research
	CO2: To impart the knowledge of Methods of data collection, Tools of Data Analysis
	CO3: To impart the knowledge of Testing of Hypothesis
<b>E 4.3 Cyber Security and IT Act</b>	CO1: To impart the knowledge of Cybercrime and cyber security among students.
	CO2: To impart the knowledge of Cybercrime laws among students.
<b>E 4.4 RDBMS</b>	CO1: To prepare students in using and managing Relational databases and its applications
<b>E 4.5 Programming in C#.NET</b>	CO1: To impart the knowledge of object oriented programming using C# among student.
<b>E 4.6 Practical on C#.Net</b>	CO1: To practically train students in programming in C#.NET
<b>E 4.7 Practical on RDBMS</b>	CO1: To learn SQL Queries

**Class:- TYBMS(e-Com) SEM-V**

<b>E 5.1 Entrepreneurship Development</b>	CO1: Learn about Entrepreneurship Development
<b>E 5.2 Marketing Management</b>	CO1: To understand basics of marketing
	CO2: To understand basics of Marketing Environment and Marketing Research, Segmentation
	CO3: To understand basics of Digital Marketing
<b>E 5.3 Introduction to scripting languages</b>	CO1: Design Web applications / Website using HTML and PHP.
	CO2: Use PHP script with functions, Arrays, and Strings in web applications.
	CO3: Use Forms and Handle Files using PHP Script.
<b>E 5.4 System Analysis And Design</b>	CO1: To design and develop software in learned language.
	CO2: To prepare software requirement specification.
	CO3: Estimate the size and cost of software product.
	CO4: Get knowledge of different types of software testing
<b>E 5.5 Web Programming with ASP.NET</b>	CO1: Use .NET IDE for ASP.NET web application development and form development using standard .NET Controls.
	CO2: Develop web application handling different events.
	CO3: Use validation controls for validating page data.
	CO4: Create and use master page, apply theme and skin for web pages.
	CO5: Develop web applications using data from database.
<b>E 5.6 Practical on ASP.NET</b>	CO1: Design Web application / Website using ASP.NET and .NET Framework.
	CO2: Use ASP.NET controls in web applications
	CO3: Create event driven ASP.NET web application.
	CO4: State Management for user and application data.

	CO5: Create web application to manage data from data base using ADO.NET.
<b>E 5.7 Practical on Scripting Language</b>	CO1: Design web site / web applications using HTM and PHP script
	CO2: File and directory handling using PHP for web applications.
	CO3: Create web application using MySQL database.

**Class:- TYBMS(e-Com) SEM-V**

<b>E 6.1 Introduction to Banking and Insurance</b>	CO1: To understand Introduction to Banking, Nature of Insurance and Bank Management
	CO1: To understand Co-operative Banking
<b>E 6.2 Human Resource Management</b>	CO1: To understand Introduction to Human Resource Management and Recruitment, Selection, Placement & Induction
	CO1: To understand Performance Appraisal, Promotion, Transfer, Separation and Demotion
<b>E 6.3 Introduction to Information System Audit</b>	CO1: To impart the knowledge and importance of Information System and Audit among Students for Quality Management.
<b>E 6.4 Enterprise Resource Planning</b>	CO1: To train students in basics of ERP
	CO2: To understand needs of Enterprise
<b>E 6.5 - PHP Scripting and MySQL</b>	CO1: Design Web applications / Website using HTML and PHP.
	CO2: Use PHP script with functions, Arrays, and Strings in web applications.
	CO3: Use Forms and Handle Files using PHP Script.
	CO4: Create web applications using MySQL database.
<b>E 6.6 – Practical on PHP and MySQL</b>	CO1: Design web site / web applications using HTM and PHP script
	CO2: File and directory handling using PHP for web applications.
	CO3: Create web application using MySQL database.
<b>E 6.7 – Project Work</b>	CO1: Learn to use applications of the theory and practical learned during the course and prepare the project



UG – B.Sc. (Mathematics)

Class: F.Y. B.Sc.

<b>MTH 101: Matrix Algebra</b>	CO1: understand concepts on matrix operations and rank of the matrix.
	CO2: understand use of matrix for solving the system of linear equations.
	CO3: understand basic knowledge of the Eigen values and Eigen vectors.
	CO4: apply Cayley-Hamilton theorem to find the inverse of the matrix.
	CO5: know the matrix transformation and its applications in rotation, reflection, translation.
<b>MTH 102: Calculus</b>	CO1: understand basic concepts on limits and continuity.
	CO2: understand use of differentiations in various theorems.
	CO3: know the Mean value theorems and its applications.
	CO4: make the applications of Taylor's, Maclaurin's theorem.
	CO5: know the applications of calculus
<b>MTH 103(B): DISCRETE MATHEMATICS</b>	CO1: Students are able to understand the concepts of relations, coding and decoding mathematical logic, Boolean algebra.
<b>MTH 201: Ordinary Differential Equations</b>	CO1: understand basic concepts in differential equations.
	CO2: understand method of solving differential equations
	CO3: understand use of differential equations in various fields
<b>MTH 202: Theory of Equations</b>	CO1: Students can find out roots of any equation of degree less than or equal to five. Theory of equations is highly useful in various subjects like algebra, linear algebra, calculus, ordinary and partial differential equations etc.
<b>MTH 203(A): Laplace Transform</b>	CO1: This course provides fundamental knowledge of Laplace transform and their applications in solving differential Equations.

UG –FY B. Sc. (Microbiology)

**FY B. Sc. (2018-19)**

<b>MB 101: Microbial Diversity</b>	CO1: Know general bacteriology and microbial aspects pertinent to bacteria, fungi and algae
	CO2: Understand the structural similarities and differences among various physiological groups of bacteria/archaea
	CO3: How the subject emerge as new branch of biology
	CO4: Learn ancient view about life continuity and concept of experiment
<b>MB 102: Microscopy and Basic Bacteriology</b>	CO1: Learn aseptic techniques and be able to perform routine culture handling tasks safely and effectively
	CO2: Demonstrate theory in microscopy and their handling techniques and staining procedures
	CO3: Comprehend the various methods for identification of unknown microorganisms
<b>MB 201: Basic Biochemistry and Cytology</b>	CO1: Understand the basic microbial structure and function and study the
	CO2: comparative characteristics of prokaryotes and eukaryotes and also Understand the structural architecture and differences among bacteria/archaea
	CO3: Know basic knowledge pertinent to cell biomolecules
<b>MB 202: Microbial Techniques</b>	CO1: Know general bacteriology and introduce microbial techniques for isolation of pure cultures of bacteria, fungi, algae and virus
	CO2: Demonstrate theory and practical skills in handling microbial culture
<b>UG –S.Y. B. Sc (2018-19)</b>	
<b>MB - 231: Fundamental biochemistry</b>	CO1: Understand the basic of microbial enzymology, nature of enzyme, their nomenclature, working mechanism, classification based on their action etc.
	CO2: Learn about nutrient uptake by microbes, various mechanism used to transport ions and molecules in microbial cells.
<b>MB - 232: Microscopy and Microbial Ecology</b>	CO1: Aware about concept of metabolism and its basic types.
	CO2: Cognizant about various pathways used by microbes to break down molecule and
	CO3: Generate ATP as a source of energy.

	CO4: Aware about the regulations and energetics of various pathways.
	CO5: Understand aerobic, anaerobic respiration and fermentation
<b>MB-241: Genetics and Immunology</b>	CO1: Concept of allele, gene, genome, genotype, phenotype, recon, muton, cistron, intron and exon
	CO2: Concept and significance of mutation
	CO3: Methods to study mutation
<b>MB- 242: Basic Microbial Biotechnology</b>	CO1: Characteristics of industrial strain
	CO2: Screening of industrially important microbes: Primary and Secondary
<b>UG –T.Y. B. Sc (2018-19) Semester – V</b>	
<b>MB 351 Microbial Genetics</b>	CO1: To introduce the concepts in Microbial Genetics.
	CO2: To acquaint with molecular techniques.
	CO3: To update applied knowledge in the field of microbial genetics.
<b>MB352 Fermentation Technology</b>	CO1: To introduce with concepts related to bioreactors and their types.
	CO2: To acquaint with concepts strain improvement and scale up.
	CO3: To understands the processes involved in fermentation.
	CO4: To introduce with concepts related to bioreactors and their types.
	CO5. To acquaint with concepts strain improvement and scale up.
<b>MB 353 Microbial Metabolism</b>	CO1: To acquaint with the principles of Bioenergetics.
	CO2: To understands the concept of thermodynamics and Electron Transport Chain.
	CO3: To define the types of anabolic and catabolic pathways and the mechanisms
	CO4: To acquaint with the principles of Bioenergetics.
<b>MB 354 Medical Microbiology</b>	CO1: To introduces the concepts in Medical Microbiology.
	CO2: To enrich knowledge about various diseases with respect to diagnosis, prevention,
	CO3: To control and role of chemotherapy.
	CO4: To understand the human anatomy with functions
	CO5: To introduce the concepts in Medical Microbiology
<b>MB 355 Immunology</b>	CO1: To study the concepts related to antigen and antibody.
	CO2: To study the various immune cells and organs functional in a body.
	CO3: To get knowledge about MHC and Antigen Presentation
	To study the concepts related to antigen and antibody.
	CO4: To study the various immune cells and organs functional in a body.

<b>MB 356 Applied Microbiology</b>	CO1: To understands concepts in milk microbiology.
	CO2: To complements the students with the basic knowledge of food microbiology.
	CO3: To acquaint the students with food preservation techniques
	CO4: To understands concepts in milk microbiology.
<b>UG –T.Y. B. Sc (2018-19) Semester – VI</b>	
<b>MB 361 Molecular Biology</b>	CO1: To get acquainted with the molecular regulatory mechanisms in bacteria.
	CO2: To understand the principles underlying techniques used in molecular Biology.
	CO3: To study the principle and applications of recombinant DNA technology.
<b>MB 362 Pharmaceutical Microbiology</b>	CO1: To introduce fermentation processes and their types.
	CO2: To provide knowledge about the chronological development in fermentation.
	CO3: To acquire knowledge about large scale production of commercially valuable
<b>MB 363 Enzymology</b>	CO1: To understand regulation of enzyme action.
	CO2: To get acquainted with enzyme technology.
	CO3: To get knowledge about techniques involved in enzyme purification.
	CO4: To understand regulation of enzyme action.
<b>MB 364 Clinical Microbiology</b>	CO1: To create awareness about the infectious diseases.
	CO2: To create theoretical base for practical approaches.
	CO3: To study prognosis of bacterial, viral and other diseases.
<b>MB 365 Diagnostic Immunology</b>	CO1: To understand various protective mechanisms underlying the human immune system,
	CO2: To study immunological disorders and tumours.
	CO3: To study the principles underlying various immunological techniques.
	CO4: To debate the immuno-prophylactic measures against various novel viral infections
<b>MB 366 Environmental Microbiology</b>	CO1: To understand concepts in plant pathology.
	CO2: To acquaint the students with basic knowledge of plant disease control.
	CO3: To complement the students with the concepts in Agricultural Microbiology.
	CO4: To understand concepts in plant pathology.

PG – M.sc I Microbiology

<b>Microbiology (June 2018-19)</b>	
<b>MB 101: Microbial taxonomy and diversity</b>	CO1: To basic and applied aspects of microbial diversity and systematic.
	CO2: To Physiology, biochemistry and applications of basic and applied aspects of microbial diversity and systematic.
	CO3: To study about Impact of various groups of microbes on earth atmosphere, human, plant and animal health and technology development.
<b>MB 102 : Microbial Biochemistry</b>	CO1: To study Structure, properties, pathways and significance of biomolecules.
	CO 2 : Applications of microbial biomolecules in various fields.
<b>MB 103 : Bio analytical Techniques</b>	CO1: To Principles, working and application of bioinstruments used in isolation and identification of microbes.
	CO2: structural determination of biomolecules.
<b>MB- 104 Methods in Microbiology MB-105 Methods in Biochemistry</b>	CO1: To study Characteristics and significance of Extremophiles, Algae, Fungi, Viruses.
	CO2: To understand biomolecules.
<b>MB 201: Microbial Genetics</b>	CO1: Understand basic and applied aspects of Genetic makeup of bacteria, algae, fungi and viruses.
	CO2: Causes, mechanisms and consequences of defect in gene/genome of microorganisms.
<b>MB 202: Microbial Enzymology</b>	CO1: Understand the concept of microbial enzymes, enzyme kinetics, regulation of enzyme activity, industrial applications of enzymes.
	CO2: Enzyme function in non-aqueous environment
<b>MB 203: Immunology</b>	CO1: Understand the concepts of functions of cells
	CO2: Types of hypersensitivity.
<b>MB- 204 Methods in Microbiology MB-205 Methods in Biochemistry</b>	CO1: Understand the concepts of techniques SDS ,PAGE, electrophoresis.
	CO2: study plasmid isolation ,conjugation , transformation.

