PES 's

Modern College of Arts,Science and Commerce,Ganeshkhind,Pune-411016

(Autonomous)

AQAR-2022-23

Criterion 1- Curricular Aspects

1.1 Curriculum Design and Development

Program Outcomes (POs) , Course Outcomes (COs)

Principal
Modern College of Arts, Science & Commerce, Ganeshkhind, Pune-16

Progressive Education Society's

Modern College of Arts, Science and Commerce

Ganeshkhind, Pune -16 (Autonomous)

F.Y.B.A. Economics (Autonomous)

Choice Based Credit Pattern (CBCS)

Course Outcomes

Sem-I **Indian Economic Environment – I (22-EC-A1111)**
Sem-II **Indian Economic Environment – II (22-EC-A1121)**

CO1: Understand the basic concepts of Economics and its scope.

CO2: Develops an understanding of Indian economic environment.

CO3: Awareness on the various new developments in the different sectors of an economy – agriculture, industry, services, banking, etc.

CO4: Ability to compare and contrast Indian Economy with other world economies.

CO5: Students will be able discuss and debate on the various issues and challenges facing the Indian Economic Environment.

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DEPARTMENT OF ECONOMICS

B. A. Economics

Programme outcomes: Bachelor of Arts (BA)

PO1: Demonstrate Language and Communication Skills (Oral and Written) which can be applied in personal and professional spheres.

PO2: Display the ability to engage in social interactions across the board.

PO3: Adhere to values and ethics inculcated through the curricula in profession and personal life.

PO4: Develop an understanding about the needs and role as citizens and taking up individual responsibilities.

PO5: Gain knowledge and skills essential for employability.

Programme Specific outcomes

PSO1: To learn basic concepts of Economics so as to make the students aware of the importance of Economics.

PSO2: Students become aware of economic situation of India and countries across the world.

PSO3: Provides understanding and deep knowledge about basic principles that lead to trade across countries.

PSO4: To learn restructuring of economic policies as per the requirement of the economic situation.

PSO5: Students' get to know various career opportunities related to Economics.

Progressive Education Society's

Modern College of Arts, Science and Commerce

Ganeshkhind, Pune -16 (Autonomous)

M.A. Part - I Economics (Autonomous)

Choice Based Credit Pattern (CBCS)

COURSE OUTCOMES

CORE COURSE - SEMESTER I

MICRO-ECONOMIC ANALYSIS – I (22 EC111)

CO1: Ability to apply the concepts of micro economics such as demand, supply,revenue, cost, elasticity, etc.

CO2: Ability to analyze and demonstrate knowledge of the basic theories/laws ineconomics- law of demand, law of supply, production function, etc.

CO3: At the end of the course, the student should be able to evaluate microeconomic concepts, models and its use in real life situations.

PUBLIC ECONOMICS I – (22 EC112)

CO1: Ability to recognize, apply and analyze concepts and theories in public economics.

CO2: Ability to appraise and assess the theory of public economics in real lifesituations.

INTERNATIONAL TRADE – (22 EC113)

CO1: Ability to understand the concepts of international economics such as comparative cost, terms of trade, trade policies and trade agreements.

CO2: Ability to interpret and apply theory relating to understand international trade.

CO3: Ability to discuss and debate the effects of trade policy, trade agreements,exchange rate policies on the world economy/trade.

ELECTIVE PAPERS - SEMESTER I

AGRICULTURAL ECONOMICS – (22 EC114A)

CO1: Ability to analyze and evaluate the subject with reference to various aspectsof agrarian economies.

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CO2: Ability to develop an understanding of agriculture with its intricacies and imperfections and to be able to construct intellectual dialogue on the challenges of agriculture.

STATISTICAL TECHNIQUES – (22 EC114C)

Co1: Ability to develop, demonstrate and examine various topics under economicswith the help of statistical techniques.

Co2: Ability to examine subject areas in economics with the use of statistical tools.

CORE COURSE - SEMESTER II

MICRO-ECONOMIC ANALYSIS–II – (22 EC121)

CO1: Ability to apply the concepts of micro economics such as demand, supply, revenue, cost, elasticity, etc.

CO2: Ability to compare and contrast various market structures and understand concept of equilibrium, price determination.

CO3: At the end of the course, the student should be able to evaluate microeconomic concepts, models and its use in real life situations.

PUBLIC ECONOMICS II – (22 EC122)

CO1: Ability to understand, apply and analyze concepts-public debt, budget, fiscalpolicy in public economics.

CO2: Ability to interpret the theories relating to public economics in real life situations.

CO3: Ability to discuss and debate on the public finance and policies w.r.t. India

INTERNATIONAL FINANCE – (22 EC123)

CO1: Ability to understand and interpret the concepts such as Balance of Payments, Exchange Rates, Foreign Exchange transactions, Internationalcapital flows, etc.

CO2: Ability to critically analyze the effects of deficits, exchange risk, role of foreign capital on the world economy/trade.

CO3: Ability to discuss and debate on subjects related to international trade and finance w.r.t the Indian Economy.

Department of Economics

M. A. Economics

Programme outcomes

PO1: Demonstrate personal integrity and professional behavior.

PO2: Understanding of the current state of knowledge.

PO3: Critically evaluate quantitative and qualitative information.

PO4: Collaborate with others and work in teams respectfully and individually.

PO5: Understand the research process.

PO6: Integrate knowledge and perspectives across disciplinary boundaries.

Programme specific outcomes

PSO1: To learn basic concepts of Economics so as to make the students aware of the importance of Economics.

PSO2: Students become aware of economic situation of India and countries across the world.

PSO3: Provides understanding and deep knowledge about basic principles that lead to trade across countries.

PSO4: To learn restructuring of economic policies as per the requirement of the economic situation.

PSO5: Students' get to know various career opportunities related to Economics.

Department of Sociology

Program Name : MA

Program outcomes

PO1 Development of critical thinking

PO2 Display the ability to engage in social interactions across the board

PO3 Engage, design and evaluate research in an Interdisciplinary way

PO4 Understand their individual responsibility towards civic and sustainability related issues

PO5 Participate in policy engagement and advocacy

Program specific outcomes

PSO1- Understanding and application of the major theoretical perspectives.

PSO2- Understanding the central concepts developed by the theorists to analyze and evaluate the social world

PSO3- Design and evaluate empirical sociological research.

PSO4-Communicate orally and in writing about sociological concepts.

PSO5- Use their sociological education outside of the classroom, particularly in their careers or further education.

Course outcomes (PG)

First Year (2019 pattern)

MA I - Semester I : Course Outcomes

Classical Sociological Tradition

CO1- Students get acquainted of the contribution of 'Classical Sociological Tradition'.

CO2- This course will help students to chart out the trajectory of 'Sociology' from its inception.

CO3- Relevance of 'Classical Theories' to understand contemporary concerns and theorization.

Sociology of India-

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CO1- Students get acquainted to 'Indian Sociological Tradition'

CO2- Students will engage with cross cutting issues of our time in particular to India.

CO3- They will acquire the knowledge of different perspectives to understand Indian Society.

CO4- Students can assess the Current Debates and shall understand its context for the Indian Society.

Applications of Social Research Methods

CO−1 The paper will give students the basic idea of Research and its Application.

CO-2 With this 'Skill Set' students can apply their theoretical understanding on ground reality.

CO−3 These Methodological skills shall enable them to enter into the 'Social Sector' or 'Research field'.

Sociology of Maharashtra: Culture and Society

CO1- Students will understand processes and context in shaping of the state of 'Maharashtra'

CO2- They will know the current/core issues.

MA I – Semester II: Course Outcomes

Sociological Theories 1

CO1-Students will understand Major Sociological perspectives.

CO2- The students will be able to thoroughly understand how theory is vital to making sense of our social life.

CO3- Only knowing the 'facts' alone is not enough to understand 'why' and 'how' things are as they seem; this theoretical understanding shall help them to comprehend about society and its reality.

Methodology of Social Research

CO1-Students will know the Philosophical background of Methodology.

CO2-They will also understand the importance of how to think about methodological choices in the course of every research.

CO3- Students will be able to understand the rigorous nature of any research.

CO4- They will know about different Quantitative and Qualitative methods.

Sociology of Education

CO1- They will have introduced to major stream of sociology namely 'Sociology of Education'

CO2- With the help of different theoretical perspectives student shall be able to engage with current issues and developments in Education.

Sociology of Media

CO1- The students will be able to critically understand Media and its role.

CO2- They will get acquainted to different perspectives and methods to study Media.

CO3- They can evaluate and engage with changing scenario of Media .

Department of Sociology

Programme Name BA

Program Specific outcomes (PSO)

PSO 1: Students will learn to apply critical approach to understand different social processes.

PSO 2: Students will learn how humans developed social consciousness, self-concepts, and Values.

PSO 3: Students will learn and demonstrate the understanding of the central/core concepts and theories developed by the theorists to analyse the social world.

PSO 4: Students will develop a basic understanding of scientific research methodologies and their applicability.

PSO 5: Students' engagement in policy framing and social change.

Course Outcomes

First Year (2019 pattern)

Sociology: Introduction to Sociology (G 1 - General paper – I) (Semester 1)

CO1: The students will be familiar with the basic concepts and subject matter of sociology and communicate them effectively.

CO2: The students will be able to understand the emergence of sociology as a science.

CO3: The students will be able to acquaint themselves with a new subject.

CO4: The students will be able to explore different career opportunities available in Sociology.

CO5: The students will be able to understand how societies have evolved.

Sociology: Social Institutions and Change (G 1 - General paper – I) (Semester 2)

CO1: The students will be able to identify 'Social Institutions' and their newer forms

CO2:- The students can effectively understand the nuances of the functioning of social institutions critically

CO3: The students will be able to explain 'Social Change' and its different dimensions

CO4: Think critically about the causes and consequences of social inequality.

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Political Science : G-1 General Paper- Introduction to Indian constitution

After undergoing the said course, the students would be able to

CO1 : Understand the basic information and analytical frameworks for studying Politics in India.

CO2 : Explain the salient features of India's Constitution. CO3 : Enumerate and Classify the Fundamental Rights and Directive Principles of state policy

CO4 : Illustrate Salient Features of Indian Federalism

CO5 : Understand the process of amending the Constitution and its flexible as well as rigid nature

CO6 : Understand the working of organs of the government and funcitioning of electoral system in India.

Second Year (2019 pattern)

Course **- Foundations of Sociological Thought** (DSE-1 A) – **(Sem. 3)** (Special Paper-I)

CO1: Students will understand the development trajectory of social sciences.

CO2: Students will aware of the foundation of 'Sociological Thoughts'

CO3: How these historical events shape the sociological imagination.

CO4: Students will be able to apply this knowledge to understand our surroundings and society at large.

Course **- Development of Sociology in India** (DSE-1 B) **- (Sem. 4)** (Special Paper-I)

CO 1: Students will be able to understand How colonialism shaped our understanding of our own society.

CO 2: How it reflects in the methods used to study Indian society.

CO 3: Students will learn to critically understand our own society's structure and processes.

CO 4: Students will learn various approaches to study Indian society

CO 5: This shall help students to understand the Social and Political fabric of India and Change.

Course **- Society in India: Understanding Issues** (DSE-2 A) **(Sem. 3)** (Special Paper-II)

CO 1: Students will get familiarize with the various issues and problems of Indian society.

CO 2: Students will develop an approach to analyze social issues using different sociological perspectives.

CO 3: Students will develop an ability to think critically about the constructions of social issues.

Course - **Indian Society: Understanding Issues/ Core Issues** (DSE-2 B) **(Sem. 4)** (Special Paper-II)

CO 1: Students will be conversant with the changing nature of social issues in India

CO 2: Students will develop an ability to think critically about the constructions of social issues.

Course - **Introduction to Population and Society** (CC-1 A) **(Sem. 3)** (General Paper-II)

CO 1: Students will be introduced to the significance of population studies and explain theories and basic concepts.

CO 2: Students will understand the impact of population on various institutions of society.

CO 3: Students will understand various debates around sources of population data.

Course - **Population and Society** (CC-1 B) **(Sem. 4)** (General Paper-II)

CO 1: Students learn the importance of population studies for policy and development.

CO 2: students familiarize themselves with the dynamics of Indian Population**.**

Course – (Mandatory Credit Course) : **Gender Spectrum and Media** (SEC 2A**) (Sem. 3)**

CO 1: Students will understand the need to study media and the relation between media and various social factors.

CO 2: Students will familiarize with gender spectrum and construction of the concept gender through media.

Course- (Mandatory Credit Course): **Research Project: Steps and Protocols** (SEC 2B**) (Sem. 4)**

CO 1: Students will develop an understanding of concept of social research and its significance.

CO 2: Students will know about the research process including steps and protocols.

Third Year (2019 Pattern)

Course- **Fundamental Principles of Social Research** (DSE- 3) **(Sem. 5)** (Special Paper-III)

CO 1: Students will familiarize with the different sociological approaches to research.

CO 2: Students will be acquainted with the types of research and issues in research.

CO 3: Students will acquire various procedures in conducting social research.

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Course- **Techniques of Social Research** (DSE-4) **(Sem. 6)** (Special Paper-III)

CO 1: Students will be imparted basic social research skills and its relevance.

CO 2: Students will be introduced with quantitative and qualitative research.

CO 3: Students will understand the process of social research.

Course- **Contemporary Indian Society** (DSE-5) **(Sem. 5)** (Special Paper-IV)

CO 1: Students will know about the forces that have shaped contemporary India.

CO 2: Students will be aware about the various issues of contemporary India.

CO 3: Students will develop an ability to think critically about issues in contemporary India.

Course- **Indian Society: Changes and Challenges** (DSE- 6) **(Sem. 6)** (Special Paper-IV)

CO 1: Students acquaint themselves with the changes in contemporary Indian Society.

CO 2: Familiarize students with the various challenges and crisis in contemporary India.

CO 3: Students will understand various dimensions of changing nature and challenges of urban society.

Course- **Crime and Society** (CC- 3) **(Sem. 5)** (General Paper-III)

CO 1: Students will learn the different definitions of crime.

CO 2: Role of Sociology to understand the 'Crime'.

CO 3: They will know about the recent debates on perspectives/approaches and their relevance to understanding crime.

CO 4: Students will be able to understand social settings affects crime in India

CO 5: Students will know the different forms of crime.

Course- **Introduction to Human Rights and Social Justice** (CC- 3) **(Sem. 6)** (General Paper-IV)

CO 1: Students will learn the concept of human rights and social justice and their importance.

CO 2: Students will be able to understand the various issues and concerns related to human rights and social justice.

CO 3: Students will know how human rights and the concept of social justice reflected in our own constitution.

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Program Outcomes (POs)

	Program Outcome (Bachelor of Arts)
PO1	**Nurturing responsible citizens through socio-economic, linguistic and cultural engagement**
PO2	**Identify and appreciate the real-world perspectives of knowledge through global understanding of texts and theories**
PO3	**Promote professionalism and cultivate ethical behaviour**
PO4	**Provide a plethora of avenues in career including higher studies, research and employment**
PO5	**Ethics, Values and Integrity inculcated through the curricula which will be applicable in everyday life both profession and personal**
PO6	**Develop an understanding about the need and role as citizens and taking up individual responsibilities**

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& Commerce, Ganeshkhind, Pune-16

DEPARTMENT OF GEOGRAPHY

PO, PSO AND CO (SEMESTER PATTERN)

PROGRAM OUTCOME

After completing B.A. Programme in Geography, students will be able to

1. **Knowledge outcomes:**
   - Demonstrate knowledge of physical and cultural features of the earth and locate them on a map.
   - Know about the basic disciplines of Geography and its sub branches.
   - Know the basic concepts and terminologies used in Geography like interior of the earth, plate tectonic, sea floor spreading, population growth, disasters, composition and structure of atmosphere, hydrosphere, etc.
   - Differentiate between minerals and rocks, weather and climate, interior of the earth, basic industries, farming etc.
   - Get information about the causes and effects of local, national and international problems like global warming, acid rain, ozone depletion, soil degradation, deforestation etc.

2. **Skill outcomes:**
   - Carry out surveying and learn the art of map making and prepare maps for the areas with the help of surveying techniques.
   - Gain knowledge of quantitative methods and their ability to use statistical and cartographical methods to solve geographical problems.
   - Construct various types of projections and scales as per requirement of the study.
   - Collect primary and secondary data in the field.
   - Apply various statistical formulas to analyse data.
   - Use cartographic techniques with the help of simple software techniques like MS Excel.
   - Handle topographical and weather maps and interpret them.
   - Identify types of rocks.
   - Know about Geographical Information System (GIS) and Remote Sensing (RS)

PROGRAM SPECIFIC OUTCOME

- Students learn about formation of landforms and identify various landforms around them.
- Students learn about various economic activities of man and their spatial temporal distribution.
- Students acquire knowledge of basic surveying and map making.
- Students know about disasters, their causes and managing disasters.
- Students come to know about geographical, socio-economic and political background of India.
- Students apply geographical knowledge in their day to day life like being alert about disasters, weather and climate data,

Course Outcomes

FYBA Geography (Autonomy Courses)

Semester 1 Physical Geography (Sub Code 22 GG – A1131)

After studying Physical Geography, students will be able to

CO 1: Know branches and interdisciplinary approach of Physical Geography and their applications.

CO 2: Understand spheres around earth and their interactions and interdependence on each other.

CO 3: Learn the basic concepts of Lithosphere, Atmosphere, and hydrosphere.

Semester 2 Human Geography (Sub Code 22 GG – A1231)

After studying Human Geography, students will have

CO 1: knowledge about the subject, branches and application of Human Geography.

CO 2: Learn basic concepts and theories used in Population, Settlement, and Agriculture etc.

CO 3: Locate and differentiate regions of Population, settlement and Agriculture on the world map.

SYBA (Choice Based Credit System 2019 Pattern)

Gg 210 (A) CC-1C Economic Geography I

CO1: Students can differentiate between activity and Economic activity.

CO2: Students can classify various economic activities like primary, secondary and tertiary.

CO3: Understand the importance of resources and make wise use of them.

CO4: Know significance of agriculture in the economy and classify agriculture on the basis of various parameters.

Gg 210 (B) CC -1 C Economic Geography II

CO1: Students know the significance of industries in the economic development and classify industries on the basis of various parameters.

CO2: Differentiate between various modes of transport.

CO3: Understand the need for trade and analyse the causes behind the Domestic and International trade.

CO4: Recognise the causes and effects of uneven rating of Economic Development in the world.

Gg 220(A) DSE 1A Population Geography –I

CO1: Students describe the need for Population Geography as an independent branch to study various aspects of population.

CO2: List out sources of population data and able to compute them with graphical presentation.

CO3: Elaborate the causes behind uneven distribution of population in the world.

CO4: Summarise the composition of population.

Gg 220 (B) DSE 1 B Population Geography -II

CO1: Students understand the concepts of population and space and know the terminologies like optimum population, over population and under population.

CO2: Students compare the population policies of India and China.

CO3: Read more about the health indicators and Human Development Index.

CO4: Explore and interpret the process and trend of urbanization.

Gg 201 (A) DSE 2 A Fundamental of Geographical Analysis

CO1: Students read the history of Cartography and understand the importance of Cartography as an independent branch of study.

CO2: Classify the types of maps.

CO3: Convert verbal scale to numeric and also British to metric system and vice versa.

CO4: Draw the graphical scale and projections.

Gg 201(B) DSE 2 B Fundamental of Geographical Analysis

CO1: Students will discover modern methods of Cartography.

CO2: Construct techniques of data representation manually and on computer.

CO3: Carry out surveying with the help of surveying instruments and prepare a map.

CO4: Participate in a study tour and write a study tour report.

CO5: Know how to measure the area in real.

SEC –1 A Applied Course of Disaster Management

CO1: Students understand the fundamental concepts used in Disaster Management.

CO2: State the role of geographers in planning for Disasters.

CO3: Compare the preparedness and mitigation plans executed in different countries during pre and post disasters.

CO4: Study and collect data about disaster in detail from any one geographical scale.

SEC –1 B Applied Course of Travel and Tourism

CO1: Students acquire basic knowledge about Travel and Tourism.

CO2: List out Tourist places from local to global.

CO3: Know the essential skills for tour management and execution.

CO4: Explain and Estimate tour plan.

TYBA (Choice Based Credit Pattern 2019 Pattern)

Gg 320 (A) Regional Geography of India-1

- Students would be understanding geography of our nation.
- Acquire an understanding and relationship of between physiography and drainage, climate, soil and natural vegetation.
- Locate river, soil, natural vegetation resources on the map.

Gg 320 (B) Regional Geography of India-2

- Students identify cultural diversity in India.
- Students locate mineral resources of the country.
- Students state the importance and role of agriculture, transport and communication in regional development.

Gg 301 (A) Techniques of Spatial Analysis-1

- Students understand the importance of toposheets and know the basic information about toposheets.
- Students try to identify relief features with the help of contour lines.
- Students handle toposheets, weather maps and also interpret them.

Gg 301 (B) Techniques of Spatial Analysis-2

- Students handle aerial photographs and satellite images.
- Students get basic information about Geographic Information System (GIS) and Remote Sensing.
- Students understand various statistical techniques used in Geography.

Gg 310 (A) Geography of Disaster Management -1

- Students learn the basic concepts used in Disaster Management
- Students classify disasters
- Students understand phases of Disaster Management

Gg 310 (B) Geography of Disaster Management -2

- Students differentiate natural and anthropogenic disasters.
- Students learn how to manage Natural and Anthropogenic Disasters.
- Students discuss global issues related disasters.

SEC 2 C Research Methodology -1

- Students understand the meaning of research and Research Methodology.
- Students classify research.
- Students learn basic concepts used in Research Methodology.

SEC 2 D Research Methodology -2

- Students differentiate between primary and secondary data.
- Students learn the types of research reports
- Students understand techniques of research report writing.

DEPARTMENT OF GEOGRAPHY

PO, PSO AND CO (SEMESTER PATTERN)

PROGRAM OUTCOME

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   - Know the basic concepts and terminologies used in Geography like interior of the earth, plate tectonic, sea floor spreading, population growth, disasters, composition and structure of atmosphere, hydrosphere, etc.
   - Differentiate between minerals and rocks, weather and climate, interior of the earth, basic industries, farming etc.
   - Get information about the causes and effects of local, national and international problems like global warming, acid rain, ozone depletion, soil degradation, deforestation etc.

