

**MAHATMA GANDHI ARTS, SCIENCE & LATE N. P. COMMERCE  
COLLEGE, ARMORI, GADCHIROLI**

**PROGRAMME OUTCOME – ARTS FACULTY**

- Student develops the sense of relevance for humanity studies.
- Student acquires the basics of human induced social systems.
- Student becomes self-aware regarding various roles and responsibility he/she has to play in society.
- Student understand the interrelationships of various parameters concerning to human civilization.
- Student learns to apply the knowledge on the day to day human interactions.
- Student develops a potential to deal with various issues related to social domain with proficiency.

**MAHATMA GANDHI ARTS, SCIENCE & LATE N. P. COMMERCE COLLEGE,  
ARMORI, GADCHIROLI**

**DEPARTMENT OF ENGLISH**

**Programme Specific Outcome:**

- + Educate students in both the artistry and utility of the English language through the study of literature and other contemporary forms of culture.*
- + Provide students with the critical faculties necessary in an academic environment, on the job, and in an increasingly complex, interdependent world.*
- + Assist students in the development of intellectual flexibility, creativity, and cultural literacy so that they may engage in life-long learning*
- + Students should be able to understand the process of communicating and interpreting human experiences using historical contexts and disciplinary methodologies, through literary representation.*
- + Students should be able to apply analytical and theoretical approaches to the reading and study of various genres of literary and cultural texts.*
- + Developing intellectual, personal and professional abilities through effective communicative skills; ensuring high standard of behavioural attitude through literary subjects and shaping the students socially responsible citizens.*
- + To enhance employability of the students by developing their linguistic competence and communicative skills.*
- + Upon completion of the course the students should know the plays of master- dramatists, and the capacity to understand and analyse various plays styles.*

**B. A. - I (Compulsory English)**

**Course Outcomes –**

*On successful completion of the course the students will be able to:*

- Acquaint themselves about the rich and best literary traditions in English and expand their range of experience and in the process they will learn to be more empathetic toward the plight of others.*
- Think about the relation between language and literature.*
- Write clearly, effectively and creatively and adjust writing style appropriately to the content, context and nature of the subject.*
- Know about various innovative ways of using English language in verbal and non-verbal communication.*
- Effective communication in English with others.*
- To expose to the best examples of prose and poetry in English so that they realize the beauty and communicative power of English.*
- To develop the ability to appreciate ideas and think critically.*
- To acquaint with the minor forms of literature in English and help them to appreciate the creative use of language in literature.*
- To develop interest in reading literary pieces.*
- To become competent users of English in real life situations*
- To acquire conversational skills in daily life.*
- Students awareness about crucial issues like human values, human rights, ecological and environmental issues, caste and gender based discrimination will be developed.*
- The students could improve vocabulary.*
- To use their creative and critical faculties of mind in real life situations.*

- *To study basic English Grammar and composition for developing communication skills.*

### **B. A. - I (English Literature)**

#### **Course Outcomes –**

*On successful completion of the course the students will be able to:*

- *Know the process of beginning and growth of English literature, particularly poetry.*
- *Read and understand about the rich English and Indo-Anglican poetry.*
- *Appreciate poetry as a source of great pleasure and wisdom.*
- *Be acquainted with major poetical types and movements.*
- *Probe into the literary and aesthetic merits of popular English poetry.*

### **B. A. - II (Compulsory English)**

#### **Course Outcomes –**

*On the successful completion of the course B. A. - II students are able to:*

- *To familiarize with excellent pieces of prose and poetry in English so that they realize the beauty and communicative power of English.*
- *To express a thorough command of English and its linguistic Structures.*
- *To compose and appreciate various styles of prose and poetry.*
- *To recognize, examine, interpret and explain the important ideas, values and themes that occur in literary and cultural texts.*
- *To be proficient in English language to improve their employability.*
- *To develop the ability to comprehend the written texts.*
- *To sharpen their critical, creative and analytical skills.*
- *To acquire conversational skills in daily life.*
- *To inculcate the moral and human values among themselves through the text.*
- *To express themselves in oral and written communicative situations.*
- *To improve their vocabulary.*
- *On successful completion of the course, the students will be accurate both in oral and written communication as they will be strong in Grammar and its usage.*
- *To enable them to express a thorough command of English and its linguistic Structures.*
- *To enable them the ability to compose and appreciate various styles of prose.*
- *To introduce the students to the fundamental elements of poetry- to inspire the students with poetry readings from various perspectives.*
- *Developing critical thinking and imagination through non-fiction, and familiarizing students with cultural diversity through various representative non-fiction samples.*
- *To train them to attempt practical criticism of plays, passages and poems.*
- *To make students able to recognize, examine, interpret and explain the important ideas, values and themes that occur in literary and cultural texts.*
- *To make students able to write analytically in a variety of different formats, including essays, academic articles, reflective writing and secondary sources and critical reviews.*

### **B. A. - II (English Literature)**

#### **Course Outcomes –**

*After completion of this course the students will be able to:*

- *Know the process of beginning and growth of English literature, particularly poetry.*

- Trace the development of the history of English literature, its various forms like story, novel, biography, autobiography, essay etc.
- Interpret the works of great English writers of worldwide fame. 4) Study and interpret representative writings from 17th to 21th century.
- Probe into the literary and aesthetic merits of popular fictions.

### **B. A. - III (English Literature)**

#### **Course Outcomes –**

After completion of this course the students will be able to:

- Know the position of literature within humanities and appreciate it.
- Literature is valued, perceived, and analysed objectively.
- How and why Indian literature emerged as a distinct field of study.
- Trace the development of history of English literature from its beginning to the present day.
- Interpret the works of great writes of Indian writers in English.
- Demonstrate, through discussion and writing, an understanding of significant cultural and societal issues presented in Indian English literature.
- Learn the history of literary criticism and various literary theories.
- Apply critical and technical theory and vocabulary to describe and analyze, and formulate an argument about literary and other texts.
- Think about the non-fixity of meaning of literacy texts.
- Develop a skill in applying various literary theories in interpreting a specific text.
- To train them to attempt practical criticism of plays, passages and poems.
- To offer a summary of the various stages of Indian writing evolution in English.
- To introduce students to the thematic concerns, genres and trends of Indian writing in English.

### **B. A. - III (Communicative Literature)**

#### **Course Outcomes –**

After completion of this course the students will be able to:

- Students will enable to understands the basics of communication skills
- Develop soft skills among the students
- Develop practical knowledge of the language
- Develop the business skills among the students
- Develop leadership qualities by understanding the basics of arranging Meetings, Notices, Agenda and Minute in the class
- Develop key concepts of the business communication
- Develop the interview and interviewing skills
- Gain skill over the business Presentation skill
- Develop the correct use of Grammar in the communication
- Understand the importance of successful communication
- Improve the self-motivation to communicate in English
- Develop the practical approaches and opportunities for the employment among the students by using English Language
- Gain mastery over English language
- Improve the writing skill by understanding reference skill
- Understand the basics of ideal research
- Enable to edit and draft the written material

## **B. Com. - I (Compulsory English)**

### **Course Outcomes –**

*After completion of this course the students will be able to:*

- *To enable students to become competent users of English in real life situations.*
- *To expose students to varied cultural experiences through literature.*
- *To contribute to their overall personality development by improving their communicative skills and soft skills.*
- *To make them able to express a thorough command of English and its linguistic Structures.*
- *To enable them the ability to compose and appreciate various styles of prose.*
- *To introduce the students to the fundamental elements of poetry- to inspire the students with poetry readings from various perspectives.*
- *Developing critical thinking and imagination through long and short fiction, and familiarizing students with cultural diversity through various representative fiction samples.*
- *To expose students to the basics of short story and to familiarize them with different types of short stories in English.*
- *To introduce some advanced units of language so that they become aware of the technical aspects and their practical usage.*

## **B. Com. - II (Compulsory English)**

### **Course Outcomes –**

*After completion of this course the students will be able to:*

- *Improve and develop interest for language.*
- *Development of the key skills in students for the betterment of business.*
- *Improve interpretative skills.*
- *Develop all the four language skills.*
- *Enable to utilize soft skills for the future challenges and opportunities.*
- *Develop social and moral values by understanding the given text.*
- *Comprehension and acquire writing skill by understanding report writing.*
- *Enable to create best CV.*
- *Understand real life inspirational, philosophical experience by prose.*
- *Acquire mastery over grammar.*
- *Understand the writing conventions and rules by following punctuation.*
- *Able to learn speaking, reading, listening and writing skill.*
- *To make effective and impressive communication.*
- *To make communication in ethical manner.*
- *Demonstrate the ability for creative thinking and critical analysis of literature.*
- *Demonstrate various aspects of storytelling in terms of plot, character, linguistic devices and forms of storytelling.*
- *Capable to write creative writing.*
- *Able for critical thinking and close reading of literary text.*
- *Understand and appreciate the social values.*
- *Respond the sensitivity of the cultural values.*
- *Able to give perfect Presentation.*
- *Will take interest in philosophical thoughts.*

- *Write simple sentences without committing errors of spelling and grammar.*
- *Understand and appreciate the principle of politeness in relation to the speaker/listener.*

### **B. Sc. - I (Compulsory English)**

#### **Course Outcomes –**

*On the successful completion of the course B. Sc. - I students are able to:*

- *To acquaint with excellent pieces of prose and poetry in English so that they realize the beauty and communicative power of English.*
- *To expose students to varied cultural experiences through English language and literature.*
- *To contribute to their overall personality development by improving their communicative skills and soft skills.*
- *To express a thorough command of English and its linguistic Structures.*
- *To compose and appreciate various styles of prose and poetry.*
- *To develop critical thinking and imagination through non-fiction, and familiarizing students with cultural diversity through various representative non-fiction samples.*
- *To expose to the basics of short story and to familiarize them with different types of short stories in English.*
- *To master the skills of reading, writing, listening and speaking. □ To acquire conversational skills in daily life.*
- *To practice their moral and social sense in life.*
- *To use English effectively in formal and informal situations of life.*
- *To understand the basic concept of literary genre, poem, prose and stories.*
- *To acquaint with the basic English Grammar and composition for developing communication skills.*
- *To sharpen their critical, creative and analytical skills and enhance their proficiency in English language.*

**MAHATMA GANDHI ARTS, SCIENCE & LATE N. P. COMMERCE COLLEGE,  
ARMORI, GADCHIROLI**

**DEPARTMENT OF MARATHI**

**Programme Specific Outcome:**

- ✚ *Develop competency in Literary Forms (Marathi poetry, autobiography, novel, short story, drama & performing prose)*
- ✚ *Develop Reading, Writing & Communication Skills in Marathi.*
- ✚ *Get Information about the history of Saint Literature.*
- ✚ *Get Information about the history of MODERN Marathi Literature.*
- ✚ *Apply the study of Marathi Linguistics & Grammar in their practical life.*
- ✚ *Study News Writing for Media. Nurture themselves in soft skills and develop research aptitude.*
- ✚ *Find jobs for their livelihood be motivated for their further education.*
- ✚ *The development of the basic language skill- listening, speaking, reading and writing communication skills.*
- ✚ *Develop Social and moral values and responsibility*
- ✚ *Develop communication skill*
- ✚ *Comprehension of the writers and poets*
- ✚ *Develop an interest for the Marathi Language*
- ✚ *Improve Language Skill, Speaking Skill, Listening Skill, Reading Skill and Writing Skill*
- ✚ *Develop Philosophical and Social thoughts by studying prose and poetry*
- ✚ *Develop Attitude of Literary Forms. (Marathi Poetry, Drama, Novel, Story & Travelogue )*
- ✚ *Develop Reading, Writing & Communication Skills of Students.*
- ✚ *Information about Literary Theory.*
- ✚ *Develop Attitude of Marathi Linguistics & Grammar.*
- ✚ *Gain Knowledge, skill and positive attitude towards Marathi Literature.*
- ✚ *Develop critical and analytical thinking & social interaction and cultural understanding.*
- ✚ *Understand how society has changed and developed from past to present.*
- ✚ *Improve their creative writing abilities towards writing in Marathi to enable them to Contribute towards Marathi literature.*
- ✚ *The relation between language and literature*
- ✚ *Introduction and practice of subjects covered in the study of literature*
- ✚ *The ancient and medieval versions of Marathi and the types of literature involved.*
- ✚ *Study of principal types of the novel and the drama.*

**B. A. – Sem. - I (Compulsory Marathi)**

**Course Outcomes –**

*Students after completion of B.A. Semester I with compulsory Marathi will be able to:*

- *Gain knowledge about different writers like Sane Guruji, Mhainbhatt , Dr. B. R. Ambedkar , P. K. Attre, V. S. Khandekar ,and Vijaya Rajadhaksha. Poets like Sant Namdeo, Sant Tukadoji Maharaj, Anant Fandi ,Bahinabai Chaudhari, Mangesh Padgawkar and Indrajit Bhalerao and real life social workers like Baburao Bagul.*
- *Learn about social, moral and religious values.*
- *Develop logical, critical and analytical thinking aptitude.*
- *Develop reading, writing and communicative skills.*
- *Understand the philosophical values and notion for life*

## **B. A. – Sem. - II (Compulsory Marathi)**

### **Course Outcomes –**

*Students after completion of B.A. Semester II with compulsory Marathi will be able to:*

- *Gain knowledge about different writer like G. G. Agarkar, Gadgebaba, Y.Waghamare, N. Mirjkar, B. Kale and Urmila Pawar & poet Saint Dhyaneshwar, B. S. Mardhekar, Shanta Shelake, Vitthal Wagh, Sudhakar Gaydhani, Kusum Alam.*
- *Understand and analyse the social work and Self work and develop logical, critical and analytical thinking aptitude.*
- *Learn tradition and culture of Indian villages and develop reading, writing and communicative skills.*
- *Develop social responsibility by understanding prose and poetry.*

## **B. A. – Sem. - III (Compulsory Marathi)**

### **Course Outcomes –**

*Students after completion of B.A. Semester III with compulsory Marathi will be able to:*

- *Gain knowledge about different writers like Lokhitwadi, Mahatma phule, Narendra Dabholkar, Madhukar wakode Wakode, B. L. Bhole and Isadas Bhadke & poet like that Saganbhau, Savitrybai Phule, Yeshwant Manohar, Kalpana Dudhal, P. Vitthal and Erfan Sheikh stories while reading text.*
- *Learn to understand and analyze the character value and real life hero of social work.*
- *Learn about social moral and religious values.*
- *Gain knowledge of social structure and problems of society.*
- *Learn moral ethics of humanity.*

## **B. A. – Sem. - IV (Compulsory Marathi)**

### **Course Outcomes –**

*Students after completion of B.A. Semester IV with compulsory Marathi will be able to:*

- *Gain knowledge of about different writers like Shahu Maharaj, Jyant Narlikar, Social worker like Dr. Abhay Bang, Shankar Kharat, Sharachandra Muktibodh and Anil Awachat. Poets like Kusumagraj, Baba Amate, Indira Saint, Chandrakant Patil, Baban Saradkar and Anuradha Patil, while reading their text.*
- *Learn about characters, Biography and social workers.*
- *Develop the skills of writing poems and articles.*
- *Learn moral ethics of humanity*
- *Develop ability to understand shadows of words*



## **B. A. – Sem. - V (Communicative Marathi)**

### **Course Outcomes –**

*Students after completion of B.A. Semester V with communicative Marathi will be able to:*

- *Learn about role and applications of communicative Marathi language.*
- *Develop writing skills and Learn to write precise, reports and translations.*
- *Broaden the knowledge of Marathi language.*
- *Learn to transfer information and also learn about techniques used to face and write reports of interviews.*
- *Learn to comprehend and write notices and also learn the role and importance of internet in learning Marathi language.*
- *Develop Writing skills, vocabulary, and expression through presentations.*
- *Gain knowledge of Editing Process, Magazine Editing, Report Writing and Interview Skill.*
- *Develop soft skill among the students.*

## **B. A. – Sem. - VI (Communicative Marathi)**

### **Course Outcomes –**

*Student after completion of B.A. Semester VI with communicative Marathi will be able to:*

- *Develop knowledge of vocabulary and grammar. Learn expression and translation.*
- *Learn to analyse interpret and write advertisement and report which also develops employable skills.*
- *Learn to write invitations of different forms and also learn about journal front page and last page writing and News in newspaper, Television and Radio.*
- *Develop skills to write and read news at radio & T.V. station.*
- *Develop the practical approaches and opportunities for the employment among the students by using Functional Marathi Language.*
- *Gain knowledge of Creative Writing, Letter Writing, Advertisement Writing, Proof Reading, Paragraph Writing and Travelogue Writing.*

## **B. A. – Sem. - I (Marathi Literature)**

### **Course Outcomes –**

*After completion of B. A. Sem I with Marathi Literature students will be able to-*

- *Gain knowledge about stories of different writers like Gangadhar Gadgil, Venkatesh Madgulkar, Shankar Patil, Baburao Bagul, G .A. Kulkarni, Kamal Desai*
- *Learn to analyse, interpret and develop employable skills.*
- *Learn to understand and analyse the character value of Heroes of the story.*
- *Develop communicative and practical skills.*
- *Develop literary criticism attitude and Students Learn Literary Criticism and Theory from Sahityvichar.*

## **B. A. – Sem. - II (Marathi Literature)**

### **Course Outcomes –**

*After completion of B. A. Sem II with Marathi Literature students will be able to-*

- *Gain knowledge about Novel of S. N. Pendase - “Garambicha bapu”.*
- *Learn to understand and analyse the character value and real life hero of social work.*
- *Learn about social, moral and religious values.*
- *Develop communicative and practical skills.*
- *Develop literary criticism attitude and Students Learn Literary Criticism and Theory from Sahityvichar.*

## **B. A. – Sem. - III (Marathi Literature)**

### **Course Outcomes –**

- *After completion of B. A. Sem. III with Marathi Literature students will be able to-*
- *Gain knowledge about criticism of books, its characters, style, plot, language and expression.*
- *Learn to understand and analyse the character value of hero of the drama “Natsamrat”.*
- *Understand the difference between drama and Act- play. Also develop social, moral and critical value from the role of characters played in the text book of Tragedy “Natsamrat” writer by V.V. Shirwadkar.*
- *Gain knowledge about criticism (sahityavichar) and develop critical and analytical thinking.*
- *Develop communicative and practical skills.*

## **B. A. – Sem. - IV (Marathi Literature)**

### **Course Outcomes –**

*After completion of this course, students will be able to:*

- *Learn poetries of Keshaosut, B. S. Mardhekar, Narayan Surve, Vitthal Wagh, Bhujang Meshram, Daya Pawar, Niraja, Hemant Diwate.*
- *Learn and enjoy poems. Those are sort of parodies which enhance philosophy of human.*
- *Develop literary criticism attitude and Students Learn Literary Criticism and Theory from Sahityvichar.*

## **B. A. – Sem. - V (Marathi Literature)**

### **Course Outcomes –**

*After completion of this course, students will be able to:*

- *Learn about characters from the Biography of mahanubhav Sant Govind- Prabhu.*
- *Analyze depth in the Powada and Lawani poem.*
- *Learn to write critical appreciation of the poems.*
- *Gain knowledge about the writer and poets of ancient era.*
- *Study about Marathi Wangmyacha Itihas written by Nasirabadkar*

- Gain knowledge about Saint Tukaram, Saint Dnyaneshwar, Saint Namdev and Saint Ekanath.
- Gain knowledge about the poets and poems of critical period (1600-1900)
- Gain knowledge about the writer and poets of modern era like kayya shastra.

### **B. A. – Sem. - VI (Marathi Literature)**

#### **Course Outcomes –**

*After completion of this course, students will be able to:*

- Students Learn travelogue written by P. L. Deshpande.
- Gain knowledge of descriptions of London, Paris, Germany, Scotland.
- Students aware of tourist Place and their Culture and Society.
- Develop Attitude of Marathi Linguistics.
- Learn about special writers and their literature like P.L.Deshpandey's Apuravai
- Study about Marathi language phonetics in Bhasha vighayan by Dr S.G.Malshe.
- Gain knowledge about different cultures and traditions by travelling through different countries while reading Deshpandey's Apuravai.

### **B.Sc. & B.Com. – Sem. - I (Compulsory Marathi)**

#### **Course Outcomes –**

*After completion of B. Sc. & B. Com. SEM I with Marathi students will be able to-*

- Gain knowledge of about different writers, poet and novels, social workers, get introduction of different types of people while reading text. Writer by Gadgebaba, Dr. B. R. Ambedkar, Jyant Narlikar, Kachru Girhe and Uttam Kamble. Poet by Saint Dyaneshawar, Keshawsut, B. S. Mardhekar, Kusumagaj and Ushakiran Atram
- Learn to analyse, interpret and write advertisement and reports.
- Develop writing and communicative skills.
- To acquire conversational skill in daily life.
- To understand the basic concept of literary genre, poem, prose and stories.
- To sharpen their critical, creative and analytical skills and enhance their proficiency in Marathi Language.

### **B.Sc. & B.Com. – Sem. - II (Compulsory Marathi)**

#### **Course Outcomes –**

*After completion of B. Sc. & B. Com. SEM II with Marathi students will be able to:*

- Gain knowledge of about different writers V. D. Sawarkar, RastantTukdoji Maharaj , P. L. Deshapende , Vasant Warhadpande and Baba Bhand. Poet by Saint Tukaram , Sane Guruji , Keshavkumar , Shanta Shelake , Dyanesh Wakudkar.
- Develop skill of Grammar and Letter writing.
- Learn tradition and culture of Indian villages.
- Aware the Problems of Society 5. To sharpen their critical, creative and analytical skills and enhance their proficiency in Marathi Language.

### **B.Sc. & B.Com. – Sem. - III (Compulsory Marathi)**

#### **Course Outcomes –**

*After completion of B. Com. SEM III with Marathi students will be able to:*

- *Gain knowledge of about different writers, poet and novels, social workers, get introduction of different types of people while reading text. Writer by Jotiba Fule, Sane Guruji, Vaman Chorghade, Gangadhar Pantawne, Bhanu kale, Dadasaheb More Poet by Sant Eknath, Honaji Bala, Bahinabai Chaudhari, Vasant Abaji Dahake, Hira Bansode, Bhujang Mesharm.*
- *Learn to analyze, interpret and write advertisement and reports.*
- *Develop writing and communicative skills.*
- *To acquire conversational skill in daily life.*
- *To understand the basic concept of literary genre, poem, prose and stories.*
- *To sharpen their critical, creative and analytical skills and enhance their proficiency in Marathi Language.*

### **B.Sc. & B.Com. – Sem. - IV (Compulsory Marathi)**

#### **Course Outcomes –**

*After completion of B. Com. Sem. IV with Marathi students will be able to:*

- *Gain knowledge of about different writers Swami Vivekanand, Pralhad Atre, Yahwantrao Chauhan, Shantaram, Anil Awachat Poet by N.V. Tilak, V.D. Sawarkar, B.S. Mardhekar, Aruna Dhere, Indrajit Bhalerao and Ajim Navaj Rahi.*
- *Develop skill of Grammar and Advertisement Writing.*
- *Learn tradition and culture of Indian villages.*
- *Aware the Problems of Society and Learn ethics of human values.*

### **M.A. Marathi**

#### **Programme Specific Outcome:**

On the successful completion of the programme M. A. Marathi the students are able to :-

- *Students understood the history of knowledge of Marathi language.*
- *Saint, Pand and Tant understood the nature of literature.*
- *Learned the language of poetry and the language of literature.*
- *Marathi saints were introduced.*
- *Learned the nature of ancient Marathi medieval poets and modern poetry.*
- *Prose literature became knowledge of verse literature and literary types.*
- *The students became curious about reading literature and observing ancient literature.*
- *Literature and Common language were understood.*
- *The students learned the Yadav language, Shiva language and Peshwa language and literature.*
- *Maharashtra name origin the period of creation of the Marathi language and the evidence of the formation of the Marathi language became known.*
- *Identify major literary genres.*
- *Do close textual analysis to interpret and evaluate literary text.*
- *Demonstrate in discussion and writing and understanding of literary techniques*

*that Marathi writers use in constructing their use.*

- *Study and understand the Classical and Modern theories in Marathi literature.*
- *Study the various literary trends in Marathi.*
- *Develop literary competence.*

### **Course Outcomes**

On the successful completion of the course M. A. - I years students are able to :-

#### **M. A. Semester - I**

##### **Paper :- Arvachin Kavita : Bhag - 1 (1885 to 1945)**

- The students got acquainted with the origins of modern Marathi poetry and the poetry of prominent Marathi poets.
- The nature of Keshavsuta's poetry was understood.
- The students studied the poems in Balakvi's collection of poems 'Fulrani'.
- The students studied Suresh Bhatt's poems edited by Shirish pai.