**PG – M.Sc. II (2018-19) Semester III**

<b>MB 301: Pharmaceutical Microbiology</b>	CO1: To introduce knowledge about antibiotics, biopharmaceuticals and GMP, ICH process
	CO2: To familiarize the students with spoilage and regulatory aspects as well as quality control issues in pharmaceuticals.
<b>MB 302: Applied Molecular Biology</b>	CO1: To learn about the various enzymes involved in r-DNA Technology
	CO2: To know the principles of c-DNA construction and amplification methods.
	CO3: Making aware of synthesis of recombinant products
<b>MB - 303: Applied and Environmental Microbiology</b>	CO1: To understand offline/ online strategies adopted for microbial analysis of food
	CO2: To learn about role of microbes in wastewater treatment, as well as liquid and solid waste management
	CO3: To impart knowledge about removal of recalcitrant from contaminated environment
<b>MB-304: Methods in Bioinformatics</b>	CO1: To impart training about elementary aspects of statistics used in microbiology
	CO2: To introduce student to the variety of computational methods currently available for predicting functional behaviour of biological system
	CO3: To analyze the output data to predict a biologically relevant function
<b>MB-305: Methods in Applied Microbiology</b>	CO1: To impart training to students about various quality control analysis carried out for pharmaceuticals
	CO2: To familiarize the students with quality activities required in pharmaceutical industry
<b>PG –M. Sc. II (2019-20) Semester IV</b>	

<p><b>MB – 401: Fermentation Technology</b></p>	<p>CO1: To introduce microbial fermentation, product recovery and bioreactor design</p> <p>CO2: To familiarize the student with separation techniques used for fermentation products</p> <p>CO3: To introduce the microbial process adopted for production of various metabolites</p>
<p><b>MB - 402: Microbial Genetics</b></p>	<p>CO1: To extend the knowledge on molecular basis of mutation and repairs in microbes</p> <p>CO2: To understand different modes of gene regulation and expression mechanisms in bacteria</p> <p>CO3: To understand the principle role of plasmids, gene transfer methods and DNA replication</p>
<p><b>MB – 403: Agricultural Microbiology</b></p>	<p>CO1: To introduce various attributes of microbial ecology and plant microbe interactions</p> <p>CO2: To learn the student about how plant elicit defence against pathogens</p> <p>CO3: To know biocontrol, biofertilizers for plant nutrition, remediation of salt-affected soils</p>
<p><b>MB - 404: Methods in Biotechnology</b></p>	<p>CO1: To train the student in basic molecular biology tools</p> <p>CO2: To learn gene transfer and gene expression</p> <p>CO3: To introduce microbial interaction with plant</p>
<p><b>MB – 405: Laboratory course (Project Dissertation)</b></p>	<p>CO1: To give exposure to the students to research culture and technology</p> <p>CO2: To introduce students how to select a research topic, plan, perform experiments, collect data and analyse the data</p> <p>CO3: To foster self-confidence and self-reliance in the students as he/she learns to work and think independently</p>
<p><b>PG M. Sc (2020-21) Semester – III</b></p>	
<p><b>MB-301: Applied and Environmental Microbiology</b></p>	<p>CO1: To understand offline/ online strategies adopted for microbial analysis of food</p> <p>CO2: To learn about role of microbes in wastewater treatment, as well as liquid and solid waste management</p> <p>CO3: To impart knowledge about removal of recalcitrant from contaminated environment</p>
<p><b>MB-302: Molecular Biology and Bioinformatics</b></p>	<p>CO1: To impart training about elementary aspects of statistics used in microbiology</p> <p>CO2: To introduce student to the variety of computational methods currently available for predicting functional behaviour of biological system</p> <p>CO3: To analyse the output data to predict a biologically relevant function</p>

<p><b>MB-303: Pharmaceutical Microbiology</b></p>	<p>CO1: To introduce knowledge about antibiotics, biopharmaceuticals and GMP, ICH process CO2: To familiarize the students with spoilage and regulatory aspects as well as quality control issues in pharmaceuticals</p>
<p><b>MB- 304: Methods in Biostatistics and Bioinformatics</b></p>	<p>CO1: To impart training about elementary aspects of statistics used in microbiology CO2: To introduce student to the variety of computational methods currently available for predicting functional behaviour of biological system CO3: To analyse the output data to predict a biologically relevant function</p>
<p><b>MB- 305: Methods in Applied Microbiology</b></p>	<p>CO1: To impart training to students about various quality control analysis carried out for pharmaceuticals CO2: To familiarize the students with quality activities required in pharmaceutical industry</p>



## F. Y. B.Sc.

<b>PHY-101- Basic Mechanics</b>	CO1: Apply the concept and knowledge of Basic Mechanics to understand and solve real life problems.
	CO2: Understanding of the course will create scientific temperament.
<b>PHY-102 – Dynamics and Properties of Matter</b>	CO1: Apply the concept and knowledge of Dynamics and Properties of Matter to understand and solve real life problems.
	CO2: Understanding of the course will create scientific temperament.
<b>PHY-201- Electricity and Electrostatics</b>	CO1: Apply the concept and knowledge of Electricity and Electrostatics to understand and solve real life problems.
	CO2: Understanding of the course will create scientific temperament.
<b>PHY-202- Dielectrics, Magnetism and Electromagnetism</b>	CO1: Apply the concept and knowledge of Dielectrics, Magnetism and Electromagnetism to understand and solve real life problems.
	CO2: Understanding of the course will create scientific temperament.
<b>PHY-103 &amp; 203 – Practical</b>	CO1: To demonstrate their practical skills.
	CO2: To understand and practice the skills while doing Physics practical.
	CO3: To understand the use of apparatus and their use without fear.
	CO4: To correlate Physics theory concepts through practical.
	CO5: Understand the concepts of errors and their estimation.
<b>PHY 301- Thermodynamics and Kinetic Theory of Gases</b>	CO1: Apply the concept of use of knowledge of Thermodynamics and kinetic theory of gases to real life problems.
	CO2: Understanding of the course will create scientific temperament.
<b>PHY 302 A: - Electronics I</b>	CO1: Apply the concept of use of knowledge of Electronics to real life problems.
	CO2: Understanding of the course will create scientific temperament.
<b>PHY 302 B - Instrumentation</b>	CO1: Apply the concept of use of knowledge of Instrumentation to real life problems.
	CO2: Understanding of the course will create scientific temperament.
<b>PHY 401 – Waves,</b>	CO1: Apply the concept of use of knowledge of Waves and Sound

<b>Oscillation and Acoustics</b>	to real life problems.
	CO2: Understanding of the course will create scientific temperament.
<b>PHY 402 – Optics and LASER</b>	CO1: Apply the concept of use of knowledge of Optics and LASERS to real life problems
	CO2: Understanding of the course will create scientific temperament.
<b>PHY 501 – Mathematical Physics</b>	CO1: Apply the concept and knowledge of Mathematical physics to understand and solve real life problems
	CO2: Understanding of the course will create scientific temperament
<b>PHY 502 – Solid State Physics</b>	CO1: Apply the concept and use of knowledge of Solid state Physics understand and solve the real life problems
	CO2: Understanding of the course will create scientific temperament.
<b>PHY 503 – Atomics and Molecular Physics</b>	CO1: Apply the concept and knowledge of Atomic and Molecular Physics to understand and solve the real life problems.
	CO2: Understanding of the course will create scientific temperament.
<b>PHY 504 – A- Electronics II</b>	CO1: Apply the concept and use of knowledge of Electronics and Digital Electronics to real life problems.
	CO2: Understanding of the course will create scientific temperament
<b>PHY 504 B – Instrumentation II</b>	CO1: Apply the concept and use of knowledge of Instrumentation to understand and to solve real life problems.
	CO2: Understanding of the course will create scientific temperament
<b>PHY 505 – Solar Energy and Applications</b>	CO1: Apply the concept of use of knowledge of energy resources, solar radiations and conversion to real life problem.
	CO2: Understanding of the course will create scientific temperament.
	CO3: To impart knowledge of basic concepts of solar cell fundamentals.
	CO4: To provide the knowledge and methodology of conversion of solar energy into electricity.
<b>PHY 506 D – Microprocessor I</b>	CO1: Apply the concept and use of knowledge of Microprocessor to understand and to solve real life problems.
	CO2: Understanding of the course will create scientific temperament
<b>PHY 601 – Quantum Mechanics</b>	CO1: Apply the concept and use of knowledge of Quantum Mechanics to real life problems.

	CO2: Understanding of the course will create scientific temperament.
<b>PHY 602 – Material Science</b>	CO1: Apply the concept of use of knowledge of Material Science to real life problems.
	CO2: Understanding of the course will create scientific temperament.
<b>PHY 603 – Nuclear Physics</b>	CO1: Apply the concept and use of knowledge of Nuclear Physics to understand and solve the real life problems.
	CO2: Understanding of the course will create scientific temperament.
<b>PHY 604 – Modern and Applied Physics</b>	CO1: Apply the concept and use of knowledge of Modern and Applied Physics to understand and solve the real life problems.
	CO2: Understanding of the course will create scientific temperament.
<b>PHY 605 – Basic Instrumentation Skills</b>	CO1: Handle and use various basic mechanical and electrical measuring instruments
	CO2: Understanding of the course will create scientific temperament
<b>PHY 606 D – Microprocessor II</b>	CO1: Apply the concept and use of knowledge of Microprocessor to understand and to solve real life problems.
	CO2: Understanding of the course will create scientific temperament.
<b>General Course Outcomes</b>	
CO1: Develop skill to impart practical knowledge in real time solution	
CO2: Design new instrument with practical knowledge	
CO3: Ability of modeling and solving physical problems	
CO4: Ability of searching solution of physical problems in scientific and technical literature	
CO5: Student should be comfortable while using an instrument	
CO6: Student should be understood to develop the various electronic circuit.	
CO7: Describe the nature of electromagnetic wave and its propagation through different media and interfaces.	
CO8: Explain charge particles dynamics and radiation from localized time varying electromagnetic sources	
CO9: Understand and explain the differences between classical and quantum mechanics	
CO10: Students are able to determine the charge, mass of any nucleus by using various spectrographs.	
CO11: Give a type of material be able to qualitatively describe the bonding scheme & its general physics properties as well as possible application.	
CO12: Give a type of bond is able to describe its physical origin as well as strength.	
CO13: Write programs to run on 8085 microprocessor based system.	

**Class: M.Sc.**

<b>PHY-101- Mathematical Method for Physics</b>	CO1: Apply the concept and knowledge of Mathematical physics to understand and solve real life problems
	CO2: Knowledge about Vector calculus, Bessel Functions, Legendre Differential equations, complex variable, Laplace transforms, Fourier Series etc. and their physical significance is learnt by students. mathematical concepts are widely used in various physics derivations
	CO3: Understanding of the Basic Mathematical physics will create scientific temperament.
<b>PHY-102 – Classical Mechanics</b>	CO1: Apply the concept and use of knowledge of Classical Mechanics to real life problems.
	CO2: Understanding of the Classical Mechanics will create scientific temperament
	CO3: The Lagrangian and Hamiltonian approaches in classical mechanics.
	CO4: The classical background of Quantum mechanics and get familiarized with Poisson brackets and Hamilton -Jacobi equation.
<b>PHY-103- Solid State Physics</b>	CO1: Apply the concept and use of knowledge of Solid state Physics understand and solve the real life problems.
	CO2: Understanding of the course will create scientific temperament
	CO3: Introducing the behavior of ferroelectric and ferromagnetic material in terms of their properties and applications.
	CO4: Introducing basic concepts via diffraction methods, lattice vibrations and free electrons, Hall effect.
	CO5: Understanding the basic transport properties of metals and semiconductors.
	CO6: Their introduction to the band structures for studying different materials
<b>PHY-104 B – Electronics Instrumentation</b>	CO1: Apply the concept and use of knowledge of Physics of Electronic Instrumentation to understand and solve the real life problems.
	CO2: Understanding of the course will create scientific temperament.
	CO3: Fabrication of integrated devices.
	CO4: Applications of electronic system.
	CO5: Bio-electric Signals and Electrodes
<b>PHY-105 – Physics Laboratory I</b>	CO1: Apply the concept and use of knowledge of the Basic Physics Laboratory course to real life problems.
	CO2: Amplifiers, diodes, various logic gates, flip-flops and multivibrator.
	CO3: Solar cell, Michelson interferometer, photovoltaic cell, lasers

	and various optoelectronic devices.
	CO4: Hall coefficient, Curie temperature, B-H curve.
	CO5: Digital electronics experiments.
	CO6: Understands in depth about thin film preparation and production controlling techniques and the application of thin films in the field of science & Technology.
<b>PHY 201- Statistical Mechanics</b>	CO1: Apply the concept and use of knowledge of Statistical Mechanics to understand and solve the real life problems
	CO2: Understanding of the course will create scientific temperament.
	CO3: Explain statistical physics and thermodynamics as logical consequences of the postulates of statistical mechanics.
	CO4: Apply the principles of statistical mechanics to selected problems.
	CO5: Grasp the basis of ensemble approach in statistical mechanics to a range of situations.
	CO6: To learn the fundamental differences between classical and quantum statistics and learn about quantum statistical distribution laws.
	CO7: Study important examples of ideal Bose systems and Fermi systems.
<b>PHY 202 – Classical Electrodynamics</b>	CO1: Apply the concept and use of knowledge of Classical Electrodynamics to understand and solve the real life problems
	CO2: Understanding of the course will create scientific temperament
	CO3: Have gained elaborated knowledge about the electrostatics and laws governing the charge distribution.
	CO4: Have gained ability to apply Laplace equation for calculating potentials
	CO5: Study in depth about Polarization, bound charges and boundary conditions.
	CO6: Realize the importance of application of Biot Savarts Law and Amperes law.
	CO7: Understand the relevance of different magnetization and the boundary condition of magnetic field.
<b>PHY 203 Quantum Mechanics</b>	CO1: Apply the concept and use of knowledge of Quantum Mechanics to real life problems.
	CO2: Understanding of the course will create scientific temperament
	CO3: Linear vector spaces, versed in Hilbert space, concepts of basis and operators and bra and ket notation.
	CO4: Both Schrödinger and Heisenberg formulations and their applications.
	CO5: Theory of angular momentum and spin matrices, orbital angular momentum and Clebsh Gordan Coefficients.
	CO6: Space -time symmetries and conservation laws, theory of identical particles, Oscillators
	CO7: Time Dependent and independent Perturbation Theory, Variation Method, WKB Method, Collision Theory and Relativistic Quantum Mechanics.