2. **Skill outcomes:**
   - Carry out surveying and learn the art of map making and prepare maps for the areas with the help of surveying techniques.
   - Gain knowledge of quantitative methods and their ability to use statistical and cartographical methods to solve geographical problems.
   - Construct various types of projections and scales as per requirement of the study.
   - Collect primary and secondary data in the field.
   - Apply various statistical formulas to analyse data.
   - Use cartographic techniques with the help of simple software techniques like MS Excel.
   - Handle topographical and weather maps and interpret them.
   - Identify types of rocks.
   - Know about Geographical Information System (GIS) and Remote Sensing (RS)

PROGRAM SPECIFIC OUTCOME

- Students learn about formation of landforms and identify various landforms around them.
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- Students apply geographical knowledge in their day to day life like being alert about disasters, weather and climate data,

Course Outcomes

FYBA Geography (Autonomy Courses)

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CO1: Students know the significance of industries in the economic development and classify industries on the basis of various parameters.

CO2: Differentiate between various modes of transport.

CO3: Understand the need for trade and analyse the causes behind the Domestic and International trade.

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Gg 220(A) DSE 1A Population Geography –I

CO1: Students describe the need for Population Geography as an independent branch to study various aspects of population.

CO2: List out sources of population data and able to compute them with graphical presentation.

CO3: Elaborate the causes behind uneven distribution of population in the world.

CO4: Summarise the composition of population.

Gg 220 (B) DSE 1 B Population Geography -II

CO1: Students understand the concepts of population and space and know the terminologies like optimum population, over population and under population.

CO2: Students compare the population policies of India and China.

CO3: Read more about the health indicators and Human Development Index.

CO4: Explore and interpret the process and trend of urbanization.

Gg 201 (A) DSE 2 A Fundamental of Geographical Analysis

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CO4: Draw the graphical scale and projections.

Gg 201(B) DSE 2 B Fundamental of Geographical Analysis

CO1: Students will discover modern methods of Cartography.

CO2: Construct techniques of data representation manually and on computer.

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Gg 320 (A) Regional Geography of India-1

- Students would be understanding geography of our nation.
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- Locate river, soil, natural vegetation resources on the map.

Gg 320 (B) Regional Geography of India-2

- Students identify cultural diversity in India.
- Students locate mineral resources of the country.
- Students state the importance and role of agriculture, transport and communication in regional development.

Gg 301 (A) Techniques of Spatial Analysis-1

- Students understand the importance of toposheets and know the basic information about toposheets.
- Students try to identify relief features with the help of contour lines.
- Students handle toposheets, weather maps and also interpret them.

Gg 301 (B) Techniques of Spatial Analysis-2

- Students handle aerial photographs and satellite images.
- Students get basic information about Geographic Information System (GIS) and Remote Sensing.
- Students understand various statistical techniques used in Geography.

Gg 310 (A) Geography of Disaster Management -1

- Students learn the basic concepts used in Disaster Management
- Students classify disasters
- Students understand phases of Disaster Management

Gg 310 (B) Geography of Disaster Management -2

- Students differentiate natural and anthropogenic disasters.
- Students learn how to manage Natural and Anthropogenic Disasters.
- Students discuss global issues related disasters.

SEC 2 C Research Methodology -1

- Students understand the meaning of research and Research Methodology.
- Students classify research.
- Students learn basic concepts used in Research Methodology.

SEC 2 D Research Methodology -2

- Students differentiate between primary and secondary data.
- Students learn the types of research reports
- Students understand techniques of research report writing.

Department of ENGLISH
Programme **Name B.A.**

Programme outcomes

PO1 Demonstrate Language and Communication Skills (Oral and Written) which can be applied in personal and professional spheres

PO2 Display the ability to engage in social interactions across the board

PO3 Adhere to values and ethics inculcated through the curricula in profession and personal life

PO4 Develop an understanding about the need and role as citizens and taking up individual responsibilities.

PO5 Gain knowledge and skills essential for employability

Programme Specific Outcomes - B.A. English

PSO1 To make students comprehend, analyze and appreciate literary texts

PSO2 To enhance students' personality and improve employability through training in English communication viz. social etiquette, manners, polite conversations and formal and informal discourse etc.

PSO3 To familiarize and expose students to numerous career opportunities through study of English

Course Outcomes
First Year (2019 pattern)

Compulsory English

CO1: Students are exposed to excellent pieces of prose and poetry in English and thus get to appreciate the beauty and communicative power of the Language

CO2: Students learn about insightful native cultural experiences and situations that help develop human values

CO3: Students get to improve their linguistic competence and communicative skills

Optional English

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CO1-Students become familiar with different genres of Literature by reading selected texts and poems

CO2-Students are introduced to the science of language through the study of phonology and phonetics of English

CO3-Students develop a taste for specialized study of English Language and Literature

MARATHI

CO1: Students understood the nature and need of language practice in different fields.

CO2: Developed skills in the use of Marathi Language in various fields and various formats.

CO3: Study of various writing styles and ability to use actual writing skills developed in students.

CO4: Students were taught to cultivate moral, professional and ideological values.

CO5: The students were introduced to the work of talented people in various fields.

एफ वाय बी एः वैकल्पिक हिंदी (सामान्य)

CO1 : भारतीय भाषाओंमें अनुवाद के माध्यम से हिंदी तथा अन्य भारतीय भाषाओं के प्रति छात्रों की रूचि बढेगी |

CO2 : पठन,पाठन तथा अनुवाद के माध्यमसे छात्रोंका भाषिक था लेखन कौशल का विकास |

CO3 : विदेशी तथा अन्य भाषिक छात्र और अध्येताओं का भाषिक विकास के साथ व्यक्तित्व विकास का संभव |

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GEOGRAPHY: Physical Geography (Semester 1) Sub Code-110 A

CO 1: Students would be acquainting with the utility and application of Physical Geography

in different regions and environment.

CO 2: Understand spheres around earth and their interactions and interdependence on each other.

CO 3: Learn the basic concepts of Lithosphere, Atmosphere, and hydrosphere.

GEOGRAPHY: Human Geography (Semester 2) Sub Code-110 B

CO 1: Students would be acquainting with the knowledge and application of Human Geography.

CO 2: Understand various aspects of Human life which are integral part of Human Geography.

CO 3: Learn basic concepts and theories used in Population, Settlement, and Agriculture etc.

CO 4: Locate different regions of Population, settlement and Agriculture on the world map.

History: Early India-Prehistory to Mouryan Age (Sem I) Sub Code- 11171

CO1: understood the salient features of Ancient Indian History

CO2: understood the key concept related to Ancient India

CO3: take interest to read historical maps, biographies, and novel related to Ancient period.

CO4: They take interest to visit historical place in relevance to ancient India

Like caves, Temple, Art Architecture

History: Early India- Post Mauryan Age to the Rashtrakutas (Sem II) Sub Code-11172

CO1: understood the Historical Process of Rise, Development & decline of Great Dynasty in Ancient India

CO2: understood the Historical Process of transformation From Ancient to Medieval

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CO3: They take interest to understand The Power politics of North India before Muslim Invasion

CO4: understood the socio- Economical & cultural transformation in Ancient India

Economics: G-1 Indian Economic Environment Sub Code- 11151

CO1: To develop an understanding of the economic environment and the factors affecting economic environment.

CO2: Awareness on the various new developments in the different sectors of an economy – agriculture, industry, services, banking, etc.

CO3: Students will be able to compare and contrast Indian Economy with other economies.

CO4: Student should be able discuss and debate on the various issues and challenges facing the Indian Economic Environment.

CO5: Students will be prepared for various competitive examinations. Course: 11151 – G-1 Indian Economic Environment

Psychology: Foundations of Psychology (Semester 1)

CO1: Provides solid foundation for the basic principles of Psychology

CO2: Familiarizes students with the historical trends in Psychology, major concepts, theoretical perspectives, and empirical findings.

CO3: Gives an overview of the applications of Psychology.

CO4: To understand the basic psychological processes and their applications in day to day life. .
CO5: To enhance the ability to evaluate memory processes, emotions of an individual.

CO6: To understand the personality and intelligence of the students by developing their psychological processes and abstract potentials.

Psychology: Introduction to Social Psychology (Semester 2)

CO1: To understand the basics of social psychology.

CO2: To assess the interactional processes in our day today life.

CO3: To understand the individual in the social world.

Sociology: Introduction to Sociology (G 1 - General paper – I) (Semester 1)

CO1: The students will be familiar with the basic concepts and subject matter of sociology and communicate them effectively.

CO2: The students will be able to understand the emergence of sociology as a science.

CO3: The students will be able to acquaint themselves with a new subject.

CO4: The students will be able to explore different career opportunities available in Sociology.

CO5: The students will be able to understand how societies have evolved.

Sociology: Social Institutions and Change (Semester 2)

CO1: The students will be able to identify 'Social Institutions' and their newer forms

CO2:- The students can effectively understand the nuances of the functioning of social institutions critically

CO3: The students will be able to explain 'Social Change' and its different dimensions

CO4: Think critically about the causes and consequences of social inequality.

Political Science : G-1 General Paper- Introduction to Indian constitution

After undergoing the said course, the students would be able to

CO1 : Understand the basic information and analytical frameworks for studying Politics in India.

CO2 : Explain the salient features of India's Constitution. CO3 : Enumerate and Classify the Fundamental Rights and Directive Principles of state policy

CO4 : Illustrate Salient Features of Indian Federalism

CO5 : Understand the process of amending the Constitution and its flexible as well as rigid nature

CO6 : Understand the working of organs of the government and funcitioning of electoral system in India.

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Second Year (2019 pattern)

S.Y.B.A. (Compulsory English)

Text: Panorama

CO1: Students develop reading habits and acquire competency in self-learning.

CO2: Students are familiarized with excellent pieces of prose and poetry in English.

CO3: Students gain exposure to native cultural experiences which develop human values and social awareness.

CO4: Students become competent in linguistic and communicative skills.

S. Y. B. A. (General English) (G-2)

Text : Linguistics: An Introduction

Title of the Paper: Study of English Language

CO1: Students become aware of different components of language.

CO2: Study of phonology and phonetics help students in learning correct pronunciation of words.

CO3: Students become familiar with phonemic symbols for English sounds and the technic of transcription.

CO4: Students learn to identify and understand the sociolinguistic variation of language.

S. Y. B. A. Special Paper-I (S-1)

Title of the Paper: Appreciating Drama and Performing Arts

CO1: Students become familiar with the concepts of Drama as a literary genre.

CO2: Students understand different genres of drama and elements employed by the dramatist.

CO3: Students learn to evaluate the text trough psychoanalysis and socio, cultural and linguistic parameters.

S. Y. B. A Special Paper-II (S-2)

Title of the Paper: Appreciating Poetry

Textbook: Mirage: An Anthology of English Poetry

CO1: Students learn the concepts and terminologies used in poetry.

CO2: Students are exposed to undertake a detailed study of a few sample masterpieces by poets across the globe.

CO3: Students learn to critically analyse and interpret the underlying meaning of the poem and the poet's philosophy.

CO4: Students learn to derive aesthetic pleasure from reading poetry.

Skill Enhancement Course (SEC): A Certificate Course in Skill Development (SEC 2-A & SEC 2-B)

CO1: Students are equipped with social skills

CO2: Students learn the importance of Digital Literacy

CO3: Students acquire interpersonal communication and soft skills

Third Year (2019 pattern)

Compulsory English (CC-Core Course)

CO1: Exposure to aesthetic beauty and communicative power of English through selected pieces of Prose and Poetry

CO2: Help instill humanitarian values and sympathetic attitude

CO3: Enable students to become competent and effective users of English language

CO4: Familiarize students with the importance of soft skills for employability

Skill Enhancement Course (SEC 1-C & SEC 1-D) (Old G-3)

CO1: Students get to know about different career avenues in English

CO2: Exposure to variety of English used in different professions

CO3: Understand the effectiveness of verbal and non-verbal communication

CO4: Help students enhance skills necessary for placement

Discipline Specific Elective (DSE-1C& DSE-1D)
(Old S-3)

CO1: Exposure to universal human experiences

CO2: Understand different aspects of a novel

CO3: Learn to critically appreciate a novel as a form of literary expression

CO4: Develop interpretative and analytical abilities

Discipline Specific Elective (DSE-2C & DSE-2D)
(Old S-4)

CO1: Students become familiar with basics of literary criticism

CO2: Understand critical approaches and technical terms

CO3: Learn to interpret and critically appreciate a literary text

CO4: Students develop aptitude for critical appreciation

Skill Enhancement Course (SEC 2-C & SEC 2-D): Mastering Life Skills and Life Values

CO1: Students are equipped with social skills

CO2: Students become aware of universal human values

CO3: Learn stress management and positive thinking

CO4: Students acquire interpersonal communication skills

CO5: Students learn to think critically

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Department of ENGLISH
Programme **Name B.A.**

Programme outcomes

PO1 Demonstrate Language and Communication Skills (Oral and Written) which can be applied in personal and professional spheres

PO2 Display the ability to engage in social interactions across the board

PO3 Adhere to values and ethics inculcated through the curricula in profession and personal life

PO4 Develop an understanding about the need and role as citizens and taking up individual responsibilities.

PO5 Gain knowledge and skills essential for employability

Programme Specific Outcomes - B.A. English

PSO1 To make students comprehend, analyze and appreciate literary texts

PSO2 To enhance students' personality and improve employability through training in English communication viz. social etiquette, manners, polite conversations and formal and informal discourse etc.

PSO3 To familiarize and expose students to numerous career opportunities through study of English

Course Outcomes
First Year (2019 pattern)

Compulsory English

CO1: Students are exposed to excellent pieces of prose and poetry in English and thus get to appreciate the beauty and communicative power of the Language

CO2: Students learn about insightful native cultural experiences and situations that help develop human values

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Optional English

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MARATHI

CO1: Students understood the nature and need of language practice in different fields.

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एफ वाय बी एः वैकल्पिक हिंदी (सामान्य)

CO1 : भारतीय भाषाओंमें अनुवाद के माध्यम से हिंदी तथा अन्य भारतीय भाषाओं के प्रति छात्रों की रूचि बढेगी |

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CO 1: Students would be acquainting with the knowledge and application of Human Geography.

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CO 3: Learn basic concepts and theories used in Population, Settlement, and Agriculture etc.

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Like caves, Temple, Art Architecture

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& Commerce, Ganeshkhind, Pune-16

Second Year (2019 pattern)

S.Y.B.A. (Compulsory English)

Text: Panorama

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S. Y. B. A. (General English) (G-2)

Text : Linguistics: An Introduction

Title of the Paper: Study of English Language

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CO1: Students become familiar with the concepts of Drama as a literary genre.

CO2: Students understand different genres of drama and elements employed by the dramatist.

CO3: Students learn to evaluate the text trough psychoanalysis and socio, cultural and linguistic parameters.

S. Y. B. A Special Paper-II (S-2)

Title of the Paper: Appreciating Poetry

Textbook: Mirage: An Anthology of English Poetry

CO1: Students learn the concepts and terminologies used in poetry.

CO2: Students are exposed to undertake a detailed study of a few sample masterpieces by poets across the globe.

CO3: Students learn to critically analyse and interpret the underlying meaning of the poem and the poet's philosophy.

CO4: Students learn to derive aesthetic pleasure from reading poetry.

Skill Enhancement Course (SEC): A Certificate Course in Skill Development (SEC 2-A & SEC 2-B)

CO1: Students are equipped with social skills

CO2: Students learn the importance of Digital Literacy

CO3: Students acquire interpersonal communication and soft skills

Third Year (2019 pattern)

Compulsory English (CC-Core Course)

CO1: Exposure to aesthetic beauty and communicative power of English through selected pieces of Prose and Poetry

CO2: Help instill humanitarian values and sympathetic attitude

CO3: Enable students to become competent and effective users of English language

CO4: Familiarize students with the importance of soft skills for employability

Skill Enhancement Course (SEC 1-C & SEC 1-D) (Old G-3)

CO1: Students get to know about different career avenues in English

CO2: Exposure to variety of English used in different professions

CO3: Understand the effectiveness of verbal and non-verbal communication

CO4: Help students enhance skills necessary for placement

Discipline Specific Elective (DSE-1C& DSE-1D)
(Old S-3)

CO1: Exposure to universal human experiences

CO2: Understand different aspects of a novel

CO3: Learn to critically appreciate a novel as a form of literary expression

CO4: Develop interpretative and analytical abilities

Discipline Specific Elective (DSE-2C & DSE-2D)
(Old S-4)

CO1: Students become familiar with basics of literary criticism

CO2: Understand critical approaches and technical terms

CO3: Learn to interpret and critically appreciate a literary text

CO4: Students develop aptitude for critical appreciation

Skill Enhancement Course (SEC 2-C & SEC 2-D): Mastering Life Skills and Life Values

CO1: Students are equipped with social skills

CO2: Students become aware of universal human values

CO3: Learn stress management and positive thinking

CO4: Students acquire interpersonal communication skills

CO5: Students learn to think critically

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Program Outcomes: Hindi

पाठ्यक्रमों का मुख्य उद्देश्य उचित ज्ञान देना और हिंदी भाषा के साथ-साथ हिंदी साहित्य की समग्र समझ विकसित करना है। कार्यात्मक और व्यावहारिक हिंदी पाठ्यक्रम का उद्देश्य भारत सरकार की आधिकारिक भाषा नीति की प्रशासनिक आवश्यकताओं के लिए हिंदी भाषा की सामान्य समझ प्रदान करना है। हिंदी साहित्य के मुख्य पाठ्यक्रमों का उद्देश्य हिंदी साहित्य की गद्य और पद्य विधाओं के साथ कार्यालयीन हिंदी के विशेष संदर्भों को समझने के ज्ञान को सिद्ध करना है। उसके साथ ही भाषण कौशलों और व्यावहारिक ज्ञान का विकास करना है।

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PES Modern College of Arts, Science and Commerce, Ganeshkhind, Pune-16.
(Autonomous)
Department of History

Department of History

Programme Outcome

PO1 Demonstrate Language and Communication Skills (Oral and Written) which can be applied in personal and professional spheres

PO2 Display the ability to engage in social interactions across the board

PO3 Adhere to values and ethics inculcated through the curricula in profession and personal life

PO4 Develop an understanding about the need and role as citizens and taking up individual responsibilities.

PO5 Gain knowledge and skills essential for employability

Program Specific Outcome BA History

PSO1. Understand The Importance of our Glorious Past.

PSO2. Understand the Meaning of Nationalism and they Respect toward Great National Personality.

PSO3. Acquire conceptual knowledge of History.

PSO4. Classified various phase in historical process & Developments

PSO5. Take interest to discuss various debatable facts in subject of history

Course Outcomes

FYBA History-History: Early India-Prehistory to Mouryan Age : **Sub Code- 22-HS-A1141**

Semester I

CO1: understood the salient features of Ancient Indian History

CO2: understood the key concept related to Ancient India

CO3: take interest to read historical maps, biographies, and novel related to Ancient period.

CO4: They take interest to visit historical place in relevance to ancient India

Like caves, Temple, Art Architecture

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FYBA History - History: Early India- Post Mauryan Age to the Rashtrakutas (Sem II) Sub Code-22- HS-A1241
Semester II

CO1: understood the Historical Process of Rise, Development & decline of Great Dynasty in Ancient India

CO2: understood the Historical Process of transformation From Ancient to Medieval India

CO3: They take interest to understand The Power politics of North India before Muslim Invasion

CO4: understood the socio- Economical & cultural transformation in Ancient India

Modern College (Autonomous) Ganeshkhind, Pune-16.

Principal
Modern College of Arts, Science
& Commerce, Ganeshkhind, Pune-16.

Department of History

Programme Outcome

PO1 Demonstrate Language and Communication Skills (Oral and Written) which can be applied in personal and professional spheres

PO2 Display the ability to engage in social interactions across the board

PO3 Adhere to values and ethics inculcated through the curricula in profession and personal life

PO4 Develop an understanding about the need and role as citizens and taking up individual responsibilities.

PO5 Gain knowledge and skills essential for employability

Program Specific Outcome BA History

PSO1. Understand The Importance of our Glorious Past.

PSO2. Understand the Meaning of Nationalism and they Respect toward Great National Personality.

PSO3. Acquire conceptual knowledge of History.

PSO4. Classified various phase in historical process & Developments

PSO5. Take interest to discuss various debatable facts in subject of history

Course Outcomes

Second Year (2019 pattern)

Semester III

CC-1(3) History of the Marathas: (1630- 1707) Sub Code - 23174

CO1. Student will develop the ability to analyse 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.

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& Commerce, Ganeshkhind, Pune-16.

DSE-1A (3) Medieval India - Sultanate Period – Sub Code - 23171

CO1. Provides examples of sources used to study various periods in history.

CO2. Relates key historical developments during medieval period occurring in one place with another.

CO3. Analyses socio - political and economic changes during medieval period

CO 4. Estimate the foreign invasion and the achievement of rulers

DSE-2A (3) - Glimpses of the Modern World - Part I – Sub Code - 23172

CO1. It will enable students to develop the overall understanding of the Modern World.

CO2. The students will get acquainted with the Renaissance, major political, socio-religious and economic developments during the Modern World.

CO3. It will enhance their perception of the history of the Modern World.

CO4. It will enable students to understand the significance of the intellectual, economic, political developments in the Modern World

Skill Enhancement Course (SEC) Tourism Management - Sub Code - 23178

CO1. Students will get an overall understanding of the process of Tourism Management.

CO2. They will learn to work in the Tourism Management with great potential.

CO 3. They will be able to seek self-employment by starting their own tourism related business

Course Outcomes
Second Year (2019 pattern)
Semester IV

CC-2(3) History of the Marathas: (1707- 1818) – Sub Code – 24174

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.

(DSE-1B) Semester -IV-Medieval India: Mughal Period – Sub Code -24171

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CO1. Draws comparisons between policies of different rulers.

CO2. Understanding Role of Akbar in the consolidation of Mughal rule in India.

CO3. Understand Aurangzeb's conflict with Rajputas, Maratha and weakening Mughals age.

CO 4. Analyses factors which led to the emergence of new religious ideas and movements (bhakti and Sufi)

(SEC 2 B) –Travel Agency and Tour Business – Sub Code – 24178

CO1. The students will understand the details of the business of Travel Agency.

CO2. They will be trained on both Theory and Practical aspect and Travel Agency and creating professionals for Tourism Industry.