#### **M.A. Semester II**

##### **Paper :- Arvachin Kavita : Bhag - 2 (1945 To 2000)**

- *The students understood the nature of B. S. Mardhekar's poetry.*
- *The students got to know the poems of Vaman Nimbalkar's collection of poems 'Vahtya Jakhmancha Pradesh'.*
- *The students got an idea of the poems in N. D. Mahanor's collection of poems 'Ranatlya Kavita'.*
- *Students understood the nature of wool tribal poetry on the poems in Bhujang Meshram's 'Ulgulan' poetry collection.*
- *The students learned the nature of rural poetry from the 'Gramgeeta' of Rastrasant Tukdoji Maharaj.*

#### **M. A. Semester - I**

##### **Paper :- Sahityashastra : Bhag - 1**

- *The students learned the relation of literature to the purpose of literary lectures, production activities and other fine arts.*
- *Students gained knowledge of the characteristics and literary values of literature.*
- *The students learned how literature relates to social life.*
- *Students became acquainted with the origins, development and vocabulary of Indian Marathi Literature.*
- *Students learned about the theory of interest in Indian Marathi Literature and its types.*

#### **M. A. Semester - II**

##### **Paper :- sahyashastra : Bhag - 2**

- *The students got acquainted with Western literary thinkers and their literary ideas.*
- *Students studied the literary ideas and opinion of Plato, Aristotle, Kroche*

*Kant, Wordsworth etc.*

- *Students studied Modern Marathi Literary Theorist and their Theories.*
- *Students studied the literary theory of Mardhekar, Muktiboth and D. G. Godse.*
- *Students study Bhalchandra Nemade's 'Deshiyata Theori' and R. B. Patankar's 'Dvyidhruvatmak Theory'.*

#### **M. A. Semester - I**

##### **Paper :- Gadya : Bhag - 1 (Prachin)**

- *The students studied the ancient Marathi prose texts of S. R. Kulkarni and understood the concept of prose.*
- *Characteristics of Ancient Marathi prose features Mahanubhaviya Gadya and Bakhar Gadya students study about the book of S. G. Tulpule to get information.*
- *The students learned the philosophy of Mahanubhaviya by studying the Mahanubhaviya Prose book 'Lilacharitra' and 'Drushtanthpath'.*
- *The students came to know the book by studying the books 'Sabhasadachi Bakhar' and 'Aadnyapatra' of the Shiva period members.*

#### **M. A. Semester - II**

##### **Paper :- Gadya : Bhag - 2 (Arvachin)**

- *The students studied the basics of Modern Marathi Prose.*
- *Students studied different types of modern Marathi essay literature.*
- *The students understood the literature of Mahatma Phule on the basis of the book 'Prabodhanacha Purvarang'.*
- *Based on the book 'Vinoba Saraswat', the students got to know the style features of Ram Shewalkar's fine essay.*
- *Students studied Shrinivas Kulkarni's book 'Sonyacha Pimpal' and understood its essay.*
- *The students understood the life of the birds in the forest by studying the beautiful essay book 'Jangalach Den'*

#### **M. A. Semester - I**

##### **Paper :- Natak : Bhag - 1**

- *The students studied the nature, style and features of Marathi Drama and Pre-independence plays.*
- *The students studied the plot, style of play 'Sangeet Saubhadra'.*
- *The students studied the play 'Ekach Pyala' written by R. G. Gadkari.*
- *The students studied the plot, style of play 'Kichakwadh'.*
- *The students studied the plot, style of play 'Gharabaher'.*

#### **M. A. Semester - II**

##### **Paper:- Natak Bhag - 2**

- *The students studied the plot, style of play 'Ithe Oshalla Mrutyu'.*
- *The students studied the plot, style of play 'Katyar Kaljat Gusali'.*
- *The students studied the plot, style of play 'Sangeet Saubhadra'.*

- In 'Kirwant', the students studied the Storytelling, Style, Characteristic of Dalit Drama.
- The student studied the narrative style, Characteristic, Storytelling of the play 'Atmahatya' in the bush.
- The students studied the storytelling plot, style, characteristic of the Gondi regional play 'Mawa Nate Mawa Sarkar'.

On the successful completion of the course M. A. - I years students are able to :-

**M. A. Semester - III**

**Paper :- Prachin Madhyayugin Marathi Kavita : Bhag - 1**

- Students will understand the origin and development of ancient Marathi literature.
- Students will know the nature of expression on ancient Marathi poetry 'Abhang' and 'Ovi'.
- Students will realize the importance of Saint Dnyaneshwar's character and literary work.
- Students will notice the nature of ancient poetry based on the book 'Mahandambeche Dhawale'.
- Students will understand the literary work of the neglected saints on the basis of this text with the 'Mahadwarachya Paythyashi'.
- Students will be introduced to the character and philosophy of Jesus Christ based on the book 'Kristache Yatnageet'.

**M. A. Semester - IV**

**Paper :- Prachin Madhyayugin Marathi Kavita : Bhag - 2**

- Students will be introduced to the nature and features of Madhyayugin Marathi Literature as well as Contemporary Poetry.
- Based on this book 'Manache Shlok', students will get to know the style of Saint Ramdas' poetry and the nature of his teachings.
- Based on this book on 'Damayanti Swayamvar', students will notice the nature of Panditi poetry and the difference in the language of that poetry.
- While studying Saint Eknath's Bharudas, students will understand the philosophy and purpose of his Bharudas.
- Students will understand the origin of planting material and its inspiration as well as special knowledge of planting material of Shahir.

**M. A. Semester - III**

**Paper :- Bhashavidnyan : Bhag - 1**

- Students will understand the nature of human language, its functioning and the background of Marathi language.
- Students studied different study methods of language.
- The students studied the field of language, science, psychology, anthropology etc.
- The students got knowledge of human language and the language of literature.

**M. A. Semester - IV**

**Paper :- Bhashavidnyan : Bhag - 2**

- *The students studied the nature, characteristics and features of sociolinguistics.*
- *By studying social linguistics, the students came to know the relationship of Marathi language with the society.*
- *The students got to know the origin of Marathi language, its expansion and the symptoms of Marathi language.*
- *The students studied the linguistic inter-circle and outer-circle theory of language.*
- *Students studied various types and forms of standard language and dialect of Marathi language.*

**M. A. Semester - III**

**Paper :- Vishesh Granthakar : Tukaram : Bhag - 1**

- *The students got an idea of the social, political and cultural status of the Saint Tukaram Maharaj period.*
- *The students got to know the character of Saint Tukaram Maharaj and the nature of his abhanga.*
- *While studying the abhangas of Saint Tukaram Maharaj, the students came to know different types of abhangas.*
- *While studying Saint Tukaram Maharaj's abhangas, the students became aware of the social conditions and problems of the time.*

**M. A. Semester - IV**

**Paper :- Vishesh Granthakar : Tukaram : Bhag - 2**

- *The students came to know the teachings of Saint Tukaram Maharaj through his abhanga.*
- *The students got to know the features, characteristic and style of Saint Tukaram Maharaj's abhanga.*
- *From the abhanga of Saint Tukaram Maharaj, the students got knowledge of the then farming methods and crop water.*
- *The students studied some of Saint Tukaram Maharaj's abhangas about Bharud and Purankatha.*

**M. A. Semester - III**

**Paper :- Marathi Gangamayacha Itihas : Bhag - 1 (Starting to 1818)**

- *The students studied the ancient forms of Marathi literature, different types, different currents of different periods.*
- *The students got acquainted with the socio-political and cultural life of the time from the ancient history of Marathi literature.*
- *Students understand the different periods of literature, the different literary streams of this period and the linguistic changes that have taken pace in it.*
- *The students studied various religious sects and philosophies from the ancient history of Marathi literature.*



*M. A. Semester - IV*

***Paper :- Marathi Gangamayacha Itihas : Bhag - 2 (1818 to 2000)***

- *The students got acquainted with the nature of Marathi literature, the concept of literary history and the study methods of history.*
- *the students got to know of the different streams and types of Marathi literature till the year 1818 AD.*
- *The students underwent various religious streams as well as political and social changes through the study of Marathi literature.*
- *The students were introduced to various stages of the period of modern Marathi literature and post-independence literary flow.*

**MAHATMA GANDHI ARTS, SCIENCE & LATE N. P. COMMERCE COLLEGE,  
ARMORI, GADCHIROLI**

**DEPARTMENT OF GEOGRAPHY**

**Programme Specific Outcome:**

**B. A. – Sem. - I (Introduction to Geography)**

**Course Outcomes –**

*After completion of this course, students will be able to:*

- *Explain To know the meaning, definition, scope, study methods and study objectives of Geography.*
- *To discuss the importance of development of Geography.*
- *To examine the place of geography in other sciences or its relation to other sciences.*
- *To inform the students about the origin of the earth, the solar system, the origin of universe, the earth is a unique planet.*
- *To arouse the curiosity of the student regarding the size & shape of the earth, longitude, latitude, international date line, time zone.*
- *Solar eclipses, lunar eclipses to study their effects on human life.*
- *To study geography while studying human and environment.*
- *Ecology, Ecology, Environmental Determinism, Possibilism and Neo-determinism and giving students' knowledge about nature through this concept.*
- *Human and environment, physical and human geography, regional and systematic geography to know debates in geography.*
- *To give students a historical overview of ancient and medieval geography from the point of view of study.*
- *Creating career opportunities for geography students through geography.*
- *Matching job occupation through GIS remote sensing.*
- *Emphasis on adopting modern techniques and ideologies in geography.*
- *Convincing students about the origin of the map and globe under cartography and its usefulness in creation and human life.*
- *Explain the importance of scale in the creation of map.*
- *Emphasis on adopting modern techniques and ideologies in geography.*

**B. A. – Sem. - II (Climatology)**

**Course Outcomes –**

*After completion of this course, students will be able to:*

- *To create awareness among the students about the elements of weather. To learn about air temperature and humidity.*
- *To impart knowledge to the students about weather factors, atmospheric levels, atmospheric phenomena.*
- *Raising awareness about the effects of temperature, solar energy on the earth and human life.*

- *To study the effect of air pressure on the earth.*
- *To create curiosity in the students about wind, types of wind, the effect of wind on the earth.*
- *To impart knowledge to the concerned student on various meteorological factors like evaporation, humidity, condensation, dew, fog.*
- *What is rainfall, types of rainfall, types of clouds to know about these atmospheric factors?*
- *To create awareness among the students about the importance of monsoon in India.*
- *Understanding the impact of cyclones and anti - cyclone, recurrent storms on India and the world.*
- *To create awareness among the students about the effects and remedies of global warming.*
- *To study the classification of global climate and the effects of climate on human life.*
- *Teaching how to create maps and diagrams related to the weather.*
- *Explain how to study weather maps and its importance in human life.*
- *Teaching how to do land survey through chain survey.*
- *Introduce students to thermometers, air pressure gauges, wet and dry balloon thermometers, rain gauges, wind speedometers and directional devices.*

### **B. A. – Sem. - III (Geomorphology)**

#### **Course Outcomes –**

*After completion of this course, students will be able to:*

- *Students about the importance of Geomorphology in the Arts branch.*
- *Knowing the definition, nature, scope of Geomorphology and place of Geomorphology in Physical Geography.*
- *Inform the student about continental drift theory by Wagoner, Plate Tectonics, Isostasy and discuss it.*
- *To enhance the knowledge of students regarding earthquakes and volcanoes.*
- *To know the process and type of weathering and related landforms.*
- *Provide information on the origin, composition and types of rocks.*
- *To know the work of the river as well as the erosion transportation and depositional work of river and Associate landforms.*
- *Discuss the cycle of erosion and interruption of cycle of erosion.*
- *Explain to the students how the river rejuvenation takes place.*
- *Awareness of measurement of a particular area through plane table survey.*
- *In depth study of different regions from the map through climatic and topographic maps.*
- *Map science cartography makes it easy to study information from different parts of the world.*
- *Creating awareness about the importance of Geomorphology in competitive examination.*

### **B. A. – Sem. - IV (Geomorphology and Oceanography)**

#### **Course Outcomes –**

*After completion of this course, students will be able to:*

- *Convincing students of the importance of geomorphology and oceanography in geography.*

- *Information about glacier types of glacier and erosion and depositional work of glaciers.*
- *To inform the students about the landforms associated with the work of Valley glaciers.*
- *Function of wind in arid regions to know the landforms formed by wind erosion and depositional work.*
- *Provide information on work of underground water and karsts to topography.*
- *Explain how sea waves work in coastal regions and how to develop new landforms due to erosional and depositional work of sea.*
- *Provide information regarding definition of Oceanography, surface configuration of ocean floor, Continental shelf, Continental slope, abyssal plain, mid-oceanic ridge and trenches.*
- *Knowing the distribution of temperature and salinity in the sea and oceans.*
- *To provide information to the students about the circulation of ocean water, waves, Tides and currents, El - Nino and La - Nino etc.*
- *Knowing the importance of the ocean as storehouse of resource for the future,*
- *Have students create Maps with the help of map projection.*
- *Studying statistical methods through mean deviation, standard deviation and quartile deviation.*

#### **B. A. – Sem. - V (Geography of Maharashtra)**

##### **Course Outcomes –**

*After completion of this course, students will be able to:*

- *To know information about location, extension, administrative division of Maharashtra.*
- *Physical division of Maharashtra explaining the physical importance of the mountains, plateaus and plains.*
- *To inform the students about the river system in Maharashtra, importance of rivers, types of rivers.*
- *To know the climate of Maharashtra. To understand the climatic region.*
- *To know the importance of forests in Maharashtra and its economic importance.*
- *To learn about the main crops of agriculture in Maharashtra, to explain to the students the characteristics of rice, wheat, sugarcane, cotton.*
- *To inform the students about the Minerals and power resources in Maharashtra.*
- *To explain to the students about the agro-based industries in Maharashtra.*
- *To inform the students about the population of Maharashtra, population density, distribution, factors affecting the density.*
- *To make the student aware of the consequences of the population of Maharashtra.*
- *To know about the population migration in Maharashtra, the reasons for rural and urban migration.*
- *Explain reduction and enlargement methods in map making.*
- *To teach how to use prismatic compass in land survey.*
- *Helps to analyse various elements in the map through dot methods, choropleth methods, bar graph and lines graph.*
- *To enhance the technical knowledge of the students through GIS, remote sensing and computer.*

#### **B. A. – Sem. - VI (India: A Geographical Analysis)**

##### **Course Outcomes –**

*After completion of this course, students will be able to:*

- *Students learn about location expansion in India.*
- *Understanding the Geographical Concepts of the physical region- mountain, plain & Plateau of India.*
- *To provide information about rivers and their divisions in India.*
- *To discuss the climate of India, the characteristics of the Indian climate.*
- *To analyse information related to climatic regions of India, distribution of rainfall in India.*
- *Monsoon, Convincing students about the importance of monsoon in India.*
- *Discuss information on iron ore, manganese and its distribution in India.*
- *Explain the economic importance of power plants, coal, petroleum, hydropower plant and distribution in India.*
- *To create awareness among the students about population in India based on various concepts like population, population density, population structure, population problems.*
- *Discussion on the nature of urbanization in India, the problems of urbanization and its consequences.*
- *To emphasize the importance of agriculture by discussing with the students on various topics related to agriculture in India, the place of Indian agriculture in the economy features of Indian agriculture, problems of Indian agriculture.*
- *To study geographical correlation through correlation.*
- *Teaching how to use dumpy level equipment in ground level.*

**MAHATMA GANDHI ARTS, SCIENCE & LATE N. P. COMMERCE COLLEGE,  
ARMORI, GADCHIROLI**

**DEPARTMENT OF HISTORY**

**Program Specific Outcomes –**

- *Understand background of our religion customs, institutions, and administrations*
- *Understand the present existing social political, religious, and economic condition of the people*
- *Developed practical skills helpful in the study understanding of historical events*
  - *Draw historical maps, charts diagrams etc...*
  - *Prepare historical models tools etc...*
- *Develop interest in the study of history and activates relating to history. They .*
  - *Collect ancient's arts, old coins and other historical materials.*
  - *Visit places of historical interest archeological sites, museums and archives.*
  - *Read historical document, maps, charts etc....*
  - *Write articles on historical topics.*

**Course Outcomes –**

**B.A.-I Semester-I(Indian History (Earliest Times to 1351 AD))**

- *Perceive various sources to study of ancient India.*
- *Understand the glory of India history in the age of harappan civilization*
- *Comprehend the history of vidic period .*
- *Understand the philosophy of Jainism and Buddhism.*

**B.A.-I Semester-II (Indian History (1526 To 1761 AD))**

- *Understand the political Situation of India on the eve of Babars Invasions.*
- *Grasp territorial's expansions of Mughal empier*
- *Know about the administrative need and the importance of grand coronations of chatrapati shivaji.*
- *Understand the policies adopted by early peshwas.*

**B.A.-II Semester-III(Modern India-1757 To 1920 AD)**

- *Understand Modern Indian History.*
- *Understand some of the early resistance to British rule.*
- *Identify the social Institutions of late 19TH century.*
- *Understand early Political a weakening in Indian freedom struggle.*

**B.A.-II Semester-IV(History of India- 1920 To 1971)**

- *Understand various phases of the national movement.*
- *Understand the difference between moderates extremists and revolutionaries.*
- *Grasp the details of freedom movement under the mahatma Gandhi's leadership.*
- *Understand the evolutionary process of constitutional developments.*

**B.A.-III Semester-V(History of Modern Word- 1776 To 1920)**

- *Learn about the causes and aftermaths of the French revolution.*
- *Understand the how industrial revolution encouraged to colonial expansion.*
- *Understand the important of world peace right after the world-war first.*
- *Evaluate the Russian revolution and first experiment of communist government.*

**B.A.-III Semester-VI(History of Modern Word- 1920 To 2000)**

- *Understand the fascism and the rise of dictatorship in Europe.*
- *Explain the Aftermaths of the World war second on the world Politics.*
- *Understand the how Russia and America emerged as superpowers on the verge of cold war.*
- *Learn about causes and effects fall of soviet state in Russia.*

**MAHATMA GANDHI ARTS, SCIENCE & LATE N. P. COMMERCE COLLEGE,  
ARMORI, GADCHIROLI**

**DEPARTMENT OF ECONOMICS**

**Programme specific outcomes (PSO) –**

The students understand the basic concept of in Economics and can apply in the real life. He/She is also update with the recent trends in the subject. The students also build a sound base for various post graduate courses in Economics.

**B. A. I Sem. I**

**Course Outcomes**

**Paper I- Micro economics**

**After successfully completion of the course students will be able to-**

- *Understand Basic concept of micro economic such law of demand, supply and elasticity.*
- *Understand Theory of Production function, law of returns, law of variable proportion.*
- *Understand Law of Utility and Application of Indifference Curve. & Engles law*

**B. A. I Sem. II**

**Course Outcomes**

**Paper I- Micro economics**

**After successfully completion of the course students will be able to-**

- *Understand Prize determination under perfect competition*
- *Understand Equilibrium of Industry and firm.*
- *Understand The decision making process in different market situation such as monopoly and monopolistic etc.*
- *Understand Understand the rent, wage, interest and profit theory.*
- *Understand the welfare theories.*
- *Understand Analyses the statistical average.*

**B. A. II Sem. III**

**Course Outcomes**

**Paper I- Macro economics**

**After successfully completion of the course students will be able to-**

- *Understand Concept and function of money.*



- *Understand Quantity theory of money and cash balance approaches.*
- *Understand Inflation, Deflation, index number & trade cycle.*
- *Understand Law of Market- Keynesian theory of employment.*
- *Understand Theories of consumption function and investment function*

#### **B. A. II Sem. IV**

##### **Course Outcomes**

##### **Paper I- Macro economics**

**After successfully completion of the course students will be able to-**

- *Understand Function of Commercial and central bank- modern banking service.*
- *Understand Public finance – income and expenditure, GST*
- *Understand International Trade theories*
- *Understand International Monetary fund- World bank, WTO and BRICS.*

#### **B. A. III Sem. V**

##### **Course Outcomes**

##### **Paper I- Indian economy**

**After successfully completion of the course students will be able to-**

- *Understand Concept of developed and developing economy.*
- *Understand the population theory and Indian population policy.*
- *Understand Meaning and concept of poverty.*
- *Understand the inequality in India- cause and measures.*
- *Understand place of agriculture in Indian economy and agriculture marketing.*

#### **B. A. III Sem. VI**

##### **Course Outcomes**

##### **Paper - Indian economy**

**After successfully completion of the course students will be able to-**

- *Understand the concept of small and cottage industries, Function of trade union.*
- *Understand the concept of economy planning and five year plans.*
- *Understand the functions of NITI Ayog.*
- *Understand the composition and direction of Indian foreign trade.*
- *Understand basic concept of ecology environment and economy*

**MAHATMA GANDHI ARTS, SCIENCE & LATE N. P. COMMERCE COLLEGE,  
ARMORI, GADCHIROLI**

**DEPARTMENT OF POLITICAL SCIENCE**

**PROGRAMME SPECIFIC OUTCOMES**

*After graduation the student will be able*

- *Understand the inter-connection between local, state, national and international politics.*
- *Understand the contribution of the main traditions of western political thinkers to political thought.*
- *Understand the processes and dynamics of Indian government and politics. It also political parties, emergence of new leadership at different levels, demand for autonomy movement, ethnic conflicts etc.*
- *Understand the basic concept and ideological orientations of political science discipline.*
- *Understand the contribution of the main traditions of Indian Political Thought.*
- *An understanding the evolution, development and trends of India's foreign policy.*
- *Understand the basic concept and issues concerning human rights and challenges.*
- *Knowledge about political system of the nation. Creating appropriate and efficient political leaders.*
- *Getting knowledge of political law and Constitution of India.*
- *Study of national and international political affairs.*
- *Understand the women's issues and problems.*
- *Familiarize with the problems and prospects of rural development of India.*
- *Understand the cultural, social, political, economic and constitutional environment as a historical perspective of Indian Administration.*

**Course Outcomes**

**B. A. I (I Sem.) Indian Democracy**

- *Glimpses of the background of the Indian Constitution, federal features, judicial review, parliamentary supremacy, concept of basic structure.*
- *Covers the preamble, fundamental rights, directive principles of state policy, fundamental duties and amendment procedure.*
- *Deals with federalism, centre state relations, centre state conflicts, regionalism, secularism.*
- *Delineates the structure of government namely executive, legislature and judiciary.*
- *Highlights the political parties, electoral process and voting behavior.*
- *Acquiring the knowledge about Indian Constitution.*
- *Getting awareness about one's rights and duties.*
- *Getting information about political parties and system of justice in India.*
- *Knowing about the problems and challenges in Indian politics.*

**B. A. I (IISem.) Local Self Government**

- *To learn the meaning, nature, scope and objectives of Rural Development in India.*
- *Explains the administrative set up for Rural Development.*