<b>PHY 204 – Material Science</b>	CO1: Apply the concept and use of knowledge of Physics of material Science to understand and solve the real life problems
	CO2: Understanding of the course will create scientific temperament.
	CO3: The student will get familiar with Crystal imperfections, Diffusion in solids and mechanical properties. Phase transformations and heat treatment
<b>PHY 205 – Basic Physics Laboratory II</b>	CO1: Apply the concept and use of knowledge of the Basic Physics Laboratory course to real life problems.
	CO2: Understanding of the Basic Physics Laboratory course which will create scientific temperament.
	CO3: Students will have hand on experience of : Zeeman effect using LG plate, Construction & study of Pb-Sn binary phase diagram Hall coefficient, Dielectric constant at high frequency, Magnetic susceptibility, Design, build & test square, triangular and sine wave generator etc.
<b>PHY 301 – Atomics and Molecular Physics</b>	CO1: 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.
	CO2: 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.
	CO3: Be able to apply the principle of Raman spectroscopy and its applications in the different field of science & Technology.
	CO4: To become familiar with different resonance spectroscopic techniques and its applications.
	CO5: To find solutions to problems related different spectroscopic systems.
<b>PHY 302 – Material Synthesis and Preliminary Analysis</b>	CO1: 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.
	CO2: Have gained ability to apply the techniques of microwave and infrared spectroscopy to elucidate the structure of molecules.
	CO3: Be able to apply the principle of Raman spectroscopy and its applications in the different field of science & Technology.
	CO4: To become familiar with different resonance spectroscopic techniques and its applications.
	CO5: To find solutions to problems related different spectroscopic systems.
<b>PHY 303 – Systematic Material Analysis</b>	CO1: After successful completion of the course, the student is expected to : know about Systematic Materials Analysis and Applications
	CO2: Have gained ability to apply the techniques of Introduction to

	Characterization Techniques: Importance of materials characterization
	CO3: The students will know the Mechanical response of Materials under - Infrared Spectroscopy, Ultra Violet & Visible Spectroscopy: Regions of UV-Visible radiation, Scanning Tunneling Microscopy: An Introduction to Quantum Mechanical Tunneling,
<b>PHY 304 – Special Laboratory I</b>	CO1: Apply the concept and use of knowledge of the Special Physics II course to real life problems.
	CO2: Understanding of the Special Physics II course which will create scientific temperament.
	CO3: Students will have hand on experience of Practical Based on : Measurement of thickness of thin film by Tolansky method, Material Synthesis, Material Science, Communication Electronics, Microprocessors.
<b>PHY 305 Project I</b>	CO1: Conceive a problem based on published research and carry out comprehensive survey of literature
	CO2: Plan and carry out task in given framework of dissertation and present the work in written and viva
	CO3: Use a holistic view to critically, independently and creatively identify, formulate and deal with complex issues
	CO4: Learn handling of instruments, use of chemicals and how to conduct the experiments
	CO5: Learn how to present the project in power point and answer the queries to examiners as well as science of writing
<b>AC 301 C – Seminar + Review Writing</b>	CO1: Retrieve, analyses, comprehends the scientific information on a given topic and derives logical inferences.
	CO2: Compile the scientific information on a topic, verify for similarity index or plagiarism.
	CO3: Deliver the interactive presentation of scientific data before audience and participate in open discussion with confidence.
<b>PHY 401 – Nuclear Physics</b>	CO1: Apply the concept and use of knowledge of the Nuclear Physics course to real life problems.
	CO2: Understanding of the Nuclear Physics course which will create scientific temperament.
	CO3: Students will have hand on experience of theory Based on : General Properties of Nuclei Constituents of nucleus and their properties, Interaction of charged particle and EM radiations with matter Energy loss of charged particles, Particle accelerators and Radiation Detectors Classification of accelerators; Van-de-Graft generator etc.
<b>PHY 402 – Nanomaterial's: Synthesis, Properties and Applications</b>	CO1: Apply the concept and use of knowledge of the Nanomaterial's: Synthesis, Properties and Applications course to real life problems.
	CO2: Understanding of the Nanomaterial's: Synthesis, Properties and Applications Physics course which will create scientific temperament..
	CO3: Students will have hand on experience of Theory Based on : Comparison of Nanomaterial's with bulk material, Different

	Techniques for synthesis of Nanomaterial's of magnetic nanoparticles, Magnetic properties-Super paramagnetic materials.
<b>PHY 403 A– Renewable Energy Sources</b>	CO1: Apply the concept and use of knowledge of the Renewable Energy Sources course to real life problems.
	CO2: Understanding of the Renewable Energy Sources of Physics course which will create scientific temperament.
	CO3: Students will have hand on experience of Theory Based on: Solar Energy: Solar Energy conversion systems and their applications, Bio mass Energy Conversion Technologies: Origin of biomass, Biomass energy resources, Ocean Energy: Ocean as the potential energy resource.
<b>PHY 404 – Special Laboratory II</b>	CO1: Apply the concept and use of knowledge of Special Laboratory II: Practical and Applications course to real life problems.
	CO2: Understanding of Special Laboratory II: Practical Physics and Applications Physics course which will create scientific temperament.
	CO3: Students will have hand on experience of theory based on : Schottky barrier determination for various semiconductors, To analyze the Raman Spectrum of a sample, Nanoparticles, LASERS, Microwaves.
<b>PHY 405 – Project II</b>	CO1: Conceive a problem based on published research and carry out comprehensive survey of literature
	CO2: Plan and carry out task in given framework of dissertation and present the work in written and viva
	CO3: Use a holistic view to critically, independently and creatively identify, formulate and deal with complex issues.
	CO4: Learn handling of instruments, use of chemicals and how to conduct the experiments
	CO5: Learn how to present the project in power point and answer the queries to examiners as well as science of writing



**Class: B. Sc. (Zoology)**

<b>F.Y.B.sc- ZOO- 101 Animal Diversity I</b>	CO1 : To Understanding Develop a foundational understanding of the principles of
	CO2: To taxonomy and classification, including the hierarchical organization of animal groups.
	CO3: To Identify and categorize major animal taxa based on morphological, anatomical, and molecular characteristics.
	CO 4: To analyze key evolutionary adaptations and innovations that has contributed to the diversity.
	CO5: To Understand the relationship between anatomical features and adaptive behaviors in different animal groups.
	CO6: To analyze the role of animal diversity in shaping ecosystem dynamics, community structure, and trophic interactions.
	CO7: To Understand the principles of island biogeography and examine case studies of species diversity and endemism in different biogeographic regions.
<b>F.Y.B.sc- ZOO- 102 Animal Diversity II</b>	CO1:To provide thorough knowledge about external morphological features of grasshopper
	CO2: To develop an understanding about internal structural and functional details of grasshopper including its reproductive system and life cycle. Learning outcomes: After successful completion of these course students.
	CO3: To Acquire knowledge about external morphological features of grasshopper.
	CO4: To Understand internal structural and functional details of grasshopper.
	CO5: To knowledge about reproduction and life cycle of grasshopper Unit Study of Grasshopper.
<b>F.Y.B.sc- ZOO 201 Comparative Anatomy of Vertebrates</b>	CO1: To gain a knowledge base for understanding vertebrate anatomy levels of organization and related functions.
<b>F.Y.B.sc- ZOO 202 Developmental Biology of Vertebrates</b>	CO2: To understand how organisms maintain gametes population.
	CO3: To understand fertilization process.
	CO4: To understand way of cleavage and different patterns to form zygote.
	CO5: To understand the fundamental embryonic development.
	CO6: To understand the complete process of formation of germ layers.
<b>S.Y.B.sc- ZOO 231 Non- Chordates - II</b>	CO1: To Understand the diversity and evolutionary relationships within non-chordate organisms.
	CO2: To Investigate physiological and ecological adaptations of non-chordates to their environments.
	CO3: To Explore the developmental processes and life cycles of various non-chordate species.
<b>S.Y.B.sc- ZOO 232 Medical</b>	CO1: To Investigate the relationship between animal species and human health, including zoonotic diseases and medical treatments derived from animals.

<b>Zoology</b>	CO2: To Study the physiological, anatomical, and genetic similarities and differences between humans and various animal species to enhance medical knowledge and treatments.
	CO3: To Analyze the impact of environmental factors, such as animal-borne pathogens and pollutants, on public health and develop strategies for prevention and control.
<b>S.Y.B.sc- ZOO 241 Chordates – II</b>	CO1: To Explore the anatomical, physiological, and behavioral diversity within chordates.
	CO2: To Investigate the evolutionary relationships and developmental processes among different chordate groups.
	CO3: To Understand the ecological roles and adaptations of chordates in various environments.
<b>S.Y.B.sc- ZOO 242 Applied Zoology</b>	CO1: To Develop sustainable practices for animal husbandry, welfare, and production.
	CO2: To Investigate the role of animals in ecosystems and their impact on biodiversity and environmental health.
	CO3: To Study and mitigate the interactions between humans and wildlife to prevent conflicts and promote coexistence.
<b>T.Y.B.sc Zoo 351 Non- chordates III</b>	CO1: To identify the taxonomic status of the entire non-chordates and discuss the evolutionary model of the group.
	CO2: To describe the general biology of few selected non-chordates useful to mankind.
	CO3: To know about some of the important and common protozoans, helminthes and arthropods of parasitic nature causing diseases in Nepal.
	CO4: To help knowing the basic concept of biosystematics and procedure in taxonomy.
	CO5: To make able to discuss some and very important phenomena in Non-chordate. To help in the general survey of non-chordates in the area.
<b>T.Y.B.sc Zoo -352 Cell and Molecular biology</b>	CO1: To Students can understand the structure and functions of cell organelles.
	CO2: To understand the basic structure and functioning of the genetic materials-DNA and RNA.
	CO3: To learn about molecular mechanism of DNA replication
<b>T.Y.B.sc Zoo -353 Mammalian Histology and Physiology I</b>	CO1: To acquire a basic background in histology and to understand the properties of cells and their interactions with one another as components of tissues and organs.
	CO2: To understand how structure and function correlate at the microscopic level.
	CO3: To be able to describe the normal structure and function of various cell types, tissues, and organs, and to differentiate their histological structures from each other through examination.
	CO4: To discuss the various birth defects for each organ system development.
	CO5: To describe the world's past biodiversity.
	CO6: To outline the history of life on earth; and to develop new ideas about evolution and ecology.

	CO7: To understand disease mechanisms.
	C83: To investigate environmental Adaptations.
	CO9: To evaluate drug effects. Support clinical decision-making.
<b>T.Y.B.sc Zoo 355 Systematics, Evolution and Paleontology</b>	CO1: To understand will be able to evaluate evidence provided by data to qualitatively and quantitatively investigate the role of natural selection in evolution.
	CO2: To Students will be able to apply mathematical methods to data from a real or simulated population to predict what will happen to the population in the future.
	CO3: To know evaluate data-based evidence that describes evolutionary changes in the genetic makeup of a population over time.
	CO4: To Students will be able to connect evolutionary changes in a population over time to a change in the environment.
	CO5: To understand will be able to justify data from mathematical models based on the Hardy-Weinberg equilibrium to analyze genetic drift and the effects of selection in the evolution of specific populations.
	CO6: To students will get to know the different types of sedimentary and metamorphic rocks and fundamentals of sedimentary and metamorphic petrology.
	CO7: To The students will able to understand the texture, structures and process of their formation.
<b>T.Y.B.sc Zoo 356 B) Pest management</b>	CO1: To acquire basic skills in the observation and study of nature.
	CO2: To understand inculcate interest in adopting biological control strategies for pest control.
	CO3: To know various pests affecting our local crops and select the best method for their control.
	CO4: To acquire basic knowledge and skills in agriculture management to enable the learner for self-employment.
<b>T.Y.B.sc Zoo 361 Chordates III</b>	CO5: To Understand the diversity and evolutionary relationships within non-chordate organisms.
	CO1: To Investigate physiological and ecological adaptations of non-chordates to their environments.
	CO2: To Explore the developmental processes and life cycles of various non-chordate species.
<b>T.Y.B.sc Zoo 362 General Embryology</b>	CO1: To acquire Students develop understanding of the development of embryology; basic human development (fertilization, implantation, embryo, placentation, development of three germ layers.)
	CO2: To understand molecular processes (induction, determination, differentiation and growth), and of processes at all stages of embryogenesis and exogenesis.
	CO3To understanding of histogenesis and organogenesis of particular tissues and organs.
	CO4:Students acquire knowledge of achievements in modern experimental

	CO5: To understand Embryology and their practical use in daily work of a doctor, and of the elements and significance of comparative embryology.
<b>T.Y.B.sc Zoo 363 Mammalian Histology and Physiology II</b>	CO1: To acquire a basic background in histology and to understand the properties of cells and their interactions with one another as components of tissues and organs.
	CO2: To understand how structure and function correlate at the microscopic level.
	CO3: To be able to describe the normal structure and function of various cell types, tissues, and organs, and to differentiate their histological structures from each other through examination.
	CO4: To discuss the various birth defects for each organ system development.
	CO5: To know describe the world's past biodiversity.
	CO6: To understand outline the history of life on earth; and (3) to develop new ideas about evolution and ecology.
<b>T.Y.B.sc Zoo 364 Research Methodology</b>	CO1: To Understanding Research To the Research Methodology course in zoology is to provide students with a comprehensive understanding of research design and methodology.
	CO2: To students will learn about the various research designs used in zoological studies, such as observational studies, experimental designs, field surveys, and meta-analyses.
	CO3: To understand & developing Research Skills and Ethical Considerations: The second objective is to develop students' research skills and instill ethical considerations in zoological research.
	CO4: To students will learn how to formulate research hypotheses, design research projects, and develop research proposals.
<b>T.Y.B.sc Zoo 365 Micro technique</b>	CO1: To prepare the whole mounts microscopic slides and staining reactions.
<b>T.Y.B.sc Zoo 366 C) Applied Zoology III (Permaculture, Poultry and Fisheries)</b>	CO2: To understand main purpose of Poultry Farming is the production of eggs, meat, etc.
	CO3: To understand Numerous chickens were grown in poultry farms for the production of eggs and meat.
	CO4: To Evaluate drug effects.
<b>S.Y.B.sc ZOO 302 Biochemistry</b>	CO1: To study molecular structures and functions.
	CO2: To Investigate metabolic pathways.
	CO3: To understand enzyme mechanisms.
	CO4: To Explore biochemical interactions in cells.
	CO5: To apply biochemistry to medical research and biotechnology.
<b>S.Y.B.sc SEC I Apiculture</b>	CO1: To Promote sustainable beekeeping practices for honey production and pollination services.
	CO1: To conduct research to improve honeybee health and resilience against pests, diseases, and environmental stressors.