CO3. It will enable student to seek self-employment by starting their own Travel Agency related to business

(DSE-2 B) -Glimpses of the Modern World - Part II – Sub Code - 24172

CO1. It will enable students to develop the overall understanding of the Modern World.

CO2. The students will get acquainted with the major nationalist movements, the World War II and its consequences, the Cold War and its Consequences.

CO3. It will enhance their overall perception of the history of the Modern World.

CO4. It will enable students to understand the significance of the strategic political developments in the Modern World.

Course Outcomes
Third Year (2019 pattern)
Semester V

CC- 3(3) Indian National Movement (1885-1947)

CO1. It will enable students to develop an overall understanding of Modern India.

CO2. It will increase the spirit of healthy Nationalism, Democratic Values and Secularism among the Students.

CO3. Students will understand various aspects of the Indian Independence Movement and the creation of Modern India

DSE-3 C (3) Introduction to Historiography

CO1. Students will be introduced to the information and importance of Historiography.

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CO2. Students will be introduced to the different Methods and Tools of data collection.

CO3. Students can study the interdisciplinary approach of History .

CO4. Students will learn about the usefulness of History in the 21st century, its changing perspectives, the new ideas that have been invented, and the importance of History in a competitive World.

CO5. This curriculum develops Research ability and process of Research Methodology in History

(DSE-4D)- (3) – Maharashtra in the 19th Century

CO1. Student will develop the ability to analyze sources for 19th century Maharashtra History.

CO2. Student will learn significance of Regional History and Socio- religious reformism foundation of the region.

CO3. It will enhance their perception of 19th Century Maharashtra.

CO4. Appreciate the skills of leadership and the Socio-religious System of the Maharashtra.

(SEC 2 C) –South Indian Art and Architecture (From 4th Century A.D. to 12th Century A.D.)

CO1.Students will get an overall understanding of the development of the Art and Architecture in South India.

CO2. They will understand the changing patterns of the Art and Architecture in South India.

CO3. They will understand the impact of Persian Art on Islamic Art and Architecture in South India

Course Outcomes
Third Year (2019 pattern)
Semester VI

CC- 4(3) India After Independence- (1947-1991)

CO1. It will enable students to develop an overall understanding of the Contemporary India.

CO2. To increase the spirit of healthy Nationalism, Democratic Values and Secularism among the students

CO 3. Students will understand various aspects of India's domestic and foreign policies that shaped Post-Independence India.

(DSE-3C) : Applied History

CO1. Students will be introduced to the information and importance of applied history.

CO2. Student will learn about the Historical significance of Archaeology and Archives and opportunities in the field of Archaeology and Archives.

CO3. Through this course, students will be informed about the opportunities in the field of Media, Museums.

CO4. Students will learn about the usefulness of history in the 21st Century, its changing Perspectives, the new ideas that have been invented, and the importance of History in a Competitive

Principal
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& Commerce, Ganeshkhind, Pune-16

World.

(DSE-4D)-: History of Maharashtra in the 20thCentury

CO1. Student will develop the ability to analyses sources for 20th Century Maharashtra History.

CO2. Student will learn significance of regional history and Socio- Religious Reformism foundation of the region.

CO3. It will enhance their Perception of 20th Century Maharashtra.

CO4. Appreciate the skills of leadership and the Socio-Religious System of the Maharashtra.

SEC (SEC 2 D): Title: -Heritage Management

CO1. Student will understand over all process of Heritage Management

CO2. Student will get the knowledge about scope and the fact of Heritage Management.

CO3. The students will enable to understand about legal and commercial framework of Heritage

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Department of History MA History

Programme outcomes

PO1 Think critically about the Different social Processes

PO2 Display the ability to engage in social interactions across the board

PO3 Engage, design and evaluate research in an Interdisciplinary way

PO4 Understand their individual responsibility towards civic and sustainability relatedissues

PO5 Participate in policy engagement and advocacy

MA History (PG) Program Specific Outcome

PSO1: understand the Basic Skill of history Writing & research.

PSO2: Tress out the Root of contemporary society from the past

PSO3: realized the importance of Socio cultural moral value.

PSO4: understand the Depth of Subject of History from Macro to Micro level

MA History Part I : Sem I

Course Outcome

Sub. Code 22-HI111: History Theory and Method Paper No 1:

CO1: gain the theoretical knowledge in subject of history.

CO2: able to understand nature, scope and importance of history.

CO3: developed conceptual knowledge in research methodology and formulated hypotheses

CO4: understand the relation between History and social sciences and increase theirinterdisciplinary approach.

Sub. Code 22-HI112: Evolution of Ideas & Institutions in Early IndiaPaper No 2:

CO1: analyze Perception Limitations & range of Sources of Ancient India

CO2: understand political ideas & institutions of Ancient India

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& Commerce, Ganeshkhind, Pune-16.

CO3: able to illustrate emergence of caste based societies in Ancient India.CO4: able to explain emergence of state in ancient India

Paper No 3: Sub. Code 22-HI113: Maratha Polity

CO1: able to analyzed Administrative Systems of Marathas.CO2: able to explain Nature of Maratha Polity

CO3: able to identify Strength & weakness of Maratha Administrative systemCO4: Understood the Socio- Political power Structure of Maratha period.

Paper No 4: Sub. Code 22-HI114A: Social Background of Dalit movement in Maharashtra

CO1: acquired knowledge of various term, concept related to Indian society and cast system.CO2: understand the change & continuity of Indian Society

CO3: discuss the contemporary social issues in classroom

MA History Part I : Sem II

Course Outcome

Sub. Code 22-HI121: Approaches to History Paper No 1 :

CO1: understand the different approaches to history

CO2: understand Political, Social, Economic and cultural history

CO3: gain knowledge extreme field of the history writing

CO4: taking interest to find out local history

Sub.Code 22-HI122: Evolution of Ideas & Institutions in Medieval India

Paper No 2:

CO1: able to analyze Perception Limitations & range of Sources of Medieval

India CO2: understand political ideas & institutions of Medieval India

CO3: able to illustrate emergence of caste based societies in Medieval

India.CO4: able to explain emergence of state in Medieval India

Sub. Code 22-HI123: Socio Economics History of Maratha Paper No 3:

CO1: understand Basic Term concept related Medieval Maratha.

CO2: understand the Social Ideas & institutions of Medieval

Maratha.

CO3: understand the Economic Ideas & institutions of Medieval Maratha.

CO4: understand the Cultural transformation of Medieval Maratha.

Sub. Code 22-HI124A: Nature of Dalit Movement in Maharashtra Paper No 4:

CO1: understand the Nature of Dalit movement of Maharashtra

CO2: Explain the achievement of Dr. Babasaheb Ambedkar in Dalit movement ofMaharashtra

CO3: take interest to read various book related to social & religious Movement in India

CO4: understand the importance of moral and social value

CO5: write and present views on social History.

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Principal
Modern College of Arts, Science
& Commerce, Ganeshkhind, Pune-16.

Department of History

Programme outcomes

PO1 Think critically about the Different social Processes

PO2 Display the ability to engage in social interactions across the board

PO3 Engage, design and evaluate research in an Interdisciplinary way

PO4 Understand their individual responsibility towards civic and sustainability relatedissues

PO5 Participate in policy engagement and advocacy

MA History (PG) Program Specific Outcome

PSO1: understand the Basic Skill of history Writing & research.

PSO2: Tress out the Root of contemporary society from the past

PSO3: realized the importance of Socio cultural moral value.

PSO4: understand the Depth of Subject of History from Macro to Micro level

MA History Part II : Sem III

Course Outcome

Paper No 1: Cultural History of Maharashtra

CO1: understand the concept of 'culture' in Maharashtra's historical context

CO2: understand the materialistic and ideal nature of culture in Maharashtra

CO3: understand Maharashtra as a place of cultural fusion

CO4: understand the change and continuity in Maharashtra's culture

Paper No. 2 : Intellectual History of Modern World

CO1: understand the Renaissance, Scholasticism & it's Impact of the world CO2: understand the intellectual revolution in 17^{th} & 18^{th} Century

CO3: understand the major concepts & ideology in modern west

Principal
Modern College of Arts, Science & Commerce, Ganeshkhind, Pune-16.

CO4: understand Progress of Science & technology

Paper No: 3 : Economic History of Modern India

CO1: understand of various term, Key concept related to Economic History of India.

CO2: understand the change & continuity of Indian Economics system From Ancient to colonial period.

CO3: discuss the contemporary Economical issues in classroom and its related to be history.

Paper No. 4: East Asia Japan (1853-2000)

CO1: understand the historical background of Japan's modernization process

CO2. Understand Japan's role in World War I

CO3. Understand the decline of Japan's constitutionalism rise as a military power.

CO4. Understand Japan's role in World War II

CO5. Role of Japan in the post-world war period and impact on foreign policy

MA History Part II : Sem IV
Course Outcome

Paper No. 1 Modern Maharashtra: A History of Ideas (1818-1960)

CO1. Understand critical appraisal of religions in the context of Modern Maharashtra

CO2. Understand and critique: caste, patriarchy, conversion movements in the context of Modern Maharashtra.

CO3. Understand the development of economic and political

thought in Modern Maharashtra

CO4. Understand the development of cultural thought in Modern

Maharashtra

Paper No. 2: Debates in Indian Historiography

CO1: exposure and understanding of different historical aspects

that have become debatableamong historians

CO2: understand different aspects and data that are used to re-construct history and how thishas made certain topics debatable

CO3: understand and see in detail the analytical thinking in process of re-construction ofhistory.

CO4: exposure to difference in perspective and understanding of European and Indianhistorians/scholars.

CO4: take interest to read various book related to British policy and ideology to ruling India

Paper No 3: World after World War II

CO1: understand the political development in the world after Second World War.

CO2: developed the understanding of new military and political ideas and

institutionsCO3: understand the process and impact of globalization

Paper No. 4. History of Modern India (1857-1971)

CO1 understand the economic and Political Transformation of Modern India

CO2: understand process of rise of Modern India.

CO3: understand the process of healthy Nationalism and Secularism by studying work of social reformer and freedom fighters.

CO4: familiar with makers of Modern India

CO5: Understand the political developments in post-independence period

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Department of History MA History

Programme outcomes

PO1 Think critically about the Different social Processes

PO2 Display the ability to engage in social interactions across the board

PO3 Engage, design and evaluate research in an Interdisciplinary way

PO4 Understand their individual responsibility towards civic and sustainability relatedissues

PO5 Participate in policy engagement and advocacy

MA History (PG) Program Specific Outcome

PSO1: understand the Basic Skill of history Writing & research.

PSO2: Tress out the Root of contemporary society from the past

PSO3: realized the importance of Socio cultural moral value.

PSO4: understand the Depth of Subject of History from Macro to Micro level

Department of History

Programme outcomes

PO1 Think critically about the Different social Processes

PO2 Display the ability to engage in social interactions across the board

PO3 Engage, design and evaluate research in an Interdisciplinary way

PO4 Understand their individual responsibility towards civic and sustainability relatedissues

PO5 Participate in policy engagement and advocacy

MA History (PG) Program Specific Outcome

PSO1: understand the Basic Skill of history Writing & research.

PSO2: Tress out the Root of contemporary society from the past

PSO3: realized the importance of Socio cultural moral value.

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(Autonomous)
Department of History

Department of History

Programme Outcome

PO1 Demonstrate Language and Communication Skills (Oral and Written) which can be applied in personal and professional spheres

PO2 Display the ability to engage in social interactions across the board

PO3 Adhere to values and ethics inculcated through the curricula in profession and personal life

PO4 Develop an understanding about the need and role as citizens and taking up individual responsibilities.

PO5 Gain knowledge and skills essential for employability

Program Specific Outcome BA History

PSO1. Understand The Importance of our Glorious Past.

PSO2. Understand the Meaning of Nationalism and they Respect toward Great National Personality.

PSO3. Acquire conceptual knowledge of History.

PSO4. Classified various phase in historical process & Developments

PSO5. Take interest to discuss various debatable facts in subject of history

Principal
Modern College of Arts, Science & Commerce, Ganeshkhind, Pune-16.

Department of History

Programme Outcome

PO1 Demonstrate Language and Communication Skills (Oral and Written) which can be applied in personal and professional spheres

PO2 Display the ability to engage in social interactions across the board

PO3 Adhere to values and ethics inculcated through the curricula in profession and personal life

PO4 Develop an understanding about the need and role as citizens and taking up individual responsibilities.

PO5 Gain knowledge and skills essential for employability

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PSO4. Classified various phase in historical process & Developments

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(Autonomous)
Department of History

Department of History

Programme Outcome

PO1 Demonstrate Language and Communication Skills (Oral and Written) which can be applied in personal and professional spheres

PO2 Display the ability to engage in social interactions across the board

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PO4 Develop an understanding about the need and role as citizens and taking up individual responsibilities.

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PSO1. Understand The Importance of our Glorious Past.

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PSO3. Acquire conceptual knowledge of History.

PSO4. Classified various phase in historical process & Developments

PSO5. Take interest to discuss various debatable facts in subject of history

Course Outcomes

FYBA History-History: Early India-Prehistory to Mouryan Age : **Sub Code- 22-HS-A1141**

Semester I

CO1: understood the salient features of Ancient Indian History

CO2: understood the key concept related to Ancient India

CO3: take interest to read historical maps, biographies, and novel related to Ancient period.

CO4: They take interest to visit historical place in relevance to ancient India

Like caves, Temple, Art Architecture

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& Commerce, Ganeshkhind, Pune-16.

FYBA History - History: Early India- Post Mauryan Age to the Rashtrakutas (Sem II) Sub Code-22- HS-A1241
Semester II

CO1: understood the Historical Process of Rise, Development & decline of Great Dynasty in Ancient India

CO2: understood the Historical Process of transformation From Ancient to Medieval India

CO3: They take interest to understand The Power politics of North India before Muslim Invasion

CO4: understood the socio- Economical & cultural transformation in Ancient India

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Principal
Modern College of Arts, Science
& Commerce, Ganeshkhind, Pune-16.

Department of History

Programme Outcome

PO1 Demonstrate Language and Communication Skills (Oral and Written) which can be applied in personal and professional spheres

PO2 Display the ability to engage in social interactions across the board

PO3 Adhere to values and ethics inculcated through the curricula in profession and personal life

PO4 Develop an understanding about the need and role as citizens and taking up individual responsibilities.

PO5 Gain knowledge and skills essential for employability

Program Specific Outcome BA History

PSO1. Understand The Importance of our Glorious Past.

PSO2. Understand the Meaning of Nationalism and they Respect toward Great National Personality.

PSO3. Acquire conceptual knowledge of History.

PSO4. Classified various phase in historical process & Developments

PSO5. Take interest to discuss various debatable facts in subject of history

Course Outcomes

Second Year (2019 pattern)

Semester III

CC-1(3) History of the Marathas: (1630- 1707) Sub Code - 23174

CO1. Student will develop the ability to analyse 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.

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DSE-1A (3) Medieval India - Sultanate Period – Sub Code - 23171

CO1. Provides examples of sources used to study various periods in history.

CO2. Relates key historical developments during medieval period occurring in one place with another.

CO3. Analyses socio - political and economic changes during medieval period

CO 4. Estimate the foreign invasion and the achievement of rulers

DSE-2A (3) - Glimpses of the Modern World - Part I – Sub Code - 23172

CO1. It will enable students to develop the overall understanding of the Modern World.

CO2. The students will get acquainted with the Renaissance, major political, socio-religious and economic developments during the Modern World.

CO3. It will enhance their perception of the history of the Modern World.

CO4. It will enable students to understand the significance of the intellectual, economic, political developments in the Modern World

Skill Enhancement Course (SEC) Tourism Management - Sub Code - 23178

CO1. Students will get an overall understanding of the process of Tourism Management.

CO2. They will learn to work in the Tourism Management with great potential.

CO 3. They will be able to seek self-employment by starting their own tourism related business

Course Outcomes
Second Year (2019 pattern)
Semester IV

CC-2(3) History of the Marathas: (1707- 1818) – Sub Code – 24174

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.

(DSE-1B) Semester -IV-Medieval India: Mughal Period – Sub Code -24171

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CO1. Draws comparisons between policies of different rulers.

CO2. Understanding Role of Akbar in the consolidation of Mughal rule in India.

CO3. Understand Aurangzeb's conflict with Rajputas, Maratha and weakening Mughals age.

CO 4. Analyses factors which led to the emergence of new religious ideas and movements (bhakti and Sufi)

(SEC 2 B) –Travel Agency and Tour Business – Sub Code – 24178

CO1. The students will understand the details of the business of Travel Agency.

CO2. They will be trained on both Theory and Practical aspect and Travel Agency and creating professionals for Tourism Industry.

CO3. It will enable student to seek self-employment by starting their own Travel Agency related to business

(DSE-2 B) -Glimpses of the Modern World - Part II – Sub Code - 24172

CO1. It will enable students to develop the overall understanding of the Modern World.

CO2. The students will get acquainted with the major nationalist movements, the World War II and its consequences, the Cold War and its Consequences.

CO3. It will enhance their overall perception of the history of the Modern World.

CO4. It will enable students to understand the significance of the strategic political developments in the Modern World.

Course Outcomes
Third Year (2019 pattern)
Semester V

CC- 3(3) Indian National Movement (1885-1947)

CO1. It will enable students to develop an overall understanding of Modern India.

CO2. It will increase the spirit of healthy Nationalism, Democratic Values and Secularism among the Students.

CO3. Students will understand various aspects of the Indian Independence Movement and the creation of Modern India

DSE-3 C (3) Introduction to Historiography

CO1. Students will be introduced to the information and importance of Historiography.

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Modern College (Autonomous) Ganeshkhind, Pune-16.

CO2. Students will be introduced to the different Methods and Tools of data collection.

CO3. Students can study the interdisciplinary approach of History .

CO4. Students will learn about the usefulness of History in the 21st century, its changing perspectives, the new ideas that have been invented, and the importance of History in a competitive World.

CO5. This curriculum develops Research ability and process of Research Methodology in History

(DSE-4D)- (3) – Maharashtra in the 19th Century

CO1. Student will develop the ability to analyze sources for 19th century Maharashtra History.

CO2. Student will learn significance of Regional History and Socio- religious reformism foundation of the region.

CO3. It will enhance their perception of 19th Century Maharashtra.

CO4. Appreciate the skills of leadership and the Socio-religious System of the Maharashtra.

(SEC 2 C) –South Indian Art and Architecture (From 4th Century A.D. to 12th Century A.D.)

CO1.Students will get an overall understanding of the development of the Art and Architecture in South India.

CO2. They will understand the changing patterns of the Art and Architecture in South India.

CO3. They will understand the impact of Persian Art on Islamic Art and Architecture in South India

Course Outcomes
Third Year (2019 pattern)
Semester VI

CC- 4(3) India After Independence- (1947-1991)

CO1. It will enable students to develop an overall understanding of the Contemporary India.

CO2. To increase the spirit of healthy Nationalism, Democratic Values and Secularism among the students

CO 3. Students will understand various aspects of India's domestic and foreign policies that shaped Post-Independence India.

(DSE-3C) : Applied History

Principal
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CO1. Students will be introduced to the information and importance of applied history.

CO2. Student will learn about the Historical significance of Archaeology and Archives and opportunities in the field of Archaeology and Archives.

CO3. Through this course, students will be informed about the opportunities in the field of Media, Museums.

CO4. Students will learn about the usefulness of history in the 21st Century, its changing Perspectives, the new ideas that have been invented, and the importance of History in a Competitive

World.

(DSE-4D)-: History of Maharashtra in the 20thCentury

CO1. Student will develop the ability to analyses sources for 20th Century Maharashtra History.

CO2. Student will learn significance of regional history and Socio- Religious Reformism foundation of the region.

CO3. It will enhance their Perception of 20th Century Maharashtra.

CO4. Appreciate the skills of leadership and the Socio-Religious System of the Maharashtra.

SEC (SEC 2 D): Title: -Heritage Management

CO1. Student will understand over all process of Heritage Management

CO2. Student will get the knowledge about scope and the fact of Heritage Management.

CO3. The students will enable to understand about legal and commercial framework of Heritage

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& Commerce, Ganeshkhind, Pune-16

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Department of History MA History

Programme outcomes

PO1 Think critically about the Different social Processes

PO2 Display the ability to engage in social interactions across the board

PO3 Engage, design and evaluate research in an Interdisciplinary way

PO4 Understand their individual responsibility towards civic and sustainability relatedissues

PO5 Participate in policy engagement and advocacy

MA History (PG) Program Specific Outcome

PSO1: understand the Basic Skill of history Writing & research.

PSO2: Tress out the Root of contemporary society from the past

PSO3: realized the importance of Socio cultural moral value.

PSO4: understand the Depth of Subject of History from Macro to Micro level

MA History Part I : Sem I

Course Outcome

Sub. Code 22-HI111: History Theory and Method Paper No 1:

CO1: gain the theoretical knowledge in subject of history.

CO2: able to understand nature, scope and importance of history.

CO3: developed conceptual knowledge in research methodology and formulated hypotheses

CO4: understand the relation between History and social sciences and increase theirinterdisciplinary approach.

Sub. Code 22-HI112: Evolution of Ideas & Institutions in Early IndiaPaper No 2:

CO1: analyze Perception Limitations & range of Sources of Ancient India

CO2: understand political ideas & institutions of Ancient India

Principal
Modern College of Arts, Science & Commerce, Ganeshkhind, Pune-16.

CO3: able to illustrate emergence of caste based societies in Ancient India.CO4: able to explain emergence of state in ancient India

Paper No 3: Sub. Code 22-HI113: Maratha Polity

CO1: able to analyzed Administrative Systems of Marathas.CO2: able to explain Nature of Maratha Polity

CO3: able to identify Strength & weakness of Maratha Administrative systemCO4: Understood the Socio- Political power Structure of Maratha period.

Paper No 4: Sub. Code 22-HI114A: Social Background of Dalit movement in Maharashtra

CO1: acquired knowledge of various term, concept related to Indian society and cast system.CO2: understand the change & continuity of Indian Society

CO3: discuss the contemporary social issues in classroom

MA History Part I : Sem II

Course Outcome

Sub. Code 22-HI121: Approaches to History Paper No 1 :

CO1: understand the different approaches to history

CO2: understand Political, Social, Economic and cultural history

CO3: gain knowledge extreme field of the history writing

CO4: taking interest to find out local history

Sub.Code 22-HI122: Evolution of Ideas & Institutions in Medieval India

Paper No 2:

CO1: able to analyze Perception Limitations & range of Sources of Medieval

India CO2: understand political ideas & institutions of Medieval India

CO3: able to illustrate emergence of caste based societies in Medieval

India.CO4: able to explain emergence of state in Medieval India

Sub. Code 22-HI123: Socio Economics History of Maratha Paper No 3:

CO1: understand Basic Term concept related Medieval Maratha.