- *Describes the concept of Panchayati Raj and Rural Development.*
- *Analysis of Rural Development programmes of India.*
- *.Discusses the problems of Rural Development.*
- *Study of the local governing mechanism.*
- *Developing leadership at local level.*
- *Students enable to explain the role of British imperial on local government in India.*
- *Students enable to understand the contributions of various committees on local government.*
- *Students enable to describe the features and provisions of Constitutional Amendment Acts regarding Local Government Institutions.*
- *Students enable to equip the learner to play an active and responsible leadership role e in the functioning of Local Government Institutions.*
- *Students enable to describe the significance and role of Grama Sabha in Maharashtra.*

### **B. A. II (III Sem.) Political Theory**

- *Students enable to understand the nature and scope of political theory.*
- *Students enable to understand the significance of political theory.*
- *Students enable to acquaint with the theories, approaches, concepts and principles of political theory.*
- *Students enable to appreciate the procedure of different theoretical ideas in political theory.*
- *Students enable to Interpret and assess information regarding a variety of political theory.*
- *Students enable to understand the various traditional and modern theories of political science.*
- *Students enable to evaluate the theories of origin of the state.*

### **B. A. II (IV Sem.) Political Analysis and Concepts**

- *Students got ability introduces Political Theory as a distinctive area of inquiry that is integral to the study of politics.*
- *Students got ability to highlights contemporary normative debates and place them in a historical perspective.*
- *Students enable to projects the global and interdisciplinary orientation of Political Theory. It also emphasizes the interplay of theory and practice in the political process.*
- *Student enables to understand the difference between ideology and thought as well as between theory and ideology. Students enable to understand the relationship between ideas and politics.*
- *Student enables to understand the core doctrines of each of the ideologies and to make sense of politics through different ideological perspectives.*
- *Student enables to understand various political concept of right, elite, low, power, authority and legitimacy.*

### **B. A. III (V Sem.) Indian Political Thought**

- *Study of the Indian Political Thinking and their thoughts.*
- *Study of the contribution of political thinkers in independent movements and their need for modern society.*

- *Explains the ancient Indian political thoughts with reference to Kautilya thinking.*
- *States the political thinking of V.D. Sarvarkar, Lokmanya Tilak,*
- *Highlights the liberal; political thinking of MK Gandhi and Jawaharlal Nehru.*
- *Discuss the political thinking of depressed class movements with reference to Jyotiba Phule and BR Ambedkar.*
- *Student knows the key ideas of political thinking in modern India as it shaped in the colonial context.*
- *Student enable to understand and decipher the diverse and often contesting ways in which ideas of nationalism, democracy and social transformation were discussed by leading Indian thinkers.*

### **B. A. III (VI Sem.) Western Political Thought**

- *Covers the political thought of Plato and Aristotle.*
- *Social contract theories of Thomas Hobbes and John Locke.*
- *Enlightenment political thought as reflected in the works of JJ Rousseau and JS Mill*
- *Getting information about western thinkers and their political thoughts.*
- *Comparative study of the ancient thoughts and modern thoughts.*
- *Examine political thought through the Classical, Renaissance, and Enlightenment periods based on the works of Plato, Aristotle, Hobbes, Locke, Rousseau, and Marx; Compare and contrast the concepts of justice, freedom, equality, citizenship, and sovereignty in the works of Machiavelli, Hobbes, Locke, and Rousseau; Explain the different versions of, and importance of, the state of nature to political thought.*
- *Explain Karl Marx's worldview, with particular regard to his critique of democracy and the modern, politically liberal state; how it came to be; and its fundamental link to capitalism; and Explain John Stuart Mill's theory on utilitarianism and how he applies it to society and the state.*

**MAHATMA GANDHI ARTS, SCIENCE & LATE N. P. COMMERCE COLLEGE,  
ARMORI, GADCHIROLI**

**DEPARTMENT OF SOCIOLOGY**

**PROGRAMME SPECIFIC OUTCOMES**

*Sociology seeks to understand all aspects of human social behavior, including the behavior of individuals as well as the social dynamics of small groups, large organizations, communities, institutions, and entire societies. Sociologists are typically motivated both by the desire to better understand the principles of social life and by the conviction that understanding these principles may aid in the formulation of enlightened and effective social policy. Sociology provides an intellectual background for students considering careers in the professions or business. Graduate student of Sociology should able to develop.*

- *Critical Thinking:*  
*The programme seeks to develop in students the sociological knowledge and skills that will enable them to think critically and imaginatively about society and social issues.*
- *Sociological Understanding:*  
*The ability to demonstrate sociological understandings of phenomena, for example, how individual biographies are shaped by social structures, social institutions, cultural practices, and multiple axes of difference and in equality. Written and Oral Communication: The ability to formulate effective and convincing written and oral arguments.*
- *Better understanding of real life situation:*  
*The ability to apply sociological concepts and theories to the real world and ultimately their everyday lives.*
- *Analytical thinking:*  
*Field survey and preparation of dissertation paper is an inseparable part of Sociology Programme. Students have to collect primary data for census as well as his/her research topic and analyze the data to draw conclusions. So, qualitative and quantitative analytical skills are enhanced.*
- *Observation power:*  
*A sensible observation power is necessary to identify the research problems in field study. So a perception about human society slowly grows up.*
- *Professional and Career Opportunities :*  
*Students will have the opportunity to join professional careers in Sociology and allied fields. Sociology provides an intellectual background for students considering careers in business, social services, public policy, government service, nongovernmental organizations, foundations, or academia. This programme lays foundation for further study in Sociology, Social work, Rural Development, Social Welfare and in other allied subjects.*

## **PROGRAMME: B.A. (SOCIOLOGY).**

### **COURSE OUTCOME COURSE**

#### **B. A. I (I Sem.): INTRODUCTION TO SOCIOLOGY –I**

- *Define Sociology and demonstrate nature, scope and subject-matter of Sociology.*
- *Demonstrate how Sociology differ from and similar to other social sciences and their areas of interdependence.*
- *Know the basic social institutions like family, marriage, kinship in a scientific way.*
- *Understand and demonstrate how self develops through various process of interaction. Demonstrate how societal and structural factors influence individual behavior.*

#### **B. A. I (II Sem.) INTRODUCTION TO SOCIOLOGY –II**

- *Acquaint themselves with the basic concepts of Sociology like society, community, association, culture, social change, social stratification , socialization, Social mobility etc.*
- *Describe Caste and Class and Elaborate on relationship between social stratification and mobility; types of social mobility; Social and Occupational Mobility, Gender and Social Mobility and factors of mobility.*
- *Describe Social Change – Theories and Factors of Social Change and Sociological Perspectives on Scientific practice : Marx, Durkheim & Merton*

#### **B. A. II (III Sem.) Social Problems in Contemporary India**

- *In this course, students will be able to study many types of contemporary issues in India. Students will also be able to learn how to solve this problem*
- *Various social problems in India like poverty, illiteracy, domestic violence, violence against women and measures taken to eradicate the problems.*
- *In this course students will get information about what are called social problems and what are their forms and types.*
- *In this course students will get information Key concepts of Social Demography, Demographic factors of social change. Theories of population, Factors affecting mortality and fertility, Population policy in India.*

#### **B. A. II (IV Sem.) Social Problems in Contemporary India**

- *In this course, students will be able to study many types of contemporary problems and issues in India.*
- *It enables students to understand various social problems that prevail in the Indian society. The major problems like family disorganization, crime, juvenile delinquency, child labour and problems of aged possible are discussed and possible solutions are suggested.*

- *To develop the skill to write a dissertation addressing 'social problems' based on field work.*
- *Understand the current societal problems like education, displacement etc.*

### **B. A. III (V Sem.) Sociology of Tribal Society**

- *Introduce them with the geographical distribution, economy, polity, social organization of tribal life of India.*
- *Know the problems faced by the tribes and policies and programmes taken by the Govt. for the upliftment of tribes.*
- *Define Tribal Sociology and demonstrate nature, subject-matter and importance of studying Tribal Sociology.*
- *Understand and analyze Panchayati Raj Act 2013 and social, economic and political aspects of Tribal society.*

### **B. A. III (VI Sem.) Sociology of Tribal Society**

- *Define and demonstrate democratic decentralization of power and importance of Panchayati Raj Institution in bringing about changes in Tribal society.*
- *Understand the changes that are taking place in Tribal society with reference to agrarian reforms and Tribal development programmes.*
- *Comprehend the various features of Indian Society and culture including unity in diversity; Indian social structure and understanding rural, urban and tribal India.*
- *Getting acquainted with the structure and changing nature of Indian tribal society.*

## **PROGRAMME: MA (SOCIOLOGY)**

### **COURSE OUTCOME COURSE**

#### **M.A. I (I Sem.) Classical Sociological Theory**

- *By the end of this course, the students will be able to*
- *Understand the intellectual and historical background of emergence of sociology and understand the basic ideas and perspectives of Comte, Spencer, Durkheim.*
- *Assess Social and Sociological Theories; Phenomenon and Perspectives; Influence of Industrial and French Revolution on Sociological thought and contributions of August Comte.*
- *Describe the contributions of Herbert Spencer, Emile Durkheim Karl Marx, Vilfredo Pareto, Max Weber and Thorstein Veblen.*
- *The course aims to provide a general introduction to sociological theory and thought. The paper acknowledges the contributions of both western and Indian scholars in the development of sociology. It provides the students an opportunity.*

### **M.A. I (I Sem.) Methodology of Social Research –I**

- *Meaning, scope, types and significance of Social Research.*
- *Importance of research design in Social Research and how to formulate it.*
- *How to collect, analyze data and how to write a field report.*
- *Understanding Sociology as a science, concepts and steps in research.*
- *Differentiate between the Quantitative and Qualitative Research and understand different types of Research Design.*

### **M.A. I (I Sem.) Rural Society in India**

*The course explores substantive issues in Rural Sociology. It gives attention to Indian themes. Studying the course students will be able to*

- *Define Rural Sociology and demonstrate nature, subject-matter and importance of studying Rural Sociology.*
- *Understand and analyze social, economic and political aspects of rural society.*
- *Demonstrate how caste system operates and its importance in rural society. 4) Define and demonstrate democratic decentralization of power and importance of Panchayati Raj Institution in bringing about changes in rural society.*

### **M.A. I (I Sem.) Social Movement In India**

- *Explain the meaning, scope and Types of of Social Movements.*
- *Describe Social Reform Movements- Satyashodhak Samaj, Arya Samaj,*
- *Elaborate Regional Movements –Jharkhand, Telangana, Vidarbha*
- *Explain the impact of Social Movements on Society.*

### **M.A. I (II Sem.) Perspective on Indian Society**

- *Understand the concepts and contributions of Indian social thinkers in the reform of Indian society as well as to enhance knowledge about society.*
- *Know the contributions of Indian Sociologists in the development of sociological thought.*
- *Understand the views of Ambedkar, Shrinivas, Mukherjee and Dubey*
- *Understand structuralism, functionalism, and phenomenology and conflict theory.*

### **M.A. I (II Sem.) Methodology of Social Research –II**

- *Understand the various techniques of Data Collection-Observation, Questionnaire, Interview Schedule; Case Study, Social Survey, Content Analysis and Writing research reports.*
- *Elaborate on Data Processing and Data Analysis.*
- *Calculation of measures of central tendency –Mean, Median and Mode; Graphic Representation: Bar Graph and Histograms.*

### **M.A. I (II Sem.) Urban Society in India**



- *Explain Nature and Scope of Urban Sociology.*
- *Describe Social Structure of Rural & Urban Communities.*
- *Analyze major theoretical Perspectives in Urban Sociology and Patterns of Urban Growth –Urban.*
- *Describe Urban economy in India- Urban Development Initiatives; Urbanization and Industrial growth.*

#### **M.A. I (II Sem.) Sociology of Kinship, Marriage And Family**

- *Understand the basic characteristics, types about Kinship, Marriage And Family.*
- *Understand relation between Kinship, Marriage And Family.*
- *Understand the recent theoretical concepts in Kinship.*

#### **M.A. II (III Sem.) Theoretical Perspective in Sociology –I**

- *Explain Theories of Talcott Parsons, C.W. Mills, George Simmel, Anthony Giddens, Alfred Schutz, Harold Garfinkel, Husserl and Goffman and Robert Merton.*
- *Understand structuralism, functionalism, and phenomenology and conflict theory.*
- *Understand the critical, post-structuralism , post-modern and other recent theories.*

#### **M.A. II (III Sem.) Social Change and Development-I**

- *Describing the Concepts and Indicators of development; Human Development and Economic Growth; Concepts of Social Development, Economic Development, and Sustainable Development.*
- *Understanding the role of International Institutions (World Bank, IMF, WTO, ILO, UNO, UNICEF)in Development Policies.*
- *Elaborate on victims of development, Rehabilitation and Resettlement –Role of Civil society and NGOs. SEZ and Development.*

#### **M.A. II (III Sem.) Industry and Society in India –I**

- *Describe the Nature and Scope of Industrial Sociology; Growth of Industrialization, Industrial Revolution and its impact on Society.*
- *Elaborating on Changing Structure of modern Industrial enterprises and principles of Organization –Formal and Informal.*
- *Describe Trade Union Movement in India; Workers Participation in Management and Collective Bargaining.*
- *Understand Labor Problems –Absenteeism, Alcoholism and Alienation.*
- *Understand Impact of Globalization on Industry and Labour.*

#### **M.A. II (III Sem.) Political Sociology-I**

- *To study in depth Politics and Society.*

- *Getting information about political parties and system of justice in India.*
- *Knowing about the problems and challenges in Indian politics.*
- *Study of the local governing mechanism.*
- *Study of the contribution of political thinkers in independent movements and their need for modern society.*

#### **M.A. II (IV Sem.) Theoretical Perspective in Sociology –II**

- Describe the contributions of Charles Horton Cooley, George Herbert Mead, Herbert Blume, George Homans, Peter Blau with reference to Symbolic Interactionism and Exchange theory.
- Describe The Project of Modernity, Classical theories and Contemporary Theories.
- Present critique of Modernity and New Philosophy of Science.

#### **M.A. II (IV Sem.) Social Change And Development-II**

- *Analyze the information Technology paradigm and Network Societies.*
- *Understand impact of Information Technology on Society ; interface between Bio Technology, Society and Sustainable Development.*
- *Elaborate the relation between Nano Technology, Development and Social Change and Explain approaches to the environment and sustainable development.*

#### **M.A. II (IV Sem.) Industry and Society in India –II**

- *Explain Growth of Industrialization, Industrial Revolution and its Impact on Society, Changing Structure of Modern Industrial Enterprises, Principles of Organization - Formal and Informal.*
- *Explain Industrial Disputes and Settlements and describe the Labour Problems; Role of ILO and Commitment and Motivation of Workers.*
- *Understanding the workers' role and workers' relations with industrial organization.*

#### **M.A. II (IV Sem.) Political Sociology-II**

- *Getting information about various concepts in Public Administration.*
- *Getting information about the system of the Constitution and Government.*
- *Understanding the government mechanism, its functions, duties and responsibilities.*
- *It is possible to study how politics affects society in this way.*

**MAHATMA GANDHI ARTS, SCIENCE & LATE N. P. COMMERCE COLLEGE,  
ARMORI, GADCHIROLI**

**DEPARTMENT OF HOME ECONOMICS**

**Programme Specific Outcome:-**

- *Home Economics is a practical science.*
- *Home Economics a subject that deals with home and family life, so its field is limitless.*
- *The study of home economics enables housewives to fulfill their dual roles at home and abroad.*
- *Home Economics is a school that teaches how to run a home well.*
- *Home Economics is an education that helps to raise the living standards of family members as well as improve physical and mental health.*
- *Home Economics has a scientific approach along with art.*
- *Although Home Economics is divided into five branches. Diet and Nutrition, Textile and Clothing, Human Development, Extension Services and Communication, all five branches are interdependent.*
- *After studying home economics, a housewife can provide financial support to the family by providing employment and self-employment in various fields.*
- *Studying Home Economics employment and self-employment makes a housewife financially independent and builds her self-confidence.*
- *With the education in home rural areas and develop the family by creating awareness among the people there. Alternatively, a housewife can contribute to the development of the family society and the country.*

**Course Outcomes**

**B. A. Semester - I Paper: - Resource Management**

- *Introduction of Home Economics, their branches and contribution of Home Economics education to good home maker.*
- *To develop rational decision making ability.*
- *To recognize family resources and their important to gain personal, family and social goal. 4) To realize the importance of home management in daily routine.*
- *To apply principals of work simplification, Time and Energy management and decision making in house for day to day life.*
- *To develop the skill in use of colours with different colour schemes.*
- *To aware of basic elements of arts.*
- *To develop the skill in embroidery stitches.*

**B. A. Semester - II Paper: - Housing and Interior Decoration**

- *To recognize the importance of the housing needs principles and planning to gain personal family and social goals.*
- *To gain basic knowledge of the role in furnishing (carpets and rugs, cartons) of residential home for daily family life satisfaction.*
- *To provide skills regarding methods of interior decoration.*

- *To introduction job potentials in Home Economics education to the students.*
- *To motivate and train the students for self-employment.*
- *To aware of basic principles of Arts.*
- *To develop skills of preparing flower bouquets / baskets arrangements, artificial flowers and other useful items for decoration selling to enhance employability.*
- *To develop skills in knitting and fabric work.*

#### **B. A. Semester - III Paper: - Food and Nutrition**

- *Introduction of Food, Nutrition, Dietetics and Functions of Food.*
- *To promote basic knowledge pertaining to various food groups and nutrients.*
- *To realize the digestive system.*
- *To relate the composition of foods to their various properties.*
- *To promote understanding of common nutritional disorders due to the deficiency of nutrients.*
- *To learn principles of diet planning and use of balance diet in meal planning of family members.*
- *To recognize energy requirement for secondary, moderate and heavy workers.*
- *To develop the skill in cooking as per macro and micro nutrients.*

#### **B. A. Semester - IV Paper: - Health and Nutrition**

- *To develop ability to improve the nutritional quality of food.*
- *To develop food preparation, types of cooking and care ability.*
- *To recognize food preservation, food spoilage and adulteration in food.*
- *To provide knowledge about causes, symptoms of diseases and modification of normal diet for therapeutic purposes.*
- *To apply principles of dietary management.*
- *To plan, calculate and prepare diets for common ailments.*
- *To comprehend concept of community nutrition, communication and understand the techniques of nutrition education.*
- *To develop the skill in cooking as per improving nutritional quality of food, food preservation and regional cookery.*

#### **B. A. Semester - V Paper: - Prenatal and Infancy Development**

- *To introduce the students to the field of child development. Its concept, scope and importance.*
- *To recognize difference of growth and development, stages and principals of development. 3) To understand the biological and physiological foundation of development.*
- *Introduction of female reproductive system.*
- *To realize the prenatal development and causes, characteristics and care of premature child.*
- *To aware the importance of immunization for pregnant woman and child.*
- *To sensitize the students to interventions in the field of child development.*

**B. A. Semester - VI Paper: - Child Development**

- *To appreciate sequential ages of development during child-hood.*
- *To understand the play, leadership and discipline very importance of development.*
- *To realize the causes and prevention of Juvenile Delinquency.*
- *To sensitize students about child-hood behaviour problems.*
- *To understand and appreciate the importance of parent-child relationship.*
- *To develop in students creative ability related to children leading to enhanced employability.*
- *To develop the skill in cooking, stitching and knitting.*

**MAHATMA GANDHI ARTS, SCIENCE & LATE N. P. COMMERCE COLLEGE,  
ARMORI, GADCHIROLI**

**PROGRAMME OUTCOME – COMMERCE FACULTY**

**PROGRAMME OUTCOMES**

- *Students will get thorough & fundamental knowledge of Commerce, Management, Economics, Accounting, Statistics, Taxation & Audit.*
- *This Programme will fulfill the requirement of well-trained manpower for Finance Companies, Banking Sector, Insurance Companies, Transport, Warehouse etc.*
- *Students can become successful Businessmen, Entrepreneur, Tax Consultant, Auditor, Accountant.*

**❖ PROGRAMME SPECIFIC OUTCOMES**

- *Students will have choices to pursue professional courses like CA, ICWA, CS, CMA, M.COM, MBA etc.*
- *Programme curriculum offers specializations and practical exposures which prepares students to face the challenges in business, trade & commerce in today's era.*
- *Students will be eligible & employable for functional areas like accounting, banking, insurance, capital market & corporate world.*
- *Students will acquire the skills like effective communication, decision making, problem solving, drafting commercial letters, business reports etc.*
- *Students will learn practical use of Cost & Management Accounting for their future career/business.*
- *Students will be able to understand & prepare financial accounting for their future career/business.*
- *Students will have knowledge of business economic analysis in the formulation of business policies, strategies & decisions.*
- *Managerial skills will be developed in the students which will be useful for their career & business.*
- *Idea of application of statistical tools and techniques in business decision-making will be developed.*
- *Knowledge & awareness about various laws related to trade, commerce & business will be increased.*

## **Course Outcomes**

### **B.Com.-I Year Semester - I (CBCS)**

#### **Business Economics – I**

- *Understanding of economic analysis in the formulation of business policies, strategies & decisions.*
- *Idea of using economic reasoning to solve problems of business.*
- *Enables students to understand factors determining market demand.*
- *Provide idea of the elasticity of demand & demand analysis.*
- *Understanding of production function & law of variable proportion.*
- *Develops understanding of Factors of Production.*
- *Enable students to understand Malthus' theory of population.*
- *Provide idea about policy adopted by china for population.*
- *Create awareness about current policy for population adopted by India*

#### **Principles of Management – I**

- *Provide a basis of understanding to the students with reference to working of business organization through the Process of Management.*
- *Acquaint the Students with the basic concept, principles and functions of management.*
- *Make students aware about the recent trends in management.*
- *Understanding the nature of management.*
- *Make awareness about importance and function of management.*
- *Provide knowledge about evaluation of management.*
- *Idea about Indian Management Thoughts.*
- *Enable students to understand importance, types, levels, advantages of planning.*
- *Idea of forecasting & its techniques.*
- *Develop knowledge about types- process & techniques of decision making.*
- *Idea of elements of organizing and processes.*
- *Understanding of delegation of authority & decentralization.*
- *Create awareness about recent trends in management*
- *Idea of social responsibility of management & management of change.*
- *Acquaint the students about management of crisis & stress management.*
- *Understanding about Total Quality Management.*

#### **Financial Accounting-I**

- *Provide basic accounting knowledge as applicable to business.*
- *Acquaint the students with the emerging issues in business, trade and commerce.*
- *Enables students understanding regarding recording, maintaining and presenting the accounting and financial facts.*
- *Basic knowledge of book keeping and accountancy*
- *Enable students to understand journal, ledger, cashbook and trial balance*
- *Idea of accounting standards, accounting policies and their discloser.*
- *Detail practical knowledge of final accounts of trading co-operative societies.*
- *Idea of depreciation accounting in detail.*
- *Practical exposure of methods of recording depreciation*
- *Practical knowledge of preparation of receipt and payment account.*

- *Idea of preparing income and expenditure accounts.*
- *Practical understanding of professionals accounts.*

### **Statistical Techniques & Business Mathematics – I**

- *Knowledge and understanding of important basic statistical tools.*
- *Idea of application of statistical tools and techniques in business decision-making.*
- *Understanding of the concept, nature, scope, functions & significance of statistics.*
- *Idea of primary and secondary data, methods & it's sources.*
- *Develop understanding of presentation of statistical data.*
- *Provide practical exposure on measures of central tendency*
- *Provide practical exposure on nature, measures of dispersion*
- *Practical understanding of range, standard deviation, co-efficient of variation, mean deviation etc.*
- *Theoretical knowledge of concept, type, causes and different measures of skewness.*
- *Practical exposure on skewness, measures of inter quartile rang and quartile deviation*
- *Understanding statistics and mathematics elementary application to business example.*
- *Basic knowledge of business mathematics.*
- *Practical knowledge of simple and compound interest calculation.*
- *Practical knowledge of percentages in of business mathematics.*