	CO1: To educate beekeepers and the public about the importance of bees in ecosystems and agricultural sustainability.
<b>S.Y.B.sc ZOO 401 Genetics</b>	CO1: To understand Student can gain knowledge about inheritance of characters and factor responsible for this.
	CO2: To study the basic concepts of genetic principles.
	CO3: To learn the principles of chromosome, syndromes and gene transformation.
<b>S.Y.B.sc ZOO 402 Evolutionary Biology</b>	CO1: To better understanding of species diversity and evolutionary relationships.
	CO2: To insights into adaptation and survival strategies in changing environments.
	CO3: To learn advances in conservation biology and preservation of biodiversity.
	CO4: To understand & Identification of evolutionary mechanisms such as natural selection and genetic drift.
	CO5: To application of evolutionary principles in medicine and agriculture.
<b>S.Y.B.sc SEC II Medical Diagnostics</b>	CO1: To develop accurate and efficient diagnostic tests for detecting diseases and health conditions.
	CO2: To improve early detection and monitoring of diseases to facilitate timely and effective medical interventions.
	CO3: To enhance diagnostic accuracy and reliability through advancements in technology and methodologies.
<b>T.Y.B.sc Zoo-501 Reproductive Endocrinology</b>	CO1: To learn about the various aspects of reproductive biology and endocrinology.
	CO2: To acquire a broad understanding of the hormonal regulation of physiological processes.
	CO3: To create awareness of new technologies in assisted reproduction as well as contraceptive methods.
<b>T.Y.B.sc Zoo-502 Cell and Molecular Biology (CMB)</b>	CO1: To understand the basic structure of cells, tissues and their working system.
	CO2: To Know the handling skill in laboratory methods of estimation, determination, working of cells and their molecules.
	CO3: To Use of binocular research microscope and bioinstrumentation in laboratory.
<b>T.Y.B.sc Zoo-503 Mammalian Histology</b>	CO1: To Understanding study the Histology of different tissues and systems of mammals.
<b>T.Y.B.sc Zoo-504 Animal Biotechnology</b>	CO1: To Studying animal cell and tissue culture techniques.
	CO2: To developing genetically engineered products for human animal welfare
	CO3: To Developing gene transfer technologies, cloning, transgenic animals
	CO4: To Studying hybridism technique and production of antibodies.
	CO5: To Impart knowledge about stem cell research.
<b>T.Y.B.sc Zoo-505 Public</b>	CO1: To provide knowledge and understanding regarding life style diseases.
	CO2: To promote an understanding of the value of good life style practices,

<b>health and hygiene</b>	physical fitness and healthy food habits for life style disease management.
	CO3: To motivate them to practice yoga and meditation in day-to-day life.
<b>T.Y.B.sc Zoo506 (A) Pest Management</b>	CO1: To acquire basic skills in the observation and study of nature.
	CO2: To inculcate interest in adopting biological control strategies for pest Control.
	CO3: To know various pests affecting our local crops and select the best method for their control.
	CO4: To acquire basic knowledge and skills in agriculture management to enable the learner for self-employment.
<b>T.Y.B.sc Zoo-601 Study of Leech &amp; Calotes.</b>	CO1: To understand habit, habitat and taxonomic status of Leech as invertebrates and Calottes as vertebrates.
	CO1: To explain the basic aspects of structural and functional details of Leech and Calottes.
<b>T.Y.B.sc Zoo Embryology</b>	CO2: To study the various stages involved in the developing embryo.
	CO3: To study the initial developmental procedures involved in chick.
	CO4: To know the processes involved in embryonic development and practical applications of studying the chick embryology.
<b>T.Y.B.sc Zoo-603 Applied Zoology</b>	CO1: To acquire basic knowledge and skills in applied branches of zoology.
	CO2: To acquire the students with self-employment capabilities.
	CO2: To provide scientific knowledge of profitable farming.
	CO3: To get technical awareness of vermin technology and vermicomposting technique.
	CO4: To convert unwanted, organic matter, particularly food scraps and paper into fertile soil.
	CO5: To learn about all aspects of raising poultry for their meat and eggs.
CO6: To know the economics, problems and prospects of Vermicomposting and Poultry.	
<b>T.Y.B.sc Zoo-604 Micro technique</b>	CO1: To understand prepare the whole mounts microscopic slides and staining reactions.
<b>T.Y.Bsc Zoo-605 Research Methodology</b>	CO1: To understand some basic concepts of research and its methodologies.
	CO2: To select and define appropriate research problem and parameters.
	CO3: To Understand the various techniques of Data Collection Observation, Questionnaire, Interview Schedule; Case Study, Social Survey, Content Analysis.
	CO4: To understand Describing various types of Sampling.
	CO5: To understand elaborate on Data Processing and Data Analysis.
	CO6: To understand writing of dissertations, project proposals, project reports, research papers.
<b>T.Y.B.sc Zoo606(B)Sericulture</b>	CO1: To give scientific knowledge about mulberry cultivation, silkworm rearing techniques to the students.
	CO1: To train the students in compressive silk production techniques.
<b>M.Sc.-</b>	CO1: To understand the structural and functional anatomy of no chordates.

<b>Zoo-101 Structure and Functional Anatomy of Invertebrates</b>	CO2: To acquire the knowledge about locomotors, nutritional and organs of digestion and its mechanism.
	CO3: To understand the respiratory, excretory and nervous coordinating organization.
	CO4: To learn about the larval forms, colonial and social life of invertebrates.
<b>MSc-I Zoo-102 Cellular organization and Developmental Biology</b>	CO1: To understand the cellular organization with specific reference to plasma membrane, cell organelles and cell cycle.
	CO2: To acquire the knowledge about basic concept of gametogenesis, fertilization and embryonic development.
	CO3: To understand the concept of aging, apoptosis and senescence.
	CO1: To learn about the morphogenesis and organogenesis in specific animals.
<b>M.Sc.-I Zoo-105 Goatery</b>	CO1: To understand start Goat rearing as a small business enterprise by liaising with different stake holders To manage Goat rearing effectively as a small business enterprise.
	CO2: To gain all round knowledge of Goat rearing as a business enterprise rather than as a community profession.
<b>MSc-I Zoo-201 Structure and Functional Anatomy of Vertebrates 4</b>	CO1: To understand habit, habitat and taxonomic status of vertebrate animals.
	CO2: To know the basic aspects of structural and functional anatomy of vertebrate animals.
	CO3: To learn about adaptive radiation in vertebrates.
<b>M.Sc.-I Zoo- 202 Biochemistry</b>	CO1: To know fundamental aspects of Biochemistry.
	CO2: To study different biological reaction mechanism.
	CO3: To know the importance of metabolism.
	CO4: To study the biochemical molecules and their interactions
<b>M.Sc.-I Zoo-203 Tools and Techniques in Biology</b>	CO1: To know basic terms of biological techniques.
	CO2: To study the applications of the various biological techniques.
	CO3: To know the principle, working and applications of basic techniques used in biology.
<b>M.Sc.-I Zoo-205 Aquaculture &amp; Ecology</b>	CO1: To know the differentiating ability of abiotic and biotic components of ecosystem, interactions of various factors of ecosystem.
	CO2: To know the various biodiversity, hotspot and conservation of ecosystems.
<b>M.Sc.-II Zoo301 C)Entomology I</b>	CO1: To understand habit, habitat and taxonomic status of vertebrate animals.
	CO2: To know the basic aspects of structural and functional anatomy of vertebrate animals.
<b>M.Sc.-II Zoo-</b>	CO3: To acquire the flavor of modern aspects of Zoology/Animal Sciences.
	CO4: To enable the students to study Enzymology and Immunology as a core

<b>302 Enzymology and Immunology</b>	course.
	CO5: To learn practicing skill so that to join public or private labs.
<b>M.Sc.-II Zoo-305 (B) Forensic Zoology</b>	CO1: The program has been designed in such a way so that the students get the flavor of modern aspects of Zoology/Animal Sciences.
	CO2: To know aims to enable the students to study Forensic Science as an elective course.
<b>M.Sc.-II Zoo-401 C) Entomology II</b>	CO1: To develop a strong foundation in entomology, including understanding of the importance of insects to human society.
	CO2: To know the process of digestion and metabolism, circulation, excretion, respiration, role of hormone in insect reproduction.
	CO3: To familiarize the students with identification of insect pests, vectors and their control methods.
	CO4: To develop a sufficient background for those students who wish to study more advanced entomological topics.
<b>M.Sc.-II Zoo-402 Molecular Biology</b>	CO1: To understand the basic structure of cells, tissues and their working system.
	CO2: To know the handling skill in laboratory methods of estimation, determination, working of cells and their molecules.
	CO3: To use of binocular research microscope and bioinstrumentation in laboratory.
<b>M.Sc.-II Zoo-405 (B) Writing &amp; presenting scientific research paper</b>	CO1: To understand the process of writing, presentation and publication of research paper.
	CO2: To learn the skills related to presentation of paper
	CO3: To avoid the mistakes in writing research paper
<b>F.Y.B.sc ZOO 101 Invertebrate Zoology</b>	CO1: To understand familiarize the student with the basic concept of Invertebrate Zoology.
	CO2: To understand of the ecological relationships of the local species.
	CO3: To identify common and unknown species.
	CO4: To understand the invertebrate taxonomy and diversity.
<b>F.Y.B.sc ZOO 102 Grasshopper The No chordate</b>	CO1: To provide thorough knowledge about external morphological features of grasshopper.
	CO2: To develop an understanding about internal structural and functional details of grasshopper including its reproductive system and life cycle.
<b>F.Y.B.sc ZOO 201 Vertebrate Zoology</b>	CO1: To understand General Characters, habit, habitat and distribution of vertebrate animals.
	CO2: To understand the classification of vertebrate animals.
	CO3: To know Accessory Respiratory Organs.
	CO4: To know Migration in Fishes.
	CO5: To understand Metamorphosis in frog and Parental care in Amphibians
	CO6: To know Poisonous and non-poisonous snakes, Importance of snake venom.
	CO7: To know Flight adaptations in birds, Migration in birds.
	CO8: To understand Origin and Evolution of mammals.



<b>F.Y.B.sc ZOO 202 Frog- The Chordate</b>	CO1: To understand habit, habitat and taxonomic status of vertebrates.
	CO2: To explain the basic aspects of structural and functional details of Frog.
<b>M.Sc.-I ZOO- 411Comparativ e Anatomy of Invertebrates</b>	CO1: To understand the structural and functional anatomy of Invertebrates.
	CO2: To acquire knowledge about locomotors, nutritional and organs of digestion and its mechanism.
	CO3: To understand the respiratory, excretory and nervous coordinating organization.
	CO4: To learn about the larval forms, colonial and social life of invertebrates.
<b>M.Sc.-I ZOO- 412 Biochemistry</b>	CO1: To acquire knowledge regarding biochemical aspects of life.
	CO2: To understand different type of metabolic process and energetics thereof.
	CO3: To make students familiar with details of enzymes, classes and factors influencing rate of enzymatic reactions.
	CO4: To learn about hormones, neurotransmitters and its mode of action.
	CO5: To gain the insight about Proteomics and Genomics with its applications.
<b>M.Sc.-I ZO-413 Biostatistics</b>	CO1: TO understand the students with a solid understanding of the fundamental concepts and principles of biostatistics.
	CO2: To understand & apply Statistical Methods to Biological Data: The second objective is to enable students to apply statistical methods to analyze and interpret biological data effectively.
	CO1: To know Interpret and Critically Evaluate Research Findings.
	CO2: To acquire biostatistics course aims to develop students' ability to interpret and critically evaluate research findings in zoology.
	CO3: To understand Experimental Design: The fourth objective is to equip students with the knowledge and skills to apply biostatistics in designing scientific experiments in zoology.
<b>M.Sc.-I ZOO- 416 Wildlife Conservation and Management</b>	CO1: To understand provide graduates in Biology a specialization in the field of Biodiversity, Conservation and Wildlife Management.
	CO2: To understand & generate qualified students who can directly get jobs in the allied fields of Biodiversity, Conservation and Wildlife Management.
	CO3: To understand & generate qualified postgraduates who can be part professional organizations working in the field of conservation and environment protection.
	CO4: To generate a team of post graduates who can take up jobs related to the environment in educational institutions.
<b>M.Sc.-I - ZOO417 Research Methodology</b>	CO1: To learn the basics of science, scientific research its importance.
	CO2: To learn the Ethics and plagiarism precautions to be taken while doing research.
	CO3: To understand the detailed referencing and literature review procedure before beginning the research.
	CO4: To understand the process of writing research papers, research project report and research proposal.
	CO5: To learn various advanced tools useful for the science and aware about the laboratory safety.
<b>M.Sc.-I ZOO-</b>	CO1: To understanding of the fundamental principles of comparative anatomy.