CO2: understand the Social Ideas & institutions of Medieval

Maratha.

CO3: understand the Economic Ideas & institutions of Medieval Maratha.

CO4: understand the Cultural transformation of Medieval Maratha.

Sub. Code 22-HI124A: Nature of Dalit Movement in Maharashtra Paper No 4:

CO1: understand the Nature of Dalit movement of Maharashtra

CO2: Explain the achievement of Dr. Babasaheb Ambedkar in Dalit movement ofMaharashtra

CO3: take interest to read various book related to social & religious Movement in India

CO4: understand the importance of moral and social value

CO5: write and present views on social History.

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Principal
Modern College of Arts, Science
& Commerce, Ganeshkhind, Pune-16.

Department of History

Programme outcomes

PO1 Think critically about the Different social Processes

PO2 Display the ability to engage in social interactions across the board

PO3 Engage, design and evaluate research in an Interdisciplinary way

PO4 Understand their individual responsibility towards civic and sustainability relatedissues

PO5 Participate in policy engagement and advocacy

MA History (PG) Program Specific Outcome

PSO1: understand the Basic Skill of history Writing & research.

PSO2: Tress out the Root of contemporary society from the past

PSO3: realized the importance of Socio cultural moral value.

PSO4: understand the Depth of Subject of History from Macro to Micro level

MA History Part II : Sem III

Course Outcome

Paper No 1: Cultural History of Maharashtra

CO1: understand the concept of 'culture' in Maharashtra's historical context

CO2: understand the materialistic and ideal nature of culture in Maharashtra

CO3: understand Maharashtra as a place of cultural fusion

CO4: understand the change and continuity in Maharashtra's culture

Paper No. 2 : Intellectual History of Modern World

CO1: understand the Renaissance, Scholasticism & it's Impact of the world CO2: understand the intellectual revolution in 17^{th} & 18^{th} Century

CO3: understand the major concepts & ideology in modern west

Principal
Modern College of Arts, Science & Commerce, Ganeshkhind, Pune-16.

CO4: understand Progress of Science & technology

Paper No: 3 : Economic History of Modern India

CO1: understand of various term, Key concept related to Economic History of India.

CO2: understand the change & continuity of Indian Economics system From Ancient to colonial period.

CO3: discuss the contemporary Economical issues in classroom and its related to be history.

Paper No. 4: East Asia Japan (1853-2000)

CO1: understand the historical background of Japan's modernization process

CO2. Understand Japan's role in World War I

CO3. Understand the decline of Japan's constitutionalism rise as a military power.

CO4. Understand Japan's role in World War II

CO5. Role of Japan in the post-world war period and impact on foreign policy

MA History Part II : Sem IV
Course Outcome

Paper No. 1 Modern Maharashtra: A History of Ideas (1818-1960)

CO1. Understand critical appraisal of religions in the context of Modern Maharashtra

CO2. Understand and critique: caste, patriarchy, conversion movements in the context of Modern Maharashtra.

CO3. Understand the development of economic and political

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thought in Modern Maharashtra

CO4. Understand the development of cultural thought in Modern

Maharashtra

Paper No. 2: Debates in Indian Historiography

CO1: exposure and understanding of different historical aspects

that have become debatableamong historians

CO2: understand different aspects and data that are used to re-construct history and how thishas made certain topics debatable

CO3: understand and see in detail the analytical thinking in process of re-construction ofhistory.

CO4: exposure to difference in perspective and understanding of European and Indianhistorians/scholars.

CO4: take interest to read various book related to British policy and ideology to ruling India

Paper No 3: World after World War II

CO1: understand the political development in the world after Second World War.

CO2: developed the understanding of new military and political ideas and

institutionsCO3: understand the process and impact of globalization

Paper No. 4. History of Modern India (1857-1971)

CO1 understand the economic and Political Transformation of Modern India

CO2: understand process of rise of Modern India.

CO3: understand the process of healthy Nationalism and Secularism by studying work of social reformer and freedom fighters.

CO4: familiar with makers of Modern India

CO5: Understand the political developments in post-independence period

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DEPARTMENT OF PSYCHOLOGY
AUTONOMOUS COURSES

Course outcomes PG
First Year

SEM I

Course-------- COGNITIVE PSYCHOLOGY: UNDERSTANDING
CO1 To understand the origin of cognitive psychology.
CO2 To explore the various concepts and knowledge of cognitive psychology.
CO3 To strengthen awareness about the recent trends in cognitive psychology.
CO4 To help relate the subject matter of cognitive psychology to daily life.

Course-------- PSYCHOMETRICS: THE SCIENCE OF PSYCHOLOGICAL ASSESSMENT
CO1 To create critical understanding of measurement issues and techniques in psychological inquiry.
CO2 To develop required skills and competencies in test construction and standardization.
CO3 To understand the various biases in psychological testing and assessment.

Course-------- RESEARCH METHODOLOGY-I
CO1 To strengthen the basics of scientific research in applied psychology.
CO2 To instill the practice of statistical rigor in designing research and processing data.

Course-------- PSYCHOLOGY PRACTICAL: TESTING
CO1 To develop an understanding of the administration of the standardized psychological tests, rapport establishment, interpretation of scores and report writing.
CO2 To acquaint students with the criteria of evaluating psychological tests.
CO3 To ascertain counseling skills on the basis of psychological results .

SEM II

Course-------- COGNITIVE PSYCHOLOGY: ADVANCES AND APPLICATION
CO1 To understand the advances in cognitive psychology
CO2 To study the application of cognitive psychology in different fields

Course-------- PSYCHOMETRICS: APPLICATIONS
CO1 To acquaint the students with how psychological tests are used for the purpose of assessment, guidance and enhancing the effectiveness of the teaching-learning process.

CO2 To understand the use and interpretation of various psychological tests used in the educational field.
CO3 To understand the use of psychological tests for better health, adjustment and related counseling.
CO4 To understand the use of psychological tests in clinical and organizational settings

Course-------- RESEARCH METHODOLOGY - II
CO1 To learn about the philosophical foundations, goals and scope of qualitative methodology.
CO2 To develop an understanding about the relationship between paradigms of science and methods of qualitative inquiry.
CO3 To understand the basic procedures of using qualitative methodology.
CO4 To enhance knowledge about scientific rigor in the use of qualitative methodology.
CO 5 To equip the students with the statistical rigor in multivariate analysis.

Course-------- PSYCHOLOGY PRACTICAL: EXPERIMENTS
CO1 To explore the various areas of experimentation in psychology.
CO2 To develop the skills required in conducting experiments in psychology.
CO3 To apply knowledge of experimental design and report writing style

DEPARTMENT OF PSYCHOLOGY
AUTONOMOUS COURSES

Course outcomes UG

First Year

Course-------- Foundations of Psychology

CO1 To provide a strong foundation to build on the basic principles of Psychology.
CO2 To acquaint the students with the historical trends in Psychology and related major concepts.
CO3 To strengthen the theoretical perspective through empirical findings.
CO4 To understand the basic psychological processes and their applications in day to day life. **CO5** To enhance the ability to evaluate cognitive processes, motivation and emotions of an individual.
CO6 To introduce the theories of personality and intelligence.

Course------ Introduction to Social Psychology

CO1 To understand the basics of Social Psychology.
CO2 To inculcate ethical community mental health practices.
CO3 To understand the individual in the social world.
CO4 To assess the interactional processes in our day today life.
CO5 To develop an understanding of 'Self' and group behavior.
CO6 To instill the concepts of prejudice, attitude, love and aggression.

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Department of Psychology

MA

Programme outcomes

PO1 Develop an in depth understanding of cognitive psychology

PO2 Create critical understanding of measurement issues and techniques in psychological inquiry

PO3 Build a research aptitude and enhance skills required in conducting research

PO4 Gain knowledge about various psychological disorders and psychotherapies

PO5 Know an overview of the key concepts, topics and issues in personnel psychology

PO6 Identify the effective development and training programs

Programme specific outcomes

PSO1 To explain what is psycho diagnostics and its basics

PSO2 To enable to discuss and assess the behavioural and clinical problems of the clients and making diagnosis, and estimating prognosis

PSO3 To enable oneself in writing psychological report

PSO4 To get acquainted with different clinical measures apart from paper pencil testing

PSO5 To acquaint the students with the nature of Organizational Behaviour (OB)

PSO6 To understand how behaviour of an individual is shaped by various factors in Indian culture, society, and organization.

PSO7 To equip the student with the knowledge of important OB processes such as Leadership and motivation

1.Course outcome - ARTS-BA

FYBA

- -कथा आणि कविता या साहित्य प्रकारचे आकलन
- जीवन मूल्य आणि साहित्य मूल्यांची शिकवण
- मराठी भाषेतील साहित्यकारांचा परिचय
- उपयोजित मराठी भाषेचा सराव
- वाचन ,लेखन,संभाषण कौशल्य वृद्धिंगत होतात

- SYBA-
- चरित्र आणि आतमचरित्र या साहित्य प्रकारचे आकलन
- विद्यार्थ्यांना प्रेरणा मिळते
- उपयोजित मराठीचा सराव
- शुद्धलेखनाचा सराव

TYBA-

- आकलन ललितगद्य व प्रवास वर्णन या साहित्य प्रकारचे आकलन
- ग्रंथपरीक्षण करण्याचा सराव
- पुस्तक वाचनाची प्रेरणा
- निबंध या साहित्य प्रकारचे

FYBCOM-

- प्रेरणादायी व्यक्तींचा परिचय
- उपयोजित मराठीचा सराव

U.G. Program Outcome I. Program Outcome of Bachelor of Arts (B.A.) Student seeking admission for B.A. programme are expected to imbue with following quality which help them in their future life to achieve the expected goals. a. Realization of human values. b. Sense of social service. c. Responsible and dutiful citizen. d. Critical temper e. Creative ability

Programm Outcomes (CO's) B.A I (Marathi-

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.1. Understanding the interrelation between literature and society.

2. Explaining the nature of language and literature.

3. Obtaining the skills of literary criticism.

4. Imbuing the essay writing skills. 5. Illustrating the nature of literary forms like, travellogue and short story

5. Acquaintance with oriental poetry.

6. Understanding the nature and features of poetry

7. Creating the skill of critical appreciation of a poem.

8. Developing the poetic devices and their usages.

9. Enhancing the interest in Marathi language

10. Understanding the formal and informal language.

11. Developing various language skills.

11. Getting motivation for creative writing

12.Understanding the technique of mass communication

2.Value added courses and Addon course –subject related--NIL

3. .Value added courses and Addon course –Courses proposed in second trem--NIL

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& Commerce, Ganeshkhind, Pune-16.

BA-MARATHI [General Level] CBCS PATTERN 2019 Course Outcome

Studied Marathi language, Marathi literature and Marathi culture.
Developed literary comprehension taste and evaluation ability
Developed life understanding through study of literature
Developed applied skills of Marathi language
The student knows the story [katha vangmay] as a form of Marathi Literature.
ields.
2] Developed skills in the use of Marathi Language in various fields and various formats.
3] Study of various writing styles and ability to use actual writing skills developed in students.
4] Students were taught to cultivate moral, professional and ideological values.
5] The students were introduced to the work of talented people in various fields.

-Dr. Sanskriti Awalgaonkar
Marathi Department

FYBCOM -MARATHI [General Level] CBCS PATTERN 2019 Course Outcome
1] Students understood the nature and need of language practice in different f

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Faculty of Commerce

B Com

- Provide conceptual knowledge and application skills in domain of commerce studies.
- Enable students to cope with latest developments in business world at national and global level through curricular and co-curricular aspects.
- Develop various employability skills and prepare students for position of leadership in business organizations.
- Develop entrepreneurial skills to enable them to establish and manage business.
- Focus on overall development of students through proper education and exposure to outside world.
- Inculcate civic, social and moral responsibilities among students.
- Make students aware about various career opportunities.
- Motivate students to go for higher studies.

M com

- To motivate the students for further education
- To inculcate a sense of social accountability.
- To make them professionally more capable and employable.
- To promote students for research.
- To impart various life and professional skills.

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& Commerce, Ganeshkhind, Pune-16.

FACULTY OF COMMERCE
B.COM

Program Outcomes

PO1: Student should have conceptual knowledge and application skills in domain of commerce field.

PO2: Students should cope with latest developments in business world at national and global level.

PO3: Student should acquire employability skills and prepare himself to take leadership positions in corporate world.

PO4: Student should develop entrepreneurship skills and contribute to economic development of country.

PO5: Student should possess social moral and civic values so as to become good citizen of country.

Course Outcome
First Year B.Com (CBCS) 2019 Pattern

Course: Compulsory English

CO1: Students learn about entrepreneurship skills from their reading of Biographies of corporate leaders

CO2: Students get the pleasure of reading works by classical writers of English Literature

CO3: Employability skills of the students are enhanced from their study and practice in communication skills and life skills

Financial Accounting (Subject Code 112 and 122)

After completing this course students will able to

CO1: Understand the basic concepts of account

CO2: Know practical usage of accounting concepts.

CO3: Learn how to utilize the accounting concepts in business environment.

CO4:Learn how to use computerized accounting practically.

CO5: Be able to do finalization of the book of account in various business establishments

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Business Economics (Micro) I Course Code – 113

After completing this course students will able to

CO1: Understand concepts and tools in micro economics and basic economics problems.

CO2: Understand the theories associated with consumer behavior analysis

CO3: Know concepts of demand, supply and other associated concepts

CO4: Know various concepts of costs, production function and shapes of cost curves

Business Economics (Micro) II Course Code – 123

After completing this course students will able to

CO1: Understand concepts of revenues and cost.

CO2: Know the competitive market conditions in which buyers and sellers operate.

CO3: Understand imperfect market conditions in which buyers and sellers operate and how equilibrium is reached.

CO4: Know factor markets and price determination in factor market

Business Mathematics & Statistics – I Course Code – 114 (A)

After completing this course students will able to

CO1. Know the basic concepts in Finance and Business Mathematics and Statistics

CO2. Understand the different methods of calculation of EMI and calculate the EMI on their own before taking any loan

CO3. Understand applications of Statistics and Mathematics in Business and can decide upon the better investment options.

CO4. Understand elementary statistical methods for analysis of data.

CO5. Calculate various averages for different data sets.

Business Mathematics & Statistics – II Course Code – 124 (A)

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After completing this course students will able to

CO1. Know the application of Matrices and Determinants in Business activities.

CO2. Understand the technique of Linear Programming in decision making process.

CO3. Understand application of concepts of Correlation and Regression in business activities.

CO4. Understand application of index numbers in Finance and Economics.

Banking and Finance

Semester I

After completing this course in commerce students will able to

CO1: Acquire the basic knowledge of the development of banking in India and abroad.

CO2: Understand the basic concepts in banking.

CO3 Enlighten about the operations of various deposit accounts.

CO4: Make them understand about the banking business

CO5: Operate the account independently.

CO6: Develop the communication and writing skills

CO7: Motivate to use of e- banking techniques

CO8: Insight to be financially independent

Banking and Finance

Semester II

After completing this course in commerce students will able to

CO1: Acquire the basic knowledge of the lending and investment policy of bank.

CO2: Understand the basic laws related to bank.

CO3: Enlighten about the various instruments used by bank for transaction convenience.

CO4: Make them understand about the bank technology.

CO5: Able to analyze the working of bank through Balance sheet of bank.

CO6: Develop logical and critical thinking.

CO7: Make digitally literate.

CO8: Develops logical and critical thinking

Subject: Organisational Skill Development Course Code: 115- A, SEM: I

Students who complete this course will:-

CO 1.Understand the functions of Modern office
CO 2.Office Organisation and Management

CO 3.Office Records Management
CO 4. Office work

Organisational Skill Development Course Code: 125- A, SEM: II

Students who complete this course will:-

CO 1.Understand the qualities of office manager

CO 2. Management Reporting

CO 3.Work measurement and standardization of office work

CO 4.Office Automation

Business Environment and Entrepreneurship (Semester I)

Subject Code 116 E

After completion of course student should

Co1 - Understand concept of Business Environment and its aspects

Co2- Know environmental issues and problems of growth

Co3- Understand entrepreneurial competencies and how it can be developed.

(Semester II) Subject 126 E

After completion of course student should

Co1- Understand significance of entrepreneurship in economy.

Co2- Know contribution of selected institutions engaged in promotion of entrepreneurship. Co3- Develop entrepreneurial inspiration through study of successful entrepreneurs.

Marketing and Salesmanship Semester I and II

Subject Code 116D and 126D

CO1 Students are going to get acquainted with basic concepts of marketing, traditional and modern approach of marketing functions of marketing and concept of Market

CO2 Students will get in depth knowledge of concept of market segmentation and marketing mix

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CO3 Students will get acquainted with in depth concept of product mix and price mix

CO4 Students will get insight into the knowledge of promotion mix and place mix through channel of distribution. Also develop skill of promotion of products in business**.**

FYBCOM –MARATHI

After completion of course students should

CO1 Understand the nature and need of language practice in different fields. CO2 Able to develop skills in the use of Marathi Language in various fields and various formats.

CO3 Understand various writing styles and ability to use actual writing skills developed in students.

CO4 Understand moral, professional and ideological values.

CO5 Understand work of talented people in various fields.

Optional English

CO1-Students get to appreciate a good blend of old and new pieces of literature CO2-Students become aware of cultural values and global challenges through the essays, Poems and short stories
CO3-Literary sensibilities are developed among students

S. Y. B Com (2019 pattern) Semester III

Course Code: 231Business Communication-I

CO1. To understand the concept and process of communication along with its Methods, Channels and Barriers to Communication and the remedies to overcome the barriers.

CO2. To understand qualities and essentials of a good business letter along with Physical Appearance and Layout of a Business Letter.

CO3. To develop awareness regarding importance and elements of Soft Skills.

CO4. To provide knowledge of Resume / CV writing and drafting of Job Application Letter.

Subject Code 232 Corporate Accounting

Outcomes:

CO1: To understand important accounting standard associated with to corporate accounting.

CO2. To understand the interpretation of financial statement in simple way.

CO3. To study difference between commencement and incorporation of a company.

CO4. To understand the Process of Holding, Absorption and Liquidation of accounting.

CO5. To understand the recent trends in the field of accountancy.

Subject Code 233BUSINESS ECONOMICS (MACRO)

CO1 To familiarize the students to the basic theories and concepts of Macro Economics and their application.

CO2 To study the relationship amongst broad aggregates.

CO3 To impart knowledge of business economics.

CO4 To understand macroeconomic concepts.

CO5 To introduce the various concepts of National Income.

Subject Code 234 Business Management

CO1 To provide basic knowledge and understanding about various concepts of Business Management.

CO2 . To help the students to develop cognizance of the importance of Management principles.

CO3 To provide an understanding about various functions of management.

CO4 To provide them tools and techniques to be used in the performance of the managerial job.

Course Code: 235 Elements of Company Law

CO1: To develop general awareness of Elements of Company Law among the students.
CO2: To understand the Companies Act 2013 and its provisions.
CO3: To have a comprehensive understanding about the existing law on formation of new company in India.
CO4: To create awareness among the students about legal environment relating to the

Company law.
CO5: To acquaint the students on e-commerce, E governance and e-filling mechanism relating to Companies.
CO6: To enhance capacity of learners to seek the career opportunity in corporate sector.

Course Code: 236 E Cost& Works Accounting I

CO1: Student should have knowledge of basic concepts of cost Accounting.

CO2: Student should know elements of Cost.

CO3: Student should be able to prepare of Cost Statement. And have knowledge of Inventory control.

Subject code 236(G)L:Business Entrepreneurship Paper I

Course Outcomes

CO1. To study new age entrepreneurs and their business models.

CO2. To understand concept of creativity and innovation and its importance in entrepreneurship.

CO3. To study business ethics and corporate social responsibilities.

Course Code: 236-H Marketing Management

Course Outcomes

CO1: Students will understand marketing management its scope and functions.

CO2: Students will learn about marketing strategy, its significance and its formulation.

CO3: Students will get acquainted of steps in marketing planning and marketing management.

CO4: Students will know the marketing research, its Scope, Procedure and can distinguish between marketing research and marketing information.

BANKING AND FINANCE

After this course in commerce student will able to

After completing this course in commerce students will able to

CO1: Acquire the basic knowledge of Indian Banking system.

CO2: Understand the role and functions of various commercial banks

CO3 Enlighten about the types of banks in India

CO4: Make them understand about the currency management in India

S. Y. B Com (2019 pattern) Semester IV

Course Code: 241 Business Communication-II

CO1. To understand report writing and internal correspondence of a business organisation.

CO2. To understand the recent trends and new technologies used in modern business world.

CO3. To develop awareness regarding drafting of business letters in various situations.

CO4. To provide knowledge of drafting of formal mails and blog writing.

Subject Code 242: Corporate Accounting

CO1. To acquaint the student with knowledge of corporate policies of investment for expansion and growth through purchase of stake in or absorption of smaller units.

CO2. To develop the knowledge among the student about consolidation of financial statement with the process of holding.

CO3. To update the students with knowledge of the process of liquidation of a company

CO4. To introduce the students with the recent trends in the field of accountancy

Subject Code 243 Business Economics (Macro)

CO 1 To familiarize the students to the basic theories and concepts of Macro Economics and their application.

CO2 To understand the theories of money.

CO3 To understand the phases of trade cycle and policy measures to elongate the trade cycle.

CO4 To understand various concepts related to public finance.

CO 5 To understand credit creation of banks and money measures of RBI.

Subject Code 244 Business Management

CO1 To understand how to motivate team members and understand their expectations.

CO2 To understand concept of Conflict Management and how to handle it.

CO3 To develop skill to establish coordination among departments.

CO4 To understand importance of CSR

Course Code: 245 Elements of Company Law

CO1: To develop general awareness among the students about management of company
CO2: To have a comprehensive understanding about Key managerial Personnel of company and their role in Company administration.
CO3: To acquaint the students about E Governance and E Filling under the Companies Act, 2013.
CO4: To equip the students about the various meetings of Companies and their importance.
CO5: To make students capable of becoming good human resource of the corporate sector.