### **Human Resource Management – I**

- *Understanding the basic concepts of human resource management*
- *Enables students to understand objective, functions and significance of human resource management.*
- *Make aware about types and sources recruitment.*
- *Enable students to understand process and steps of selection.*
- *Provide idea about objectives & types of interview.*
- *Knowledge about objectives & steps of induction*
- *Basic knowledge of importance & methods of training.*
- *Enable students to understand process and technique of management development.*
- *Facilitate the knowledge about performance appraisal and it's different methods.*
- *Provide an idea about job evaluation*
- *Create awareness about motivation & methods of motivation.*
- *Understanding of morale and productivity*
- *Basic idea of core dimensions of job enrichment.*
- *Understanding of executive stress.*
- *Provide idea of the factors effecting wage determination & incentive plans.*
- *Create awareness about profit sharing & fringe benefits.*

### **B.Com.-I Year Semester – II (CBCS)**

#### **Business Economics – II**

- *Understanding about pricing under various market conditions.*
- *Enable students to understand perfect competition, monopoly monopolistic competition.*
- *Develops understanding of cost analysis.*



- *Make aware about short run & long run cost analysis*
- *Provide idea about accounting costs and economic costs.*
- *Enable students to understand concept of economic rent*
- *Provide knowledge about various theories of rent.*
- *Create awareness about money-wages and real wage, causes of wage differentials.*
- *Know the theories of interest.*
- *Unable students to understand the theories of profit.*

## **Principles of Management – II**

- *Basis of understanding of principles & techniques of direction.*
- *Idea of process functions, barriers of communication.*
- *Enable students to understand the meaning & importance of motivation.*
- *Create awareness about various theories of motivation.*
- *Understanding the concept leadership in detail.*
- *Idea of need & techniques of co-ordination.*
- *Knowledge about need, process & techniques of control.*
- *Create awareness about new trends in management.*
- *Understanding of business ethics*
- *Idea about disaster management & event management.*

## **Financial Accounting-II**

- *Practical knowledge of Hire purchase and Installment purchase System.*
- *Theoretical knowledge of legal provision and rights of vendor and purchaser under both purchases system*
- *Practical exposure of Accounting treatments in the books of purchaser and vendor*
- *Enable the students to understand Consignment Account.*
- *Practical & Theoretical knowledge of Branch accounts excluding foreign branch.*
- *Practical knowledge of Royalty A/c in minimum rent account method.*

## **Statistical Techniques & Business Mathematics – II**

- *Basic knowledge of correlation & its types.*
- *Practical exposure on Karl Pearson Co-efficient for Ungrouped & Grouped data.*
- *Practical knowledge of Spearman's rank correlation & Regression (Simple)*
- *Theoretical knowledge of Concept of Index Number,*
- *Practical exposure on various methods of Index Number. (Fisher , Dorbish and Bowle, Pasche & Lasprey's method)*
- *Basic Knowledge & Practical exposure on Chi-Square Test*
- *Understanding the use of ratio & Proportion in Business mathematics.*
- *Practical exposure on Profit & Loss in Business mathematics.*

## **Human Resource Management – II**

- *Enables students to understand basis ,causes.policy of Promotion.Demotion and Transfer.*
- *Knowledge about Types , Objectives & Principles of Transfer policies*
- *Make aware about causes, effects & measures to reduce Workers absenteeism.*
- *Detail knowledge of causes, effects & measures to reduce Labour turnover.*

- *Basic Idea of Lay-off.*
- *Acquaint the students Role of Human Resource Development Manager.*
- *Enable students to understand the need for separate department for human resource development.*
- *Make aware about Function & Qualities of successful HR Manager*
- *Enable students to understand Professionalization of Human Resource Development in India*
- *Create awareness about Development, Establishment, Objectives & Activities performed by the Indian Management Institutes.*
- *Understanding the concept Human Resource Development.*
- *Enable students to understand Human Resource Planning.*
- *Provide idea about Career Planning and Career Development.*
- *Make aware about the concept Quality Circle.*
- *Develops understanding of Human Resource Accounting.*

## **B.Com.-II Year Semester – III (CBCS)**

### **Company Law**

- *Develop conceptual understanding of the fundamentals of company law and procedure requirements.*
- *To impart skills in law.*
- *Enable students to understand Joint Stock Companies.*
- *Make aware about Private and Public Companies.*
- *Introduce and develop knowledge about Holding companies and subsidiary companies.*
- *Enable the students to gain an idea of conversion of private into public & private into public.*
- *Provide knowledge about Formation of Companies.*
- *Create awareness about functions, duties, liabilities of promoters.*
- *Enable students to understand Memorandum of Association and Articles of Association.*
- *Make students aware about Prospectus in detail.*
- *Develop understanding of Kinds of Share Capital & Procedures for the issue of share.*
- *Detail knowledge about Share Allotment and Share Certificate.*
- *Make aware about Membership of a Company.*
- *Provide knowledge about Duties, Liabilities, Powers & Legal Position of Directors.*

### **Monetary Economics – I**

- *Enable students to understand the nature, functioning and issues related to money.*
- *Impart detail knowledge about Paper Currency and Its Kinds.*
- *Make aware about Impact of fake currency in Indian Economy.*
- *Develop conceptual understanding of Methods of Note Issue.*
- *Provide knowledge of Modern Monetary system.*
- *Impart detail knowledge about ATM, Credit & Debit card, ECS & EFT etc.*
- *Enable students to understand causes , effects & remedies of Inflation and Deflation.*
- *Basic Idea of Banking , It's evolution & types.*

- *Create awareness about Functions of Commercial Banks.*
- *Idea of Credit Creation by Commercial Banks.*
- *Knowledge and understanding of Functions of central bank.*
- *Enable the students to understand Repo and Reverse Repo Rate.*
- *Detail knowledge about Evolution, Objectives , functions , Achievements of world bank. 14. Make students aware about World Bank and India.*

### **Corporate Accounting**

- *Enable the students to understand Flootation of joint stock companies and their capital structure.*
- *Enable students to prepare accounting for issue and forfeiture of shares, re-issue of forfeited shares*
- *Facilitate the knowledge about Issue and redemption of debentures.*
- *Practical exposure on Final Accounts of joint stock companies with reference to companies act.*
- *Theoretical knowledge of features, valuation & factors influencing valuation of goodwill. 6. Practical knowledge of Valuation of Goodwill & its methods.*
- *Understanding the need for valuation of shares, factors influencing valuation of shares.*
- *Practical exposure on Valuation of Shares& its methods.*

### **Cost Accounting-I**

- *Provide Basic Knowledge and Understanding of Cost Accounting.*
- *Enables students to understand importance of Cost Accounting in Business and Industry.*
- *Create awareness about the concept of overhead cost.*
- *Practical exposure by Problems relating to Cost-Sheet.*
- *Understanding the preparation of tender sheet.*
- *Enable the students to understand about Needs & Causes of Reconciliation.*
- *Facilitate the idea of preparation of Reconciliation Statement.*
- *Make students aware about Principle& Application of Process Costing.*
- *Practical exposure on Process Costing.*
- *Understanding of Features & Types of Contract Costing.*
- *Develop the knowledge about Certified Work, Uncertified Work.*
- *Practical exposure on one or two contracts for one year.*

### **Organizational Behaviour**

- *Enables students to understand the conceptual framework of organizational behaviour.*
- *Provide idea of Nature of Organizational Behaviour.*
- *Understanding of Foundation of Individual Behaviour.*
- *Enable students to understand Personality and Organizational Behaviour.*
- *Provide idea about Perception, Learning Attitudes and Organizational Behaviour.*
- *Understanding of Attitudes, values and Job Satisfaction.*
- *Create awareness about Basic Motivational Concepts.*
- *Enable students to understand Factors of Motivation, Objective, kinds, and Techniques of Motivation.*
- *Make aware about Incentives & it's Types of Incentives.*

- *Facilitate the knowledge about Theories of Motivation.*
- *Basic Idea of Job Enlargement, Enrichment, Job Rotation.*

## **B.Com.-II Year Semester – IV (CBCS)**

### **Secretarial Practice**

- *Develop conceptual understanding of the fundamentals of secretarial practice.*
- *Impart skills in drafting notices, resolutions, minutes, reports, etc.*
- *Provide knowledge of Appointment, Remuneration, Powers and Duties of manager & director.*
- *Impart detail knowledge about Company Secretary.*
- *Make awareness about Company Meetings, Statutory Meeting, Annual General Meeting etc.*
- *Idea of Extra Ordinary General Meeting, Meetings of Directors.*
- *Enable students to understand Law and Practice of Company Meetings.*
- *Conceptual understanding of Profit and Dividend.*
- *Theoretical knowledge of Account and Audit.*
- *Develop knowledge & skills about various types of Company reports.*
- *Create awareness about Certificate for Commencement of Business.*

### **Monetary Economics – II**

- *Enable the students to understand the Role of finance in economy.*
- *Acquaint the concept of mutual fund.*
- *Make students aware about Public finance*
- *Detail Knowledge and understanding of Sources of Public Revenue.*
- *Idea of The Principle of Maximum Social Advantage.*
- *Facilitate the knowledge about Modern trade and Commerce*
- *Understanding the Commodity exchanges.*
- *Introduction of Stoke exchanges & Online trading.*
- *Create awareness about Security & Exchange Board of India*
- *Knowledge about primary capital market.*
- *Make aware about National Stock Exchange.*
- *Enable the students to understand the Bombay Stock Exchange.*

### **Corporate Accounting – II**

- *Practical knowledge of preparation of Final Account of Banking companies Act.*
- *Practical exposure on Final Accounts of General Insurance Companies in the latest prescribed form.*
- *Preparation of Revenue Accounts of fire, Marine and Accident insurance business.*
- *Practical exposure on Profit Prior to Incorporation of Joint stock company.*
- *Practical knowledge of Winding up of Companies.*
- *Theoretical knowledge of Types of winding up.*
- *Enable students to prepare liquidators final statement of accounts.*

## **Management Accounting**

- *Basic Knowledge and Understanding of important Management Accounting to Business and Industry*
- *Understanding of the various tools and techniques of Management Accounting.*
- *Enable the students to understand Business Budgeting.*
- *Practical exposure on Flexible Budget & Cash Budget.*
- *Practical exposure on Break Even Analysis.*
- *Idea about the computation of Break Even Analysis.*
- *Practical exposure on Profit- Volume Ratio, Margin of Safety.*
- *Understanding of Variable Cost and Fixed Cost.*
- *Make students aware about Nature, Significance and Limitation of Ratio Analysis.*
- *Idea of Computation of Ratios relating to Trading and Profit and Loss Account and Balance-Sheet.*
- *Basic idea of computation of various ratios for management accounting.*
- *Facilitate the idea of Importance and Limitations of Fund Flow Statement.*
- *Practical knowledge of Preparation of Schedule of Changes in Working Capital and Fund Flow Statement.*

## **Organizational Behaviour – II**

- *Facilitate the knowledge about Group Behaviour and Leadership.*
- *Idea of creation of Group Behaviour in the organization.*
- *Make students aware about concept of Leadership, Characteristics, Types and Qualities of Leadership.*
- *Enable students to understand Power and Politics.*
- *Understanding of Role and Importance, Types & Essentials of Effective Communication. 6. Basic Idea of Management of Organisational Conflicts.*
- *Create awareness about Organisational Culture. 8. Detail Knowledge and understanding of Human Resources Policies and Practices.*
- *Facilitate the knowledge about Training and Development & It's methods.*
- *Make aware about Work Stress & Measures of Reducing the Stress.*

## **B.Com.-III Year Semester – V (CBCS)**

### **Auditing**

- *Develop conceptual understanding of the fundamentals of Auditing.*
- *Enable students to understand Origin and Growth of Auditing.*
- *Provide knowledge about Objects & Necessity of Auditing.*
- *Enable students to understand about Detection and Prevention of Fraud.*
- *Create awareness about Classification of Audit.*
- *Facilitate the knowledge about Statutory Audit.*
- *Provide knowledge about Objectives of Govt. Audit and Commercial Audit.*
- *Make students aware about Continuous Audit, Annual Audit.*
- *Create awareness about Audit Planning.*
- *Enable students to understand Vouching, Subsidiary Books.*
- *Provide knowledge about International Check and Internal Control.*
- *Facilitate the knowledge about Audit of Ledger.*
- *Idea of Capital and Revenue Items.*
- *Make students aware about audit of Bank, Insurance Companies, Co-Operative Societies and Educational Institutions.*

## **Indian Economics - I (Urban)**

- *Expose students to a New approach to the study of the Indian Economy.*
- *Understanding the structure of the Indian urban economy.*
- *Understanding about trend of urbanization in India.*
- *Enables students to understand Economics growth & Development of India.*
- *Create awareness about National Income & National Production.*
- *Idea of Industrialization & Urbanization.*
- *Create awareness about New Economics reforms.*
- *Understanding of Economic Planning & Public Finance.*
- *Idea of Public Debt & Public revenue.*
- *Make aware about economic planning in India.*
- *Enables students to understand urban population in India & Unemployment.*
- *12.Create awareness about Urban poverty & Economic Inequality in India.*

## **Advance Accounting – I**

- *Provide Basic Knowledge and Understanding of Vendor and purchasing Companies.*
- *Enables students to understand Purchase Consideration- Accounting Entries.*
- *Practical exposure on Accounting for Amalgamation.*
- *Theoretical knowledge of Social Accounting and Social Reporting.*
- *Idea of Accounting for Absorption.*
- *Practical exposure on Preparation of Balance Sheet after Absorption.*
- *Understanding the Farm Accounting.*
- *Practical exposure on Accounting for Internal External Reconstruction.*
- *Idea of Preparation of Balance sheet after Internal & External Reconstruction.*
- *Practical knowledge of General Insurance claim accounts.*
- *Provide Basic Knowledge of Claim for Loss of stock.*

## **Business Communication**

- *Develop Necessary Techniques and Skill of Communication.*
- *Introduce Communication Concepts Process, Elements of Communication.*
- *Make students aware about Objective and Importance of Communication.*
- *Facilitate the knowledge about Types of Communication.*
- *Idea of Supervisory Systems and Grapevine Communication.*
- *Enable students to understand The Art and Science of Public Speaking.*
- *Develop skills of Business Writing.*
- *Idea of drafting Commercial Letters.*
- *Develops skills of preparing business report.*

## **Commercial Law**

- *Develop conceptual understanding of the fundamentals of Commercial Law.*
- *Enable students to understand Indian Contract Act 1872.*
- *Make students aware about legal provisions under Contract Act 1872.*
- *Facilitate the knowledge about Indian Contract Act 1872.*
- *Provide idea legal provisions of Partnership Act 1932.*

- *Idea of Rights and liabilities and Duties of Partners & Dissolution of Partnership.*
- *Create awareness about Sale of Goods Act 1930.*
- *Facilitate the knowledge about legal provisions under Negotiable Instrument Act, 1881.*
- *Make students aware about Consumer Protection Act, 1881.*

### **Industrial Relations (HRD)**

- *Develop conceptual understanding of Industrial Relations.*
- *Make students aware about Role of Government in Industrial relations.*
- *Facilitate the knowledge about Workers Participation in Management.*
- *Create awareness about Evolution, objects and functions, role of trade union.*
- *Idea of Industrial Relations and Public Sector.*
- *Develop conceptual understanding of Collective Bargaining & essential for successful collective bargaining.*
- *Make students aware about Grievance and Discipline & Machinery for handling Grievance.*
- *Make students aware about legal provisions under Prevention and Settlement of Disputes in India*
- *Idea of the role of the State in industrial relations.*

### **B.Com.-III Year Semester – VI (CBCS)**

#### **Income Tax**

- *Enable students to understand basic concept of Income Tax.*
- *Basic Knowledge of Residential States.*
- *Introduction of Five Income Heads of Income Tax.*
- *Practical exposure on Deduction under chapter VI.*
- *Provide knowledge about Computation of taxable Income from salary.*
- *Practical exposure on Income from House Property.*
- *Facilitate the knowledge about Income Exempt from Tax.*
- *Practical exposure on Income from other sources.*
- *Theoretical knowledge of PAN and TAN.*

#### **Indian Economics – II (Rural)**

- *Make aware about Indian Agriculture.*
- *Idea of Agriculture price commission.*
- *Understanding the Agriculture marketing.*
- *Create awareness about Land Reforms in Rural India.*
- *Understanding of Importance of forest in Indian rural economy.*
- *Enables students to understand National Agriculture policy & State Agriculture policy.*
- *Idea of National Agriculture Insurance scheme.*
- *Facilitate the knowledge about Rural Development in India.*
- *Awareness about Rural Development & water Management.*
- *Idea of Finance & Micro Finance for Rural Development*

## **Advance Accounting – II**

- *Basic Knowledge and Practical exposure on Accounts of Holding Companies*
- *Theoretical knowledge of Government system of Accounting*
- *Practical exposure on Investment Accounts.*
- *Detail Theoretical knowledge of Human Resource Accounting.*
- *Practical exposure on Accounts from Incomplete Records.*
- *Basic Knowledge on conversion of single entry into double entry.*
- *Practical exposure on Double Account system.*
- *Idea of Accounting in public Utilities, Electricity, Gas & water Supply Company.*

## **Business Communication – II**

- *Facilitate the knowledge about Communication Media.*
- *Make students aware about application advantages and disadvantages.*
- *Enable students to understand Organizational Communication.*
- *Create awareness about Company Manuals, House Journals, Placement Broachers, and Information Booklets.*
- *Knowledge about Designing and Organizing Trade Fair and Conference.*
- *Idea of Functions of Public Relation Officer.*
- *Conceptual knowledge of Corporate image, Creation of a Public image.*
- *Introduction of Legal Aspects of Business Communication, Recent trends in Communication.*
- *Idea of Global Communication for E- Business.*
- *Detail theoretical knowledge of Modern forms of Communication-Fax, E-Mail, and Video Conferencing*

## **Corporate Law**

- *Develop conceptual understanding of the fundamentals of Corporate Law.*
- *Introduction of Factories Act, 1948.*
- *Make students aware about Provisions relating to Labour, health, Welfare, Safety.*
- *Facilitate the knowledge about legal provisions under Industrial Disputes Act, 1947.*
- *Create awareness about Provisions and Rules of strikes, lock outs, Lay off and Retrenchment.*
- *Make students aware about Right to Information Act, 2005.*
- *Enable students to understand Cyber Laws in detail.*
- *Detail Idea of legal provisions under Customs Act.*

## **Labour Law (HRD)**

- *Develop conceptual understanding of Sources of Laws.*
- *Create awareness about The Constitution of India & its articles.*
- *Introduction of various labour laws.*
- *Provide idea of legal provisions under The Contract Labour (Regulation & Abolition) Act, 1970.*
- *Facilitate the knowledge about Determination of “Appropriate Govt.” under the Act, Registration of Establishment under The Contract Labour Act-1970.*
- *Enable students to understand legal provisions under Factories Act, 1948.*
- *Provide idea legal provisions of Maternity Benefit Act, 1961.*



- *Create awareness about Payment of Bonus Act, 1965.*
- *Make students aware about legal provisions Bombay Shops and Establishment Act, 1948. 10. Facilitate the knowledge about The Apprentices Act, 1961.*
- *Provide idea legal provisions of Minimum Wages Act, 1948.*
- *Make students aware about legal provisions under Payment of Wages Act, 1936.*
- *Create awareness about Equal Remuneration Act, 1976.*

**MAHATMA GANDHI ARTS, SCIENCE & LATE N. P. COMMERCE COLLEGE,  
ARMORI, GADCHIROLI**

**PROGRAMME OUTCOME – SCIENCE FACULTY**

- Student develops the scientific temper.
- Student gains fundamentals of science.
- Student understands the inter-dependability of various sciences.
- Student learns to apply the knowledge on the day to day physical world.
- Student develops a potential to deal with elementary scientific problems with skill.
- Student becomes a part of the scientific drive for the betterment of humanity.

**MAHATMA GANDHI ARTS, SCIENCE & LATE N. P. COMMERCE COLLEGE,  
ARMORI, GADCHIROLI**

**DEPARTMENT OF ZOOLOGY**

**Programme Specific Outcome- UG**

- *Apply the knowledge of various branches of Zoology for graduate course and higher studies.*
- *Develop positive attitude towards the subject for sustainable development.*
- *Understand the connection of life and rich diversity of organism and their ecological and evolutionary significance.*
- *Acquire basic skill and study of nature, techniques experimental skill and scientific investigation.*
- *Identify and list out common animals explain physiological changes in animal bodies.*
- *Explain genetic abnormalities animal benefits to human also diseases caused by animals to humans. Use of Bioinformatics, Biostatistics as a tool for all activities related to Zoology.*
- *Promotes responsibility, entrepreneurship skill research and career opportunities.*

**Course Outcomes**

**BSc semester-I Paper- I**

**Life and Diversity of animals (Protozoa to Annelida)**

- *Familiar with invertebrate world that surrounds us.*
- *Able to identify invertebrates and classify them up to the class level.*
- *Understand the basis of life processes in the non-chordates.*
- *Lower invertebrates introduction digestive nervous reproductive system.*
- *Classify and characterize phylum- protozoa, reproduction in Paramecium.*
- *Classify and characterize phylum- porifera, morphological characters of Sycon.*
- *Classify and characterize phylum- coelenterata, morphological characters of Obelia.*
- *CO-8 Classify and characterize phylum- platyhelminths, reproduction in Taenia solium.*
- *Classify and characterize phylum- aschelminths, reproduction in Ascaris.*
- *Classify and characterize phylum- Annelida, digestive reproduction in Hirudinaria.*

**B.Sc. Semester-I Paper-II**

**Cell Biology**

- *To know the fundamental principles and unifying facts of cell biology.*
- *To study the cell theory, prokaryotic and eukaryotic cells, animal and plants cell.*
- *To know the osmosis, diffusion, active and passive transport with help of examples.*
- *To study different models- Sandwich and fluid mosaic model.*
- *To study the cell organelles (Golgi complex, Ribosomes, lysosomes, Endoplasmic reticulum, Mitochondria etc.*
- *To know the structure and function of nucleus, nucleolus and chromosomes.*

### **BSc semester-II Paper- I**

#### **Life and Diversity of animals (Arthropoda to Hemichordata)**

- *Familiar with invertebrate world that surrounds us.*
- *Able to identify invertebrates and classify them up to the class level.*
- *Understand the basis of life processes in the non-chordates.*
- *Lower invertebrates introduction digestive nervous reproductive system.*
- *Classify and characterize phylum-Arthropoda, reproduction in Periplaneta.*
- *Classify and characterize phylum- Mollusca, morphological characters of Pila.*
- *Classify and characterize phylum- Echinodermata, morphological characters of Asterias.*
- *Classify and characterize phylum-Hemichordata, reproduction in Balanoglossus.*

### **B.Sc. Semester-II Paper-II**

#### **Genetics and Evolution**

- *To know the Mendelian genetics, laws of genetics, interaction of genes.*
- *To study linkage, crossingover, syndrome and mutation.*
- *To know the major history of life.*
- *To study the direct evidences of evolution (type of fossil, evolution of horse)*
- *To study the evolutionary changes, species concept, modes of speciation.*
- *To know more about macroevolution and extinction.*