<b>421 Comparative Anatomy of Vertebrates</b>	CO2: To understand skills in anatomical observation and comparison.
	CO3: To understand evolutionary relationships among vertebrate groups: Comparative anatomy provides valuable insights into the evolutionary relationships among different vertebrate groups.
	CO4: To acquire & Apply comparative anatomy to broader scientific contexts: The final objective of the course is to enable students to apply their knowledge of comparative anatomy to broader scientific contexts.
<b>M.Sc.-I ZOO- 422 Immunology</b>	CO1: To Understand all basics components of the immune system.
	CO2: To gain knowledge of how the immune system works building on their previous knowledge from biochemistry, genetics, cell biology and microbiology.
	CO3: To understand the role of cytokines in immunity and immune cell activation; and be able to identify and characterize cytokines of particular immune importance; • understand the significance the Major Histocompatibility Complex in terms of immune response and transplantation.
<b>ZO-423 Tools and Techniques in Life Sciences</b>	CO1: To understand course is to introduce students to a range of essential tools and techniques used in life sciences research in the field of zoology.
	CO1: To Understand experience in using various laboratory techniques relevant to zoology.
	CO1: To learn about field sampling techniques and data collection methods specific to zoology.
	CO1: To Know Analysis and Interpretation: Students will learn how to analyze and interpret data collected using tools and techniques in life sciences.
<b>M.Sc.-I ZOO- 426 Environmental Biology</b>	CO1: To understand the Population and age structure of Population.
	CO2: To understand Growth of organism and models of population growth.
	CO3: To acquire knowledge of prey-predator system.
	CO4: To know Competition in Nature and concept of niche.
	CO5: To understand Community, Diversity and Ecological Succession.
	CO6: To Understanding the need of conservation.

UG –B. Sc. (Biotechnology)

F. Y. B.Sc. (2018-19)

<b>BT 101: Cell Biology</b>	CO1: learn basic knowledge pertinent to cell as unit, cell organelles and its architecture
	CO2: know the structural and functional details of cell
	CO3: How the subject emerge as new branch of biology
	CO4: Learn ancient view about life continuity and concept of experiment
<b>BT 102: Biochemical Tools</b>	Co 1. Understand the fundamental biochemical concepts and familiarize with standard solution, buffer and reactions
	CO2: Describe the concepts of pH and its biological significance, buffers, Henderson-Hassel Balch equation, biological buffer systems and their importance
	CO3: Comprehend the various methods for identification of unknown microorganisms
<b>BT 201: Biomolecules</b>	CO1: Overview of major biomolecules –carbohydrates, lipids, proteins, amino acids, nucleic acids, classification, structure, function of the above mentioned biomolecules
	CO2.comparative characteristics of prokaryotes and eukaryotes and also Understand the structural architecture and differences among bacteria/archaea
	CO3: Know basic knowledge pertinent to cell biomolecules
<b>BT 202: Basic Microbiology</b>	CO1: Understand the basic microbial structure and study the comparative characteristics of prokaryotes and eukaryotes and familiarize the structural similarities and differences among various microbes
	CO2: Know various Culture media and their applications and also understand various physical and chemical means of sterilization
<b>UG –S.Y. B. Sc (2018-19)</b>	
<b>BT: 301 Basic Genetics</b>	CO1: understand basic concept of Gene, DNA & understand the Mendel's laws
	CO2: study mutation and chromosomal variations learn basic aspect about gametogenesis and cell cycle.
<b>BT 302: Bioprocess Technology</b>	CO1: Develop an understanding of the various aspects of Bioprocess Technology.
	CO2.Cognizant about various pathways used by microbes to break down molecule and
	CO3: Aware with screening of Industrially Important Strains and culture collection centres
	CO4: Aware about the regulations and energetics of various pathways.
	CO5.Understand aerobic, anaerobic respiration and fermentation

<b>BT 401: Molecular Biology</b>	CO1: understand basic structure of DNA understand central dogma of molecular biology
	CO2. Concept and significance of mutation
	CO3: Methods to study mutation
<b>BT 402: Immune Response</b>	CO1: know the cellular ontogeny and organ involvement in immunity and explain the principles of self-tolerance and autoimmunity
	CO2: know how the immune system can fight infections and cancer, including examples of immunodeficiency diseases
<b>UG –T.Y. B. Sc (2018-19) Semester – V</b>	
<b>BT-351 Genetics</b>	CO1: To introduce the concepts in Microbial Genetics.
	CO2: To provide basic knowledge about the fundamental molecular process of living cells
	CO3: To introduce the students to the principles of ecology and genetic disorders
<b>BT-352 Agricultural Biotechnology</b>	CO1: This course presents application of plant biotechnology in agriculture, Nitrogen fixation and Bio fertilizer, Rhizosphere microflora and its role in the rhizosphere.
	CO2. The course presents understanding of Plant pathology and disease control, horticulture and floriculture
	CO3: To understand the processes involved in fermentation.
	CO4: To introduce with concepts related to bioreactors and their types.
	CO5. To acquaint with concepts strain improvement and scale up.
<b>BT-353 Animal Biotechnology</b>	CO1: To introduce the students to the basic principles of Animal tissue and cell culture
	CO2: The course will describe as to how animal cell culture is carried out for research and diagnostic purposes
	CO3: How transgenic animals are generated, what are the pros and cons along with ethical issues associated with transgenesis
<b>BT-354 Industrial Biotechnology</b>	CO1: To acquire requisite skills for the design and development of bioreactors, media, sterilization, microbial growth etc.
	CO2. To acquaint with the principles of Bioenergetics
<b>BT-355 Food Biotechnology</b>	CO1: The course provides understanding of Microbial analysis of milk, Microbial production of fermented food viz. cheese, bread etc.
	CO2: Causes of food spoilage, Spoilage of fruit, Vegetables, Dairy product.
	CO3: Food Preservation –Chemical Method, Physical method

<b>BT-356 Environmental Biotechnology</b>	CO1: An exposure to environmental perspectives.
	CO2: Insight into the management of wastewater, biodegradation techniques bioremediation and xenobiotics
<b>UG –T.Y. B. Sc. (2018-19) Semester – VI</b>	
<b>BT-361 Gene Biotechnology and Bioinformatics</b>	CO1: To get acquainted with the molecular regulatory mechanisms in bacteria.
	CO2: To understand the principles underlying techniques used in molecular Biology.
	CO3: To study the principle and applications of recombinant DNA technology.
<b>BT-362 Plant Biotechnology</b>	CO1: Understand concept of totipotency, organization of plant tissue culture.
	CO2: PTC, meristem culture, organ culture
	CO3: Principles and applications of phytohormones
<b>BT-363 Immunology</b>	CO1: Basic principles of Immune system, types of immunity, primary and secondary lymphoid organ.
	CO2: Antigen presentation, immune response lymph organs, complements system, immunological disorders
<b>BT-364 Advanced Bioprocess technology</b>	CO1: Basic principles of upstream and downstream process of different commercially important products: enzymes, antibiotics, organic acids
	CO2: To create theoretical base for practical approaches.
	CO3: Understand Quality and economic aspects of fermentation
<b>BT-365 Pharmaceutical Biotechnology</b>	CO1: To understand various protective mechanisms underlying the human immune system,
	CO2: To study immunological disorders and tumours.
	CO3: To study the principles underlying various immunological techniques.
	CO4: To debate the immuno-prophylactic measures against various novel viral infections
<b>BT-366 Biodiversity and Biometry</b>	CO1: To understand concepts in plant pathology.
	CO2: To acquaint the students with basic knowledge of plant disease control.
	CO3: To complement the students with the concepts in Agricultural Microbiology.
	CO4: To understand concepts in plant pathology.

**PG – M.sc I Biotechnology**

<b>Biotechnology (June 2018-19)</b>	
<b>BT 101: Microbial Physiology and diversity</b>	CO1: To basic and applied aspects of microbial diversity and systematic.
	CO2: To Physiology, biochemistry and applications of basic and applied aspects of microbial diversity and systematic.
	CO3: To study about Impact of various groups of microbes on earth atmosphere, human, plant and animal health and technology development.
<b>BT 102 : Biochemistry</b>	CO1: To study Structure, properties, pathways and significance of biomolecules.
	CO2 : Applications of microbial biomolecules in various fields.
<b>BT 103 : Immunology</b>	CO1: Understand the concepts of functions of cells
	CO2: Types of hypersensitivity.
<b>BT- 104 Methods in Microbiology &amp; biochemistry BT-105 Methods in n Enzymology and Immunology</b>	CO1: To study Characteristics and significance of Extremophiles, Algae, Fungi, Viruses.
	CO2: To understand biomolecules
<b>BT 201: Molecular Biology</b>	CO1: Understand basic and applied aspects of Genetic makeup of bacteria, algae, fungi and viruses.
	CO2: Causes, mechanisms and consequences of defect in gene/genome of microorganisms.
<b>BT 202: Bioanalytical Techniques</b>	CO1: To Principles, working and application of bioinstruments used in isolation and identification of microbes.
	CO2: structural determination of biomolecules.
<b>BT 203: Bioprocess Technology</b>	CO1: Bioprocess and the kinetic aspects, types of fermenters developed for specialized applications, extraction.
	CO2: purification of fermentation product, concept of quality process and related documentation.
<b>BT- 204 Methods in Microbiology BT-205 Methods in Biochemistry</b>	CO1: Understand the concepts of techniques SDS , PAGE, electrophoresis.
	CO2: study plasmid isolation, conjugation, transformation.

**PG – M. Sc. II (2018-19) Semester III**

<b>BT-301 Genetic Engineering</b>	CO1: To learn about the various enzymes involved in rDNA Technology CO2: To know the principles of cDNA construction and amplification methods.
<b>BT-302 Plant Biotechnology.</b>	CO1: The objectives of this course is to introduce students to the principles, practices and application of animal biotechnology, plant tissue culture, plant and animal genomics, genetic transformation and molecular breeding of plants and animals
<b>BT-303: Applied and Environmental Microbiology</b>	CO1: To understand offline/ online strategies adopted for microbial analysis of food CO2: To learn about role of microbes in wastewater treatment, as well as liquid and solid waste management CO3: To impart knowledge about removal of recalcitrant from contaminated environment
<b>BT-304: Methods in Bioinformatics</b>	CO1: To impart training about elementary aspects of statistics used in microbiology CO2: To introduce student to the variety of computational methods currently available for predicting functional behavior of biological system CO3: To analyses the output data to predict a biologically relevant function
<b>BT-305: Methods in Applied Microbiology</b>	CO1: To impart training to students about various quality control analysis carried out for pharmaceuticals CO2: To familiarize the students with quality activities required in pharmaceutical industry
<b>PG –M. Sc. II (2018-19) Semester IV</b>	
<b>BT – 401: Fermentation Technology</b>	CO1: To introduce microbial fermentation, product recovery and bioreactor design  CO2: To familiarize the student with separation techniques used for fermentation products CO3: To introduce the microbial process adopted for production of various metabolites

<b>BT - 402: Microbial Genetics</b>	CO1: To extend the knowledge on molecular basis of mutation and repairs in microbes CO2: To understand different modes of gene regulation and expression mechanisms in bacteria CO3: To understand the principle role of plasmids, gene transfer methods and DNA replication
<b>BT – 403: Agricultural Microbiology</b>	CO1: To introduce various attributes of microbial ecology and plant microbe interactions CO2: To learn the student about how plant elicit defence against pathogens CO3: To know bio control, bio fertilizers for plant nutrition, remediation of salt-affected soils
<b>BT - 404: Methods in Biotechnology</b>	CO1: To train the student in basic molecular biology tools CO2: To learn gene transfer and gene expression 3. To introduce microbial interaction with plant
<b>BT – 405: Laboratory course (Project Dissertation)</b>	CO1: To give exposure to the students to research culture and technology CO2: To introduce students how to select a research topic, plan, perform experiments, collect data and analyses the data CO3: To foster self-confidence and self-reliance in the students as he/she learns to work and think independently
<b>PG M. Sc (2018-19) Semester – III</b>	
<b>BT-301: Applied and Environmental Microbiology</b>	CO1: To understand offline/ online strategies adopted for microbial analysis of food CO2: To learn about role of microbes in wastewater treatment, as well as liquid and solid waste management CO3: To impart knowledge about removal of recalcitrant from contaminated environment
<b>BT-302: Molecular Biology and Bioinformatics</b>	CO1: To impart training about elementary aspects of statistics used in microbiology CO2: To introduce student to the variety of computational methods currently available for predicting functional behavior of biological system CO3: To analyze the output data to predict a biologically relevant function
<b>BT-303: Pharmaceutical Microbiology</b>	CO1: To introduce knowledge about antibiotics, biopharmaceuticals and GMP, ICH process CO2: To familiarize the students with spoilage and regulatory aspects as well as quality control issues in pharmaceuticals