Course Code: 246 E Cost & Works Accounting I

CO1: To know the documents those are used in stores and how to calculate the issuing price of material.

CO2: To provide knowledge to students on classification and codification.

CO3: To equip students with knowledge regarding the ascertainment of labour cost.
CO4: To understand the concept of payroll.

CO5: To know the concepts of labour turnover and merit rating.

CO6: To understand recent trends in cost accounting.

Subject code 246(G) Business Entrepreneurship Paper II

CO1. To understand concept of individual entrepreneurship and group entrepreneurship.

CO2. To study role of service sector in National Economy

CO3. To understand challenges in Entrepreneurship Development

CO4. To study success stories of entrepreneur to motivate them to become entrepreneur.

Course Code: 246-H Marketing Management

CO1: Students will understand green marketing, its objectives, strategies and practices.

CO2: Students will learn about E-marketing, its significance and its formulation.

CO3: Students will understand the concept of Digital marketing, its channels

CO4: Students will know the international marketing, its scope, objectives and limitations.

BANKING AND FINANCE

After completing this course in commerce students will able to

CO1: Acquire the basic knowledge of selective concepts in banking.

CO2: Understand the major component of Indian Financial system like development bank.

CO3 Enlighten about the financial sector reforms after 1991 and its impact.

CO4: Make them understand about role of cooperatives in rural empowerment

T Y B.Com (2019 pattern) Semester V

Course Code 351: Business Regulatory Framework

CO1. To understand the basic provisions regarding the legal framework governing the business world.

CO2. To develop the awareness among the students regarding the laws affecting trade, business and commerce.

CO3. To make the students understand about business and corporate laws.

CO4. To help the students to understand the concept of contracts, sale of goods and partnership.

Course Code 362: Advanced Accounting

CO1. To provide the knowledge of various accounting concepts.

CO2. To impart knowledge about accounting methods, procedures and techniques.

CO3. To provide students the practical approach for financial institution like banks.

Subject Code 354: Auditing & Taxation

CO1: Student should get familiarize with the concept of auditing like meaning & evolution of auditing and auditing process

CO2: Student should be well versed with aspects while conducting audit like vouchers and vouching of cash book items, verification and valuation of balance sheet items.

CO3: Student should have knowledge of audit report its types and contents.

CO4: Student should learn legal provisions regarding Company Auditor including provisions regarding qualification, disqualification, rights duties and liabilities.

Subject Code 353Indian and Global Economic Development

CO1. Students will be able to understand the concept of growth and development and compare the Indian economy with other economies

CO2.Students will be able to understand present Economic Scenario of Indian Economy as well as World Economy.

CO3.Students will be able to understand the role and prospectus various sectors such as Agricultural, Industrial and Service Sector in Indian economy.

CO4.Student will be able to understand and evaluate the role of India in international economy.

Subject Code 355 (B) Banking &Finance II & 356(B) Banking & Finance III

CO1: Student should understand the roleof Indian financial markets and institutions.

CO2: Student should learn various banking laws, negotiable instrument and their operations.

CO3: Student should get idea of rights, duties and precautions to be taken by the bankers.

CO4: Student should have idea of relationship between bank and customers.

CO5: Students should know recovery measures adopted by the banks.

Course Code 355 (E): Cost & Works Accounting (II) & 356(E) Cost & Works Accounting (III)

CO1: Students should be able to know overhead accounting

CO2: Students should be able to know the concept of Activity Based Costing [ABC]

CO3: Student should know techniques of costing and should be able to prepare budgets

CO4: Student should be aware of Supply chain and Management Information system [MIS]

Subject Code 355 (g) Business Entrepreneurship (II) & 356 (g) Business Entrepreneurship (III)

CO1: Student should be equipped with necessary skill and knowledge to start

new venture.

CO2: Student should be able to prepare business plan.

CO3: Student should be aware about business crises and sickness.

CO4; Student should be aware about the importance of Organizational behavior, personality development and emotional intelligence.

Subject Code 355(h) Marketing Management (II) & 356(h) Marketing Management (III)

CO1: CO1: Students will understand Concept of Marketing Demand, Sales forecasting, Marketing organisation, Brand Building Strategy

CO2 : Students will understand Marketing of Non profit organisation, Concept of Brand and Brand Management, Fundamentals of advertising and Advertising Media

CO3: Students will understand Appeals and approaches in advertising, buying motives and economic, social and regulatory aspects of advertising

T Y B.Com (2019 pattern) Semester VI

Course Code 351: Business Regulatory Framework

CO1. To provide the students with knowledge of Indian legislation and to understand legal environment of business in India.

CO2. To help students to understand the basic legal knowledge to the business transactions and its enforceability in course of law.

CO3. To make the students understand about business and corporate laws.

CO4. To understand the concept of consumer protection act, Negotiable Instrument Act, E-contracts and Intellectual Property Rights.

Course Code 362: Advanced Accounting

CO1. To make aware the students about the conceptual aspects of various recent trends in the field of accounting.

CO2. To help the students to understand the procedure and methods of analysis of financial statements.

CO3. To deliver the knowledge amongst students about resent trends in accounting.

CO4. Tounderstand the practical analysis of financial statements.

Course Code 364: Auditing & Taxation

CO 1 : Student Understand the concept of Income Tax as per the Act 1961

CO2 : Students understand the income tax rules and regulations and its provisions and get knowledge about various type of incomes, deductions and rebates.

CO3 : Students grasp the changes made in the act and measures its impact on assesses

CO4 : Students acquainted with the e-use for filing the returns, students learns practical use of Income tax department portal

Subject Code 363Indian and Global Economic Development

CO1. Students will be able to understand the concept of development and deprivation indices.

CO2. Students will be able to understand the role of foreign capital in Economic Development.

CO3. Students will be able to understand the role and critically evaluate the Indian Foreign Trade Policy.

CO4. Students will be able to analyzethe role of International Financial Institutions.

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CO5. Students will be able to evaluate the success of Regional Economic Cooperation's

Course Code 365 (E): Cost & Works Accounting(II) & 366 (E): Cost & Works Accounting (III)

CO1: Student should know methods of costing and should be able to do cost sheet/cost determination under different methods.

CO2: Students should know concept of cost audit its procedure and legal formalities.

CO3: Students should get training though internship to implement costing methods &techniques.

CO4: Students should be able to know various pricing decisions.

Course Code 365 (B): Banking & Finance(II)& 366 (B): Banking & Finance (III)

CO1: Student would understand the basics of stock market.

CO2: Students would know the mechanism of trading.

CO3: Students would understand the working of NBFCs.

CO4: Students would become aware about the role and functioning of regulatory authorities.

Course Code 365 (g): Business Entrepreneurship (II) & 365 (g): Business Entrepreneurship (III)

CO1: Student would understand working of MSME.

CO2: Students would know how to create new venture.

CO3: Students would understand available tools for setting up new ventures.

CO4: Students would become able to formulate their own business plan and tackle the odds in business growth.

Course Code 365 (h): marketing Management (II)&365 (h): marketing Management (III)

. CO1: Students will understand the concept of Agriculture Marketing, Global Marketing, Regulatory aspects in Marketing

CO2: Students will understand the concept and strategy of cyber security marketing,concept of Service Marketing, understand the art and craft of creating advertisements for various media

CO3: Students will understand concept of Social Media Marketing, Marketing Control, and Marketing Audit

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Modern College of ASC, Ganeshkhind, Pune – 16 (Autonomous)

Department of Chemistry

Program Outcomes- UG (B. Sc. Chemistry) 2022-23

Sr. No.	Objectives/ Outcomes
1	It is expected to inspire and boost interest of the students towards chemistry as the main subject. Students are expected to understand the fundamentals, principles, mathematical concepts and analytical techniques in Chemistry.
2	Students are expected to know the importance of chemistry in everyday life. They will be able to relate physical and chemical phenomena around us with chemical point of view.
3	As the course gradually deepens the subject knowledge from first year to third year, it makes students well versed with physical chemistry, quantum mechanics, coordination chemistry and its applications in various fields.
4	It would help students to learn various aspects of organic chemistry and its usefulness in natural products, isolations, pharmaceuticals, dyes, textiles, polymers, petroleum products, forensic etc.
5	The environmental chemistry course would create awareness and a sense of responsibilities. The practical courses are in relevance to the theory courses to improve the understanding of the concepts. It would help in the development of practical skills of the students. Students would be able to design, analyze and interpret data theoretically as well as practically.
6	The practical courses would help them to develop good laboratory practices, understand standard operating procedures, preparation of various solutions, identification and removal of impurities, use of analytical instruments, syntheses of complexes and small organic molecules etc.
7	The students will be thus introduced to concepts, applications and recent developments to inculcate research aptitude. It would enable to develop an interdisciplinary approach to the subject.
8	It will help students to build up a progressive successful career and become responsible citizens.

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Program Outcomes- PG (M. Sc. I Organic Chemistry) 2022-23

Sr. No.	Objectives/ Outcomes
1	To enrich specific knowledge in areas like thermodynamics, kinetics, quantum chemistry, nuclear chemistry, spectroscopy, organometallics, bio-inorganics, reaction mechanisms, photochemistry, biochemistry, medicinal chemistry etc. which will give a bird's eye view to the scope of chemistry.
2	It would help students to learn applications of various facets of chemistry and their importance.
3	Problem solving will inculcate logical thinking to address a problem and become result oriented with a positive attitude.
4	Practical courses will refine the basic techniques and their use for analyses, syntheses, basic computer skills and research. It would develop analytical independent thinking required for academics, research, and industrial work.
5	Literature reading and project work will help for strategic planning and execution, to know recent developments in chemistry, its interdisciplinary relevance and create interest for research.
6	The credit system would help them to be regular in performance, improvise their presentation skills, strive for excellence, and create awareness of their social and environmental responsibilities.
7	To help students build up a progressive successful career.

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Modern College of ASC, Ganeshkhind, Pune – 16 (Autonomous)
Department of Chemistry
F. Y. B. Sc. (Regular) 2022-23
Course Outcomes- UG

22-CH-101: Paper 1: Physical and Analytical Chemistry

CO 1: Students will be able to plot graphs of linear, exponential and logarithmic function.
CO 2: Students should be able to understand the concept of real and ideal gases.
CO 3: Student should understand the concept of ionization process in acids and bases.
CO4: Students should understand the perspectives of Analytical Chemistry.

22-CH-102: Paper 2: Organic and Inorganic Chemistry

CO 1: Students will learn fundamentals of organic chemistry and functional group approach for aliphatic and aromatic hydrocarbons.
CO 2: Students will learn structure of atom and hence the reactivity, various theories for chemical bonding and applications of hybridization.

22-CH-103: Chemistry Practical - I

CO1: Importance of chemical safety and Lab safety while performing experiments in the laboratory.
CO2: Techniques of pH measurements.
CO3: Students should learn the geometry of molecules by making models.

22-CH-201: Paper 1: Physical and Analytical Chemistry

CO1: Students will be able to understand theories related to atomic structure.
CO2: Students should understand the concepts of real and ideal gases.
CO3: Student should understand the concept of ionization process in acids and bases.
CO4: Students should understand the perspectives of Analytical Chemistry.
CO5: Students will be able to apply thermodynamic principles to physical and chemical processes.
CO6: Students will be able understand the basic concepts of pH and its significance.

22-CH-202: Paper 2: Organic and Inorganic Chemistry

CO1. Students will learn Fundamentals of stereochemistry and the Concept of isomerism, types of isomers and representation of organic molecules.
CO2. Students will learn Periodicity of elements and modern periodic law.
CO3. Students should learn the aromaticity of benzenoid and heterocyclic compounds.
CO4. Application of s-block elements: Industrial, biological and agricultural fields.

22-CH-203: Chemistry Practical - II

CO1: The practical course is in relevance to the theory courses to improve the understanding of the concepts.
CO2: It would help in development of practical skills of the students.
CO3: The student will be able to design the experiments by their own innovative ideas through experiential learning experiments and projects.

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M. Sc. I Organic Chemistry (2022-23)
Course Outcomes- PG

22-CCTP-1: Physical Chemistry - I
Thermodynamics, Quantum Chemistry and Chemical Kinetics

CO1: To study the concepts in thermodynamic to understand the thermodynamics of the mixtures.
CO2: To understand the concept of partition function and its applications in finding the thermodynamic parameters with reference to translational, rotational, vibrational and electronic energies
CO3: To understand the need of quantum chemistry and its application in understanding the particle in a box concept.
CO4: To understand the advantages of valence bond theory over Molecular orbital theory.
CO5: To understand the kinetics of elementary and complex reactions
CO6: To know the different techniques to study the fast reactions.
CO7: To understand the kinetics of catalytic reactions based on enzyme catalysis, autocatalysis.
CO8: To understand the surface chemistry concepts.

22-CCTP-2: Inorganic Chemistry - I
Molecular Symmetry and Chemistry of Main Group Elements

CO1: To visualize molecule in 3-D, understand the concept of molecular point groups with their symmetry elements, symmetry operations, GMTs, character tables and group representations.
CO2: To understand how to derive the SALCs for molecules using the Projection Operators and also how to construct molecular orbitals using various symmetry operations and their representations.
CO3: To correlate application of symmetry to spectroscopy and find possible IR active modes of vibration.
CO4: To understand the detail chemistry of s- and p- block elements w.r.t. their compounds, reactions, applications and organometallic chemistry of some important elements.
CO5: To learn the advance chemistry of boranes, fullerenes, silicates including zeolites, carbon nanotubes, Polymers, etc.

22-CCTP-3 Organic Chemistry - I
Basic Organic Chemistry

CO1: Understand fundamental aspects of organic chemistry, learn the concept of aromaticity and its types.
CO2: To study substitution and elimination reactions.
CO3: understand concepts of stereochemistry and will be able to stereochemical aspects in Organic chemistry
CO4: To study structure, formation, stability and related name reaction of intermediates like carbocation, carbanion, free radical, carbenes and nitrenes; recognise neighbouring group participation
CO5: To study rearrangement reaction with specific mechanism and migratory aptitude of different groups
CO6: To study Ylides and their reactions.

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CO7: To understand the basis of redox reactions; reagents and mechanism for selective oxidation/reduction reactions of organic compounds.

22-CBOP-1 General Chemistry - I
SECTION - I Theory course
Option-B: Chemical Biology - I

CO1: Students will be able to explore new areas of research in both chemistry and allied fields of science and technology.
CO2: Students will be able to function as a member of an interdisciplinary problem solving team.
CO3: To impart the students thorough idea in the chemistry of carbohydrates, amino acids, proteins and nucleic acids etc.
CO4: Be able to describe the chemical basis for replication, transcription, translation and how each of these central processes can be expanded to include new chemical matter.

CO5: Develop skills to critically read the literature and effectively communicate research in a peer setting.

22-CBOP-1 General Chemistry - I
SECTION - II Inorganic Chemistry Practical - 1

CO1: Prepare the exact solutions for quantitative analysis.
CO2: Apply the knowledge of quantitative analysis for the determination of metals from ores/alloys.
CO3: Know different methods for the synthesis and characterization of nanoparticles
CO4: Learn various applications of nanoparticles
CO5: Understand principle and working of Ion-exchange chromatography for separation of metal ions using ion-exchange resin.

22-CCPP-1: Basic Practical Chemistry
Section I: Physical Chemistry Practical - I

CO1: The students should be able to apply and correlate the concepts in theory.
CO2: The students should develop the skill for the laboratory safety and handling of chemicals
CO3: The students should be able to work independently in the laboratory.

Section II: Organic Chemistry Practical - I

CO1: Students are trained to different purification techniques in organic chemistry like recrystallization, distillation, steam distillation and extraction.
CO2: Students are made aware of safety techniques and handling of chemicals.
CO3: Students are made aware of carrying out different types of reactions and their workup methods.
CO4: This practical course is designed to make student aware of green chemistry and role of green chemistry in pollution reduction.
CO5: Students are made aware of carrying out different types of reactions and their workup methods.

22-CCTP-4 Physical Chemistry - II
Molecular Spectroscopy, Nuclear and Radiation Chemistry

CO1: Students will be able to understand the principle of Microwave, IR, Raman, NMR and ESR spectroscopy
CO2: Students will be able to analyze Microwave, IR, Raman and ESR spectra.
CO3: The student should be able to understand the concepts in Nuclear and Radiation Chemistry
CO4: The student should be able to know the hazards of radioactivity and management of nuclear waste.
CO5: The student will understand the applications of radioactivity

22-CCTP-5 Inorganic Chemistry – II
Coordination and Bioinorganic Chemistry

After successfully completing this course, students will be able to
CO1: find out the number of microstates, construct a microstate table and know meaningful term symbols for various configurations.
CO2: find out splitting of the free ion terms in weak and strong ligand fields and draw Orgel, correlation and Tanabe-Sugano diagrams for various configurations in Td an Oh ligand field.
CO3: Study electronic spectra, its interpretation and solve numerical based on crystal field parameters.
CO4: Understand various terms involved in magneto chemistry, know various phenomena of magnetism and their temperature dependence.
CO5: Understand Importance of bioinorganic chemistry and Role of metals in living systems.
CO6: Know the similarities in coordination theory for metal complexes and metal ions complexed with biological ligands.
CO7: Importance and transport of metal ions by ionophores and Mechanism for active transport of Na^+ and K^+ ions.

22-CCTP-6 Organic Chemistry – II
Photochemistry and Organic Spectroscopy

CO1: Students should understand free radicals formation, stability and reactivity and should also be able to use the basic understanding in writing probable reaction mechanisms.
CO2: They should understand carbon-carbon bond formation and will be able to write the mechanism for addition reactions.
CO3: Students should learn different types of name reactions.
CO4: Students should be able to calculate λmax of organic compounds and correlate IR bands with functional groups using numerical data as well as spectral data.
CO5: Students should be able to solve ^{1}H-NMR problems and should also able to draw the ^{1}H-NMR spectrum for simple organic compounds and should able to predict and analyze the multiplicity patterns with more than one coupling constants.
CO6: Students should be able to use ^{13}C-NMR data to interpret the structure.
CO7: Students should able to know various key factors responsible for the spectroscopic data acquisition and should able to solve Problems based on UV, IR, MS, ^{1}H-NMR, ^{13}C-NMR.

22-CBOP-2 General Chemistry - II
SECTION - I Theory course
Option-B: Chemical Biology - II

CO1: To impart the students thorough idea in the chemistry of Enzymes and nucleic acids.
CO2: Students will be able to explore new areas of research in both chemistry and allied fields of science and technology.
CO3: Students will be able to function as a member of an interdisciplinary approach.
CO4: Students will be able to describe the chemical basis for replication, transcription, translation, gene cloning, gene therapy, etc.
CO5: To understand different metabolic pathways like TCA cycle, Trans amination, urea cycle, etc.

22-CBOP-2 General Chemistry - II
SECTION - II Physical Chemistry Practical - II

CO1: The student should get the hands-on experience of conductivity meter, potentiometer and pH meter.
CO2: The student should be able to analyse the experimental data.

22-CCPP-1: Basic Practical Chemistry
Section I – Inorganic Chemistry Practical - II

CO1: To prepare the exact solutions for quantitative analysis.
CO2: Understand the principle and working of different instruments like Colourimeter, conductometer, spectrophotometer, etc. and handle these instruments.
CO3: Synthesize Inorganic complexes and find their purity.
CO4: Study the electronic spectra of Ni (II) complexes.

Section II- Organic Chemistry Practical - II

CO1: Students should be able to use different purification techniques in organic chemistry like recrystallization, distillation, steam distillation and extraction.
CO2: Students should be aware of safety techniques and handling of chemicals.
CO3: Students should be able to carry different types of reactions and their workup methods.
CO4: Student should know green chemistry and role of green chemistry in pollution reduction.

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P. E. Society's

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DEPARTMENT OF STATISTICS

Class: F.Y.B. Sc. and S.Y. B.Sc.(Gen) Pattern: Autonomous (Semseter Pattern)

Program Specific Outcomes

PSO1: Students learn different techniques
PSO2: Students will be well acquainted with various fields in statistical knowledge is useful.
PSO3: Students learn the team work while completing the project work.

22-ST-111: Descriptive Statistics I

CO1) Students should be able to recall basic concepts like mean, median, mode which they have learned in school and Junior college.
CO2) Students will understand the concept of population and sample, various statistical measures such as measures of central tendency, dispersion, skewness and kurtosis.
CO3) Students will be able to describe the association between interrelated qualitative variables.
CO4) Students will be able to apply all the above mentioned topics in the real life.
CO5) Students will be able to analyze data collected through survey, sampling, etc.

22-ST–112: Discrete Probability and Probability Distributions I

By the end of the course students are expected to be able to:
CO1) Students can recall basic concepts of Probability.
CO2) Students will understand the concept of probability distribution of random variable (one or two dimensional) in the given situation.
CO3) Students will be able to apply above concepts in real life.
CO4) Students will be able to distinguish between random and non-random experiments.

22-ST-121: Descriptive Statistics II

CO1) Students will recall various statistical sampling methods and how to classify and represent that data graphically.
CO2) Students will go through statistical measures such as Karl Pearson's Correlation coefficient to estimate relationship among variables.
CO3) Students will be able to describe the correlation between interrelated variables and also able to find appropriate regression equation among the variables.

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CO4) They will understand how to construct mathematical equations to display the relationship among variables using line fitting and curve fitting methods.
CO5) Students will be able to apply correlation, Regression and index numbers techniques in the real life.
CO6) The students are expected start using some statistical software and verify their theoretical knowledge about different statistical entities and computations during practical sessions.

22-ST –112: Discrete Probability and Probability Distributions II

CO1) Students will recall concept of discrete random variable and continuous random variable.
CO2) Students will go through statistical measures such as Karl Pearson's correlation coefficient to estimate relationship among variables.
CO3) Students will study properties of these distributions as well as interrelation between them.
CO4) They will learn various Standard Discrete Probability Distributions.
CO5) Students will be able to apply standard discrete probability distribution to different situations.

23-ST – 231: DISCRETE PROBABILITY DISTRIBUTIONS AND TIME SERIES

CO1) Students will learn new distributions like Negative binomial, multivariate, truncated distribution.
CO2) Students learn new concept of time series and their components.
CO3) Students learn exploratory data analysis in time series.
CO4) Students learn the application of the techniques like fitting of curve and their statistical analysis for time series.