### **BSc semester-III Paper- I**

#### **Animals Diversity of chordata and comparative anatomy**

- *Familiar with vertebrate world that surrounds us.*
- *Able to identify vertebrates and classify them up to the class level.*
- *Understand the basis of life processes in the chordates.*
- *Higher vertebrates introduction digestive nervous reproductive system and comparative anatomy.*
- *Classify and characterize up to order -Urochordata, general characters Ascidian tadpole larva retrogressive metamorphosis.*
- *Classify and characterize up to order - Cephalochordata, morphological characters digestive system of Amphioxus.*
- *Classify and characterize up to order - Cyclostomata, morphological characters of Pteromyzon and Myxine.*
- *Classify and characterize up to order -pisces, general characters, osmoregulation.*
- *Classify and characterize up to order –amphibia, general characters, parental care.*
- *Classify and characterize up to order –Reptilia, general characters, snake venom poisonous and non poisonous snakes.*
- *Classify and characterize up to order –aves, general characters, flight adaptation migration. Classify and characterize up to order –mammals, general characters, prototheria, metatheria, eutheria.*

### **B.Sc. Semester-III Paper-II**

#### **Physiology and Biochemistry\*Part-I**

- *To know the fundamental principles and unifying facts of human physiology.*
- *To study the breathing mechanism, Hemoglobin (Hb %) as a respiratory pigments, function of respiratory organs and others respiratory organs.*

- *To study source and type of vitamins, deficiency and diseases.*
- *To know the digestive mechanism, digestion of carbohydrates, protein and fats.*
- *To study all digestive glands and its function (Structure and function of Salivary, Gastric, Intestinal, liver, Pancreas).*
- *To study of enzyme, nomenclature of enzyme, Induce–fit model and key-lock models, properties of enzyme and factors affecting enzyme activity.*
- *To study the mechanism of breathing, respiratory pigments, transports of O<sub>2</sub> and CO<sub>2</sub>.*
- *To study the respiratory disorders and effects of smoking.*

### **BSc semester-IV Paper- I** **Developmental Biology**

- *To Study of types of eggs.*
- *To know fertilization mechanism and significance.*
- *To study types of cleavage.*
- *To study types of blastulation.*
- *To study morphogenetic movements in the early development of frog.*
- *To know development of chick.*
- *To study extra embryonic membrane.*
- *To know gametogenesis.*
- *To study implantation types.*
- *To know placentation types and functions.*
- *To know gene activation and apoptosis.*
- *To study stem cells*
- *To know IVF*
- *To study semen bank and AI and contraceptive*

### **B.Sc. Semester-IV Paper-II** **Physiology and Biochemistry\*Part-II**

- *To study the structure and function of nephron, mechanism of urine formation.*
- *To know the elementary ideas of dialysis and counter current mechanism.*
- *To study the structure and functions of endocrine glands (Pituitary, Thyroid, Adrenal)*
- *To know the male and female sex hormones.*
- *To study their productive cycle (menstrual & estrous cycle)*
- *To study the structure and function of neuron, E.M. structure of neuron*
- *To know the sliding filaments theory of muscle*
- *To study the properties of muscles (Twitch, tetanus, tonus, summation, muscle fatigue)*
- *To study the circulatory system in details.*
- *To know the blood groups and its genetics.*
- *To know the Blood pressure, 13 clotting factors, cardiac cycle, ECG and function of blood and its composition etc.*

### **BSc semester-V Paper- I** **Applied Zoology**

- *To study types of fisheries in brief.*
- *To know pre and post stocking management.*
- *To study mono and poly culture.*
- *To study fish diseases.*
- *To study life cycle of Ancylostoma and Wuchereria.*

- *To study biology control and damage insect pest.*
- *To study mosquito disease and Pediculus humanus.*
- *To study fowl on the basis of their use.*
- *To know about principles of poultry breeding and diseases.*
- *To study introduction of dairy farm and management.*
- *To know preservation semen and AI in cattle's and diseases.*
- *To study of management of modern dairy farm.*

### **B.Sc. Semester-V Paper-II**

#### **Aquatic Biology**

- *To know the fundamental principles and unifying facts of aquatic biology.*
- *To study the ecosystems (Freshwater, marine water)*
- *To know the differences between lentic and lotic ecosystem*
- *To study different physicochemical and biological parameters of water & soil*
- *To know the fresh water and saline water fishery in India.*

### **BSc semester-VI Paper- I**

#### **Microtechnique Bioinformatics and Biostatistics.**

- *To study visualization of cell by light microscope.*
- *To study concept of resolving power of different microscopes.*
- *To know the different fixation and staining technique for EM, freez-etch method.*
- *To study image processing method in microscopy.*
- *To study structure and function of microtome.*
- *To study fixation dehydration clearing embedding.*
- *To know about section cutting and problem encounter in section cutting.*
- *To study double staining with Haematoxyline. Eosin.*
- *To know about Bioinformatics tools.*
- *To study biological database.*
- *To study structure of nucleotide database.*
- *To know about Application of bioinformatics.*
- *To study of tabulation presentation of data sampling error.*
- *To study measures of central tendency dispersal probability distribution regression and correlation t- test analysis of variance.*

### **B.Sc. Semester-VI Paper-II**

#### **Reproductive Biology**

- *To know the fundamental principles and unifying facts of reproductive biology.*
- *To know the structure and functions of main reproductive organs of human being.*
- *To study the current state of knowledge about the functional organization of the human body.*
- *To study the physiology of reproduction*
- *To know the role of male reproductive system and female reproductive system.*
- *To know the general functions of reproductive organs of male and female.*
- *To study the physiology of coitus, spermatogenesis and oogenesis.*
- *To know the assisted reproductive technology including ZIFT, GIFT, IVF, AI, etc.*
- *To study the contraceptive measures.*
- *To study the physiology of pregnancy.*

- *To study the pregnancy test by using kit.*
- *To know the causes of infertility in male and female.*
- *To study the histology of reproductive organs of human being and other mammals too.*

## **PROGRAMME SPECIFIC OUTCOMES (PSO) OF M.Sc. ZOOLOGY**

### ***Programme: M.Sc. Zoology***

- *Developing deeper understanding of key concepts of Zoology at biochemical, molecular and cellular level,*
- *Developing deeper understanding of key concepts of physiology and reproduction at organism level.*
- *Developing deeper understanding of key concepts of aquatic biology, fish and fisheries and parasitological.*
- *Strengthening of genetics and cytogenetic principle in light of advancements in understanding human genome and genomes of other model organisms.*
- *Description of expression of genome revealing multiple levels of regulation and strategies to manipulate the same in the benefit of the mankind.*
- *Development of an understanding of zoological science for its application in aquaculture, parasitological and fish and fishery sciences.*
- *Development of theoretical and practical knowledge in handling the animals and using them as model organism.*
- *Maintenance of high standards of learning in animal sciences*

## **Course Outcomes**

### **MSc Semester I**

#### **Paper- I Animal structure and function: Invertebrates**

- *Developing knowledge of animal classification into sub-kingdom section phyla and minor phyla.*
- *To know about Protozoa ultrastructure of locomotory organ.*
- *To know about Porifera cellular grade of organization in sponges.*
- *Developing knowledge of coelom formation evolution and significance.*
- *To know about origin of metazoan.*
- *Developing knowledge of coelentrata polymorphism, metagenesis and metamorphosis.*
- *To know about helminthes reproductive system structure and mechanism of reproduction in Fasciola, Taenia and Ascaris.*
- *To know about Annelida evolution of nephridia and mechanism of excretion in polycheta, oligochaeta and hirudinea.*
- *Developing knowledge of Onychophora Peripatus structure affinities and taxonomy position.*
- *To know about Arthropoda respiratory organ mechanism of gaseous exchange tracheal respiration in insect and gill respiration in crustacean.*
- *Mollusca neuroanatomy in gastropoda Pila Unio Loligo.*
- *To know about Echinodermata water vascular system structure and function.*

- *To know about Echinodermata larval form metamorphosis and evolutionary significance.*
- *To know about Ctenophora general account and affinities.*
- *To know about Entoprocta ectoprocta general account and affinities.*

## **MSc Semester I**

### **Paper- II – General Physiology**

- *Description of enzymes, mechanism of enzyme action, activators and inhibitors.*
- *Understanding the concepts of respiratory pigments, neurotransmitter, colour change mechanism.*
- *Understanding the physiology of digestion of protein, carbohydrates and fats.*
- *Regulation of heart-beat and blood pressure, neural and chemical regulation of respiration, Gas transfer in air and water.*
- *Perception of circulatory and respiratory responses to extreme conditions.*
- *Discerning acid –base balance, Regulation of body pH.*
- *Developing the concept of animal adaptation by exploring the diversity of functional characteristics of various kinds of organisms which is closely related to evolutionary processes and environmental changes.*
- *Perception of Osmoregulation, Kidney functions and diversity, Extra-renal osmoregulatory organs, Patterns of nitrogen excretion.*
- *Concept of thermoregulation - Heat balance in animals, Adaptations to temperature extremes, torpor, Aestivation and hibernation, Counter current heat exchangers.*
- *Understanding of adaptations to Stress- basic concept of environmental stress, acclimatization, avoidance and tolerance, stress and hormones.*
- *Description of sensing the environment- photoreception, chemoreception, mechanoreception, echolocation, endogenous and exogenous biological rhythms, chromatophores and bioluminescence.*
- *Understanding of feeding mechanisms and their control, effect of starvation.*

## **MSc Semester I**

### **Paper-III**

#### **Course – Cell biology and genetics**

- *Understanding of cell membranes (structure and Function) active transport passive transport, osmosis, diffusion, plasma membrane models (fluid mosaic models)*
- *Description of cell organelles (ribosome, mitochondria, golgi complex, lysosome, endoplasmic reticulum etc.)*
- *Understanding of cell signalling, cellular communication, signal transduction and general principle of cell communications.*
- *Understanding of cancer-genetic rearrangements in progressive cell, oncogenes tumor suppressor genes & metastasis.*
- *Understanding of Mendel's principle, its extension and chromosomal basis.*



- *Determination of gene action from genotype to phenotype including penetrance and expressivity, gene interaction, epistasis, pleiotropy; nature of the gene and its functions.*
- *Evolution of the concept of the gene and fine structure of gene using rII locus.*
- *Capability to perform gene mapping using 3- point test cross in Drosophila, gene mapping in humans by linkage analysis in pedigrees.*
- *Imparting knowledge regarding gene mutation, types of gene mutations, methods for detection of induced mutations, P- element insertional mutagenesis in Drosophila, DNA damage and repair.*
- *Developing concept of regulation of gene activity in prokaryotes and eukaryotes at transcriptional and posttranscriptional level.*
- *Describing structural and functional organization of a typical eukaryotic gene, transcription factors, enhancers and silencers, and non-coding genes.*
- *Depicting the mechanism of sex determination and dosage compensation in human and other model organisms.*
- *Developing skills in human genetics with capability for karyotyping and nomenclature of metaphase chromosome bands.*
- *Understanding the chromosome anomalies and associated diseases.*
- *Capability to perform basic genetic analysis of complex traits - complex pattern of inheritance, quantitative traits, threshold traits.*
- *Description of human genome and mapping.*
- *Identify link between genetics and cancer with emphasis on oncogenes, chromosome rearrangement and cancer, tumor suppressor genes and genetic pathways to cancer.*
- *Principles of Gene Manipulation*
- *Imparting knowledge of basic recombinant DNA techniques, preparation of restriction maps and mapping techniques.*
- *Understanding of method and applications of nucleic acid probes, blotting techniques, DNA fingerprinting, DNA foot printing, methyl interference assay and polymerase chain reaction.*
- *Developing skill to understand biology of cloning and expression vectors.*
- *Description of gene cloning strategies by transformation of E. coli and other cells with rDNA; methods of selection and screening of transformed cells; construction of genomic and cDNA libraries.*
- *Defining key strategies to express cloned genes including phage display.*
- *Exposure to principles of DNA sequencing, automated sequencing methods; synthesis of oligonucleotides, primer design.*

- *Micro-arrays and confocal microscopy techniques with application.*
- *Understanding a concept of changing genes- directedevolution, protein engineering in microbes.*
- *Introduction to gene manipulation methods in animals, transgenic technology, application of recombinant DNA technology; gene knockouts, gene silencing, mouse disease models, somatic and germ- line therapy.*

## **MSc Semester I**

### **Paper- IV- Reproductive biology**

- *Developing knowledge of various methods of asexual and sexual reproduction in Protozoa.*
- *To know about regeneration in Hydra and annelid worm morphogenesis and hormonal control.*
- *To know about metamorphosis in insect.*
- *To know about mechanism of vitellogenesis.*
- *Developing deeper knowledge of spermatogenesis process hormonal regulation.*
- *Developing deeper knowledge of oogenesis process biochemical event hormonal regulation.*
- *Developing deeper knowledge of cytological and molecular events of fertilizations.*
- *Developing deeper knowledge of types of cleavage blastulation gastrulation and embryonic induction.*
- *To know about male accessory sex glands in mammals.*
- *To know about semen biochemical composition and sperm abnormality.*
- *To know about sperm capacitation and decapacitation .*
- *Developing deeper knowledge of pheromones and sexual behavior in mammals.*
- *Developing deeper knowledge of neurohormonal control of fish reproduction.*
- *To know about molecular induction and organizer concept.*
- *To know about cryopreservation of gametes, embryo and test tube baby.*
- *To know about in vitro fertilization IVF and significance.*

## **MSc Semester II**

### **Paper- I- Animal structure and function: Vertebrates**

- *To know about origin and ancestry of chordate.*
- *To know about general organization and affinities of cephalochordate.*
- *To know about structure development and metamorphosis of amoecoetus.*
- *To know about general characters and affinities of dipnoi.*
- *To know about organ and mechanism of respiration in pisces and amphibian.*
- *To know about vertebrate integument and its derivatives.*
- *Developing deeper knowledge of appendicular skeleton in amphibian reptelia aves and mammals.*
- *To know about general body organization and classification in chelonian.*

- *Developing deeper knowledge of evolution of urinogenital organ in vertebrates.*
- *To know about origin of birds.*
- *Developing deeper knowledge of cetacea general characters and adaptations.*
- *To know about comparative anatomy of brain in vertebrates.*
- *To know about autonomous nervous system in vertebrates.*
- *To know about evolution of heart in vertebrates.*
- *To know about sense organ in vertebrates.*
- *Developing deeper knowledge of evolution of man.*

## **MSc Semester II**

### **Paper- II**

#### ***Course – General and Comparative Endocrine Physiology***

- *Developing a concept of endocrine system, its function and phylogeny.*
- *Description of evolution and comparative aspects of endocrine physiology in vertebrates.*
- *An overview of synthesis of corticosteroid, structural diversity of glucocorticoids among vertebrates.*
- *Importance of adrenocortical and adrenomedullary interaction.*
- *Illustration of evolution of thyroid gland, thyroid hormone synthesis and its regulation, hormonal regulation of calcium and phosphate homeostasis.*
- *Conceptualization of hormonal control of feeding behaviour and gastrointestinal tract functioning, Pancreatic hormones and glucose homeostasis, vitellogenesis and the evolution of viviparity.*

## **MSc Semester II**

### **Paper- III - Molecular Biology and Biotechnology**

- *Description of organelle genome, DNA structure and forms of DNA and DNA replication*
- *Understanding transcription in prokaryotic and eukaryotic*
- *Description of RNA polymerase enzyme, transcriptional unit, initiation, elongation and termination.*
- *A study of translation (prokaryotic and eukaryotic) genetic code and mobile DNA elements.*
- *Description of Antisense and ribosome technology.*
- *An overview of isolation and sequencing of DNA, gene amplification, Polymerase chain reaction, RAPD, RFLP, maxam and gilberts, Sangers dideoxy methods.*
- *Detailed view of splicing and cloning vectors, hybridization techniques, southern and northern blotting hybridization and microassay*
- *Understanding the Medical biotechnology, application of RFLP, genetic counseling.*
- *Description of agriculture biotechnology, biofertilizers, bioinsecticides, biogas.*
- *Detailed understanding of Immunobiotechnology, hybridoma technology and monoclonal antibodies.*
- *Description of industrial and environmental biotechnology.*

## **MSc Semester II**

### **Paper- IV - Advanced developmental Biology**

- *Information about history and basic concepts of developmental biology.*
- *Illustration of model systems: invertebrate and vertebrate model organisms.*
- *Identification of developmental genes: spontaneous and induced mutation, mutant screening, developmental mutations in Drosophila.*
- *Elucidation of early embryonic development of invertebrates and vertebrates.*
- *Concept of axis specification in Drosophila, role of maternal genes, patterning of early embryo by zygotic genes and the homeotic selector genes.*
- *Concepts of organogenesis in invertebrates and vertebrates: the homeotic selector genes for segmental identity, insect compound eye, kidney development– development of ureteric bud and mesenchymal tubules.*
- *Illustration of postembryonic development: growth- cell proliferation, growth hormones; aging genes involved in alteration in timing of senescence.*
- *Understanding of process of regeneration in Hydra and salamander.*
- *Explanation of embryonic stem cells and their applications.*
- *Description of medical implications of developmental biology, genetic errors of human development, the nature of human syndromes*
- *Study of gene expression and human disease– inborn errors of nuclear RNA processing, inborn errors of translation*
- *An insight on teratogenesis- environmental assaults on human development, teratogenic agents like alcohol, retinoic acid etc.*

## **MSc Semester III**

### **Paper- I- Parasitology and Immunology**

- *Developing deeper knowledge of Vibrio cholera and Clostridium titani life cycle and mode of transmission, infection.*
- *Developing deeper knowledge of Yersinia pestis life cycle and mode of transmission, infection.*
- *Developing deeper knowledge of Influenza and H1N1 virus life cycle and mode of transmission, infection.*
- *Developing deeper knowledge of Dengue and hepatitis life cycle and mode of transmission, infection.*
- *Developing deeper knowledge of Trypanosoma and Entamoeba life cycle and mode of transmission, infection.*
- *Developing deeper knowledge of Leishmania and Malaria life cycle and mode of transmission, infection.*
- *Developing deeper knowledge of Wucheria and Trichinella life cycle and mode of transmission, infection.*
- *To know about toxin and antitoxins.*
- *To know about immune system innate and adaptive immunity.*
- *To know about cell and organ of immune system T- cell and B-cell.*
- *To know about major histocompatibility complex MHC.*
- *To know about complement system.*

- *To know about cytokine receptor.*
- *Developing deeper knowledge of hypersensitivity reaction.*
- *Developing deeper knowledge of transplantation immunology.*
- *Developing deeper knowledge of tumor immunology*

### **MSc Semester III**

#### **Paper- II (Special group- Aquaculture-I)**

##### **Course – Fresh water aquaculture**

- *Knowing about the aquaculture, importance and its present status in India.*
- *Learning physicochemical conditions of pond water.*
- *Biological conditions, plankton seasonal distribution and its role in fisheries.*
- *Chemical conditions of pond soil, pond ecosystem.*
- *To study of methods of productivity measurement, planning and construction of fresh water fish farm.*
- *Learning of biology of culturable indigenous carps and exotic carps.*
- *Knowing the reproductive system and breeding behavior in Indian carps, fisheries of major river systems in India.*
- *Learning of riverine collection of fish seed, fish breeding in wet and dry bundhs.*
- *Learning about the induced breeding by hypophysation, hatching techniques and type of hatcheries.*

### **MSc Semester III**

#### **Paper- III (Special group- Aquaculture-II)**

##### **Course – Aquaculture and rural development**

- *Learning culture of zooplankton, crabs, pearl, oyster, prawn and methods of breeding.*
- *Knowing development and advancement of aquaculture in India.*
- *Learning about the larvivorous fishes in relation to public health.*
- *To study of culture of exotic and transplanted fishes, breeding and care of fresh water aquarium fishes.*
- *Developing knowledge about fishery extension techniques.*
- *Learning on aquaculture and rural development in India, role of FFDA in India.*
- *Learning about the socio-economic status of fisherman community, fisheries co-operatives and their role in fish production and marketing*
- *To know about the fishery legislation and their role in fishery development.*
- *Learning of riverine collection of fish seed, fish breeding in wet and dry bundhs.*
- *Learning about the induced breeding by hypophysation, hatching techniques and type of hatcheries.*

### **MSc Semester III**

#### **Paper- IV - Foundation I -Fresh water fisheries**

- *Developing deeper knowledge of riverine fisheries.*
- *Developing deeper knowledge of lacustrine reservoir fisheries.*
- *To know about physico-chemical characters of fresh water.*
- *To know about construction and layout of fish farm.*
- *To know about history of fish culture in India.*
- *To know about outline of commercially important species of fresh water fishes and prawn.*
- *To know about present status scope and importance of fisheries.*
- *To know about fisheries product and by- product.*
- *To know about induced breeding.*
- *To know about bundh breeding (dry and wet).*
- *To know about fish seed production by Chinese circular hatchery.*
- *To know about transportation of brood and fish seed.*
- *Developing deeper knowledge of food and feeding habits of commercially important fishes.*
- *To know about nutritional requirement of fish.*
- *To know about artificial feed and their composition.*
- *Developing deeper knowledge of crafts and gears used in fresh water fish capture.*

### **MSc Semester IV**

#### **Paper- I- Biotechniques, Biostatitics, Ethology, Toxicity and Bioinformatics**

- *Developing deeper knowledge of sterilization techniques media for microbial culture, inoculation methods.*
- *To know about animal cell and tissue culture primary, cell line cell quantification growth kinetics of cell cryopreservation of cell.*
- *To know about basic principle of sedimentation and centrifugation radioactive isotopes.*
- *To know about chromatographic separation – thin layer and gas chromatography electrophoretic separation techniques.*
- *To know about central tendency and dispersion.*
- *To know about probability basic theory and types of probability.*
- *To know about sampling types standard error standard deviations significances test t-tes z-test chi square test.*
- *To know about neuronal control genetic and environmental component in development of animal behavior, animal ethics.*
- *Developing deeper knowledge of introduction and scope of toxicology.*
- *To know about environmental toxicology.*
- *To know about translocation of toxicants.*
- *To know about toxicity test.*
- *Developing deeper knowledge of introduction and scope of bioinformatics.*
- *To know about sequence alignment.*
- *To know about biological database BLAST and FASTA.*
- *To know about phylogenetic analysis.*

## **MSc Semester IV**

### **Paper- II - Foundation II, applied fresh water fisheries**

- *To know about pre and post stocking management of pond.*
- *To know about predators and their eradication.*
- *To know about aquatic weeds and their control.*
- *To know about manuring and liming of pond.*
- *To know about composite fish farming.*
- *To know about general outline of integrated fish farming.*
- *To know about sewage fed fisheries.*
- *To know about prawn culture.*
- *To know about role of cooperative societies in fish marketing.*
- *To know about introduction to fisheries economics.*
- *To know about economics of fish seed and fish production.*
- *To know about fisheries extension services.*
- *To know about fresh water pearl culture.*
- *To know about cage and pen culture.*
- *To know about setting up of aquarium and its maintenance.*
- *Developing deeper knowledge of general outline of fish diseases.*

## **MSc Semester IV**

### **Paper-III (Special group- Aquaculture-III)**

#### **Course – Aquaculture and Management**

- Learning aquaculture technology for fresh and marine fishes.
- Culturing of fish food organisms like algae; zooplankton for improving nutritive quality.
- Management of water quality requirements for aquaculture.
- Learning integrated farming by fish-cum-live stock farming, paddy-cum-fish farming, and aquaculture engineering-aquahouse.
- A detailed learning of transportation of finfish and shellfish, eggs, fry, fingerlings and adults.
- Managing improvement in the Nutrition of aquatic animals by learning feed types, manufacture and ingredients, anti- nutritional factors in fish feed ingredients.
- Understanding environmental impact of aquaculture, aquacultural wastes and future developments in waste minimization, environmental consequences of hypernutrification.
- Learning about fish vaccines- strategy and use in aquaculture.