<b>BT- 304: Methods in Biostatistics and Bioinformatics</b>	CO1: To impart training about elementary aspects of statistics used in microbiology CO2: To introduce student to the variety of computational methods currently available for predicting functional behavior of biological system CO3: To analyze the output data to predict a biologically relevant function
<b>BT- 305: Methods in Applied Microbiology</b>	CO1: To impart training to students about various quality control analysis carried out for pharmaceuticals CO2: To familiarize the students with quality activities required in pharmaceutical industry
<b>M.Sc. Part II (2018-19) (Semester IV)</b>	
<b>BT - 401: Fermentation Technology</b>	CO1: To introduce microbial fermentation, product recovery and bioreactor design CO2: To familiarize the student with separation techniques used for fermentation products CO3: To introduce the microbial process adopted for production of various metabolites
<b>BT-402: Applied Molecular Biology</b>	CO1: To extend the knowledge on molecular basis of mutation and repairs in microbes CO2: To understand different modes of gene regulation and expression mechanisms in bacteria CO3: To understand the principle role of plasmids, gene transfer methods and DNA replication
<b>BT-403: Agricultural Microbiology</b>	CO1: To introduce various attributes of microbial ecology and plant microbe interactions CO2: To learn the student about how plant elicit defence against pathogens CO3: To know biocontrol, biofertilizers for plant nutrition, remediation of salt-affected soils
<b>BT-404: Methods in Biotechnology</b>	CO1: To train the student in basic molecular biology tools CO2: To learn gene transfer and gene expression 3. To introduce microbial interaction with plant
<b>BT-405: Laboratory course (Project Dissertation)</b>	CO1: To give exposure to the students to research culture and technology CO2: To introduce students how to select a research topic, plan, perform experiments, collect data and analyse the data CO3: To foster self-confidence and self-reliance in the students as he/she learns to work and think independently

UG – B.Sc. (Botany)

**Class: FYBSC 2018-19**

<b>Bot. 101: Microbial Diversity, Algae &amp; Fungi</b>	CO1: Provide identification technique diversity among Microbes.
	CO2: To study systematic, morphology and structure of Bacteria, Viruses, Algae and Fungi.
	CO3: Understand the life cycle pattern of Bacteria, Viruses, Algae and Fungi.
	CO4: Students will aware about useful and harmful activities of Bacteria, Viruses, Algae and Fungi.
<b>Bot. 102: Plant Taxonomy</b>	CO1: To study the diversity of angiosperms.
	CO2: Understand the comparative account among the families of angiosperms.
	CO3: Students will able to understand economic importance of the angiosperm plants.
<b>Bot. 201: Diversity Of Archegoniates</b>	CO1: To study salient features of Archegoniates.
	CO2: To make students aware of the status of higher cryptogams& gymnosperms as a group in plant kingdom.
	CO3: To study the life cycles of selected genera.
	CO4: Students will able to understand economic and ecological importance of Archegoniates.
<b>Bot. 202: Plant Ecology</b>	CO1: Students will able to scope and importance of the discipline
	CO2: Students will able to plant communities and ecological adaptations in plants.
	CO3: To know about conservation of biodiversity.
<b>Class: FYBSc 2022-23</b>	
<b>Bot. – 101: Diversity Of Lower Cryptogams</b>	CO1: Provide identification technique of microbes, Viruses, Bacteria, Algae and Fungi.
	CO2: Understand the systems of classification of Microbes, Viruses, Bacteria, Algae and Fungi, and its interdisciplinary approaches.
	CO3: Provide lab-based training in writing short species descriptions and illustration.
<b>Bot. – 102: Morphology Of Angiosperms</b>	CO1: Students will able to understand ground plan of angiospermic plant
	CO2: Students will aware about vegetative and reproductive characteristics of angiospermic plant.
	CO3: Students will able to understand the modifications and functions of plant parts.

<b>Bot-201: Diversity Of Higher Cryptogams</b>	CO1: Student will be able to understand the basic knowledge of the subject.
	CO2: To understand the basic structure and study the comparative characteristic of Bryophytes and Pteridophytes.
	CO3: Also, to understand the structural similarities and differences among both the groups.
<b>Bot-202: Taxonomy Of Angiosperms</b>	CO1: Understanding of Angiospermic plants Causes of phenomenal succession and alternation of generation.
	CO2: Understand the systems of classification of angiosperms, nomenclature and interdisciplinary approaches.
	CO3: Recognize members of the major angiosperm families by identifying their diagnostic features, economic and medicinal importance.

UG –B.Sc. (Chemistry)

**Class: FYBSC**

<b>CH: 101 Physical and Inorganic Chemistry</b>	CO1: Apply the rules of logarithm for solving numericals in chemistry
	CO2: Draw, calculate the slope of various graphs for chemistry experiments
	CO3: Calculate derivative and integration of some simple functions especially related to chemical problems
	CO4: Various theories and principles applied to reveal atomic structure
	CO5: Nature of matter and experiments which confirmed it.
<b>CH: 102 Organic and Inorganic Chemistry</b>	CO1: Different types of bonds and structures of organic compounds.
	CO2: Different types of structural effects and their effect on the strength of acids and bases.
	CO3: Fundamentals of organic reaction mechanism, structural isomerism, methods of purification of organic compounds.
	CO4: Different types of solvents used in organic reactions Students will be able to understand:
	CO5: SP <sup>3</sup> , SP <sup>2</sup> and SP hybridizations

**Class: SYBSC**

<b>CH-301 Physical &amp; Inorganic Chemistry</b>	CO1: To gain knowledge about origin of surface tension.
	CO2: To determine surface tension.
	CO3: To get idea regarding viscosity.
	CO3: Students will be able to apply thermodynamic principles to physical and chemical
	CO5: Calculations and significance of entropy.
	CO6: Students will be able to understand equilibrium.
	CO7: To learn and apply various concepts such as
<b>CH - 302 Organic and Inorganic Chemistry</b>	CO1: The course helps to build up a conceptual framework for understanding the principles and theories for chemical bonding and properties of inorganic compounds
	CO2: Understood various methods of synthesis of heterocyclic compounds.
	CO3: Acquire skill to predict reactivity of heterocyclic compounds.
	CO4: To gain the knowledge about acid and bases according to different type theories
<b>CH-304 SEC-1: Basic Analytical Chemistry</b>	CO1: Explain the fundamentals of analytical methods and instruments for qualitative and quantitative Analysis.
	CO2: Express the role of analytical chemistry in science.
	CO3: Students will be able to function as a member of an

interdisciplinary problem solving team.

**Class: TYBSC**

<b>CH-501</b> <b>Subject- Principles of Physical Chemistry-I</b>	CO1: After successful completion of this course, students are expected to Understand the significance of wave function and postulates of quantum mechanics.
	CO2:Deduce rate equations and half-life equations for first and second order reactions
	CO3:Draw and explain the one and two component system phase diagrams
	CO4:Explain the principles of electrode processes and
	CO5:apply them during Practicals
<b>CH-502</b> <b>Subject-Inorganic Chemistry</b>	CO1: Learn about the VSEPR theory and how it can be used to explain molecular shapes.
	CO2: Learn about the VBT to describe the formation of covalent bonds in terms of atomic orbital overlap.
	CO3: Learn about stability of complexes using CFSE.
	CO4: Learn about MOT to draw energy diagrams and to predict bond order.
<b>CH-503</b> <b>Subject- Organic Reaction Mechanism</b>	CO1:Students will learn organic reactions like nucleophilic substitution, electrophilic substitution, nucleophilic addition, electrophilic addition and elimination
	CO2: Students will be able to write/ explain mechanisms of those types of reactions.
	CO3:Students will understand how a reaction takes place in one or more
	CO4: Students will understand the types of intermediates steps formed in different reactions.
	CO5: Students will learn how reagent attacks the substrate molecule and accordingly how bonds break and formed.
	CO6: Students will learn how change in structure of substrate, reagent and solvent changes the product formed and its stereochemistry.
	CO1: Basic requirements of Chemical Industry, different terms,

<b>CH-504</b> <b>Subject- Industrial</b> <b>Chemistry</b>	operations and processes involved in chemical Industry.
	CO2: Describe Copy Right Act, Patent Act and Trade Marks, Bureau of Indian Standards (BIS) and International Organization for Standardization (ISO).
	CO3:Basic requirements, raw materials, different processes and operations involved in Sugar Industry and also different grades of sugar and uses of by-products of sugar industry.
	CO4:Importance of fermented products, basic requirements, theory and process of alcohol making, fractional distillation and various terms involved in Fermentation Industry.
	CO5:Understand Occurrence of Petroleum, theories of formation of Petroleum and different terms Viz. Knocking, Anti-Knock Compounds, Octane number, Cetane number, Gasohol and Power alcohol etc.
	CO6:Manufacturing processes involved in Industrial Organic Synthesis such as Methanol, Isopropanol, Glycerol, Acetylene and Aromatic hydrocarbon i.e. Toluene from petroleum with their uses
<b>CH-505</b> <b>Subject- Analytical</b> <b>Instrumentation</b>	CO1: To develop an understanding of the range and uses of analytical methods in chemistry.
	CO2:To understand and establish the role of chemistry in quantitative analysis
	CO3: To enhance the Analytical instrumental skill of the students.
	CO4: Explain the fundamentals of analytical methods and instruments for qualitative and quantitative Analysis.
	CO5: Express the role of analytical chemistry in science.
	CO6:Students will be able to function as a member of an interdisciplinary problem solving team
<b>CH-506(B)</b> <b>Subject- Chemistry</b>	<b>Green</b> CO1:With this course, the graduate students will be able to understand the twelve principles of green chemistry that will help to build the basic understanding of toxicity, hazards and risk of chemical substances
	CO2: The course will help to understand stoichiometric calculations and relate them to green chemistry metrics. The students will learn about atom economy and understand its importance over percentage yield
	CO3:The students will learn to design safer chemicals, products and processes that are less toxic than the conventional chemistry, understand significance of catalysis, use of renewable feed stock,

	renewable energy sources, importance of green solvents, etc.
	CO4: The course will train the students to appreciate green chemistry and boost the students to think and develop the skills to innovate and search for the solutions to environmental problems.
	CO5: Green chemistry is only way of future chemistry to ensure sustainability with absolute zero waste. The success stories and real-world cases will motivate the young generation to practice green chemistry.
<b>PG –M.Sc. Class: MSC I</b>	
<b>CH-411 : Advanced Physical Chemistry–I</b>	CO1:Students should able to understand core and study of chemical kinetics and spectroscopy
	CO2:Apply the quantum mechanical principles to simple systems of chemical
	CO3: Students should understand the importance of statistical thermodynamics and concept of partition functions.
<b>CH-413 : Advanced Organic Chemistry-I</b>	CO1:Develop knowledge of substitution (electrophilic, nucleophilic) addition and elimination reactions
	CO2:Differentiate between various organic reactive intermediates and their reactions
	CO3:Students can understand the carbon-carbon multiple bonds and carbon heteroatom multiple bonds- Mechanism and stereochemical aspects
<b>CH-416-A : Advanced Inorganic Chemistry</b>	CO1:The course helps to build up a conceptual framework for understanding the principles and theories for chemical bonding and properties of inorganic compounds.
	CO2:The course helps to furnishes the basic concepts of group theory and its applications for various inorganic compounds
	CO3: The course furnishes knowledge of Organometallic compounds of some important transition metals and their applications.
	CO4: The course offers information lying on synthesis, structure, bonding, reactivity and properties of some selected non transition elements.

<b>RM-417 :Research Methodology for Sciences Learning outcomes:</b>	CO1:Students will understand the basic concept of science and scientific research
	CO2:Learn and follow the ethical guidelines while doing research avoid plagiarism in research publications
	CO3: Able to write a comprehensive literature review on a given research
	CO4:To be able to write a crisp research proposal or research project independently
	CO5: To be learn most advanced chemistry tools for the efficient research work.
	CO6:Acquire knowledge about various hazardous chemical handling procedures and implement it while working in the laboratory

**Class: M.Sc. II:**

<b>CH-350: Organic Reaction Mechanism</b>	CO1: To make the students conversant with the CO-1. Learn in detailed strength of acid and bases. Understand the Linear free energy relationship, Hammett and Taft equation, substituent and reaction constants
	CO2:Detailed mechanism of hydrolysis with breaking and formation of sigma bond
	CO3: Study of reaction of carbanion with detailed mechanism, coupling reactions along with name reactions.
	CO4: Study of basics of photochemical reactions and learn various photochemical reactions
<b>CH-351: Spectroscopic Methods in Structure Determination</b>	CO1: Study of basics of photochemical reactions and learn various photochemical reactions To make the students conversant with the CO-CO2: Study 1H NMR Spectroscopy: Chemical Shift, deshielding, correlation for protons bonded to carbon and other nuclei
	CO2:Study of basics of photochemical reactions and learn various photochemical reactions
	CO3: Study of basics of photochemical reactions and learn various photochemical reactions 2D NMR techniques: COSY, homo and hetero nuclear 2D resorts spectroscopy, NOESY and the applications.
	CO4: Study of mass spectrometry: Instrumentation, various methods of ionization, FAB, ESI, TPSI, MALDI, TOF, Mass



	spectral fragmentation of Organic compounds
<b>CH-352 Organic Stereochemistry</b>	CO1: To make the students conversant with the CO-1. To learn and apply various concepts such as stereochemistry and fundamental principles of stereo selectivity in organic chemistry.
	CO2: Study of different types of per cyclic reactions. CO-3. Study of stereo chemical aspects of fused and bridged rings.
	CO3: Study of stereo chemical aspects of six membered and other related rings CO-5 Study of prochirality and topocity.

<b>CH-353 Heterocyclic Chemistry</b>	<b>A:</b> CO1: Understood various methods of synthesis of heterocyclic compounds.
	CO2: To predict the product and suggest the mechanism
	CO3: Understand the importance of heterocyclic in industry as well as in drug discovery.