23-ST 232: CONTINUOUS PROBABILITY DISTRIBUTIONS

CO1) Students will understand the concept of continuous random variable and its probability distribution.
CO2) Students will able to describe and study the different kinds of continuous probability distributions such as Uniform distribution, Normal distribution

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and Exponential distribution.

CO3) They can find relations among aforesaid continuous random variables.

CO4) Students can implement these probability distributions in handling the real life data.

23-ST – 241: TESTS OF SIGNIFICANCE AND STATISTICAL METHODS.

CO1) Students will learn new techniques like testing of hypotheses.

CO2) Students will learn multiple regression which is the extension of simple linear regression.

CO3) Students learn Demography and the various rates of vital statistics.

CO4) Students will learn new application which is queuing model.

23-ST-242: CONTINUOUS DISTRIBUTIONS AND EXACT TESTS.

CO1) Students will understand the concept of testing of hypothesis.

CO2) Students will able to describe and study the different kinds of continuous probability distributions such as Chi square distribution, t and F distributions.

CO3) They can find relations among aforesaid continuous random variables.

CO4) Students can implement the tests based on sampling distributions in the real life situations

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DEPARTMENT OF STATISTICS

Class: F.Y.B. Sc. and S.Y. B.Sc.(Gen) Pattern: Autonomous (Semseter Pattern)

Program Specific Outcomes

PSO1: Students learn different techniques
PSO2: Students will be well acquainted with various fields in statistical knowledge is useful.
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22-ST-111: Descriptive Statistics I

CO1) Students should be able to recall basic concepts like mean, median, mode which they have learned in school and Junior college.
CO2) Students will understand the concept of population and sample, various statistical measures such as measures of central tendency, dispersion, skewness and kurtosis.
CO3) Students will be able to describe the association between interrelated qualitative variables.
CO4) Students will be able to apply all the above mentioned topics in the real life.
CO5) Students will be able to analyze data collected through survey, sampling, etc.

22-ST–112: Discrete Probability and Probability Distributions I

By the end of the course students are expected to be able to:
CO1) Students can recall basic concepts of Probability.
CO2) Students will understand the concept of probability distribution of random variable (one or two dimensional) in the given situation.
CO3) Students will be able to apply above concepts in real life.
CO4) Students will be able to distinguish between random and non-random experiments.

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CO1) Students will recall various statistical sampling methods and how to classify and represent that data graphically.
CO2) Students will go through statistical measures such as Karl Pearson's Correlation coefficient to estimate relationship among variables.
CO3) Students will be able to describe the correlation between interrelated variables and also able to find appropriate regression equation among the variables.

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& Commerce, Ganeshkhind, Pune-16

CO4) They will understand how to construct mathematical equations to display the relationship among variables using line fitting and curve fitting methods.
CO5) Students will be able to apply correlation, Regression and index numbers techniques in the real life.
CO6) The students are expected start using some statistical software and verify their theoretical knowledge about different statistical entities and computations during practical sessions.

22-ST –112: Discrete Probability and Probability Distributions II

CO1) Students will recall concept of discrete random variable and continuous random variable.
CO2) Students will go through statistical measures such as Karl Pearson's correlation coefficient to estimate relationship among variables.
CO3) Students will study properties of these distributions as well as interrelation between them.
CO4) They will learn various Standard Discrete Probability Distributions.
CO5) Students will be able to apply standard discrete probability distribution to different situations.

23-ST – 231: DISCRETE PROBABILITY DISTRIBUTIONS AND TIME SERIES

CO1) Students will learn new distributions like Negative binomial, multivariate, truncated distribution.
CO2) Students learn new concept of time series and their components.
CO3) Students learn exploratory data analysis in time series.
CO4) Students learn the application of the techniques like fitting of curve and their statistical analysis for time series.

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CO1) Students will understand the concept of continuous random variable and its probability distribution.
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and Exponential distribution.

CO3) They can find relations among aforesaid continuous random variables.

CO4) Students can implement these probability distributions in handling the real life data.

23-ST – 241: TESTS OF SIGNIFICANCE AND STATISTICAL METHODS.

CO1) Students will learn new techniques like testing of hypotheses.

CO2) Students will learn multiple regression which is the extension of simple linear regression.

CO3) Students learn Demography and the various rates of vital statistics.

CO4) Students will learn new application which is queuing model.

23-ST-242: CONTINUOUS DISTRIBUTIONS AND EXACT TESTS.

CO1) Students will understand the concept of testing of hypothesis.

CO2) Students will able to describe and study the different kinds of continuous probability distributions such as Chi square distribution, t and F distributions.

CO3) They can find relations among aforesaid continuous random variables.

CO4) Students can implement the tests based on sampling distributions in the real life situations

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Modern College of ASC, Ganeshkhind, Pune – 16 (Autonomous)

Department of Chemistry

Program Outcomes- UG (B. Sc. Chemistry) 2022-23

Sr. No.	Objectives/ Outcomes
1	It is expected to inspire and boost interest of the students towards chemistry as the main subject. Students are expected to understand the fundamentals, principles, mathematical concepts and analytical techniques in Chemistry.
2	Students are expected to know the importance of chemistry in everyday life. They will be able to relate physical and chemical phenomena around us with chemical point of view.
3	As the course gradually deepens the subject knowledge from first year to third year, it makes students well versed with physical chemistry, quantum mechanics, coordination chemistry and its applications in various fields.
4	It would help students to learn various aspects of organic chemistry and its usefulness in natural products, isolations, pharmaceuticals, dyes, textiles, polymers, petroleum products, forensic etc.
5	The environmental chemistry course would create awareness and a sense of responsibilities. The practical courses are in relevance to the theory courses to improve the understanding of the concepts. It would help in the development of practical skills of the students. Students would be able to design, analyze and interpret data theoretically as well as practically.
6	The practical courses would help them to develop good laboratory practices, understand standard operating procedures, preparation of various solutions, identification and removal of impurities, use of analytical instruments, syntheses of complexes and small organic molecules etc.
7	The students will be thus introduced to concepts, applications and recent developments to inculcate research aptitude. It would enable to develop an interdisciplinary approach to the subject.
8	It will help students to build up a progressive successful career and become responsible citizens.

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Program Outcomes- PG (M. Sc. I Organic Chemistry) 2022-23

Sr. No.	Objectives/ Outcomes
1	To enrich specific knowledge in areas like thermodynamics, kinetics, quantum chemistry, nuclear chemistry, spectroscopy, organometallics, bio-inorganics, reaction mechanisms, photochemistry, biochemistry, medicinal chemistry etc. which will give a bird's eye view to the scope of chemistry.
2	It would help students to learn applications of various facets of chemistry and their importance.
3	Problem solving will inculcate logical thinking to address a problem and become result oriented with a positive attitude.
4	Practical courses will refine the basic techniques and their use for analyses, syntheses, basic computer skills and research. It would develop analytical independent thinking required for academics, research, and industrial work.
5	Literature reading and project work will help for strategic planning and execution, to know recent developments in chemistry, its interdisciplinary relevance and create interest for research.
6	The credit system would help them to be regular in performance, improvise their presentation skills, strive for excellence, and create awareness of their social and environmental responsibilities.
7	To help students build up a progressive successful career.

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Modern College of ASC, Ganeshkhind, Pune – 16 (Autonomous)
Department of Chemistry
F. Y. B. Sc. (Regular) 2022-23
Course Outcomes- UG

22-CH-101: Paper 1: Physical and Analytical Chemistry

CO 1: Students will be able to plot graphs of linear, exponential and logarithmic function.
CO 2: Students should be able to understand the concept of real and ideal gases.
CO 3: Student should understand the concept of ionization process in acids and bases.
CO4: Students should understand the perspectives of Analytical Chemistry.

22-CH-102: Paper 2: Organic and Inorganic Chemistry

CO 1: Students will learn fundamentals of organic chemistry and functional group approach for aliphatic and aromatic hydrocarbons.
CO 2: Students will learn structure of atom and hence the reactivity, various theories for chemical bonding and applications of hybridization.

22-CH-103: Chemistry Practical - I

CO1: Importance of chemical safety and Lab safety while performing experiments in the laboratory.
CO2: Techniques of pH measurements.
CO3: Students should learn the geometry of molecules by making models.

22-CH-201: Paper 1: Physical and Analytical Chemistry

CO1: Students will be able to understand theories related to atomic structure.
CO2: Students should understand the concepts of real and ideal gases.
CO3: Student should understand the concept of ionization process in acids and bases.
CO4: Students should understand the perspectives of Analytical Chemistry.
CO5: Students will be able to apply thermodynamic principles to physical and chemical processes.
CO6: Students will be able understand the basic concepts of pH and its significance.

22-CH-202: Paper 2: Organic and Inorganic Chemistry

CO1. Students will learn Fundamentals of stereochemistry and the Concept of isomerism, types of isomers and representation of organic molecules.
CO2. Students will learn Periodicity of elements and modern periodic law.
CO3. Students should learn the aromaticity of benzenoid and heterocyclic compounds.
CO4. Application of s-block elements: Industrial, biological and agricultural fields.

22-CH-203: Chemistry Practical - II

CO1: The practical course is in relevance to the theory courses to improve the understanding of the concepts.
CO2: It would help in development of practical skills of the students.
CO3: The student will be able to design the experiments by their own innovative ideas through experiential learning experiments and projects.

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M. Sc. I Organic Chemistry (2022-23)
Course Outcomes- PG

22-CCTP-1: Physical Chemistry - I
Thermodynamics, Quantum Chemistry and Chemical Kinetics

CO1: To study the concepts in thermodynamic to understand the thermodynamics of the mixtures.
CO2: To understand the concept of partition function and its applications in finding the thermodynamic parameters with reference to translational, rotational, vibrational and electronic energies
CO3: To understand the need of quantum chemistry and its application in understanding the particle in a box concept.
CO4: To understand the advantages of valence bond theory over Molecular orbital theory.
CO5: To understand the kinetics of elementary and complex reactions
CO6: To know the different techniques to study the fast reactions.
CO7: To understand the kinetics of catalytic reactions based on enzyme catalysis, autocatalysis.
CO8: To understand the surface chemistry concepts.

22-CCTP-2: Inorganic Chemistry - I
Molecular Symmetry and Chemistry of Main Group Elements

CO1: To visualize molecule in 3-D, understand the concept of molecular point groups with their symmetry elements, symmetry operations, GMTs, character tables and group representations.
CO2: To understand how to derive the SALCs for molecules using the Projection Operators and also how to construct molecular orbitals using various symmetry operations and their representations.
CO3: To correlate application of symmetry to spectroscopy and find possible IR active modes of vibration.
CO4: To understand the detail chemistry of s- and p- block elements w.r.t. their compounds, reactions, applications and organometallic chemistry of some important elements.
CO5: To learn the advance chemistry of boranes, fullerenes, silicates including zeolites, carbon nanotubes, Polymers, etc.

22-CCTP-3 Organic Chemistry - I
Basic Organic Chemistry

CO1: Understand fundamental aspects of organic chemistry, learn the concept of aromaticity and its types.
CO2: To study substitution and elimination reactions.
CO3: understand concepts of stereochemistry and will be able to stereochemical aspects in Organic chemistry
CO4: To study structure, formation, stability and related name reaction of intermediates like carbocation, carbanion, free radical, carbenes and nitrenes; recognise neighbouring group participation
CO5: To study rearrangement reaction with specific mechanism and migratory aptitude of different groups
CO6: To study Ylides and their reactions.

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CO7: To understand the basis of redox reactions; reagents and mechanism for selective oxidation/reduction reactions of organic compounds.

22-CBOP-1 General Chemistry - I
SECTION - I Theory course
Option-B: Chemical Biology - I

CO1: Students will be able to explore new areas of research in both chemistry and allied fields of science and technology.
CO2: Students will be able to function as a member of an interdisciplinary problem solving team.
CO3: To impart the students thorough idea in the chemistry of carbohydrates, amino acids, proteins and nucleic acids etc.
CO4: Be able to describe the chemical basis for replication, transcription, translation and how each of these central processes can be expanded to include new chemical matter.

CO5: Develop skills to critically read the literature and effectively communicate research in a peer setting.

22-CBOP-1 General Chemistry - I
SECTION - II Inorganic Chemistry Practical - 1

CO1: Prepare the exact solutions for quantitative analysis.
CO2: Apply the knowledge of quantitative analysis for the determination of metals from ores/alloys.
CO3: Know different methods for the synthesis and characterization of nanoparticles
CO4: Learn various applications of nanoparticles
CO5: Understand principle and working of Ion-exchange chromatography for separation of metal ions using ion-exchange resin.

22-CCPP-1: Basic Practical Chemistry
Section I: Physical Chemistry Practical - I

CO1: The students should be able to apply and correlate the concepts in theory.
CO2: The students should develop the skill for the laboratory safety and handling of chemicals
CO3: The students should be able to work independently in the laboratory.

Section II: Organic Chemistry Practical - I

CO1: Students are trained to different purification techniques in organic chemistry like recrystallization, distillation, steam distillation and extraction.
CO2: Students are made aware of safety techniques and handling of chemicals.
CO3: Students are made aware of carrying out different types of reactions and their workup methods.
CO4: This practical course is designed to make student aware of green chemistry and role of green chemistry in pollution reduction.
CO5: Students are made aware of carrying out different types of reactions and their workup methods.

22-CCTP-4 Physical Chemistry - II
Molecular Spectroscopy, Nuclear and Radiation Chemistry

CO1: Students will be able to understand the principle of Microwave, IR, Raman, NMR and ESR spectroscopy
CO2: Students will be able to analyze Microwave, IR, Raman and ESR spectra.
CO3: The student should be able to understand the concepts in Nuclear and Radiation Chemistry
CO4: The student should be able to know the hazards of radioactivity and management of nuclear waste.
CO5: The student will understand the applications of radioactivity

22-CCTP-5 Inorganic Chemistry – II
Coordination and Bioinorganic Chemistry

After successfully completing this course, students will be able to
CO1: find out the number of microstates, construct a microstate table and know meaningful term symbols for various configurations.
CO2: find out splitting of the free ion terms in weak and strong ligand fields and draw Orgel, correlation and Tanabe-Sugano diagrams for various configurations in Td an Oh ligand field.
CO3: Study electronic spectra, its interpretation and solve numerical based on crystal field parameters.
CO4: Understand various terms involved in magneto chemistry, know various phenomena of magnetism and their temperature dependence.
CO5: Understand Importance of bioinorganic chemistry and Role of metals in living systems.
CO6: Know the similarities in coordination theory for metal complexes and metal ions complexed with biological ligands.
CO7: Importance and transport of metal ions by ionophores and Mechanism for active transport of Na^+ and K^+ ions.

22-CCTP-6 Organic Chemistry – II
Photochemistry and Organic Spectroscopy

CO1: Students should understand free radicals formation, stability and reactivity and should also be able to use the basic understanding in writing probable reaction mechanisms.
CO2: They should understand carbon-carbon bond formation and will be able to write the mechanism for addition reactions.
CO3: Students should learn different types of name reactions.
CO4: Students should be able to calculate λmax of organic compounds and correlate IR bands with functional groups using numerical data as well as spectral data.
CO5: Students should be able to solve ^{1}H-NMR problems and should also able to draw the ^{1}H-NMR spectrum for simple organic compounds and should able to predict and analyze the multiplicity patterns with more than one coupling constants.
CO6: Students should be able to use ^{13}C-NMR data to interpret the structure.
CO7: Students should able to know various key factors responsible for the spectroscopic data acquisition and should able to solve Problems based on UV, IR, MS, ^{1}H-NMR, ^{13}C-NMR.

22-CBOP-2 General Chemistry - II
SECTION - I Theory course
Option-B: Chemical Biology - II

CO1: To impart the students thorough idea in the chemistry of Enzymes and nucleic acids.
CO2: Students will be able to explore new areas of research in both chemistry and allied fields of science and technology.
CO3: Students will be able to function as a member of an interdisciplinary approach.
CO4: Students will be able to describe the chemical basis for replication, transcription, translation, gene cloning, gene therapy, etc.
CO5: To understand different metabolic pathways like TCA cycle, Trans amination, urea cycle, etc.

22-CBOP-2 General Chemistry - II
SECTION - II Physical Chemistry Practical - II

CO1: The student should get the hands-on experience of conductivity meter, potentiometer and pH meter.
CO2: The student should be able to analyse the experimental data.

22-CCPP-1: Basic Practical Chemistry
Section I – Inorganic Chemistry Practical - II

CO1: To prepare the exact solutions for quantitative analysis.
CO2: Understand the principle and working of different instruments like Colourimeter, conductometer, spectrophotometer, etc. and handle these instruments.
CO3: Synthesize Inorganic complexes and find their purity.
CO4: Study the electronic spectra of Ni (II) complexes.

Section II- Organic Chemistry Practical - II

CO1: Students should be able to use different purification techniques in organic chemistry like recrystallization, distillation, steam distillation and extraction.
CO2: Students should be aware of safety techniques and handling of chemicals.
CO3: Students should be able to carry different types of reactions and their workup methods.
CO4: Student should know green chemistry and role of green chemistry in pollution reduction.

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DEPARTMENT OF STATISTICS

Class: F.Y.B. Sc. and S.Y. B.Sc.(Gen) Pattern: Autonomous (Semseter Pattern)

Program Specific Outcomes

PSO1: Students learn different techniques
PSO2: Students will be well acquainted with various fields in statistical knowledge is useful.
PSO3: Students learn the team work while completing the project work.

22-ST-111: Descriptive Statistics I

CO1) Students should be able to recall basic concepts like mean, median, mode which they have learned in school and Junior college.
CO2) Students will understand the concept of population and sample, various statistical measures such as measures of central tendency, dispersion, skewness and kurtosis.
CO3) Students will be able to describe the association between interrelated qualitative variables.
CO4) Students will be able to apply all the above mentioned topics in the real life.
CO5) Students will be able to analyze data collected through survey, sampling, etc.

22-ST–112: Discrete Probability and Probability Distributions I

By the end of the course students are expected to be able to:
CO1) Students can recall basic concepts of Probability.
CO2) Students will understand the concept of probability distribution of random variable (one or two dimensional) in the given situation.
CO3) Students will be able to apply above concepts in real life.
CO4) Students will be able to distinguish between random and non-random experiments.

22-ST-121: Descriptive Statistics II

CO1) Students will recall various statistical sampling methods and how to classify and represent that data graphically.
CO2) Students will go through statistical measures such as Karl Pearson's Correlation coefficient to estimate relationship among variables.
CO3) Students will be able to describe the correlation between interrelated variables and also able to find appropriate regression equation among the variables.

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CO4) They will understand how to construct mathematical equations to display the relationship among variables using line fitting and curve fitting methods.
CO5) Students will be able to apply correlation, Regression and index numbers techniques in the real life.
CO6) The students are expected start using some statistical software and verify their theoretical knowledge about different statistical entities and computations during practical sessions.

22-ST –112: Discrete Probability and Probability Distributions II

CO1) Students will recall concept of discrete random variable and continuous random variable.
CO2) Students will go through statistical measures such as Karl Pearson's correlation coefficient to estimate relationship among variables.
CO3) Students will study properties of these distributions as well as interrelation between them.
CO4) They will learn various Standard Discrete Probability Distributions.
CO5) Students will be able to apply standard discrete probability distribution to different situations.

23-ST – 231: DISCRETE PROBABILITY DISTRIBUTIONS AND TIME SERIES

CO1) Students will learn new distributions like Negative binomial, multivariate, truncated distribution.
CO2) Students learn new concept of time series and their components.
CO3) Students learn exploratory data analysis in time series.
CO4) Students learn the application of the techniques like fitting of curve and their statistical analysis for time series.

23-ST 232: CONTINUOUS PROBABILITY DISTRIBUTIONS

CO1) Students will understand the concept of continuous random variable and its probability distribution.
CO2) Students will able to describe and study the different kinds of continuous probability distributions such as Uniform distribution, Normal distribution

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and Exponential distribution.

CO3) They can find relations among aforesaid continuous random variables.

CO4) Students can implement these probability distributions in handling the real life data.

23-ST – 241: TESTS OF SIGNIFICANCE AND STATISTICAL METHODS.

CO1) Students will learn new techniques like testing of hypotheses.

CO2) Students will learn multiple regression which is the extension of simple linear regression.

CO3) Students learn Demography and the various rates of vital statistics.

CO4) Students will learn new application which is queuing model.

23-ST-242: CONTINUOUS DISTRIBUTIONS AND EXACT TESTS.

CO1) Students will understand the concept of testing of hypothesis.

CO2) Students will able to describe and study the different kinds of continuous probability distributions such as Chi square distribution, t and F distributions.

CO3) They can find relations among aforesaid continuous random variables.

CO4) Students can implement the tests based on sampling distributions in the real life situations

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DEPARTMENT OF STATISTICS

Class: F.Y.B. Sc. and S.Y. B.Sc.(Gen) Pattern: Autonomous (Semseter Pattern)

Program Specific Outcomes

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DEPARTMENT OF STATISTICS

Class: M. Sc. (Gen) Pattern: Autonomous (Semseter Pattern)

Program Specific Outcomes

PSO1: Students learn different techniques used in Industries and research used for carrying the analysis.
PSO2: Students will be well acquainted with various fields in statistical knowledge is useful.
PSO3: Students learn the team work while completing the project work.
PSO4: Students get knowledge and training of technical subjects and get more employability in upcoming industries.

22-ST-11: (Paper I, Sem. I) Basics of Real Analysis and Calculus

CO1) Students will learn Set theory thoroughly with relearning countable sets, limit points, interior points, compact sets in details.
CO2) Students learn sequences, series their convergence and divergence in details. And they can apply it for finding moments. They also learn change of order in summation of series.
CO3) Students learn high level calculus in details. They learn partial derivatives and their uses for change of variables, finding optimum values in details.
CO4) Students learn integration once again with respect to its new definition of Riemann Stieltjes integral. They also learn sufficient conditions for function to be Riemann and Riemann Stieltjes integral.
CO5) Students learn improper integral, double integral and Leibnitz theorem for interchange of diffentiation under integral sign.

22-ST-12: (Paper II, Sem. I) Linear Algebra and Numerical Methods

The students will be able to:
CO1) Review the basic notions in linear algebra those are often used in Statistical anlalysis.
CO2) Understand the fundamental properties of matrices including determinants, inverse of matrix, matrix factorization, eigenvalues and their transformations.