## **MSc Semester IV**

### **Course – Fish pathology and fish genetics**

- *Understanding biochemical composition of raw fish.*
- *Learning about nutritional value of raw and preserved fish.*
- *Understanding fish preservation objective and principles.*

- *To know the methods of fish preservation.*
- *Details learning about the fish decomposition, rigor mortis and fish spoilage.*
- *Understanding effect of water pollution on fishes.*
- *Learning details on poisoning, toxicity and allergies from fish as a food.*
- *To study on fish products and byproducts.*
- *Understanding fungal, bacterial, protozoan diseases of farm fish.*
- *Learning of nutritional diseases of fish.*
- *Knowing the worm and crustacean diseases of farm fish.*
- *Learning about the diseases caused by aquatic pollutants.*
- *To study about hybridization, transgenic fish, cryopreservation of gametes, gene banking and its application of genetic engineering in aquaculture.*
- *Learning about fish genetic resources and its application in fisheries management.*
- *Student can select any two papers from optional special groups and two papers are compulsory. Besides this, each student completes a Dissertation, which is theoretical and does not involve any laboratory component.*



**MAHATMA GANDHI ARTS, SCIENCE & LATE N. P. COMMERCE COLLEGE,  
ARMORI, GADCHIROLI**

**DEPARTMENT OF CHEMISTRY**

**Programme Specific Outcome- UG**

- Understand the fundamentals principle, instrumentation, application of various *spectroscopic techniques like NMR, IR, and U.V- Visible spectroscopy.*
- *Know Organic Synthesis and reaction mechanisms via several organic chemical reactions.*
- *Study green route for chemical reaction for sustainable Development.*
- *Achieve pure and applied knowledge of physical chemistry through principle, observation , hypothesis derive conclusion and evaluate their significance with broad scientific context*
- *Understand the synthesis and significance of polymer and fabrics in everyday life.*
- *Know appropriate techniques for the qualitative and quantitative analysis of Chemicals in laboratories and in industries.*
- *Aware different branches and importance of chemistry like analytical, organic, inorganic, physical, environmental, polymer and biochemistry, medicinal chemistry for research and as better carrier opportunity.*
- *Know different basic standards of soil parameter having advantages and disadvantages Chemical fertilizer in actual practices.*
- *Attentive about sources of water pollution and industrial waste management.*
- *Demonstrate good laboratory practices and safety to develop research oriented skills.*
- *Promotes towards use modern techniques, decent equipment's and Chemistry software's*

**Course Outcomes**

**BSc semester-I Paper- I  
Inorganic Chemistry**

- *To know fundamental and shapes s, p and d atomic orbital and electronic configuration of elements.*
- *To learn Atomic Structure by theory like Bohr's, de-Broglie, Heisenberg's and Schrodinger wave equation.*
- *To study periodic table through Periodic trends and Properties θ Understand the formation of Covalent Bond by Valance bond theory.*
- *Explore the concept of Molecular Orbital theory using bonding and antibonding molecular orbitals.*
- *To make them know how elements are classified into S and P blocks, and Comparison of periodic property of elements.*
- *Know the effect of hydrogen bonding on viscosity, solubility, Melting point and boiling point.*
- *Understand the concept of Volumetric Analysis by various titrations.*

**BSc semester-I Paper- II  
Organic Chemistry**

- *To know Fundamentals of Organic Chemistry in terms of Electromeric Effect, Resonance and Hyper conjugation.*
- *To study types hybridization, shape and reactivity of organic molecules.*
- *To have a basic understanding of classification and nomenclature of organic compounds,*

- Understand basics of organic reaction mechanism, aromaticity and stereochemistry of molecule. Learn the types of hydrocarbons its chemical properties and its uses.
- To explore synthesis and chemical properties of aromatic hydrocarbons via various organic name reaction.

### **BSc semester-II Paper- I** **Organic Chemistry**

- *To study in detail about mechanism of Nucleophilic Substitution (SN1 , SN2 and SNi ) reactions.*
- *To understand the methods of preparation of aryl halide and there reactivity.*
- *Learn chemical properties and different approaches to obtained Alcohols, Phenols and Ethers and there uses.*
- *To know Nomenclature, Structure and reactivity of the carbonyl group through organic name reaction and mechanism.*
- *To explore the synthesis structure and bonding, physical properties: acidity of carboxylic acid and there derivatives.*
- *To gain fundamental knowledge to distinguish between different functional group.*

### **BSc semester-II Paper- II** **Physical Chemistry**

- *To know the Mathematical Concepts: Logarithmic relations, linear graphs, calculation of slopes.*
- *To understand Strong, moderate and weak electrolytes, degree of ionization.*
- *Learn the concept of Statements of first law of thermodynamics and thermochemistry.*
- *To acquired knowledge of postulates of kinetic theory of gases and distinguish between ideal and real gases.*

### **BSc semester-III Paper- I** **Inorganic Chemistry**

- *To study in depth about the structure and bonding in diborane and borazine.*
- *To learn the chemistry of first second and third transition series element  $\theta$  Understand the chemistry of lanthanides and actinides*
- *To know the basic properties and understanding of iodine and interhalogen compounds*
- *Learn about general characteristic of Ionic and metallic solid.*
- *To know the general characteristic of Lewis, Bronsted Lowery, and Lux –Flood concept of acid and bases.*

### **BSc semester-III Paper- II** **Physical Chemistry**

- *To understood the phase rule, degree of freedom, derivation of clapeyron equation and its application.*
- *To make them able to describe the liquid –liquid mixture, partial miscible liquids and immiscible liquids.*
- *To learn the second law of thermodynamics.*
- *Know the concept of partial molar quantities, chemical potential.*
- *Learn about concept of collision theory of bimolecular reaction*

- *To know depth of solution and colligative properties.*
- *Understand the concept of reaction rate, factor affecting the rate of reaction- concentration, temperature, etc.*

**BSc semester-IV Paper- I**  
**Inorganic Chemistry**

- *To study Effective Atomic Number Theory and Werner Complexes*
- *Understand the magnetic properties and the colour of coordination compounds.*
- *To know the stability of metal complexes by the using formation constants and calculate thermodynamic parameters from them.*
- *Learn to explain Parsons SHAB concept and familiar with its application*
- *To understand the rules for splitting of d- orbital in octahedral, tetrahedral and square planar complexes.*
- *To study in depth about principle, instrumentation of colorimetry and Spectrophotometer.*

**BSc semester-IV Paper- II**  
**Organic Chemistry**

- *To learn the preparation and properties of nitro and amino compounds.*
- *Make them understood the concept diazonium salt and their stability.*
- *To introduce about Organometallic and heterocyclic compounds*
- *To know quantitative analysis of different element.*
- *To introduce the concept of preparation and classification of amino acid.*
- *To know details about classification and chemical properties of carbohydrate.*
- *To learn the preparation and properties of synthetic dyes.*
- *Make them aware with some fundamental classes of synthetic drugs*

**BSc semester-V Paper- I**  
**Organic Chemistry**

- *To know about spectroscopic technique Nuclear Magnetic resonance (NMR).*
- *To Recognize Problems elucidation of simple organic compounds using NMR data.*
- *Learn Claisen condensation reaction mechanisms through via Enolates of Active methylene compounds.*
- *To study the chemistry comprising synthesis of ketone, diketone, 4-methyl uracil from acetoacetic ester.*
- *Know the concept keto-enol tautomerism.*
- *Understand introduction classification and reaction of polymers and fabrics.*
- *To explore about Biodegradable and conducting polymers.*
- *Understand twelve principles of green chemistry Green Chemistry as technology for sustainable development and Designing Products.*

**BSc semester-V Paper- II**  
**Physical Chemistry**

- *To study in depth about electrochemical reaction, Electrical transport and conductivity of electrodes.*
- *To understand the application of various electro chemical theory like Kohlrausch law, Arrhenius theory, Debye-Huckel theory and Onsagar equation.*
- *To explore difference between Faraday's I and Faraday's II laws of electrolysis.*
- *Aware about thermodynamic quantities of cell reactions such as  $\Delta G$ ,  $\Delta H$  &  $\Delta S$  & equilibrium constant.*

- *To learn entire concept of reversible electrodes like gas electrode, metal-metal ion electrode, amalgam electrode, metal insoluble salt-anion, redox electrodes.*
- *To study the derivation Nernst equation and Applications of emf measurements in pH-determination and potentiometric titration.*
- *To know the Failure of classical mechanics and need of quantum mechanics*
- *To understand the concept of Normalized and orthogonal wave functions.*
- *To differentiate between classical and quantum mechanics.*
- *To Understand the Postulates of quantum mechanics, by application in Derivation of Schrodinger wave equation*

### **BSc semester-VI Paper- I** **Inorganic Chemistry**

- *To carry out Qualitative and quantitative analysis of Experimental data by sampling, errors, accuracy and Precision.*
- *To know modern instrument Flame Photometry and study Basic principles, instrumentation and application of it.*
- *To develop basic skills required for chromatography, ion exchange, solvent extraction, crystallisation, distillation, TLC and column.*
- *To Understand the Basic Principal of Soil Chemistry through Collection of sample, Chemical Analysis, Soil pH and Soil Salinity.*
- *To explore the basic knowledge of various pesticides, insecticides, fungicides and herbicides.*
- *To make them know about Preparation, properties and application o organometallic Compound like Al, Hg and Sn.*
- *To aware about gold and silver Nanomaterial Technology and Carbon Nanotube.*

### **BSc semester-VI Paper- II** **Physical Chemistry**

- *To know about photochemical reaction through various laws and fluorescence, phosphorescence, chemiluminescence.*
- *Learn how to determine dipole moment, Bond moments Group moments for benzene derivatives*
- *To Know derivation of expression for rotational and vibrational spectra and there application for molecule.*
- *Learn to distinguish phenomenon of adsorption and absorption and colloidal chemistry through ultrafiltration, electrophoresis and electro Osmosis.*
- *To understand through classification of particle,*
- *To study Nuclear Chemistry and its application in radio tracers, Discovery of radioactivity, typical radioisotopes.*

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**MSc. CHEMISTRY.**

After successful completion of two years degree program in chemistry student should be able to:

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**Programme****Specific****Outcomes****(PSOs):-**

1. Know different approaches for Organic Synthesis and study there reaction mechanisms.
  2. Motivate towards critical thinking and analysis to solve complex chemical problems, e.g., analysis of data, synthetic logic, spectroscopy, structure and modelling, problem solving.
  3. Promotes towards use modern techniques, decent equipment's and Chemistry software's.
  4. Demonstrate good laboratory practices and safety to impart the basic analytical and research oriented skills.
  5. Understand the fundamentals principle, instrumentation and application of various spectroscopic techniques like NMR, IR, and U.V- Visible spectroscopy.
  6. Learn potential uses of analytical, industrial, medicinal and green chemistry for sustainable development of human welfare.
  7. Achieve all essential knowledge of organic, inorganic physical, analytical chemistry.
  8. Aware about various separation techniques like Chromatography Ion exchange, Solvent extraction.
  9. Understand the concept of synthesis and significance of medicine, polymer and fabrics in everyday life.
  10. Perform experiments in the area of organic synthesis, qualitative and quantitative analysis, estimation, inorganic semi micro analysis, and conductometric potentiometric methods.
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Course outcomes of MSc Semester: -I

Course	After completion of these course students should be able to :-
<p><b>Paper-I Inorganic Chemistry (COs)</b></p>	<ul style="list-style-type: none"> <li>❑ To know Stereochemistry and Bonding in Main Group Compound by VSRPR theory.</li> <li>❑ To understand Metal-Ligand Bonding via Crystal Field Theory.</li> <li>❑ Learn to determine Stepwise and overall formation constants using spectrophotometric and Potentiometric method.</li> <li>❑ To study Classification, nomenclature, structure, bonding of borane hydride cluster.</li> <li>❑ Understand the concept of Metal-Metal bonds</li> </ul>
<p><b>Paper-II Organic Chemistry (COs)</b></p>	<ul style="list-style-type: none"> <li>❑ To know Nature and Bonding in Organic Molecule.</li> <li>❑ Learn novel organic synthesis approaches of enamines and imines.</li> <li>❑ Understand concept of Stereochemistry in 5 -8 membered rings.</li> <li>❑ To explore the concept of Reactive Intermediates: carbocation, carbanion, free radical, carbenes, nitrenes.</li> <li>❑ To make understood about organic Reaction mechanism, there Structure and Reactivity.</li> <li>❑ To study in detail about aliphatic, aromatic nucleophilic and electrophilic substitution.</li> </ul>
<p><b>Paper-III Physical Chemistry (COs)</b></p>	<ul style="list-style-type: none"> <li>❑ To know Nature and Bonding in Organic Molecule.</li> <li>❑ To understand postulates of quantum mechanics and derivation of Schrodinger wave equation.</li> <li>❑ Learn about Classical thermodynamics Maxwell's relations and entropy Partial molar quantities.</li> <li>❑ To understand the construction of phase diagram in one, two, and three component systems.</li> <li>❑ To study chemical kinetics considering various theories</li> </ul>

	<p>related to rates of reaction.</p> <ul style="list-style-type: none"> <li>❑ To know Photochemical and enzyme catalysis reaction and there application.</li> </ul>
<p><b>Paper-IV Analytical Chemistry (Cos)</b></p>	<ul style="list-style-type: none"> <li>❑ To know application of analytical chemistry in qualitative and quantitative analysis of data.</li> <li>❑ To understand various separation technique like Chromatography Ion exchange, Solvent extraction.</li> <li>❑ To make them aware about Classical methods of analysis via volumetric and gravimetric analysis.</li> <li>❑ To learn the principle, instrumentation of Spectrophotometry and Colorimetry.</li> </ul>
<p>Course outcomes of MSc Semester: -II</p>	
<p><b>Course</b></p>	<p>After completion of these course students should be able to :-</p>
<p><b>Paper-I Inorganic Chemistry (Cos)</b></p>	<ul style="list-style-type: none"> <li>❑ To Study Electronic spectra of Transition Metal complexes.</li> <li>❑ To understand the concept of Magnetic Properties of Transition Metal complexes.</li> <li>❑ Learn Reaction mechanism of Transition Metal Complexes.</li> <li>❑ To know Structure and bonding, vibrational spectra of metal carbonyls and Metal nitrosyls.</li> <li>❑ To explore EAN rule, synthesis and structures Wilkinson's catalyst and Vaska's compound.</li> </ul>
<p><b>Paper-II Organic Chemistry (COs)</b></p>	<ul style="list-style-type: none"> <li>❑ To know the addition to carbon-carbon and carbon-hetero atom multiple bond reaction and mechanism.</li> <li>❑ Understand the mechanism of molecular rearrangement through organic name reaction.</li> <li>❑ Learn the concept of synthesis reactivity and mechanism of free radical reaction.</li> <li>❑ To Aware the knowledge of Basic principles of green chemistry for sustainable development.</li> </ul>

<b>Paper-III Physical Chemistry (COs)</b>	<ul style="list-style-type: none"> <li>❑ To know application of quantum mechanics.</li> <li>❑ To learn all concept of thermodynamics like Statistical and Irreversible Thermodynamics.</li> <li>❑ To understand Solid State chemistry and its Reactions.</li> <li>❑ To explore knowledge of nuclear chemistry and its models.</li> </ul>
<b>Paper-IV Analytical Chemistry (Cos)</b>	<ul style="list-style-type: none"> <li>❑ To learn fundamental of sampling and quantification.</li> <li>❑ To know application and advantages of gas and Liquid chromatography.</li> <li>❑ To understand modern technique like Fluorometry, phosphorimetry and Flame photometry.</li> <li>❑ To introduce about Principle of polarography. Its Instrumentation and advantages.</li> </ul>

Course outcomes of MSc Semester: -III

**(ORGANIC CHEMISTRY SPECIALIZATION)**

Course	After completion of these course students should be able to :-
<b>Paper-I Spectroscopy (Cos)</b>	<ul style="list-style-type: none"> <li>❑ To understand modern technique like Fluorometry, phosphorimetry and Flame photometry.</li> <li>❑ To understand Symmetry properties of molecules and application.</li> <li>❑ To know working and uses of modern technique like Mass and Mossbauer spectroscopy.</li> <li>❑ To study fundamentals of microwave and Infrared spectroscopy.</li> <li>❑ Understand the principle of ESR and Raman for molecular structure determination.</li> </ul>



<b>Paper-II Organic Chemistry (Special-I) (Cos)</b>	<ul style="list-style-type: none"> <li>❑ To understand synthesis and mechanism of photochemical reaction.</li> <li>❑ To know concept of Pericyclic Reactions by FMO and Woodward-Hoffman approach.</li> <li>❑ To learn oxidation and reduction reagent there stereochemistry in organic synthesis.</li> <li>❑ To make them aware about Chemistry of P, S, Si, B, and Ti compounds.</li> </ul>
<b>Paper-III Organic Chemistry (Special-II) (Cos)</b>	<ul style="list-style-type: none"> <li>❑ To understand occurrence, isolation Structure determination of natural products, alkaloids plant pigments.</li> <li>❑ To get detail knowledge of naturally occurring sugars carbohydrate.</li> <li>❑ Learn concepts of Amino acids, protein and peptides.</li> <li>❑ To know structure of and importance of Porphyrin, steroids.</li> </ul>
<b>Paper-IV Polymer Chemistry (Elective) (Cos)</b>	<ul style="list-style-type: none"> <li>❑ To study nomenclature and classification of polymers</li> <li>❑ Understand how to determine of Molecular mass of polymers.</li> <li>❑ Know Morphology and order in crystalline polymers.</li> <li>❑ To awake about types of Commercial polymers and uses</li> </ul>
<b>Course outcomes of MSc Semester: -IV</b>	
<b>Course</b>	After completion of these course students should be able to :-
<b>Paper-I Spectroscopy (Cos)</b>	<ul style="list-style-type: none"> <li>❑ Understand the fundamental of Ultraviolet and visible Photoelectron spectroscopy.</li> <li>❑ To learn how to perform analysis Nuclear magnetic Resonance data.</li> <li>❑ To make known about types of NMR and its various applications in medical field.</li> <li>❑ Understand the modern X ray, Electron, Neutron Diffraction.</li> </ul>

<p><b>Paper-II Organic Chemistry (Special-I) (Cos)</b></p>	<ul style="list-style-type: none"> <li>❑ To study mechanism organic name reaction involving Carbanion intermediate.</li> <li>❑ To know Preparation and applications of organometallic reagents.</li> <li>❑ Understand the concept of Advanced Stereochemistry in organic synthesis.</li> <li>❑ Learn the protection and deprotection of functional groups.</li> <li>❑ To make them know design and synthesis based on retrosynthetic analysis. Mechanism of Enzyme Action</li> </ul>
<p><b>Paper-III Organic Chemistry (Special-II) (Cos)</b></p>	<ul style="list-style-type: none"> <li>❑ Understand mechanism of reaction in which enzyme acts as biological catalyst.</li> <li>❑ To know synthesis of heterocycle and chemical properties.</li> <li>❑ Learn biological functions of Nucleic Acids, lipids, vitamins.</li> <li>❑ To know Introduction, classification and methods of dyeing.</li> <li>❑ To make them know History, medical terms in pharmaceutical chemistry and classification of drugs.</li> </ul>
<p><b>Paper-IV Polymer Chemistry (Elective) (Cos)</b></p>	<ul style="list-style-type: none"> <li>❑ To know Introduction, classification and methods of dyeing.</li> <li>❑ To make them know History, medical terms in pharmaceutical chemistry and classification of drugs.</li> <li>❑ Understand concept of Characterization of polymers by thermo mechanical and X-ray diffraction technique.</li> <li>❑ To make them distinguish between Biomedical Inorganic, coordination polymers.</li> </ul>

**MAHATMA GANDHI ARTS, SCIENCE & LATE N. P. COMMERCE COLLEGE,  
ARMORI, GADCHIROLI**

**DEPARTMENT OF BOTANY**

**Programme Specific Outcome- UG**

- *Know about the importance of plants, their diversity and its conservation.*
- *Know the cryptogams and phanerogams.*
- *Know the Characteristic features, Systematics, Morphology, Structure and lifecycle of Viruses, Bacteria, Cyanobacteria, Mycoplasma, Algae, Fungi, Lichen, Bryophytes, Pteridophytes.*
- *Know the Diversity, Systematics and biology of seed plants (Angiosperms and Gymnosperms).*
- *Know the structures, types and function of gene, genome, cell, tissue, organ system containing development, reproduction, ecological and physiological adaptations.*
- *Understand the basic concepts of plant Physiology, Biochemistry, Anatomy, Morphology, Taxonomy, Ecology, Cytology, Genetics, Plant pathology, Mycology, Ethenobotany.*

**Course Outcomes**

**BSc semester-I Paper- I**

**Micro-organisms, Algae, Fungi and Plant Pathology**

- *Understand the general characteristic of life.*
- *Understand the depth about Viruses Bacteria & Mycoplasma.*
- *Understand the depth of Cyanobacteria (Nostoc).*
- *Learn about general characteristics, classification, economic importance of Algae & Fungi.*
- *Understand the life history of Algae (Voucheria, Chara, Bactrachopermum, Ectocarpus, Oedogonium) and Fungi (Mucor, Albugo, Cercospora, Puccinia, Penicillium).*
- *Understand the classification of plant diseases, pathogen, symptoms, causes and control measures of Tobacco mosaic disease, Red rot of Sugarcane, Brown spot of Rice, Bacterial Blight of Cotton & loose smut of Wheat.*

**BSc semester-I Paper- II**

**Plant Diversity (Bryophyta, Pteridophyta, Gymnosperms and Palaeobotany)**

- *Understand the morphological diversity and Economic importance of Bryophyta.*
- *Know about Classification system, the interesting characters and Economic importance of Pteridophyta and Gymnosperms.*
- *The students will be able to understand the structure & reproduction of certain selected Bryophyta, Pteridophyta, Gymnosperms.*
- *The students will be able to understand the process of Fossilization.*
- *Learn some fossil Rhynia, Glossopteris, Cycadeoidea.*

### **BSc semester-II Paper- I** **Angiosperm (Morphology and Anatomy)**

- *Understand the morphological characteristic of Angiosperm.*
- *Know about modification of stem, leaves, root in Angiosperm.*
- *Know about phyllotaxy, branching, pattern and venation in Angiosperm.*
- *Understand about morphology of flower, its types, floral whorls (calyx, corolla, androecium & gynoecium) useful for practical purpose also.*
- *Understand about Inflorescence, its types, placentation, Aestivation, types of fruits, floral formula and floral diagram.*
- *Learn about classification of permanent tissue (parenchyma, collenchyma, Sclerenchyma, xylem, phloem).*
- *Learn about Newman theory and Tunica carpus theory.*
- *Learn about vascular cambium, Periderm & Vascular Bundles.*
- *Know about Anatomy of root, stem and leaf of Maize and Sunflower.*
- *To know more about anatomy of stem and Anamolous secondary growth in Moringa, Dracena, Bignonea, Boerhavia and Beet root.*

### **BSc semester-II Paper- II** **Taxonomy and Diversity of Angiosperms**

- *The students will be able to understand the classification system of Angiosperm.*
- *The students will be able to understand the plant diversity available in the region and its economic value.*
- *Know about basic principles of plant taxonomy.*
- *Know the Botanical names and families of most of the plants available in the region.*
- *The students will be able to understand the herbarium techniques.*

### **BSc semester-III Paper- I** **Reproductive Biology of Angiosperms, Plant Growth and Development**

- *The students will be able to understand the mechanism of pollination and basic structure of the embryo.*
- *The students will be able to understand the plant growth and development.*
- *Know about plant movement.*
- *The students will be able to understand concept of photoperiodism.*

### **BSc semester-III Paper- II** **Plant Biochemistry & Physiology**

- *Students understand the mechanism of Osmosis, Plasmolysis, Diffusion, Ascent of Sap, Transpiration & Mineral nutrition.*
- *Understand the mechanism of Biological N<sub>2</sub> fixation.*
- *Know about the properties of enzymes, classification and theories (Lock and Key theory & Induced fit theory).*
- *Know about mechanism of photosynthesis and respiration.*
- *Know about classification, properties, role of carbohydrates.*