UG –B.Sc. SEM II

**Class: FYBSC**

<b>CH: 201 Physical and Inorganic Chemistry</b>	CO1: To gain knowledge about origin of surface tension
	CO2: To determine surface tension.
	CO3: To get idea regarding viscosity.
	CO4: To get idea regarding viscosity
	CO5: Students will be able to understand equilibrium.
	CO6: Students will be able to understand different factors affecting equilibrium
	CO7: Students will be able to understand equilibrium
<b>CH: 202 Organic and inorganic chemistry</b>	CO1: Alcohols, their classification and nomenclature
	CO2: Different methods of preparation and reactions of alcohols
	CO3: Different methods of preparation and reactions of phenols.
	CO4: Different methods of preparation and reactions of ethers

**Class: SYBSC**

<b>CH- 401 Physical and Inorganic Chemistry</b>	CO1: Explain the principles of electrode processes and apply them during Practical's.
	CO2: identify and write different types of equilibria of an electrolyte in solutions
	CO3: Third law of thermodynamics and its applications
<b>CH - 402 Organic and Inorganic Chemistry</b>	CO1: The course furnishes knowledge of Organometallic compounds of some important transition metals and their applications.
	CO2: Study of transition metal complexes in organic synthesis.
	CO3: Learn about MOT to draw energy diagrams and to predict bond order.
	CO4: Learn about the VBT to describe the formation of covalent bonds in terms of atomic orbital overlap.
<b>CH-404 SEC-2: Advanced Analytical Chemistry</b>	CO1: Compare the Instrumental methods and non instrumental methods and there advantages
	CO2: Solve the problem of detection and separation using analytical instruments.
	CO3: Students will be able to explore new areas of research in both chemistry and allied fields of science and technology

**Class: TYBSC**

<b>CH-601</b> <b>Subject- Principles of Physical Chemistry-II</b>	CO1: After successful completion of this course, students are expected to: Analyze the rotational spectra of diatomic molecules and determine the bond length.
	CO2: Explain and apply the radioactivity principles for various chemical and biological investigations
	CO3: Describe the mechanism of fluorescence, phosphorescence and photochemical reactions
	CO4: Analyze the given crystal structure and determine the indices of planes, inter- planer distances and type of crystal structure
<b>CH-602 Subject-Inorganic Chemistry</b>	CO1: Learn about basic principles and synthesis of nanomaterials
	CO2: Learn about classification, composition and processing of cement
	CO3: Learn about classification and composition of alloys
<b>CH-603</b> <b>Subject- Spectroscopic Methods of Structure Determination</b>	CO1: Students will learn interaction of radiations with matter. They will understand different regions of electromagnetic radiations. They will know different wave parameters.
	CO2: Students will learn principle of mass spectroscopy, its instrumentation and nature of mass spectrum.
	CO3: Students will understand principle of UV spectroscopy and nature of UV spectrum. They will learn types of electronic excitations
	CO4: Students will be able to calculate maximum wavelength for any conjugated system. And from the value of $\lambda$ -max they will be able to find out extent of conjugation in the compound.
<b>CH-604 Subject-Chemistry of Industrially Important Products</b>	CO1: Describe the industrial production of a number of important organic and inorganic compounds / chemicals and products of end use.
	CO2: Gain comprehensive knowledge of cutting-edge developments in a field of different chemical industries
	CO3: Importance of Cosmetics Industry and a general study including preparation and uses of the Hair dye, hair spray, shampoo, suntan lotions, lipsticks, talcum powder, nail enamel, creams (cold, and shaving creams).
	CO4: Perfumes and identify the distinguishing features of its

	<p>components and also an essential oils and their importance in cosmetic industries with reference to Eugenol, Geraniol, sandalwood oil, eucalyptus, rose oil, 2- phenyl ethyl alcohol, Jasmone, Civetone, Muscone etc.</p>
	<p>CO5: Know about pesticides both natural and synthetic, benefits and adverse effects of it, also synthesis, manufacture and uses of pesticides viz. Organochlorines (DDT, Gammexene); Organophosphates (Malathion, Parathion); Anilides (Alachlor and Butachlor).</p>
<p><b>CH-605 Subject- Analytical Techniques</b></p>	<p>CO1: To provide knowledge of instruments which are used in Chemical, Pharma, Petroleum, and insecticide and pesticide industry</p>
	<p>CO2: To increase student technical skill as per industry need.</p>
	<p>CO3: To develop an understanding of the range and uses of analytical methods in chemistry.</p>
	<p>CO4: Compare the Instrumental methods and non-instrumental methods and there advantages.</p>
	<p>CO5: Students will be able to explain why chemistry is an integral activity for addressing social, economic, and environmental problems.</p>
<p><b>CH-606(A) Subject- Polymer Chemistry</b></p>	<p>CO1: Define terms like monomer, polymer, polymerization, polydispersity index, etc., classify polymers based on their origin, native backbone chain, and thermal response</p>
	<p>CO2: Know glass transition temperature and its determination, various ways to express molecular weights of polymers and polydispersity index.</p>
	<p>CO3: Identify different mechanisms of polymerizations viz. free radical, ionic, and condensation polymerizations.</p>

**Class: MSC I**

<b>CH-421 : Advanced Physical Chemistry-II</b>	CO1:Differentiate between the nature of chemical bond concept from MOT and VBT
	CO2:Students will be able to apply the Approximate quantum methods for simple conjugated systems
	CO3: Students will be able to explain the mechanism of spectroscopic methods and solve the numerical problems related with it.
<b>CH-423 : Advanced Organic Chemistry-II</b>	CO1:Students can understand various reactions and rearrangements
	CO2:Understand and write mechanism of reactions and their applications
	CO3:Understand how to convert one molecule into another molecule by using oxidizing and reducing agents
	CO4: Plan the fundamental organic reactions of significance for organic synthesis and design synthesis of organic molecules.
<b>CH-426-A : Advanced Inorganic Chemistry-I</b>	CO1:This course provides detailed information of ionic solids, examples with their structures and calculation of radius ratio w. r. t. C. N. 3, 4, 6.
	CO2:This course offers to impart the basic knowledge about spectroscopy of inorganic compounds
	CO3:This course also offers to study the reaction mechanism in transition metal complexes

**Class: MSC II**

<b>CH-450: Chemistry of Natural Products</b>	CO1: To study the important features of terpenoids.
	CO2: To study the biosynthesis of natural products.
	CO3: To apply the knowledge of different reagents for synthesis of natural product.
	CO4: To understand the classification and uses of vitamins.
<b>CH-451: Synthetic Methods in Organic</b>	CO1:The students will be able to • Understand and apply the specific protecting groups for the reactant to react the desirable functional group
	CO2: Design the synthetic pathway from target molecule by applying the retrosynthesis, disconnection approach.
	CO3: Understand various synthetic methods in organic synthesis.
	CO4:Understand advanced organic reaction.

<b>CH-452(A): Drug Chemistry</b>	CO1:Acquire knowledge on metabolism of biomolecules
	CO2: Familiarise with amino acids, proteins, lipids, nucleic acids and enzymes
	CO3: Understand biochemical reactions in microbial cells and metabolic pathway diversity

**UG - B. Sc. (Computer Science)**

<b>CS 101: Essential of Computer Science</b>	CO1: To do basic operations regarding
	CO2: To identify network type and analyze & comply basic issues in networking.
	CO3: To design an algorithm and draw the flowchart.
	CO4: To study about networks and its type
<b>CS 102: C Programming-I</b>	CO1: Understand basic Structure of the C-Programming, declaration and usage of variables
	CO2: Understand the concepts of various operators and conditional statements.
	CO3: Understand array to store multiple pieces of homogeneous data.
<b>CS LAB: DSC 1A LAB: Lab Course on Essential of Computer and C Programming</b>	CO1: To study various data types, arrays and functions in C
	CO2: To understand input-output and, control and iterative statements in C
	CO3: To study various data types, arrays and functions in C
<b>CS 201: Internet Computing</b>	CO1: Understand the idea of a digital world
	CO2: Understand the importance of keeping safe online
<b>CS202: C Programming-II</b>	CO1: Understand the concepts of functions and pointers.
	CO2: Be able to work with operators and conditional statements
<b>COMP-211 :Data Structure – I</b>	CO1: Demonstrate an understanding of basic data structure (Such as an array-based list, linked list, stack ,queue, binary search tree )and algorithms
<b>COMP-212 : Programming in C++-I</b>	CO1: Use functions and pointers in your C++ program.
	CO2: Understand tokens, expressions, and control structures.
	CO3: Explain arrays and strings and create programs using them.
	CO4: Describe and use constructors and destructors.
	CO5: Understand and employ file management.
<b>Class: (T.Y.Bsc)Semester – V</b>	

<b>CS-501 System Programming</b>	CO1: Understand details about system software
	CO2: To do basic system program like development of editors lexical analyzers etc
	CO3: Students are familiar with language processing activities- functions of translators, loader and linkers
<b>CS-502 Database Management System</b>	<b>On completion of the course, student will be able to–</b>
	CO1: Solve real world problems using appropriate set, function, and relational models.
	CO2: Design E-R Model for given requirements and convert the same into database tables.
<b>CS-503 Software Engineering</b>	CO1: Students are able to perform the E-R Diagram, DFD, Data dictionary, Decision tree about software.
	CO2: They can also design the software in learned language using the course content.
	CO3: Get the knowledge of types of testing & how testing is performed in industry.
<b>CS-504 Computer Aided Graphics</b>	CO1: Differentiate between interactive and non-interactive graphics.
	CO2: Study line Drawing and Circle Drawing techniques and algorithms.
	CO3: Perform 2D and 3D transformation on different images.
	CO4: Know about detail working of 2D and 3D clipping and windowing.
	CO4: Understand raster graphics and hidden surface elimination.
<b>CS-505 Python Programming</b>	CO1: Explain basic principles of Python programming language
	CO2: Construct and apply various filters for a specific task.
	CO3: Apply the best features of mathematics, engineering and natural sciences to program real life problems.
<b>CS-506B JAVA Programming I</b>	CO1: Get knowledge of JDK environment
	CO2: Explore polymorphism using method overloading and method overriding
	CO3: Understand the different aspects of hierarchy of classes and their extensibility
	CO4: Understands the concept of streams and files
	CO5: Write programs for handling run time errors using exceptions



<b>DSC UG-CS-508: LAB on Computer Aided Graphics</b>	CO1:Understanding Graphics Concept Practically
	CO2: Hands on of using standard graphics library
	CO3: Hands on of implementation of DDA, Bresenham's Line,Circle Drawing Algorithm
	CO4: Hands on of implementation of 2D Transformation: Translation, Scaling and Rotation
	CO5: Hands on of implementation ofCohen-Sutherland line clipping algorithm
<b>CS-509B: Lab on JAVA Programming I</b>	CO1:Get knowledge of JDK environment
	CO2:Explore polymorphism using method overloading and method overriding
	CO3:Understand the different aspects of hierarchy of classes and their extensibility
	CO4:Understands the concept of streams and files
	CO5:Write programs for handling run time errors using exceptions
<b>Semester –VI</b>	
<b>CS-601 Operating System</b>	CO1: Students should familiar with Operating System Services.
	CO2: Understand CPU scheduling algorithms, memory Management Techniques, Disk Drum Scheduling algorithms, Deadlock preventions and avoidance.
	CO3:Introduction to android operating systems – its architecture, applications and uses
<b>CS-602 Relational Database Management Systems</b>	<b>On completion of the course, student will be able to–</b>
	CO1:Design E-R Model for given requirements and convert the same into database tables.
	CO2:Use database techniques such as SQL & PL/SQL.
	CO3:Explain transaction Management in relational database System.
	CO4:Use advanced database Programming concepts
<b>CS-603 Computer Network</b>	<b>After completion of the course:</b>
	CO1: Students understand the information exchange done across the network with the help of OSI & TCP/IP models.
	CO2: Student understands how errors are captured & handled in network.
	CO3: Student understands various attack & its prevention techniques.
<b>CS-604 Theoretical Computer Science</b>	CO1: Understanding the use of Sets, Relations and Graphs.
	CO2: Understand Languages in TCS.

	CO3: Introduction of Regular Languages and Expressions.
	CO4: Understanding Pumping Lemma and its applications.
	CO5: Explore the knowledge of Pushdown Automata.
	CO6: Understanding Normal Forms with Examples.
	CO7: Understanding Turing Machine.
<b>CS-605 Python Programming – II</b>	CO1: Explain basic principles of Python programming language
	CO2: Implement object oriented concepts, database applications.
	CO3: Construct regular expressions for pattern matching and apply them to various filters for a specific task.
	CO4: Design and implement Database Application and Content providers.
	CO5: Apply the best features of mathematics, engineering and natural sciences to program real life problems
<b>CS-606B: JAVA Programming II</b>	CO1: Program using graphical user interface with Swing classes
	CO2: Create programs using menus and dialog boxes
	CO3: Understand advanced java concepts like JDBC, Java Beans
	CO4: Handle different kinds of events generated while handling GUI components
	CO5: Program to create applets
<b>CS-Lab 608: Lab on RDBMS</b>	CO1: To use SQL & PL/SQL.
	CO2: To perform advanced database operations.
	CO3: Create database tables in postgresQL.
	CO4: Write and execute simple, nested queries
	CO5: To use SQL & PL/SQL.
<b>CS-509 B: Lab on JAVA Programming II</b>	CO1: Program using graphical user interface with Swing classes
	CO2: Handle different kinds of events generated while handling GUI components
	CO3: Create programs using menus and dialog boxes
	CO4: Program to create applets
	CO5: Program using graphical user interface with Swing classes
	CO6: Handle different kinds of events generated while handling GUI components
	CO7: Create programs using menus and dialog boxes
	CO8: Understand advanced java concepts like JDBC, Java Beans
<b>CS 101: Essential of Computer Science</b>	CO1: To do basic operations regarding
	CO2: To identify network type and analyze & comply basic issues in networking.
	CO3: To design an algorithm and draw the flowchart.