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CO3) Define vector spaces, subspaces and their related results.
CO4) Illustrate various properties of canonical forms.
CO5) Study of inner product spaces.
CO6) Explain concepts of Gram Shmidt orthogonalization process.
CO7) Apply numerical methods to obtain approximate solutions to mathematical problems.

22-ST-13: (Paper III, Sem. I) Probability Distributions

CO1) Students will be able to explain the random variable as a measurable function on probability space using the concepts like sigma field, set function and measure,
CO2) Students should know about transformation of random variable of the type (i) one to one on to (ii) monotonic (iii) non monotonic and they can derive probability distributions of functions of random variables.
CO3) Students will be able to find expectation of random variable, necessity of existence of absolute moments, uniqueness of m.g.f. Also they can derive the probability distributions using p.g.f. , characteristic function and convolutions for sums of independent random variables.
CO4) Students should know about some other probability distributions such that Bivariate Poisson Distribution, Bivariate Exponential Distribution, Dirichlet Distribution, Non-central chi square , f and t distribution
CO5) Students will understand the concepts like order statistics, quadratic forms and distribution free statistics and explore the respective applications.

22-ST-14: (Paper IV, Sem. I) Sampling Theory

CO1) Students will able to apply various sampling methods for real life data.
CO2) Students will able to explain and to compare various allocations using stratified random sampling.
CO 3) Students will use practical applications of ratio and regression method of estimation
CO 4) Students will able to understand the basic principles underlying survey design and estimation
CO 5) Students will be able to apply unequal probability sampling designs viz. PPSWR, PPSWOR including Lahiri's method.

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DEPARTMENT OF STATISTICS

22-ST-21: Probability theory

CO1) Students will recall the concept of field, measurable space, distribution function.
CO2) Students will understand the sequence of random variables.
CO3) Students will learn convergence in probability, distribution.
CO4) Students will be learn different theorems related to independence of random variables.

22-ST-22: (Paper II, Sem. II) Regression Analysis

CO1) Students will learn how to apply linear regression models in practice: identify situation where linear regression is appropriate; build and fit linear and multiple regression models with software; interpret estimates and diagnostic statistics; produce exploratory graphs
CO2) Students will learn about the theory underlying point estimation, hypothesis and confidence intervals for linear regression models.
CO3) Students will able to understand the diagnostic measures for Non-linear data such as transformation of data.
CO4) Students will able to understand the Ridge and Poisson Regression model as real life application.
CO5) Students will be able to apply regression technique in real life situation.

22-ST-23: (Paper III, Sem. II) Statistical Inference-I

The students will be able to:
CO1) Students should recall various terms for Fisher Information, interval estimation to understand the problem of statistical inference.
CO2) Students will be able to compute Cramer – Rao lower bound in order to find most efficient estimator.
CO3) Students will be able to estimate the parameters with multiple criteria
i) Minimum variance Bound Unbiased
ii) Rao-Blackwell Theorem
CO4) Students will be able to analyze the estimation techniques using Confidence Interval and Bayes estimation.
CO5) Students will be able to solve the problems based on testing of hypotheses

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using various techniques.

22-ST-24: (Paper IV, Sem. II) Multivariate Analysis

CO1) Students will be able to understand difference between one and multidimensional random variables.
CO2) Students should know about principal component analysis and factor analysis.
CO3) Students will be able to know about Multivariate normal distribution
CO4) Students should be able to estimate MLEs of parameters of multivariate normal distribution and their sampling distribution.
CO5) Students will understand the concepts like Wishart distribution, Hotteling T^2 statistics, MANOVA techniques and their respective applications.

23-ST-31: Applied Stochastic Processes

CO1) Understand the standard concept and apply the techniques and constructions of discrete andcontinuous time Markov chains to solve problems involving n-step transition probabilities, hitting probabilities, and stationary distributions.
CO2) Understand how to choose best stochastic process for specific situation.
CO3) Distinguish between transient and recurrent states in given finite and infinite Markov chains.
CO4) Apply the stochastic analysis to realistic problems.
CO5) Understand renewal theory and branching processes with applications.

23-ST- 32: Design and Analysis of Experiments

CO1) Understand the concept of BIBD, connectedness, balancedness and orthogonality of design.
CO2) Understand the difference between fixed and random effect models.
CO3) Compare the pairs of treatment means using different methods. Construct Fractional factorial experiments and apply confounding in real life problems.
CO4) To use appropriate design for solving real life examples.
CO5) To learn the applications of different designs in agricultural experiments

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DEPARTMENT OF STATISTICS

23-ST-33: Machine Learning

After completion of the course, students will be able to:
CO1) Apply appropriate learning algorithm for analyzing data.
CO2) Use appropriate R-packages for data analysis.
CO3) Design learning algorithms for new tasks.
CO4) Self-learn many other ML techniques.
CO5) Be a better data scientist.

23-ST-34(A): Bayesian Inference

After completion of the course students will able to:
CO1) Understand difference between classical and Bayesian appproach
CO2) Bayesian computation.
CO3) Credible intervals.

23-ST- 34 (B): Statistical Process control (SPC)

After completion of the course students will able to:
CO1) To use appropriate control charts
CO2) To use different sampling plans
CO3) To draw inference about process capability

23-ST-41: Asymptotic Inference

Course Outcomes:
After completion of the course students will able to:
CO1) Understand the concept of consistency and asymptotic normality.
CO2) Understand method of moments and percentiles, maximum likelihood To find consistentestimator and Cramer Huzurbazar theorem.
CO3) Apply likelihood ratio tests, Wald, Score and Bartlett's test in real life situations.
CO4) Compare various tests through relative asymptotic efficiency.

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DEPARTMENT OF STATISTICS

23-ST- 42 (A): Econometrics and Time Series Analysis

After completion of the course students will able to:

CO1) Understand the concept of time series with its components and able to compute ACVF and ACF.

CO2) Remove trend and seasonality using different methods to convert the time series into stationary.

CO3) Apply auto regressive, moving average, ARMA, ARIMA, SARIMA models, Box-Jenkins approach to forecast time-series data empirically.

CO4) Check and validate models with its residual analysis and diagnostic checking.

CO5) Apply econometrics concepts in real life data.

23-ST- 42 (B): Operations Research

CO1) Understand basics and formulation of linear programming problems and appreciate their limitations; solve linear programming problems using graphical method.

CO2) Apply simplex method to solve real life problems.

CO3) Solve artificial variable technique, duality theory, revised simplex method, sensitivity analysis, and transportation and assignment problems.

CO4) Understand the concept of non-linear programming problem, PERT/ CPM, simulation, investment analysis with real life application

23-ST-43 (A): SURVIVAL ANALYSIS

After completion of the course students will able to:

CO1) Understand the concept of censoring, life distributions and ageing classes.

CO2) Gained the ability to recognize the difference between parametric and non-parametric survival models.

CO3) Estimate nonparametric survival function of the data.

CO4) To estimate survival function, cumulative hazard rate function using the so-called Kaplan-Meier estimator.

CO5) Use the test of exponentiality against nonparametric classes in real life problems.

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DEPARTMENT OF STATISTICS

23-ST 43(B) Categorical Data Analysis

CO1) Appreciation of difference between linear models and logistic and log-Linear models.

CO2) Knowledge of models for categorical data analysis and ability to fit them snd interpret the results.

CO3) Awareness of dependence relationships amongst categorical variables.

CO4) Ability to use any related software to fit models for categorical data

23-ST-44(A): Computer Intensive Statistical Methods

After completion of the course students will able to:

CO1) to apply various methods like Bootstrap, Jackknife method.

CO2) To understamd MCMC methods for missing values

CO3) Smoothing techniques.

23-ST-44(B): Statistical Analysis of Clinical Trials

After completion of the course students will able to:

CO1) Learn data collection systems for good clinical practice

CO2) Knowledge of Pharmokintics, pharmodynamics

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Progressive Education Society's ,
Modern College of Arts, Science and Commerce,
Ganeshkhind,Pune-411016

Three Year B.Sc. Degree Program in Electronic Science

(Faculty of Science & Technology)

F.Y.B.Sc. (Electronic Science)

Choice Based Credit System (CBCS) Syllabus of an autonomous college

To be implemented from Academic Year 2022-2023

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Title of the Course: B. Sc. (Electronic Science)

Preamble:

Electronics technology has revolutionized various fields including communication, consumer appliances, medical, defense and so on. The advances in technology are making systems smaller, smarter and powerful. Electronics is an important branch of Science devoted to design implementation and analysis of circuits and systems. Knowledge of Electronics is based on fundamental laws of Physics and though new chips/SOC's are fabricated every day, basic principles remain the same.

The goal of the three-year course is to instill in students a confidence that they can get a grip of the subject and apply it for designing, testing and analyzing systems. The course will also make use of problem-solving approach wherein the students will be trained to apply the acquired knowledge to design and analyze circuits for specific applications. The students will be familiarized with programming languages, various development tools, modeling and simulation tools through lab sessions.

The syllabus has been designed such that basic fundamental concepts, knowledge and specific practical skills of the students are developed. The students will be first introduced to various components, devices and their applications, Network theorems and applications of electronics in day to day life. Digital Electronics fundamentals, Operational amplifier circuits, and its applications will be covered in the second semester. In the Second year the students will be taught the basic principles of communication, Analog and digital circuit design and Microcontrollers. In the third year the students will be given an insight to concepts of Embedded System Design, VLSI Technology, Communication systems and various discipline specific courses with a Project in the final semester.

Program Outcomes :

PO1. To foster scientific attitude, provide in-depth knowledge of scientific and technological concepts of Electronics
PO2:To enrich knowledge through problem solving, minor/major projects, seminars, tutorials, review of research articles/papers, participation in scientific events, study visits, etc.
PO3:To familiarize with recent scientific and technological developments.
PO4: To create foundation for research and development in Electronics
PO5:To help students to learn various experimental and simulation tools thereby developing approach to system design to address real world problems.
PO6: To train students in skills related to research, education, industry and market.
To help students to build-up a progressive and successful career in Electronics

DEPARTMENT OF ELECTRONIC SCIENCE

B. Sc. Computer Science(Electronics)

Course Outcomes

F. Y. B.Sc. Computer Science-Semester I & Semester II (Autonomous)

SEMESTER I

Electronics Paper I

22-ELC-111: Semiconductor Devices and Basic Electronic Systems (2 Credits, 36 lectures)

After completion of this course student will be able:

CO1. To analyze performance parameters based on study of characteristics of electronic devices like diode, transistors and MOSFETs.

CO2. To analyze the Regulated Power supply using discrete components and using ICs.

CO3. To analyze the signal generating circuits- Oscillators and study their applications.

CO4. To build and test Data converters such as Analog to Digital and Digital to analog converters.

Electronics Paper-II

22-ELC-112: Principles of Digital Electronics(2 Credits, 36 lectures)

After completion of this course student will be able:

CO1. To solve problems based on inter-conversion of number systems

CO2. To study methods to reduce logic circuits by reducing Boolean expression.

CO3. To understand the operation of all types of Logic Gates, their families etc.

CO4. To understand the design and function of different Combinational Logic circuits.

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Electronics Paper-III

22-ELC-113[P]: ELECTRONICS LAB IA (1.5 Credits)

Learning outcomes: After completion of this course student will be able

CO1. To identify different components and devices as well as their types and basic parameters.
CO2. To understand the use of various measuring Instruments and operate the devices in the laboratory .
CO3. To connect circuit and do required performance analysis
CO4. To compare expected and actual results of given particular experiment.
CO5. To analyze the output of the circuits through Observation Tables and Graphical representation.

SEMESTER II

Electronics Paper I

22-ELC-121: Instrumentation Systems(2 Credits, 36 lectures)

Learning outcomes: After completion of this course student will be able

CO1. To understand the Instrumentation System and role of Sensors along with their types.

CO2. To understand the specifications of different sensors .

CO3. To understand the use of different Sensors and Actuators.

CO4. To realize the Smart Instrumentation system and analyze the use of Smart Sensors.

CO5. To understand the use of Operational Amplifier as a Signal conditioning element.

Electronics Paper II

22-ELC-122 : Basics of Computer Organization(2 Credits, 36 lectures)

Learning outcomes: After completion of this course student will be able

CO1.To understand the working of different Sequential logic circuits

CO2.To understand working operations of different types of Flip flops as a basic building block.
CO3. To know the operations of shift registers and Binary Counters
CO4. To understand the basic Computer System and general organization of different blocks.
CO5. To understand the organization of memory in the Computer system and know different types of Memories.

Electronics Paper III

22-ELC-123[P]: Electronics Lab IB(1.5 Credits)

Learning outcomes: After completion of this course student will be able

CO1. To experience activity based learning through hobby projects ,Market survey Industrial visits. Or

CO 2. To learn the project development process through Circuit Simulation and other tools.

CO 3. To understand the working operations of various sensors.

CO 4. To know the use of Operational Amplifier.

CO 5. To understand the operation of different Sequential Circuits.

CO 6. To know the functional operation of memories.

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F. Y. B.Sc. Computer Science-Semester I & Semester II (CBCS PATTERN) AUTONOMOUS

Program Outcomes

PO1: To develop problem solving abilities using a computer.

PO2: To build the necessary skill set and analytical abilities for developing computer-based solutions for real life problems.

PO3: To train students in professional skills related to Software Industry.

PO4: To prepare necessary knowledge base for research and development in Computer Science.

PO5: To help students' build-up a successful career in Computer Science and to produce entrepreneurs who can innovate and develop software products.

Course Outcomes

Course 22-CS-111: Problem Solving using Computer and 'C' Programming

After successfully completing this course, students will be able to:

CO1: Students will understand algorithms and flowchart for solving problems using computers.

CO2: Students will understand and can choose the loops and decision-making statements to solve the problem.

C03: Student will implement different Operations on arrays and will use functions to solve the given problem.

CO4: To enrich the students in logic development required for programming.

CO5: To help the students to build carrier in various branches of software development.

Course 22-CS-112 Database Management Systems

After successfully completing this course, students will be able to:

CO1: Will understand the fundamental concepts of database.

CO2: Will understand user requirements and frame it in data model.

CO3: Will understand creations, manipulation and querying of data in databases

CO4: Solve real world problems using appropriate set, function, and relational models.

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CO5: Design E-R Model for given requirements and convert the same into database tables.

CO6: Use SQL.

Course 22-CS103 : Practical course on Problem Solving using Computer and 'C'programming and Database Management Systems

On completion of this course, students will be able to :

CO1: Devise pseudocodes and flowchart for computational problems.

CO2: Write, debug and execute simple programs in 'C'.

CO3: Create database tables in PostgreSQL.

CO4: Write and execute simple, nested queries.

CO3: Solving the exercises through Virtual Lab

Course 2 2 - CS121 Advanced ‘C’ Programming

On completion of the course, Student will be able to :-

CO1: Study advanced concepts of programming using the ‘C’ language.

CO2: Design and develop solutions to real world problems using C.

CO3: To Develop modular programs using control structures, pointers, arrays, strings and structures

CO4: Understand code organization with complex data types and structures

CO5: Work with files.

Course 22-CS122 : Relational Database Management Systems

On completion of the course, student will be able to–

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

Course 2 2 - CS123 : Practical Course on Advanced ‘C’ Programming and Relational Database Management Systems

On completion of this course, students will be able to :

CO1: Write, debug and execute programs using advanced features in ‘C’.

CO2: To use SQL & PL/SQL.

CO3: To perform advanced database operations.
CO4: Practical on Virtual laboratories.

Department of Computer Science
M.Sc. (Computer Applications)

The master of science in Computer Application Program provides the students with knowledge, general competence, and analytical skills on an advanced level, needed in academics, industry, research.

Knowledge outcomes:

Students will be able to

PO1: Apply computing knowledge and domain specific knowledge.
PO2: Identify, produce, and develop solutions to computational challenges through.
PO3: Understand professional, ethical, legal, security, and social issues and responsibilities for the computing profession.
PO4: Understand and apply computing management principles to manage multi-disciplinary projects.
PO5: Design and develop computer programs/computer-based systems in the areas related to algorithms, networking, web design, cloud computing, Artificial Intelligence, Mobile applications and Internet of Things.

Skill Outcomes:

Students will

PO6: Use software development tools, software systems, and modern computing platforms

PO7:be able to integrate several scientific and technical disciplines in the area of informationtechnology.

PO8: be able to communicate and engage effectively with diverse stakeholders.

General Competence:

PO9 : Understand how technological advances impact society and the social, legal, ethical andcultural ramifications of computer technology and their usage.

PO10 : be able to contribute to innovative thinking and innovation processes.

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Program Specific Outcomes

After completing M.Sc. Computer Application Program students will be able to:

PSO1. Communicate computer science concepts, designs, and solutions effectively andprofessionally

PSO2. Apply knowledge of computing to produce effective designs and solutions for specificproblems

PSO3. Use software development tools, software systems, and modern computing platforms.

Part-I

M.Sc. (Computer Applications) Year- II Semester- I	
22-CA-CCTP-1 : Web Technology	
After successfully completing this course, students will be able to:	
CO1	Implement interactive web page(s) using HTML, CSS andJavaScript.
CO2	Design a responsive web site using HTML5 and CSS3.

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M.Sc. (Computer Applications) Year- II Semester- I	
22-CA-CCTP-2 : Advance Databases	
After successfully completing this course, students will be able to:	
CO1	Explain and understand the concept of a transaction and how ACID properties are maintained when concurrent transaction occurs in a database
CO2	Create and populate a RDBMS for a real life application, with constraints and keys, using SQL
CO3	Retrieve any type of information from a database by formulating complex queries in SQL.

M.Sc. (Computer Applications) Year- II Semester- I	
22-CA-CCTP-3 : Design andAnalysis ofAlgorithm	
After successfully completing this course, students will be able to:	
CO1	Students will be able to select appropriate design techniques to solve real world problems.
CO2	Students will be able to apply the dynamic programming technique to solve the problems.

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CO3	Students will be able to apply the greedy programming technique to solve the problems.

M.Sc. (Computer Applications) Year- II Semester- I	
22-CA-CBOTP-1 A : Object Oriented Programming with C++	
After successfully completing this course, students will be able to:	
CO1	Implement Object Oriented programming concept using basic syntaxes of control Structures, strings and function for developing skills of logic building activity.
CO2	Demonstrates how to achieve reusability using inheritance, interfaces and packages and describes faster application development can be achieved.
CO3	Identify classes, objects, members of a class and the relationships among them needed for finding the solution to specific problems.

M.Sc. (Computer Applications) Year- II Semester- I	
22-CA-CBOPP-1 A : Object Oriented Programming with C++ Lab	
After successfully completing this course, students will be able to:	
CO1	Understand the difference between the top-down and bottom- up approach.
CO2	Describe the object-oriented programming approach in connection with C++

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M.Sc. (Computer Applications) Year- II Semester- II	
22-CA-CCTP-4: Data Mining and Data Warehousing	
After successfully completing this course, students will be able to:	
CO1	Store voluminous data for online processing.
CO2	Preprocess the data for mining applications.
CO3	Apply the association rules for mining the data.

M.Sc. (Computer Applications) Year- II Semester- II	
22-CA-CCTP-5: Operating systems	
After successfully completing this course, students will be able to:	
CO1	Identify basic components of the operating system.
CO2	Conceptualize synchronization amongst various components of a typical operating system.
CO3	Understand and simulate activities of various operating system components.
CO4	Correlate basic concepts of operating system with an existing operating system

M.Sc. (Computer Applications) Year- II Semester- II	
22-CA-CCTP-6: Computer Networks	
After successfully completing this course, students will be able to:	
CO1	Understand the concepts of Data Communication.
CO2	Study the functions of OSI Layers.
CO3	Familiarize with the Transmission Media, Flow Control and Error Detection & Correction

M.Sc. (Computer Applications) Year- II Semester- I	
22-CA-CBOTP- 1A: Java Programming	
After successfully completing this course, students will be able to:	
CO1	Understand the knowledge of java programming and object oriented concepts.
CO2	The use of Java in a variety of technologies and on different platforms.

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M.Sc. (Computer Applications) Year- II Semester- I	
22-CA-CBOPP-1A: Java Programming Lab	
After successfully completing this course, students will be able to:	
CO1	Knowledge of the structure and model of the Java programming language, (knowledge)
CO2	Develop software in the Java programming language, (application)

M.Sc. (Computer Applications) Year- II Semester- I	
22-CA-CBOPP-1A: Java Programming Lab	
After successfully completing this course, students will be able to:	
CO1	Get familiar with WEKA and R software for data mining and warehousing.

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Part-II

M.Sc. CA Comp. Application Part II (Semester III)	
23-CA-CCTP-7: Mobile Application Development using Android	
After successfully completing this course, students will be able to:	
CO1	Gain knowledge about different mobile platform and Application development
CO2	To know the programming using Android on IOS and Windows Platform
CO3	To develop the mobile app.

M.Sc. CA Comp. Application Part II (Semester III)	
23-CA-CCTP-8: Internet of Things	
After successfully completing this course, students will be able to:	
CO1	Develop small microcontroller based IOT application.
CO2	Apply theoretical knowledge in real world scenario.

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M.Sc. CA Comp. Application Part II (Semester III)	
23-CA-CCTP-9: Artificial Intelligence	
After successfully completing this course, students will be able to:	
CO1	Discuss the core concepts and algorithms of Advanced AI
CO2	Apply the basic principles, models and algorithms of AI to recognize models and solve problems in the analysis and design of information systems.

M.Sc. CA Comp. Application Part II (Semester III)	
23-CA-CBOTP-3A: Python Programming	
After successfully completing this course, students will be able to:	
CO1	Express proficiency in the handling of strings and functions.
CO2	Determine the methods to create and manipulate python programs by utilizing the data structures like list, dictionaries, tuples and sets.

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M.Sc. CA Comp. Application Part II (Semester III)	
23-CA- CBOPP-3A: Python Programming Lab	
After successfully completing this course, students will be able to:	
CO1	Understand the programming structures and implementationof different programming concepts in python

M.Sc. CA Comp. Application Part II (Semester III)	
23-CA-CCPP-3: Android programming Lab	
After successfully completing this course, students will be able to:	
CO1	Develop an android based application for the real world.