- *Know about Aldoses and Ketoses.*
- *Students understand the properties and role of lipids, uses of fatty acids, oils, waxes, and sterols.*
- *Know about structure of Amino acids and Proteins.*

### **BSc semester-IV Paper- I**

#### **Cell Biology, Genetics and Biotechnology**

- *Students learn about structure of typical plant cell and cell organelles (Mitochondria, Chloroplast, Endoplasmic reticulum, Vacuoles, Ribosome's, Lysosomes and Golgi bodies).*
- *Students understand the various steps of cell division (Mitosis and Meiosis).*
- *Understand tissue culture technique. ⊕ Learn more about Mendelism. (Law of dominance, Law of segregation and law of Independent Assortment).*
- *Know about complementary and supplementary factors.*
- *Learn about plastid and Mitochondrial DNA.*
- *Learn about mechanism of Linkages and crossing over.*
- *Know more about polyploidy mutation, chromosomal abberation.*
- *Learn mechanism of protein synthesis.*
- *Learn more about Agrobacterium plasmid, T4 bacteriophage, jumping genes, lac operar model.*

### **BSc semester-IV Paper- II**

#### **Plant Ecology**

- *Understand about the climatic factors, Edaphic factors, Biotic Factors,*
- *Understand the concept of Food chain and food web.*
- *Understand the Ecosystem, and Environmental Pollution.*
- *Understand plant community dynamics, ecological adoption in plant and phytogeographical regions of India and local region.*

### **BSc semester-V Paper- I**

#### **Economic Botany I**

- *Students understand the origin, Botanical description, cultivation and uses of cereal crops (Rice, Wheat, Maize, Jawar, Gram, Pigeon Pea, Lentil, Green gram and Black gram).*
- *Understand the origin, Botanical description, cultivation method and uses of Ground nut, Mustard, Sesame, Soyabean, Coconut, Linseed, Tembhurni, Charoli and Jambhul.*
- *Know about origin, Botanical description, cultivation method and uses of vegetable plants and fruit plants. (Tomato, Potato, Brinjal, Onion, Chili, Sugarcane, Mango, Papaya).*
- *Know more about origin, botanical description, Cultivation & uses of (Cotton, Jute, Sunhemp, Sisal hemp, Bamboo, Cowpea, Ferugreek and Lucerne).*

## **BSc semester-V Paper- II**

### **Economic Botany**

- *Students gain knowledge about various plant of economic use and its importance.*
- *Understand the role of plant in human welfare.*
- *Students gain knowledge about origin, cultivation method, uses and botanical description of economical important plant (Spices, Beverages, Gum, Dye, Rubber, Timber, Bamboo, Medicines, Essential Oil, Bio-fuels) etc.*

## **BSc semester-VI Paper- I**

### **Mycology and Plant Pathology**

- *Understand brief idea about objectives of mycology and mycological institutes in India.*
- *Understand the process of parasexuality, Homothallism, Heterothallism.*
- *Know more about classification of plant diseases, culture media preparation Koch's postulates, importance of pathogenicity in 20th century.*
- *Know more about effect of temperature, soil environment, relative humidity, rainfall, wind, light on plant diseases.*
- *Learn more about defence mechanism and hyper sensitive reaction in plants.*
- *Students know the Biological and chemical control of plant diseases. Students know about plant quarantine.*

## **BSc semester-VI Paper- II**

### **Mycology and Plant Pathology**

- *Understand role of fungi in industrial Mycology, scope & their utility.*
- *Understands the basic information on mushroom.*
- *Understand the scope and importance of plant pathology.*
- *Understand the life cycle & Symptoms of casual agent.*
- *Know the prevention & control measure of plant disease & its effects on economy of crop.*

**MAHATMA GANDHI ARTS, SCIENCE & LATE N. P. COMMERCE COLLEGE,  
ARMORI, GADCHIROLI**

**DEPARTMENT OF GEOLOGY**

**Programme Specific Outcome- UG**

- *Students will acquire a solid base of knowledge in the science of geology as a whole as well as earth materials, earth history, sedimentation and stratigraphy, deformational processes and structural features, and geomorphic processes and landforms.*
- *Students will develop proficiency in conveying complex geologic concepts in clear, technically correct writing.*
- *Students will develop proficiency in oral communication of complex geologic concepts.*
- *Students will develop the aptitudes and dispositions necessary to help democratize society by obtaining and maintaining employment as a professional geologist.*

**Course Outcomes**

**BSc semester-I Paper- I**

**Physical Geology**

- *Students demonstrate an understanding of the physical and chemical structure of the earth's interior.*
- *Students develop a cursory understanding of the hydrologic system and its sub-components (rivers, lakes, oceans, glaciers, deserts) and associated geologic features.*

**BSc semester-I Paper- II**

**Mineralogy & Elementary Mineral Optics**

- *Students develop the basic understanding of mineral formation in nature.*
- *Students understand the basic mineral properties and develop the identification skill for minerals.*
- *Students develop the understanding regarding the occurrence of minerals in nature and respective agglomerates as rocks.*
- *Students develop basic vision regarding light behaviour while studying optical properties of minerals.*
- *Students also get become accustomed with petrological microscope.*

**BSc semester-II Paper- I**

**General Geology**

- *Students recognize the relationship between plate tectonics and production of metamorphic terrains and the creation of metamorphic rocks.*
- *Students acquire an introductory understanding of geologic time and the importance of both relative and radiometric dating techniques. Students also demonstrate an understanding of the usefulness of fossils in relative dating and regional correlations of sedimentary rock units.*

- *Students complete the course with a sense of geologic time and the ability to recognize the role of plate tectonics in the development of all Earth's surface features including mountain ranges, ocean basins, etc.*

### **BSc semester-II Paper- II** **Crystallography and Optical Mineralogy**

- *Students understand the basic crystal structure and develop various concepts of crystals.*
- *Students develop skills to classify the mineral into various crystal systems.*
- *Students develop the skill to identify the minerals on the basis of crystal shape.*
- *Students understand the basic optical behaviour of minerals and develop a skill for their identification on the basis of optical properties.*

### **BSc semester-III Paper- I** **Igneous Petrology**

- *Students understand the concept of rock origin.*
- *Student will develop the skill to classify the rock in basic types.*
- *Students understand the basics of igneous rocks, their origin, their classification, their occurrence, etc.*
- *Students develop the skill to identify the specific igneous rock on various criteria.*

### **BSc semester-III Paper- II** **Palaeontology**

- *Students will understand methods of fossil preservation and preparation.*
- *Students will understand issues related to the completeness of the fossil record.*
- *Students will understand how to test scientific hypotheses in paleontology, including appropriate methods of data acquisition and analysis.*
- *Students will understand how to best describe populations of fossil organisms and how individuals grow and populations evolve through time*
- *Students will understand how to recognize and properly describe new species of fossils.*
- *Students will understand the stratigraphic distribution of fossils, how to estimate true times of origination and extinction, and how to estimate rates of evolution and extinction using fossils.*
- *Students will learn fundamental principles of paleoecology and better understand the science of evolutionary paleoecology.*

### **BSc semester-IV Paper- I** **Sedimentary Petrology and Metamorphic Petrology**

- *Students understand the origin of sedimentary & metamorphic rocks.*
- *Student develops the understanding of classification and occurrence, etc of sedimentary & metamorphic rocks.*



- *Students develop the skill to identify the specific sedimentary & metamorphic rocks on megascopic criteria.*
- *Students learn optical properties of sedimentary & metamorphic rocks and identify them on microscopic criteria.*

### **BSc semester-IV Paper- II** **Indian Stratigraphy**

- *Students will understand the historical development of geology as a science.*
- *Students will understand the fundamental tools for the interpretation of earth history,:*
- *Students will master information related to important changes in the physical earth.*
- *Students will master information related to important changes in the biological earth.*
- *Students will deepen their understanding of "Earth's Dynamic Equilibrium".*

### **BSc semester-V Paper- I** **Economic Geology**

- *Understand the nature and importance of the resource industry*
- *Describe the variety of minerals deposits and how they are found and formed*
- *Demonstrate knowledge of the variety of or forming processes*
- *Identify common rock type minerals found in and around ore deposits*
- *Demonstrate knowledge of variety of ore forming processes*
- *Differentiate between resources and reserves and how to estimate them.*

### **BSc semester-V Paper- II** **Elements of Remote Sensing and Geomorphology**

- *Students understand the basic concept of remote sensing and its application in basic operations in geology.*
- *Students develop the skill to study and analyse the aerial photographs and satellite imageries.*
- *Students understand the basic concept of geomorphology and the processes responsible for its formation and development.*
- *Students develop the skill to identify the various geomorphology features and its relevance intra-disciplinary approach.*

### **BSc semester-VI Paper- I** **Structural Geology**

- *Students understand the basic concept of various geological structures and its process of formation.*
- *Students develop the skill to identify various structures like fault, fold, etc in the field.*
- *Students understand the relevance of structure in various approaches like economic geology, tectonics etc.*
- *Students learn to draw the various structural maps and its application.*

## **BSc semester-VI Paper- II**

### **Elementary Hydrogeology and Environmental Geology**

- *Students will recognize and be able to demonstrate understanding of the hydrologic cycle as it pertains to ground water systems.*
- *Students are able to explain how different subsurface materials influence fluid flow including understanding of aquifers, aquitards, aquicludes, confined aquifers and unconfined aquifers.*
- *Students demonstrate understanding of surface water and ground water systems using the theories of hydraulically connected systems to predict the influence of pumping wells on availability of water in surface bodies.*
- *Students will be learn and be able to explain basic concepts and procedures associated oil and gas wells and the expanded use of hydraulic fracturing (fracking).*

### **Environmental Geology**

- *Students will understand impacts of geologic processes on humans.*
- *Students will directly perform lab tests.*
- *Students will know how to calculate and understand meaning behind moment magnitude, factor of safety, recurrence intervals, etc.*
- *Students will see the impacts of geologic processes on humans.*
- *Students will investigate problems of resource and waste management with growing populations.*
- *Students will work with and help others to complete projects in a team environment*

### **Programme Specific Outcome- PG**

- *Students are trained to be an expert in multilevel aspects of geology.*
- *Students achieve an sound technical knowledge about all sort complex concepts in geology.*
- *Students can view the various geological problems professional.*
- *Students can deal and provide solutions on different geological problems related to hydrogeology, petrology, mining, etc.*
- *Ultimately on completion of post graduate degree in geology the student became an individual with deep understanding of geology in every manner.*

## **MSc semester-I Paper- I**

### **Mineralogy and Crystallography**

- *Students develop proficiency over advanced level mineral properties and unique identification skill over it.*
- *Students develop the proficiency over the occurrence of minerals in specific with respective crystallization history.*

- *Students will be able under the various facets crystals study and develop proficiency over it.*
- *Students develop professional skills to classify the mineral into various crystal systems.*

**MSc semester-I Paper- II**  
**Igneous Petrology**

- *Students develop the proficiency over igneous rocks and their classification.*
- *Students develop the proficiency over igneous rocks origin & occurrence.*
- *Students develop the professional skill to specify igneous rock on various criteria.*
- *Students understand the crystallization history of igneous rock as well which intern helps to explain the origin of various minerals assemblages.*

**MSc semester-I Paper- III**  
**Metamorphic petrology and Geological Mapping**

- *Students develop the proficiency over metamorphic rocks and their classification.*
- *Students develop the proficiency over metamorphic rocks origin & occurrence.*
- *Students develop the professional skill to specify metamorphic rock on various criteria.*
- *Students understand the depositional history of metamorphic rock as well which intern helps to explain the origin of various minerals assemblages & respective thermodynamic situation.*
- *Students get expertise in mapping skills and develop a tempo of mapping in various geological fields.*

**MSc semester-I Paper- IV**  
**Stratigraphy and Indian Geology**

- *Students will develop the proficiency over historical geology.*
- *Students will develop the proficiency over fundamental tools for the interpretation of earth history.*
- *Students will develop the proficiency over inter-disciplinary approaches about earth geological history.*
- *Students will develop the proficiency over various stratigraphic columns in Indian subcontinent. .*

**MSc semester-II Paper- I**  
**Sedimentary, Geostatistics and Computer Application in Geology**

- *Students will develop the proficiency over sedimentary rocks and its classification.*
- *Students will develop the deep understanding of sedimentary rock origin and its respective occurrence.*
- *Students develop the professional skill to identify the specific sedimentary rocks.*
- *Students develop the technical attitude in terms of fundamental statistics and computer software used in geological studies.*

**MSc semester-II Paper- II**  
**Palaeontology and Applied Paleobiology**

- *Students will develop the proficiency over scientific approach to palaeontology, including appropriate methods of data acquisition and analysis.*
- *Students will understand how to best describe populations of fossil organisms and how individuals grow and populations evolve through time*
- *Students develop the professional skill to recognize and describe various species of fossils.*
- *Students develop the stratigraphic correlation with fossil and their evolution history.*
- *Students get a touch of various application of palaeontology in various fields of geology.*

**MSc semester-II Paper- III**  
**Geochemistry and Instrumentation Techniques**

- *Students will develop the proficiency over the geochemical system established in earth system.*
- *Students will develop the proficiency over migration of various elements through various cycles.*
- *Students will understand the functioning and operation of various instruments used for analysis specifically to geochemical studies.*

**MSc semester-II Paper- IV**  
**Structural Geology, Geodynamics and Tectonics**

- *Students understand the concept of geological structures and its origin.*
- *Students develop proficiency to identify various structures and their origin history.*
- *Students understand the dynamism of earth and its correlation with structural geology.*
- *Students develops and understanding about the tectonics and related aftermaths.*

**MSc semester-III Paper- I**  
**Hydrogeology & Watershed Management**

- *Students develop the proficiency over hydrogeological aspects in any geological setup.*
- *Students can exhibit the surface water and ground water systems using various theories to predict the influence of various factors.*
- *Students understand the basic concept of watershed management and its applications.*
- *Students develop the significance and a proficiency over watershed management for sustainable development.*

**MSc semester-III Paper- II**  
**Geomorphology, Remote sensing and GIS**

- *Students understand the basic and advanced concept of geomorphology and the processes responsible for respective landform development.*
- *Students develop the proficiency over various geomorphology processes and its relevance in inter-disciplinary approach.*
- *Students develop the proficiency over remote sensing and its application in basic and advanced operations in geology.*
- *Students develop the professional skill to analyse the aerial photographs and satellite imageries efficiently.*
- *Students understand the basic concept of Geographical Information System and its application in geology.*

**MSc semester-III Paper- III**  
**Environmental and engineering geology**

- *Students develop the proficiency over environmental perspectives in terms of geology.*
- *Students can examine the complications related to resource management and will be able to provide sustainable solutions.*
- *Students understand the fundamental aspects of engineering geology and their applications.*
- *Students can undertake various projects related to constructions on behalf of geology.*

**MSc semester-III Paper- IV**  
**Introduction to Geology (Foundation Course)**

- *Students will be able to get an opportunity to refresh their elementary understanding of geology.*

**MSc semester-IV Paper- I**  
**Ore Geology and Ore Microscopy**

- *Students develop the proficiency over various ore and their classification.*
- *Students understand the process of ore origin and its relevance in economic field.*
- *Students will be able to identify various ores on the basis of physical properties.*
- *Students understand the ore microscopy and its applications*
- *Students will be able to identify various ores on the basis of optical properties.*

**MSc semester-IV Paper- II**  
**Indian Mineral deposits and Mineral economics**

- *Students will get to know the Indian mineral deposits and their occurrences.*
- *Students will know the various mineral deposits abundance and characterisation.*
- *Students will understand the basic principles of mineral economic.*
- *Students will develop a deep understanding of mineral significance on economy of any country.*

**MSc semester-IV Paper- III**  
**Fuel Geology**

- *Students will get to know the options available in geology as fuel.*
- *Students understand the origin, occurrence and significance of different fuels derived from geological setup.*
- *Students develop the proficiency over fuel geology as a whole and can suggest the sustainable options.*

**MSc semester-IV Paper- IV**  
**Paleobiology (Foundation Course)**

- *Students will be able to get an opportunity to refresh their elementary understanding of Paleobiology.*

**MAHATMA GANDHI ARTS, SCIENCE & LATE N. P. COMMERCE COLLEGE,  
ARMORI, GADCHIROLI**

**DEPARTMENT OF PHYSICS**

**Course Outcomes**

**BSc semester-I Paper- I  
Mechanics and Relativity**

- *Understand the basic concepts of Classical Mechanics like laws of motion, centre of mass, momentum and energy, collision, dynamics of rigid body, rotational motion.*
- *Understand space and time coordinate transformation in relativistic motion using Lorentz Transformation. They will become familiar with fascinating concepts in Special Theory of Relativity viz. time dilation, variation of mass with velocity, length contraction, twin paradox, addition of velocities, etc.*
- *Have clear picture of mass energy equivalence relation and its applications.*
- *Understand how major concepts developed and changed over time.*
- *Experience the diverse applications of classical mechanics.*
- *Capable of analysing and solving problems using oral and written reasoning skills based on the concepts of classical physics and special theory of relativity.*
- *Acquire a foundation for advanced courses in physics.*

**BSc semester-I Paper- II  
Gravitation & Elasticity**

- *Understand the basic concept Newton's law of gravitation.*
- *Understand the logical knowledge about artificial satellite.*
- *Learn about GPS system.*
- *To know about Simple Harmonic Motion.*
- *Understand the basic concept of elasticity.*
- *Understand the logical knowledge construction of dam, building etc.*
- *Understand the basic concept of viscosity.*
- *Understand the logical knowledge about sprayer, atomizer and lift of an aeroplane.*
- *Know the basic concept of Bernoulli's theorem and Poiseuille's equation.*

**BSc semester-II Paper- I  
Vector Analysis and Electrostatics**

- *Understand the basic concepts vectors and vector analysis and its applications in Physics.*
- *Understand the basic theories in electrostatics such as electric field, electric dipole, electric quadrupole, electric potential, electric flux, Gauss' law and its applications to find out electric field, relation between electric field and electric potential.*
- *Develop the understanding of electric field in dielectric, capacitance, various types of capacitors, displacement vector, polarization in dielectric and use of it in practical applications.*

- *Develop skill to solve numerical problems on it.*
- *Acquire a foundation for advanced courses in physics*

### **BSc semester-II Paper- II** **Magnetostatics & Electromagnetic waves**

- *Understand the basic knowledge about faraday's law of electromagnetic induction.*
- *Understand the basic knowledge about transformer.*
- *Understand the basic concept kirchoff's law.*
- *Knowledge about Maxwell's equations.*
- *Understand the basic concept electromagnetic waves.*
- *Understand the basic concept about diamagnetic , paramagnetic and ferromagnetic material.*

### **BSc semester-III Paper- I** **Thermal Physics**

- *Understand the Kinetic theory of gases.*
- *To know about Monoatomic, Diatomic and Polyatomic gases.*
- *Understand the concept of Thermodynamics, Law of Thermodynamics.*
- *Understand the concept of Entropy.*
- *Understand the Clausis – Clapeyron Equation, Joule – Thomson effect, Porus – plug experiment and its application.*
- *Develop skill to solve numerical problem on it.*
- *Acquire a foundation for advanced courses in physics.*

### **BSc semester-III Paper- II** **Radiation and Statistical Physics**

- *Develop understanding of black body, black body radiation, temperature dependence of black body radiation spectra, failure of classical theories like Wien's distribution law, Rayleigh – Jeans law to explain black body radiation spectra.*
- *Learn Plank's quantum postulates, Plan's energy distribution law.*
- *Understand the principles in statistical physics, mainly for systems in thermal equilibrium.*
- *Understand quantum and classical statistical mechanics for ideal systems, and be able to judge when quantum effects are important. The student should understand the connection between microphysics and thermodynamics.*
- *Use statistical principles in a wide range of applications.*
- *Acquire a foundation for advanced courses in physics.*

### **BSc semester-IV Paper- I** **Waves, Acoustics and Laser**

- *Understand the Lissajous figure, application of lissajous figure and the Optical method.*
- *Understand the Wave motion and Relation between Group velocity and Phase velocity.*



- *To know about Ultrasonic wave, Properties and Application.*
- *Understand the Noise and Music. And characteristics of musical sound.*
- *Understand the Types of Laser, Properties and Application of Laser.*
- *Develop skill to solve numerical problem on it.*
- *Acquire a foundation for advanced courses in physics.*

### **BSc semester-IV Paper- II**

#### **Optical Physics**

- *Understand the basic concepts of Light Waves and properties of light waves like interference, diffraction, wavefront, phase change on reflection, interference in thin film due to reflected and transmitted light in parallel film, Haidinger Fringes, Fizeau Fringes.*
- *Understand Newton's Ring experiment and apply skills to find out wavelength and refractive index using Newton's Ring experiment.*
- *Understand Michelson's Interferometer experiment and apply skills to find out wavelength, wavelength difference, refractive index and visibility of fringes using Michelson's Interferometer.*
- *Differentiate between Fraunhofer and Fresnel diffraction. They will learn Half-period zones, zone plate, diffraction due to straight edge and narrow slit.*
- *Understand theory of diffraction grating and its application to find wavelength.*
- *Explain the physics of polarisation, different methods for the production of polarisation by reflection, double refraction. They will be able to explain Brewster's law, Nicol's prism and its applications, quarter and half wave plate.*
- *Develop skill to solve numerical problems on it.*
- *Acquire a foundation for advanced courses in physics.*

### **BSc semester-V Paper- II**

#### **Elements of modern Physics**

- *Understand about Schrodinger's Equations.*
- *Understand the concept of Eigen value and Eigen equation.*
- *Understand the logic of tunneling.*
- *To know about size of nucleus.*
- *Understand the knowledge about Binding energy.*
- *Understand about radioactivity.*
- *To know about emission of  $\alpha$ ,  $\beta$  and  $\gamma$  emission .*
- *Understand knowledge about liquid drop model.*
- *Understand basic knowledge about Nuclear Fission.*
- *To know about nuclear fusion and staller energy*

### **BSc semester-V Paper- II**

#### **Solid State Physics**

- *Understand the Crystal structure, and Types of lattices.*
- *To know about Diamagnetic, Paramagnetic and Ferromagnetic material and Weiss's theory of Ferromagnetism.*
- *Understand the Three electric vectors E, D and P.*

- *Understand the Energy band picture of conductor, semiconductor and insulator and Kroning Penny Model.*
- *Understand the Theory of superconductivity and Types.*
- *Develop skill to solve numerical problem on it.*
- *Acquire a foundation for advanced courses in physics.*

**BSc semester-VI Paper- I**  
**Nuclear & Particle Physics**

- *Understand the knowledge of constituent of nuclei.*
- *To know about Binding Energy and Packing fraction.*
- *Understand about different nuclear models.*
- *Understand the concept of nuclear force.*
- *To know about exo, endo reactions.*
- *Understand the concept of magic number*
- *To know about nuclear reaction.*

**BSc semester-VI Paper- II**  
**Digital and Analog Circuits and Instrumentation**

- *Understand the Digital circuits and Types of number system.*
- *understand the Types of Logic gates.*
- *Understand the Semiconductor devices and Application.*
- *To know about Power supply and Types of Rectifiers.*
- *Understand the Transistors and Classification of Amplifiers.*
- *Understand the Operational Amplifiers and application of Operational Amplifiers.*
- *Develop skill to Digital and Analog circuits on it*

**MAHATMA GANDHI ARTS, SCIENCE & LATE N. P. COMMERCE COLLEGE,  
ARMORI, GADCHIROLI**

**DEPARTMENT OF COMPUTER SCIENCE**

**Program Specific Outcomes:**

- **Foundation of mathematical concepts:**  
To use mathematical methodologies to crack problem using suitable mathematical analysis, data structure and suitable algorithm.
- **Foundation of Computer Science:**  
The ability to interpret the fundamental concepts and methodology of computer systems. Students can understand the functionality of hardware and software aspects of computer systems.
- **Foundation of Software development:**  
Foundation of Software development