<b>CS 102: Programming in C-I</b>	CO1: Understand array to store multiple pieces of homogeneous data.
	CO2: Understand the concepts of functions and pointers.
	CO3: Be able to work with operators and conditional statements
<b>PG Computer Science- M.Sc. (Computer Science)</b>	
<b>Data Structures and Algorithms</b>	CO1: Student will be able to choose appropriate data structure as applied to specified problem definition
	CO2: Students will be able to use linear and non-linear data structures like stacks, queues, linked list etc.
	CO3: To increase the student's intuitive understanding of search trees
	CO4: To learn advanced tree data structures
	CO5: To learn to represent data using graph data structure
	CO6: Students will be able to apply concepts learned in various domains like DBMS, compiler construction etc.
<b>CS-102 Database Management System (DBMS)</b>	CO1: To analyze Database design methodology.
	CO2: Acquire knowledge of fundamentals of Database Management System.
	CO3: Analyze the difference between traditional file system and DBMS.
	CO4: To deal with different Database languages.
	CO5: Draw various data models for Database, writing and executing queries to get expected results.
<b>CS-103 Automata Theory and Computability</b>	CO1: Understand, design, construct, analyse and interpret Regular languages, Expression and Grammars.
	CO2: Design different types of Finite Automata and Machines as Acceptor, Verifier and Translator.
	CO3: Understand, design, analyse and interpret languages, Expression and Grammars.
	CO4: Design different types of Push down Automata and Turing Machine.
<b>CS-104 Operating Systems</b>	CO1: understand different types of operating systems.
	CO2: gain extensive knowledge on principles and modules of the operating systems.
	CO3: understand key mechanisms in the design of operating systems modules.
	CO4: understand process management, thread management, memory management, file management and deadlock handling.
	CO5 compare performance of different processor scheduling algorithms.
	CO6 produce algorithmic solutions to process synchronization

	problems
	CO7: understand the issues related to protection and security
<b>CS-105 Object Oriented Programming using JAVA</b>	CO1: To understand the fundamentals of Java programming language and its constructs.
	CO2: To understand concept of object-oriented programming concept using Java.
	CO3: To implement the applications using the concept of the Inheritance, Interfaces, Lambda Expressions, and Inner Classes.
	CO4: To design and implement the real-world application using the concept of the Exceptions and Generic Programming
	CO5: understand how to use concept of the Graphics Programming, Event Handling, Swing Components, and JDBC in their application.
<b>CS LAB-I LAB on Data Structures and Algorithms and JAVA programming</b>	<b>Data Structures and Alg.</b>
	CO1: Develop solutions for a range of problems using procedure oriented / object oriented programming.
	CO2: Apply divide and conquer strategy to searching and sorting problems using iterative And / or recursive solutions.
	CO3: Design scenarios to explain behaviors and demonstrate correctness of programs
	CO4: Determine which algorithm or data structure to use in different scenarios
	CO5: Choose the appropriate data structure and algorithm design method for a specified application.
	CO6: Have practical knowledge on the applications of data structures
	<b>JAVA programming</b>
	CO1: Write Java application programs using OOP principles and proper program structuring
	CO2: Implementing user interface: 2D shapes, events, dialog box, menu and popup menu
	CO3: Developing Applets, multithreaded programs
	CO4: Implementing generic and JDBC programming
	CO5: Demonstrate the concepts of polymorphism and inheritance
	CO6: Write Java programs to implement error handling techniques using exception handling
<b>CS LAB-II LAB on DBMS</b>	CO1: To understand Database design methodology.
	CO2: Acquire knowledge in fundamentals of Database Management System.

	CO3: Work with popular Database languages.
	Co4: Realise various data models for Database and Write queries in SQL.
	Co5: Familiar with basic database storage structures and access techniques.
<b>CS-201 Compiler Construction</b>	Understanding of basic structure of compiler, concepts and terminology in programming languages, lexical analysis, finite state techniques, scanner generator, parsing, kinds of parsers, designing lexical analyzer, scanner and parsers, principal ideas with intermediate code generation, optimizations.
<b>CS-202 Mathematical Foundations of Computer Science</b>	Understanding of all concepts essential to design compiler
	CO1: demonstrate their understanding of and apply methods of mathematics in computer science to subsequent courses in algorithm design and analysis
	CO2: identify, formulate, and develop solutions to computational challenges.
	CO3: understand and solve a computational problem to meet desired needs within realistic constraints.
	CO4: analyze the behavior of the data, model the data using statistical measures and represent it graphically on paper without using available computerized tools.
	CO5: apply mathematical foundations, probability theory in the modeling and design of computational systems in a way that demonstrates comprehension of the tradeoffs involved in design choices.
<b>CS-203 Artificial Intelligence</b>	Co1: Identify problems that are amenable to solution by AI methods.
	CO2: Identify appropriate AI methods to solve a given problem.
	CO3: Design smart system using different informed search / uninformed search or heuristic approaches.
	CO4: Apply the suitable algorithms to solve AI problems.
<b>CS-204 Design and Analysis of Algorithms</b>	CO1: Analyze the asymptotic performance of algorithms.
	CO2: Write rigorous correctness proofs for algorithms.
	CO3: Design and analyze divide-and-conquer based algorithms.
	CO4: Devise and Synthesize greedy and dynamic-programming based algorithms.
	CO5: Employ graphs to model problems solvable using traversal techniques.
	CO6: Able to model problems using backtracking
	CO7: Able to classify nondeterministic polynomial time algorithms.
<b>CS-205 Python Programming</b>	CO1: understand the basic concepts of Python programming.
	CO2: write Python programs that supports some constructs of

	<p>functional programming like map, reduce, filter.</p> <p>CO3: understand the use of strings, lists, tuples, dictionaries, and files and able to manipulate data available within them with help of various functions.</p> <p>CO4: understand how to write user defined classes, methods as well as module creation and handle exceptions while implementing python programs.</p> <p>CO5: use regular expression for validating email address or domain name.</p>
<b>CS-301 Machine Learning</b>	<p>CO1: Distinguish between, supervised, unsupervised and semi-supervised learning</p> <p>CO2: Apply the apt machine learning strategy for any given problem</p> <p>CO3: Suggest supervised, unsupervised or semi-supervised learning algorithms for any given problem</p> <p>CO4: Design systems that use the appropriate graph models of machine learning</p>
<b>CS-302 Web Application Development Technology</b>	<p>CO1: Successful students will be able to design web applications using ASP.NET</p> <p>CO2: Successful students will be able to use ASP.NET controls in web applications.</p> <p>CO3: Successful students will be able to debug and deploy ASP.NET web applications</p> <p>CO4: Successful students will be able to create database driven ASP.NET web applications and web services</p>
<b>CS-303 Computer Graphics and Digital Image Processing</b>	<p>CO1: Developed scientific and strategic approach to solve complex problems in the domain of Computer Graphics and Digital Image Processing.</p> <p>CO2: Demonstrated various algorithms for scan conversion and filling of basic primitive objects and their comparative analysis and applied 2-D and 3-D geometric transformations, viewing and clipping on graphical objects.</p> <p>CO3: Built the mathematical foundations for digital image representation, image acquisition, image transformation, image enhancement and restoration.</p> <p>CO4: Developed a theoretical foundation of fundamental concepts of digital image processing.</p> <p>CO5: Exposed students to MATLAB Image Processing Toolbox.</p>
<b>CS-304 Software Engineering</b>	<p>CO1: Understand and demonstrate basic knowledge in software engineering</p> <p>CO2: Define various software application domains and</p>

	remember different process model used in software development.
	CO3: Explain needs for software specifications also they can classify different types of software requirements and their gathering techniques.
	CO4: Convert the requirements model into the design model and demonstrate use of software and user interface design principles.
	CO5: Distinguish among SCM and SQA and can classify different testing strategies and tactics and compare them.
	CO6: Justify role of SDLC in Software Project Development
	CO7: Generate project schedule and can construct, design and develop network diagram for different type of Projects.
<b>CS-305 (A) Natural Language Processing</b>	CO1: Students will get idea about know-hows, issues and challenge in Natural Language Processing and NLP applications and their relevance in the classical and modern context.
	CO2: Student will get understanding of Computational techniques and approaches for solving NLP problems and develop modules for NLP tasks and tools such as Morph Analyzer, POS tagger, Chunker, Parser, WSD tool etc.
	CO3: Students will also be introduced to various grammar formalisms, which they can apply in different fields of study.
	CO4: Students can take up project work or work in R&D firms working in NLP and its allied areas
<b>CS-305 (B) Optimization Algorithms</b>	CO1: write about OR and decision making.
	CO2: Differentiate between feasible and optimal solution
	CO3: Apply solving techniques to all types of LPP.
	CO4: Apply solving techniques to network problems and game theory problems as well.
<b>CS-305 (C) Data Warehousing and Data Mining (DWDM)</b>	CO1: Explain organization of data warehousing and data marts.
	CO2: Differentiate between OLTP and OLAP
	CO3: Apply data pre-processing techniques
	CO4: Write basic algorithms for extracting patterns from data (association mining, classification and clustering)
	CO5: Solve problems related with various aspects of data mining
<b>CS LAB-V LAB on Web Application Development Technology</b>	CO1: Students will get hands-on experience on basic concepts in web applications development using ASP.NET technology.
	CO2: Students can develop or undertake professional looking real life web sites using ASP.Net technology.
	CO3: It will help students to grasp other Web Application Development technologies/platforms easily through learn-by-comparison approach so that the learning curve will be smooth and faster.

<b>LAB on Computer Graphics and Digital Image Processing</b>	CO1: Developed scientific and strategic approach to solve complex problems Computer in the domain of Computer Graphics and Digital Image Processing using C++ and MATLAB respectively.
	CO2: Implemented various algorithms for scan conversion and filling of basic primitives objects and their comparative analysis and applied 2-D and 3-D geometric transformations, viewing and clipping on graphical objects.
	CO3 Exposed students to MATLAB and Image Processing Toolbox.
	CO4: Used various tools in MATLAB to implemented image transformation, image enhancement in spatial and frequency domain.



UG – B.Sc. (Electronics)

**Class: F.Y. B.Sc. (2018-19)**

<b>ELE-101: Network Analysis And Digital Integrated Circuits</b>  <b>ELE-102: Digital Integrated Circuits</b>	CO1: Apply knowledge to develop circuits using electronic devices.
	CO2: Apply the concept and knowledge of electronics devices to real life problems.
	CO3: Simulate complex circuits and understand the behavior of the systems.
	CO4: Understand and analyze, linear and digital electronic circuits.
	CO5: Review, prepare and present technological developments.
<b>ELE-201: Analog Electronics</b>  <b>ELE-202: Linear Integrated Circuits</b>	CO1: Apply the concept and knowledge of integrated circuit chips to develop new systems.
	CO2: Apply practical knowledge to solve real life problems of the society.
	CO3: Understand of the course and create scientific temperament and give exposure to the students for independent use of integrated circuit chips for innovative applications.
	CO4: Model complex circuits and simulate them.
	CO5: Handle simulation software to analyze electronics circuits.

**Class: F.Y. B.Sc. (2022-23)**

<b>ELE-101: Circuit Components and Network Analysis</b>  <b>ELE-102: Basics of Digital Electronics</b>	CO1: Apply knowledge to develop circuits using electronic devices.
	CO2: Apply the concept and knowledge of electronics devices to real life problems.
	CO3: Simulate complex circuits and understand the behavior of the systems.
	CO4: Understand and analyze, linear and digital electronic circuits.
	CO5: Review, prepare and present technological developments.
<b>ELE-201: Analog Electronics</b>  <b>ELE-202: Digital Circuits</b>	CO1: Apply the concept and knowledge of integrated circuit chips to develop new systems.
	CO2: Apply practical knowledge to solve real life problems of the society.
	CO3: Understand of the course and create scientific temperament and give exposure to the students for independent use of digital integrated circuit chips for innovative applications.
	CO4: Model complex circuits and simulate them.

**Class: S.Y. B.Sc. (2019-20)**

<p align="center"><b>ELE-301: Analog Communication</b></p> <p align="center"><b>ELE-302: Microprocessors and Applications</b></p>	CO1: Apply knowledge to develop circuits of analog modulation and demodulation.
	CO2: Apply the concept and knowledge of microprocessors to real life problems.
	CO3: Analyze modulation circuits and understand the behavior of the systems.
	CO4: Understand and analyze 8085 microprocessor and its programming.
	CO5: Review, prepare and present technological developments.
<p align="center"><b>ELE-401: Digital Communication</b></p> <p align="center"><b>ELE-402: Microcontrollers and Applications</b></p>	CO1: Apply the concept and knowledge of digital communication to develop new systems.
	CO2: Apply practical knowledge of microcontrollers to solve real life problems of the society.
	CO3: Understanding of the course and create scientific temperament and give exposure to the students for independent use of microcontroller for innovative applications.
	CO4: Gain knowledge of microcontroller programming.
	CO5: Handle hardware and software to shoot problems of the society.

**Class: S.Y. B.Sc. (2022-23)**

<p align="center"><b>ELE-301: Analog Circuits and Applications</b></p> <p align="center"><b>ELE-302: Microprocessors and Applications</b></p>	CO1: Apply knowledge to develop analog circuits and use for different applications.
	CO2: Apply the concept and knowledge of microprocessors to real life problems.
	CO3: Understand and analyses 8085 microprocessor and its programming.
	CO4: Review, prepare and present technological developments.
<p align="center"><b>ELE-401: Analog Communication</b></p> <p align="center"><b>ELE-402: Linear Integrated Circuits &amp; Applications</b></p>	CO1: Apply the concept and knowledge of analog modulation and demodulation.
	CO2: Understand the analog communication to develop new systems.
	CO3: Apply practical knowledge of integrated circuits to solve real

	life problems of the society.
	CO4: Understanding of the course and create scientific temperament and give exposure to the students for independent use linear integrated circuits.
	CO5: Handle hardware and software to shoot problems of the society.