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M.Sc. (Computer Applications) 2022-23 CBCS Pattern(Autonomous)

M.Sc. (Computer Applications) Part I (Semester I)

After successfully completing this course, students will be able to

Subject Code	Subject Name	Course Outcome
22-CA-CCTP-1	Web Technology	CO1: Implement interactive web page(s) using HTML, CSS and JavaScript. CO2: Design a responsive web site using HTML5 and CSS3
22-CA-CCTP-2	Advance Databases	CO1:Explain and understand the concept of a transaction and how ACID properties are maintained when concurrent transaction occur in a database CO2: Create and populate a RDBMS for a real life application, with constraints and keys, using SQL CO3:Retrieve any type of information from a database by formulating complex queries in SQL.
22-CA-CCTP-3	Design and Analysis of Algorithm	CO1: Students will be able to select appropriate design techniques to solve real world problems. CO2:Students will be able to apply the dynamic programming technique to solve the problems. CO3:Students will be able to apply the greedy programming technique to solve the problems.
22-CA-CBOTP-1A	Object Oriented Programming with C++	CO1:Implement Object Oriented programming concept using basic syntaxes of control Structures, strings and function for developing skills of logic building activity.

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		CO2:Demonstrates how to achieve reusability using inheritance, interfaces and packages and describes faster application development can be achieved. CO3:Identify classes, objects, members of a class and the relationships among them needed for finding the solution to specific problems.
22-CA-CBOTP-1A	Object Oriented Programming with C++ Lab	CO1:Understand the difference between the top-down and bottom-up approach CO2: Describe the object-oriented programming approach in connection with C++

M.Sc. (Computer Applications) Part I (Semester II)

After successfully completing this course, students will be able to

Subject Code	Subject Name	Course Outcome
22-CA-CCTP-4	Data Mining and Data Warehousing	CO1: Store voluminous data for online processing CO 2: Preprocess the data for mining applications CO3:Apply the association rules for mining the data
22-CA-CCTP-5	Operating systems	CO1: Identify basic components of the operating system.

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		CO2:Conceptualize synchronization amongst various components of a typical operating system. CO3:Understand and simulate activities of various operating system components. CO 4:Correlate basic concepts of operating system with an existing operating system.
22-CA-CCTP-6	Computer Networks	CO1: Understand the concepts of Data Communication. CO2: Study the functions of OSI Layers. CO3:Familiarise with the Transmission Media, Flow Control and Error Detection & Correction.
22-CA-CBOTP-2 A	Java Programming	CO1: Understand the knowledge of java programming and object oriented concepts CO2: the use of Java in a variety of technologies and on different platforms.
22-CA-CBOTP-2 A	JAva Programming Lab	CO1:knowledge of the structure and model of the Java programming language, (knowledge) CO2:develop software in the Java programming language, (application)
22-CA-CCPP-2	Data Mining Data Warehousing Lab	CO1: get familiar with WEKA and R software for data mining and warehousing.

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Course Outcomes (AUTONOMOUS)

F. Y. B.Sc. Computer Science-Semester I & Semester II (CBCS PATTERN)

Computer Science Paper-I

Course 22-CS-111: Problem Solving using Computer and 'C' Programming

After successfully completing this course, students will be able to:

CO1: Students will understand algorithms and flowchart for solving problems using computers.

CO2: Students will understand and can choose the loops and decision-making statements to solve the problem.

CO3: Student will implement different Operations on arrays and will use functions to solve the given problem.

CO4: To enrich the students in logic development required for programming.

CO5: To help the students to build carrier in various branches of software development.

Course 22-CS-112 Database Management Systems

After successfully completing this course, students will be able to:

CO1: Will understand the fundamental concepts of database.

CO2: Will understand user requirements and frame it in data model.

CO3: Will understand creations, manipulation and querying of data in databases

CO4: Solve real world problems using appropriate set, function, and relational models.

CO5: Design E-R Model for given requirements and convert the same into database tables.

CO6: Use SQL.

Course 22-CS103 : Practical course on Problem Solving using Computer and 'C'programming and Database Management Systems

On completion of this course, students will be able to :

CO1: Devise pseudocodes and flowchart for computational problems.

CO2: Write, debug and execute simple programs in 'C'.

CO3: Create database tables in PostgreSQL.

CO4: Write and execute simple, nested queries.

CO3: Solving the exercises through Virtual Lab

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Course 2 2 - CS121 Advanced ‘C’ Programming

On completion of the course, Student will be able to :-

CO1: Study advanced concepts of programming using the ‘C’ language.

CO2: Design and develop solutions to real world problems using C.

CO3: To Develop modular programs using control structures, pointers, arrays, strings and structures

CO4: Understand code organization with complex data types and structures

CO5: Work with files.

Course 22-CS122 : Relational Database Management Systems

On completion of the course, student will be able to–

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

Course 2 2 - CS123 : Practical Course on Advanced ‘C’ Programming and Relational Database Management Systems

On completion of this course, students will be able to :

CO1: Write, debug and execute programs using advanced features in ‘C’.

CO2: To use SQL & PL/SQL.

CO3: To perform advanced database operations.
CO4: Practical on Virtual laboratories.

Department of Physics

Course outcomes

In each course students will learn different concepts and theories as mentioned below.

First Year 2019 (CBCS) PATTERN

Semester I

Course- PHY 111- Mechanics and Properties of Matter

CO1: Application of Newton's laws of motion to solve various problems related to day today life.

CO2: Concepts like zero work done, conservative forces, mass energy equivalence ($E= mc^2$).

CO3: Effect of force on various types of materials is described and physical properties like elasticity, different moduli etc. along with their relation.

CO4: Examples of surface tension in nature and its applications in our day to day life.

CO5: Concept of viscosity of fluids, Bernoulli's Equation and its applications.

Course- PHY 112- Physics Principles and Applications

CO1: Students learn about an atom is made up of protons, neutrons and electron, how they arranged to make up an atom. They learn different atomic models, Atomic spectrum and types of spectrum.

CO2: Students learn about Different forces which hold atoms together to form a molecule.

Different types of chemical and physical bonds like ionic, covalent, Van der Waal's bonds. Energy levels of rotational and vibrational diatomic molecule.

CO3: Students will identify and compare the characteristics of electromagnetic spectrum including speed, wavelength and frequency.

CO4: students will learn common uses and applications of electromagnetic waves.

CO5: students will learn basic principles of Laser, excitation and de-excitation process, pumping scheme, population inversion and metastable state. Characteristics, applications and different types of laser.

Semester II

Course - PHY-121- Heat and Thermodynamics

CO1: To understand various thermodynamic processes like isothermal, isobaric, isochoric processes and laws of thermodynamics.

CO2: To understand the concept of entropy.

CO3:- To understand Carnot's cycle, Heat engines and Refrigerators.

CO4:- To understand Principle of thermometry and various types of thermometers like Liquid filled thermometers, Gas filled thermometers, Bimetallic thermometers, Platinum resistance thermometer

Course – PHY122 - Electricity and Magnetism

CO1: Students will be able to understand the concept of the electric force, electric field and electric potential for stationary charges. They are able to calculate electric potential and electric field by using Gauss's law.

CO2: Student will understand the dielectric phenomenon and effect of electric field on dielectric.

CO3: Study the concept of magnetic field, magnetic field for steady currents using Biot-Savart's and Ampere's Circuital laws.

CO4: Student will learn magnetic materials and its properties.

Second Year (2019 pattern)

Semester I

Course: PHY 231 Mathematical Methods in Physics

The student will be able to

CO1: Studying De Moivre's theorem students will understand how the power of given complex number is calculated.

CO2: Many times students come across the term divergence, curl, gradient but they don't understand their physical meaning. From this course their concept will clear.

CO3: Students can understand what exact use of partial differentiation concept in physics is. .

CO4:Students can also understand what is the need of complex no. is during mathematical calculation

Course: PHY 232 (A) Electronics

Students learn about the following topics in this subject
CO1: Various network theorems which use to solve problems related to complicated circuits by converting them into simpler circuits. This has wide applications in electronic and transmission circuits.
CO2: Knowledge about semiconductors since it is a basic materials used in many electronic components like diode, transistors FET, UJT etc.
CO3: Characteristics and working of operational amplifiers which are useful in various medical and scientific investigations to amplify the signals.
CO4:Generation of high frequency signals using oscillator circuits and their applications in radio and TV communication.
CO5:An introduction to digital electronics which is useful in digital computers. Also logic gates and their applications.

Course: PHY 232 (B) Instrumentation

Students learn about the following topics in this subject
CO1: History and need of Instrumentation, Components of measurement system, Standards of Measurement, errors in measurement. Importance and method of calibration, Static and dynamic characteristics of measurements.
CO2: Transduction principle, types of transducers. Use of transducers in measurement of displacement, force and temperature.
CO3: Comparative study of Pressure scales, pressure units, concept of vacuum, Elastic Transducers, Types and use of diaphragms and strain gauges.
CO4:Need and use of signal conditioning. Circuits indicating use of OPAMP for different applications. Like current to voltage converter, voltage to current converter and filters.

Semester II

Course: PHY 241 Waves and Oscillations

The student will be able to
CO1: Studying DeMoivree's theorem students will understand how the power of given complex number is calculated.
CO2: Many times students come across the term divergence, curl, gradient but they don't understand their physical meaning. From this course their concept will clear.
CO3: Students can understand what exact use of partial differentiation concept in physics is. .
CO4: Students can also understand what the need of complex no. is during mathematical calculation.

Course: PHY 242 Optics

The student will be able to

CO1: Geometrical optics dealing with lenses and mirrors and image formation

CO2: Defects produced in images formed by lenses like distortion, spherical aberration, Coma, Astigmatism and ways to reduce these defects

CO 3: Construction working and image formation by simple microscope, compound microscope, Huygens's eyepiece and Ramsden Eyepiece

CO 4:Theory of Fringes formed in Interference and diffraction, Formation of Fringes using Newton's ring experiment, resolving power and comparison between Fresnel and Fraunhofer diffraction

CO 5:Concept of polarization, double refraction, Nicol Prism

Third Year (2019 pattern)

Semester I

Course - PHY351- Mathematical Methods in Physics-II

CO1: Students will understand three commonly used co-ordinate systems and general curvilinear co-ordinate system.

CO2: Students will learn- Concept of relativity, length contraction, relativistic mass, time dilation and twin paradox.

CO3: Students will learn various methods to solve different differential equations.

CO4: Students will understand the properties of Legendre polynomials, Hermite polynomials and Bessel function. These are useful to solve the problem of linear simple harmonic oscillator in quantum mechanics.

Course - PHY 352 - Electrodynamics

CO1: Understand the basic mathematical concepts related to electromagnetic vector fields.

CO2: Understanding of basic principles and concepts of electromagnetism and magnetostatics

CO3: Learning Maxwell's equations and boundary value problems. Apply these equations for solving problems.

CO4: Understanding the basics of electromagnetic waves, wave equations in free space and pointing theorem. Apply Maxwell's equations for solving electromagnetic waves problems .

Course - PHY 353- Classical Mechanics

CO1: Students will be able to define, present and demonstrate basic mechanical concepts and their applications used in daily life.

CO2: Students can understand the motion of a body, Equations of motions, trajectory of an object in constant field such as electrical, magnetic field.
With the help of this knowledge students can understand process involved in cathode ray Oscilloscope.

CO3: With the help of this knowledge students will understand how to launch rockets and satellites. How the mechanical concepts used in sports and military.

CO4: Students will learn Lagrangian and Hamiltonian formulations.
Students can Apply technique of Lagrangian and Hamiltonian formulation for problem solving in mechanics.

CO5: Understand Scattering theory of particles.

CO6: Mathematical and thinking skills will develop among students by solving problems.

Course - PH Y 354- Atomic and Molecular Physics

CO1: There are many atomic models to explain atomic structure. But none of the model explained atomic structure fully. A new model could explain all parameters of atomic structure called vector atom model. Studying these model students can draw vector diagrams easily.

CO2: Students learn how to find out interaction energy from different coupling schemes.

CO3: Students scientifically understand how the x-rays produced. Also they will understand what precaution should be taken during handling of x- rays.

CO4: By studying molecular spectroscopy students understand the importance rotational and vibrational energy levels.
CO5: Students can understand use of discovery of Raman Effect in Medical Physics as well as in chemistry.

Course - PHY 355- Computational Physics

CO1: Learn the Basic Programming Concept.

CO2: Improve the logical as well as Computational ability.

CO3: Memory allocation and utilization technique learning.

CO4: Applicability of computer resources in physics.

CO5: Learn Graphical technique using some Graphical Commands in C programming.

Course - PHY 356 (B)- Elements of Material Science

CO1: By studying defects in solid, students can identify the defects existing in a given solid.

CO2:. Students will understand which type of ceramic material can be used for a particular application

CO3: Smart materials are newly discovered materials which are useful to human being in day-to-day life. Students will study such advanced materials.

CO4: Using Phase diagram students can understand different phases of material simultaneously.

Course - PHY 356 (A)- Astronomy and Astrophysics -I

CO1: Students gain awareness about basic astronomy, components of universe like stars, planets, comets, galaxies etc. Developing student's interest in the astronomical events. To make them aware of some basic measurements of astronomical bodies like mass, distances, size and period of revolution.

CO2: Students get to know more about working of instruments like telescopes, Spectroscopes, camera, photometer and interferometer used for astronomical observations and measurements.

CO3: Student's learn about life cycle and classification of stars and the basic observations, Black holes, Neutron Stars, Chandrasekhar limit, Eclipses, meteor showers and occulations

CO4: Learn more about galaxies, Hubble's tuning fork diagram, Open and globular clusters, BBT and Steady state theories

Course - PHY 3510 (J)- Sensors and Transducers

CO1: Students know about the functions of sensors and transducers and the basic difference in their functioning. Students know about applications of sensors in various fields like medical, Industry, defense, research and home appliances. They know about the use of mechanical and electromechanical sensors. Applications of strain gauges and LVDT and various performance characteristics of sensors like sensitivity, accuracy and resolution.

CO2: Students learn about various capacitive sensors with changing parameters and also use of stretched diaphragms as sensors.

CO3: Students learn about solid, liquid and gas filled thermal sensors like RTD, Thermistors and Thermocouples.

CO4: Students learn about sensors based on Villari effect for assessment of force, torque and proximity, Weidman effect for yoke coil sensors, Hall effect and Hall drive and radiation sensors

CO5: Students get a hands on experience of using these instruments and taking measurements using them.

Course - PHY 3511 (K) - Physics workshop Skills

CO1: This course gives exposure to various instruments and students learn to handle different instruments. Students learn about static and dynamic characteristics of instruments, errors in measurement, loading effect and working of analog and digital instruments.

CO2: Students learn how about construction of digital multimeter and its use in various measurements like ac , dc voltages and currents, capacitance, resistance and component testing. Students know about construction and working of electronic voltmeter its types and specifications.

CO3: Students learns about construction and working of Cathode Ray Oscilloscope, its use for various measurements like frequency and amplitude.

CO4: Students also learn about construction and working of function generator, its types, impedance bridges, RLC Bridge and Q meters

CO5: Students get hands on experience of using these instruments and taking measurements using them.

Third Year- Semester II

Course - PHY 361- Solid State Physics

CO: Students will able to study difference between crystalline and amorphous material, crystal structures, miller indices, interplaner distances, interatomic forces and bonds.
From this study students get to learn the basics of solid state physics.

CO2: Students will understand Bragg's diffraction, Bragg's law. X-ray diffraction and characterization techniques. With the help of this knowledge students know the principles of

structures determination by X-ray diffraction method. This would be helpful in performing experiments in nanotechnology.

CO3: Students understand electrical and thermal conductivity of free electron in metals, Energy levels of free electrons in one and three dimensions.
They will learn significance of Pauli's exclusion principle, Bloch theorem, Fermi energy, and Hall effect and energy bands in materials.
CO4: Students understand different magnetic materials and their properties and Hysteresis curve. Students can apply this knowledge in research.

Course - PHY362 - Quantum Mechanics

CO1: Students understand basic concepts in Quantum Mechanics. They get the knowledge what is the difference between classical and quantum mechanics.

CO2: Students understand time dependent and time independent Schrodinger's equations as well as different types of operators in quantum Mechanics Students can apply these equations for problem solving.

CO3: Students obtain eigen value of energy and eigen function for particle in one, three dimensional rigid box, rigid rotator with fix axis.

CO4: Students understand concepts like step potential and barrier potential in quantum mechanics and how to write Schrodinger's equation in spherical polar co-ordinates.

Course - PHY 363- Thermodynamics and Statistical Physics

CO1: To study the transport phenomenon such as viscosity, thermal conductivity, diffusion.

CO2: To learn about thermodynamic functions, variables and their relations.

CO3: To acquire the skill of solving problems based of particle distribution.

CO4: To study about types of ensembles viz. Microcanonical, canonical and grand canonical.

CO5: To get the knowledge about Maxwell Boltzmann statistics, Bose Einstein statistics and Fermi Dirac Statistics

Course – PHY 364- Nuclear Physics

CO1: Studying Basic properties of nucleus, student got the idea of inner information of the nucleus.

CO2: From radioactivity chapter student knew that which radiations emit from radioactive material and how they are useful and harmful for the human.

CO3: From nuclear force student understood that apart from alpha, beta, gamma particle how many other particles are inside the nucleus.

CO4: Student learnt by using accelerators we can produce high energy particle which can be used for research purpose

CO5: Use of nuclear reactors to produce huge amount of heat energy.

Course – 365(A)- Electronics-II

Students can learn the design and working of electronics used in different applications.

CO1: To learn about special Purpose diodes like LED, photodiode, Varactor, Optocoupler

CO2: To understand concepts of Amplifiers, Class A, Class B and Class C , Push Pull emitter follower and differential amplifier

CO3: To study construction and working of Junction Field Effect Transistor and MOS Field Effect Transistor, Working and applications

CO4: To learn about Operational Amplifiers its parameters, characteristics and applications

CO5: To study 555 timer, Astable, Monostable and Bistable Multivibrator

CO6: To understand Regulated power supply using IC 723

CO7: To understand Combinational Circuits like Adder, Subtractor and Multiplexer, Binary to Gray code conversion

CO8: To understand Sequential Logic Circuits, Flip- Flop, Counters and Shift Register

Course – 365(B)- Advanced Electronics

CO1: Students learn about different types of sensors like motion, optical, temperature and pressure sensors. Accelerometer, Pyrometer, Photo detector and Laser. They learn about variety of applications of sensors in day to day life

CO2: Signal conditioning is the need of all sophisticated electronic instruments. Students learn about different analog signal conditioning methods like Multiplexing and De-multiplexing and filtering

CO3: Students learn about different digital signal conditioning methods like Multiplexing and De-multiplexing, Encoders and Decoders, Analog to digital and digital to analog converters.

CO4: Students learn about process control methods, OPAMP and Temperature sensors.

Course - PHY 366 (V)- Acoustics -II

Students can learn physics behind architectural acoustics and variety of instruments used in commercial sound recording and reproduction.

CO1: Students learn about types of Microphones, Construction and working of moving coil and condenser microphones, Sensitivity and its directional Characteristics

CO2:, Students know about the types of Loudspeakers like direct radiator and horn loudspeaker, Tweeter and woofer, their construction and working, Efficiency and cut off frequency of loudspeakers, Loudspeaker cabinets

CO3: Students get to know about different types of sound systems, amplifiers, power specifications for auditoria, Audio file formats, Sound Equalizers, Compressors, Expanders, Monophonic and stereophonic sound recording systems and noise reduction

CO4:, Students learn about noise created in the environment, Highway noise, sonic boom, Weighted sound levels, Phon and Sone, noise induced hearing loss. Trauma and chronic hearing aids

CO5: Students learn about Ultrasound transducers, Medical ultrasound, Ultrasonography, Distance measurement using ultrasound.

Course - PHY 3610 (U)- Scientific Data Analysis Using Python

Students learn how to analyses data using Python. This course will take students from the basics of Python to exploring many different types of data. They will learn how to prepare data for analysis, perform simple statistical analyses, create meaningful data visualizations, and predict future trends from data.

CO1: Students can use python for Creating and accessing list elements, Creating Tuples knowing about functions for Tuples and programming with Tuples Creating Dictionary, knowing functions for Dictionary, programming with Dictionary.

Students learn about Math module, random Module, Array module, string Module etc.

CO2: Students learn about Core libraries in Python like NumPy Library for Arrays , Pandas Library for Data Processing. They also learn about Basics of data frames, create, adding/ deleting of rows, columns to data frames , Importing of data, functions of data frames and Data Normalization.

CO3: Student learn how to do the Summarizing of Data Frame and visualization
They learn about Matplotlib Library for visualization: Pie chart, violin plot, scatter plot, histogram, bar chart, area plot.
Seaborn Library for Visualization: Box plot, point plot, line plot, count plot, bar plot, strip plot, and Scatter plot and Regression Plot

CO4: Students get hands on experience of data Analysis and Visualization with Pandas

Course - PHY 3611 (AA) - Radiation Physics

CO1: Students can use the knowledge in the applications of Radiation physics in the field like radio carbon dating, medical diagnostic tools.

CO2: Students acquire skill in operating different types of radiation detectors to detect and measure radiation levels in different places.

CO3: Students can work as advisers in maintenance of radiation safety standards and following of strict protocols at various places like Hospitals, Industries and laboratories etc.

CO4: Students become able to employ their skills to develop applications of radio activity in the fields like Hospitals, Industries.

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Department of Physics

Programme Name - B.Sc. (Physics)

Programme Outcomes

Knowledge Outcomes

After completing B.Sc. (Physics) Programme students will be able to:

1. Apply the basic principles of Physics to the events occurring around us and also in the world.
2. Try to find out or analyze scientific reasoning for various things.

Skill Outcomes

After completing B.Sc. (Physics) Programme students will be able to:

1. Use computers and various software and acquire programming skills
2. apply the knowledge to develop the sustainable and eco-friendly technology for pollution free environment
3. collaborate effectively on team-oriented projects in the field of Physics
4. Communicate scientific information in a clear and concise manner both orally and in writing or through audio video presentations

Generic outcomes

Students will

1. develop ability to work in group
2. develop capacity of critical reasoning, judgment and communication skills.
3. Develop abilities for logical thinking

Programme Specific Outcomes

PSO1: Students get acquainted with techniques which are useful in industry.

PSO2: Students get conceptual knowledge of entrepreneurships through the co-curricular activities

PSO3: learn the organizational skills and working in group.

PSO4: Students will be well versed with use of computers

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