**Course Outcomes:**

**Sem-I(CBCS)**

**Paper-I (INFORMATION AND COMMUNICATION TECHNOLOGY)**

- *Understand the History of Computers.*
- *Understand What is Computer and Basic concepts of computer.*
- *Aware about various types of Computers, types of input and output devices.*
- *Preparation of Algorithm and Flowchart of Program.*
- *Learn computer networks, its types and basics of Internet.*
- *Understand computer viruses and its types.*

**Paper-II (PROGRAMMING TECHNIQUES & INTRODUCTION TO 'C')**

- *Develop their programming skills.*
- *Be familiar with programming environment with C Program structure.*
- *Declaration of variables and constants.*
- *Understand operators, expressions and preprocessors.*
- *Understand arrays , it's declaration and uses.*

**Sem-II (CBCS)**

**Paper-I (OPERATING SYSTEM & LINUX)**

- *Know about functions and services of operating system.*
- *aware about different CPU scheduling algorithms*

- *Get familiar with different memory management techniques.*
- *Understand different disk and drum scheduling algorithms as well as deadlock Concepts.*
- *Get introductory knowledge about android operating system.*

### **Paper-II (STRUCTURED Programming With ‘C’)**

- *Design programs using Functions, Pointers , Structures and Unions in C language.*
- *Write a program using File Handling.*
- *Writing programs for drawing different graphical shapes.*

### **Sem-III(CBCS)**

#### **Paper-I (DATABASE MANAGEMENT & SYSTEM ANALYSIS)**

- *Get aware of Describing & storing data.*
- *Know about E-R Model by overview of database design..*
- *Get familiar with Conversion of ER to Relational model.*
- *Know about functional dependency and Data Normalisation.*
- *Understand Database Implementations.*
- *Make use of Concurrency control, Backup & recovery for large or huge of databases.*
- *Get aware about handling huge databases.*

#### **Paper-II(OBJECT ORIENTED PROGRAMMING WITH C++)**

- *Be familiar with Object Oriented Programming Environment.*
- *Differentiate between Structures oriented programming and object oriented programming.*
- *Understand different object modelling techniques and analysis like Generalization ,*
- *Aggregation and Metadata.*
- *Write Reusable , Extensible and Robust programs in C++.*

### **Sem-IV(CBCS)**

#### **Paper-I (ALGORITHM & DATA STRUCTURES)**

- *Know what is data structure and basic algorithmic notations.*
- *Analyze the time and space requirement of any algorithm.*
- *Understand different linear data structures for conversion of mathematical expressions and polynomial representations.*

- *Know the file structures.*

## **Paper-II (VISUALBASIC & INTRODUCTION TO .NET)**

- *Get aware about .Net platform.*
- *Understand looping structure, control flow statements and exception handling in VB.NET*
- *Understand object oriented programming in VB.NET*
- *Program using ADO.NET*

## **Sem-V (CBCS)**

### **Paper-I (E-Commerce & Web Designing)**

- *Use page layout, styles and text balance, site map, Master pages and content Pages, Navigation controls: Tree view, site map path(bread crumb), Menu navigation.*
- *Understand how to design website with different website development models.*
- *Know the different page types on websites and it's navigations.*

### **Paper-II( Database Programming with Oracle)**

- *understand features and data types in SQL server.*
- *create and manipulate databases for various applications.*
- *use procedures and trigger for performing complex operation on databases.*
- *handle errors using exception handling concepts.*
- *Get aware of Describing & storing data.*
- *Understand Database Implementations.*

## **Sem-VI (CBCS)**

### **Paper-I (CORE JAVA)**

- *Get knowledge JDK Environment.*
- *Explore polymorphism using Function and Operator Overloading ,overriding .*
- *Understand the different aspects of hierarchy of classes and their extensibility.*
- *Understand the concepts of streams and files .*
- *Write programs for handling runtime errors using exception.*

### **Paper-II (PYTHON PROGRAMMING)**

- *To acquire programming skills in core Python.*
- *To acquire Object Oriented Skills in Python*
- *To develop the skill of designing Graphical user Interfaces in Python*
- *To develop the ability to write database applications in Python*

## **Mahatma Gandhi Arts Science and late NP Commerce College armori Gadchiroli**

### **Department of Microbiology**

#### **Program specific outcome UG**

- *Microbiology is nothing but the seeing unseen world and Microscope is the key to open the world of microbiology.*
- *Applied Microbiology gives various biological routes to make environmental pollution free.*
- *Understand the concept of genetic and DNA technology.*
- *Student will acquire the solid base knowledge related to the medical field and immune system of human.*
- *Students will develop awareness regarding to diseases and their transmission.*
- *Good laboratorial practices develop many opportunities related to the Research oriented skill.*

#### **Course outcome**

##### **B.Sc Semester 1**

##### **Paper-I fundamental of microorganism microbiology**

- *To study deep about the microorganism and get information about their history and development*
- *Scientists give their theories to clear the ideas about microorganisms and their world*
- *To study the prokaryote and eukaryotes.*
- *Students start understanding the principle and classification of bacterial taxonomy.*
- *Students clear the concept regarding to the history and classification of viruses, archaebacteria and fungi.*

##### **Paper -II Microbial techniques**

- *Student initiated by understanding history and types of microscope and their mechanism.*
- *To study and understand the construction, working mechanism and application of different type of microscope.*
- *student get know more about the principle and procedure of staining and their classification understanding the preparation of pure culture.*
- *Characteristics of Ideal disinfectant. Microorganisms control by physical and chemical agent and mode of action of antibiotics.*

##### **Semester II**

##### **Paer -I General Biochemistry**

- *To study the principle of bio-chemicals, various type of isomers and bonds with their importance.*
- *Students Acquire the information of different types of amino acids and proteins.*

- *To understand the definition, classification and biological significance and structure of Carbohydrate and lipids.*
- *Students get understand the definition and composition of nucleic acid and the structure of DNA and RNA.*

### **Paper-II Applied Microbiology**

- *Student started understanding the definition and composition of air and their different types of sources of microorganism in air.*
- *To study and understand the types of water and sewage water with sources of microorganisms. Different types of method to treat the water and sewage water.*
- *To study the composition of milk and various sources which can contaminate milk and cause milk borne diseases.*

### **Semester III**

#### **Paper-I : microbial physiology and metabolism**

- *Student start the session by understanding the concept of phases of growth curve.*
- *To study brief about the enzymes, their properties and Kinetics.*
- *Student understand the concept of different type of Pathways and cycles.*
- *To clear the concept of alcohol and lactose fermentation pathway.*

#### **Paper-II food soil microbiology and microbial Ecology**

- *Students learn more about sources of contamination of food and get mire about of food borne diseases, infections and food poisoning.*
- *Students will understand significance of microorganisms in soil and important elemental mental cycles.*
- *students will know more about understanding the association of bacteria with each other for their growth.*
- *Study of environmental biotechnology.*

### **Semester IV**

#### **Paper I Industrial microbiology**

- *Students will acquire a knowledge about the scope and basics of industrial microbiology, also the stage of fermentation.*
- *To study about the raw material used for fermentation processes and importance of microorganisms.*
- *Student understand the whole process of Upstream and Downstream process.*
- *Students learn different types of products and their recovery by industrial processes of fermentation and product recovery operations.*

#### **Paper -II microbial Genetics and Molecular Biology**

- *Student increase their knowledge by understanding the concept of gene Regulation and gene action.*
- *Students will learn frequency and types of mutation and enzymes involve in replication.*

- *To understand synthesis and process of transcription and translation.*
- *To get more information about genetic recombination.*

## **Semester V**

### **Paper-I medical microbiology**

- *Student learn more about the different medical term and stages of infectious diseases.*
- *To study more about the transmission of diseases and agents involve in Transmission.*
- *To understand difference of pathogenicity and virulence.*
- *To get information about different type of diseases and study the pathogenic microorganisms.*

### **Paper-II Bioinstrumentation**

- *Students understand the concept of electromagnetic radiation and spectrophotometer.*
- *To study brief account of different type of chromatography.*
- *To clarify the concept of electrophoresis and different types of blotting techniques.*
- *To study basic principle and different type of centrifugation techniques.*

## **Semester VI**

### **Paper-I Recombinant DNA technology**

- *To study history and fundamental tool for rDNA technology.*
- *To study in vitro construction of rDNA molecule isolation and transfer into suitable host.*
- *To study the construction of gene library also the principle and method of PCR technique.*
- *To study the application of products of rDNA technology.*

### **paper-II immunology**

- *student develop the basic knowledge about the function of immune system.*
- *Students also get more informative about how immunity of the host work.*
- *Students acquire the information about antigen, antibody and their reaction with different applicable methods.*
- *Session end with studying hypersensitivity and autoimmunity.*



**MAHATMA GANDHI ARTS, SCIENCE & LATE N. P. COMMERCE COLLEGE,**

**ARMORI, GADCHIROLI**

**DEPARTMENT OF MATHEMATICS**

**Programme specific outcome – UG**

- Build logic to deal with problems in mathematics.
- Make students understand the basic structure of mathematics i.e. sets, relation and functions and relation among them.
- Develop the ability to understand concepts in mathematics on their own.

**COURSE OUTCOMES :-**

**B.Sc. Semester I:- Paper I**

**DIFFERENTIAL AND INTEGRAL CALCULUS**

After completion of this course students will be able to :

- *Revise concepts of limit, continuity and differentiability.*
- *Learn Mean Value Theorems and their applications.*
- *Deal with Taylor's series, Maclaurin's series of  $\sin x$ ,  $\cos x$ ,  $\exp(x)$ ,  $\log(1+x)$  etc.*
- *Learn the concepts of Beta and Gamma function and their properties.*
- *Learn the advanced technique to solve double integral.*

**B.Sc. Semester I:- Paper II**

**DIFFERENTIAL CALCULUS AND TRIGONOMETRY**

After completion of this course students will be able to :

- *Find limit, continuity of two variable functions.*
- *Understand partial differentiation and various method to find them.*
- *Learn about homogeneous functions, Taylor's series of two variable functions.*
- *Find minima and maxima using Lagrange's multiplier method.*
- *Learn tracing of curves, find tangent and normal of curve.*
- *Deal with complex functions, finding roots of complex numbers.*
- *Learn circular and hyperbolic functions.*
- *Learn De'moivre's theorem and its applications.*

**B.Sc. Semester II:- Paper III**

**ORDINARY DIFFERENTIAL EQUATIONS AND DIFFERENCE EQUATIONS.**

After completion of this course students will be able to :

- *Deal with first order differential equation.*
- *Find integrating factor.*

- Deal with linear equations, Bernoulli's equation and first order higher degree equations solvable for  $x, y, p$ .
- Find orthogonal trajectory.
- Solve simultaneous differential equations.
- Solve linear equation with constant coefficients by finding complementary function and particular integral.
- Deal with Cauchy- Euler's equation.
- Find wronskian and its properties.
- Solve differential equation using method of variation of parameter.
- Form difference equation.
- Solve linear difference equation.
- Deal with Homogeneous linear equation with constant coefficient and non-homogeneous linear equations.

### **B.Sc. Semester II:- Paper IV**

#### **PARTIAL DIFFERENTIAL EQUATION**

After completion of this course students will be able to :

- Understand linear partial differential equation of first order and formation of partial differential equation by eliminating the arbitrary constants and arbitrary functions.
- Solve total differential equation, Lagrange's linear partial differential equation.
- Solve various types of partial differential equations, such as
 
$$f(p, q) = 0$$

$$z = px + qy + f(p, q)$$

$$f(z, p, q) = 0$$

$$f(x, p) = g(y, q)$$
- Solve partial differential equation using Charpit's method.
- Solve homogeneous partial differential equation with constant coefficient by finding complementary function and particular integral.
- Find solution of non homogeneous linear partial differential equation.
- Classify second order partial differential equation.

### **B.Sc. Semester III:- Paper V**

#### **REAL ANALYSIS**

After completion of this course students will be able to :

- Understand the concepts of real sequence, their convergence and divergence and Cauchy convergence criterion for sequence.
- Understand the concepts of infinite real series their convergence and divergence.
- Find convergence of series by using various tests such as comparison test, P- series test, ratio test, Leibnitz's test.
- Understand the basic of metric, neighborhood, closed set, open sets.

- *Learn about metric spaces, Cauchy sequence and complete metric space.*
- *Understand concepts of Reimann integral and properties of integrable functions.*

### **B.Sc. Semester III:- Paper VI**

#### **SET THEORY AND LAPLACE TRANSFORMATION**

After completion of this course students will be able to :

- *Gain basic knowledge of sets, subsets, classes of sets and countability of sets.*
- *Learn basic concepts of relation and types of relations.*
- *Learn basic concepts of Fuzzy sets, examples of Fuzzy sets and operations on Fuzzy sets.*
- *Understand the alpha cuts and convex Fuzzy sets.*
- *Gain knowledge about Laplace transform, its properties.*
- *Learn inverse Laplace transform and its applications on differential equations and partial differential equations.*

### **B.Sc. Semester IV:- Paper VII**

#### **ALGEBRA**

After completion of this course students will be able to :

- *Understand the basic of groups, their various types, its properties.*
- *Learn basic of Normal subgroups, cosets, their properties.*
- *Find homomorphism and isomorphism of groups, kernel of homomorphism.*
- *Learn fundamental theorems of isomorphism.*
- *Gain basic knowledge of Ring theory, Field, subring and their properties.*
- *Learn about integral domain and characterization of ring.*

### **B.Sc. Semester IV:- Paper VIII**

#### **ELEMENTARY NUMBER THEORY**

After completion of this course students will be able to :

- *Find greatest common divisor of more than two integers by using Euclidean algorithm and least common multiple.*
- *Solve linear diophantine equation.*
- *Gain knowledge about fundamental theorems of arithmetic and unique factorization theorem.*
- *Learn about congruence and properties of congruence.*
- *Learn about Chinese remainder theorem and Goldbach conjecture.*
- *Gain knowledge about arithmetic function, Euler's theorem, Mobius  $\mu$  function, the  $\tau$  and  $\sigma$  functions.*

## **B.Sc. Semester V:- Paper IX**

### **LINEAR ALGEBRA**

After completion of this course students will be able to :

- *Understand the basic concepts of vector spaces, subspaces and their properties.*
- *Learn about linearly dependence and independence and their basic properties.*
- *Learn about basis and dimension of vector spaces.*
- *Learn about linear transformation, algebra linear transformation and rank nullity theorem.*
- *Gain knowledge about Dual space, Bi dual space, adjoint of linear transformation and eigenvalue and eigenvectors of linear transformation.*
- *Learn basic concepts of Inner product space, Cauchy Schwartz inequality.*
- *Deal with orthogonal vectors, orthogonal sets and Gram Schmidt orthogonalization process.*

## **B.Sc. Semester V:- Paper X**

### **MATRICES AND THEORY OF EQUATIONS**

After completion of this course students will be able to :

- *Gain basic knowledge of matrices, types of matrices.*
- *Operate elementary operations on matrices.*
- *Reduce matrices to normal form.*
- *Find inverse of matrices, and row rank, column rank and rank of matrices.*
- *Solve homogeneous and non homogeneous system of linear equations by matrix inversion method, crammer's rule, Gauss Jordan elimination method.*
- *Find eigenvalues and eigenvectors of matrices.*
- *Gain basic knowledge about polynomial equations in one variable.*
- *Locate roots of polynomial by using Descarte's rule sign.*
- *Understand relation between roots and coefficients of polynomial.*
- *Find transformation of equations if there is change in sign of roots, if root is multiplied by given number.*
- *Learn Cordon's method, Ferrari's method and Descarte's method.*

## **B.Sc. Semester VI:- Paper XI**

### **NUMERICAL METHODS**

After completion of this course students will be able to :

- *Solve nonlinear equations  $f(x) = 0$  by using various methods such as*
  - 1) *Bisection method*
  - 2) *Regula falsi method*
  - 3) *Secant method*
  - 4) *Newton- Raphson method*

- Solve linear algebraic equation  $Ax = b$  by using various methods such as
  - 1) Gauss elimination method
  - 2) Partial pivoting
  - 3) Gauss- Jordan elimination
  - 4) LU decomposition method
  - 5) Gauss- Jacobi method of iteration
  - 6) Gauss- Seidel method of iteration.
- Gain knowledge about Finite difference operator, Central difference operator.
- Learn about Newton- Gregory forward and backward difference interpolation formula, Lagrange's interpolation formula, Newton's divided difference interpolation formula for unequal interval.
- Learn about various method for numerical differentiation such as
  - 1) Newton's special and general formula
  - 2) Newton's divided difference formula
- Find minima and maxima of a tabulated function.
- Learn about various methods to find integration numerically such as
  - 1) Trapezoidal rule
  - 2) Simpson's one-third rule
  - 3) Simpson's three-eight rule
  - 4) Boole's rule
- Find degree of precision and truncation error of above quadrature rule.

## **B.Sc. Semester VI:- Paper XII**

### **COMPLEX ANALYSIS AND VECTOR CALCULUS**

After completion of this course students will be able to :

- Learn about analytic function, Cauchy- Riemann equation and harmonic function.
- Find Mobius transformation and cross ratio of complex numbers.
- Find complex integration.
- Use Cauchy's integral theorem and Cauchy integral formula.
- Find singularities and residue of complex functions.
- Find vector differentiation and vector integration.
- Find Gradient, Divergent and curl of vector functions.
- Use of Green, Gauss and Stokes theorems.

## **Programme specific outcome – PG**

- *Provide advanced knowledge of various topics in mathematics.*
- *Build base which will motivate students in mathematics.*
- *Enhance thinking, problem solving skills, project work dealing.*
- *Guiding students for preparing competitive exams like NET, SET, GATE etc.*

## **COURSE OUTCOMES :-**

### **MSc semester I, Paper I**

#### **GROUP THEORY AND RING THEORY**

After completion of this course students will be able to :

- *Learn basic of groups, types of subgroups, isomorphism theorems and automorphisms.*
- *Understand concepts direct products, Sylow theorems.*
- *Learn about Ideals and Zorn's Lemma.*

### **MSc semester I , Paper II**

#### **REAL ANALYSIS**

After completion of this course students will be able to :

- *Learn concepts of uniform convergence and continuity, integration.*
- *Deal, with topological manifold, smooth manifold.*
- *Gain advanced level in differentiation.*

### **MSc semester I, paper III**

#### **TOPOLOGY**

After completion of this course students will be able to :

- *Learn basic concepts of sets, open sets, limit points, closed sets and closure.*
- *Understand compactness and homeomorphism*
- *Learn  $T_0$ ,  $T_1$ ,  $T_2$  spaces and sequences.*

### **MSc semester I, paper IV**

#### **LINEAR ALGEBRA**

After completion of this course students will be able to :

- *Learn about vector spaces, linear combination, linear dependence, linear independence.*
- *Deal with matrices and system of equation.*
- *Understand concept of Inner Product Spaces, Gram Schmidt orthogonalization and Jordan canonical forms.*

## **MSc semester II, paper I**

### **FIELD THEORY**

After completion of this course students will be able to :

- *Learn Unique factorization domains, Principal Ideal domains, Euclidean domains and polynomial rings over unique factorization domain.*
- *Understand the concept of Automorphism group, fundamental theorem of Galois theory.*
- *Learn Irreducible polynomial and Eisenstein criterion.*

## **MSc semester II, paper II**

### **LEBESGUE MEASURE THEORY**

After completion of this course students will be able to :

- *Learn measurable sets and lebesgue measure and measurable functions.*
- *Deal with Riemann integral and general Lebesgue integral.*
- *Learn differentiation of monotone functions and an integral.*
- *Learn  $L^p$  spaces, the Holder and Minkowski Inequality.*

## **MSc semester II, paper III**

### **ADVANCED TOPICS IN TOPOLOGY**

After completion of this course students will be able to :

- *Learn advanced concepts of topological properties.*
- *Learn Quotient topology, Urysohn's metrization theorem and paracompact spaces.*
- *Understand concepts of Nets and filters.*

## **MSc semester II, paper IV**

### **CLASSICAL MECHANICS**

After completion of this course students will be able to :

- *Understand Hamilton's principle, and Lagrange's equations.*
- *Learn about Legendre transformations, Routh's procedure and oscillations.*
- *Deal with equations of motion and conservation theorems in the poisson bracket formulation.*

## **MSc semester III, paper I**

### **COMPLEX ANALYSIS**

After completion of this course students will be able to :

- *Understand how to find limit, derivative, integration of complex functions.*

- *Learn about power series, zeroes and singularities of complex functions.*
- *Learn concept of linear transformation, Mobius transformation.*

### **MSc semester III, paper II**

#### **FUNCTIONAL ANALYSIS**

After completion of this course students will be able to :

- *Understand Banach spaces, natural embedding of  $N$ .*
- *Learn open mapping theorem, Hilbert spaces and orthonormal sets.*
- *Understand finite dimensional spectral theory, matrices, determinant and spectrum of an operators.*

### **MSc semester III, paper III**

#### **MATHEMATICAL METHODS**

After completion of this course students will be able to :

- *Learn how to find Fourier transform, Fourier series, finite Fourier cosine and sine transform and multiple Fourier transform.*
- *Evaluate integral, find solution of differential equations.*
- *Understand concepts of Laplace transform, inverse Laplace transform, their properties and applications.*
- *Understand the Hankel transformation and it's properties.*
- *Understand the Mellin transformation and it's properties.*

### **MSc semester I, paper IV**

#### **OPERATIONAL RESEARCH I**

After completion of this course students will be able to :

- *Deal with linear programming problems by using Simplex method.*
- *Deal with transportation problems and assignment problems.*
- *Understand the concepts of Dynamic programming.*
- *Deal with games and strategies.*

### **MSc semester IV, paper I**

#### **DYNAMICAL SYSTEMS**

After completion of this course students will be able to :

- *Understand dynamical systems and vector field.*
- *Find whether differential equation has solution or not that is existence of solution of differential equation.*
- *Understand nonlinear sinks, stability and Liapunov function.*
- *Understand the Poincare Bendison theorem and it's applications.*



- *Understand asymptotic stability of closed orbits and discrete dynamical systems.*
- *Check uniqueness and continuity of non-autonomous differential equations.*

### **MSc semester IV, paper II**

#### **PARTIAL DIFFERENTIAL EQUATION**

After completion of this course students will be able to :

- *Understand the concepts of partial differential equations, classification of integral.*
- *Understand Charpit's method and Jacobi method of solving partial differential equations.*
- *Learn Quasi linear equations, non linear first order partial differential equations.*
- *Deal with second order partial differential equations.*
- *Learn about Laplace's equation, Duhamel's principle and families of equipotential surfaces.*

### **MSc semester IV, paper III**

#### **INTEGRAL EQUATIONS**

After completion of this course students will be able to :

- *Understand basic concepts of integral equations, types of kernels, Leibnitz's rule and connection with differential equation.*
- *Find solution of Fredholm integral equations.*
- *Understand concepts of Hilbert Schmidt theory, complex Hilbert space, gram Schmidt orthogonalization process.*
- *Find Schmidt's solution of the non homogeneous Fredholm integral equation of second kind.*
- *Find solution of Volterra integral equation of second kind by successive substitution and successive approximation.*

### **MSc semester IV, paper IV**

#### **OPERAYIONAL RESEARCH II**

After completion of this course students will be able to :

- *Understand concepts of integer programming*
- *Learn advanced techniques of goal programming and linear programming problem.*
- *Understand the concepts of queueing theory.*
- *Understand the concepts of nonlinear programming and methods.*

  
**PRINCIPAL**  
 M.G.Arts, Science &  
 Late N.P.Commerce College  
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