Criterion 2- Teaching Learning and Evaluation

Key Indicator- 2.6 Student Performance and Learning Outcome

2.6.1 - Programme Outcomes (POs) and Course Outcomes (COs) for all Programmes offered by the institution are stated and displayed on website

Programs Outcomes and Course Outcomes

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Jr. College Code No. 22-02-001

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English Department

Programs Outcomes and Course Outcomes

PO'S & CO's of English

Learning Outcomes, Program Outcome, Program Specific Outcome and Course Outcome

Department of English

Learning Outcomes

After completing the graduation in English, student will be able to:

LO1: improve the basic skills regarding learning of language

LO2: develop and enrich creative and innovative writing skills

LO3: develop and enrich creative and innovative writing skills

LO4: able to increase the considerable number of diction for daily communication

LO4: analyse, interpret and evaluate any important task in daily life

LO5: develop critical and evaluative skills

LO6: acquaint with major and useful terms, theories and concepts in literature and history

LO7: apply grammatical rules while communication

LO8: develop and enrich communicative competence

LO9: communicate at official and working places with ease and comfort

LO10 make overall and exhaustive development of their personality

LO11: attain the skills like proof reading, editorial writing and research writing.

Programme Outcomes

After completion of this Programme students will be able to:

PO1: Apply and Demonstrate practical knowledge of the subject in diverse sectors

PO2: Elucidate and explain the basic and fundamental concepts, critical terms and theories, advanced concepts and techniques in the programme.

PO3: Comprehend, Comment and appreciate literature in developing aesthetic, emotional, mental, moral, intellectual skills of an individual and creating a healthy society.

PO4: Relate the implications as well as influences of environmental, socio-economic, socio-cultural and socio-political literature to the daily life and how they can provide solutions to the social, political, economic, environmental and cultural issues through written articles, novels, dramas, poetries and stories to spread the message of equality, nationality, social harmony, ecosystem, fraternity, brotherhood, etc.

PO5: Evaluate and analyze critically the literature inrelation to social issues and appreciate the strength, understand the challenges and suggest the required and beneficial improvements for better results.

PO6: Apply multiple paradigms of literature and social sciences to make the life of human beings more joyful and meaningful.

PO7: Increase the participation in various social, political, environmental and cultural activities.

PO8: Establish an independent identity and constructa multifaceted and overall personality to enrich earning skills

PO9: Apply knowledge of literature in connection with social, economic, cultural, political and environmental approaches to cultivate human and moral values which generate responsibility and positive attitude for leading well balanced life for nation building.

PO10: Enrich and demonstrate development of communication skills like, listening, speaking, reading and writing which will help to express ideas, thoughts and views effectively.

Programme Specific Outcomes

**On completion of graduation programme, students are able to: **

PSO1: Compose literary works.

PSO2: Critically appreciate a literary work of art.

PSO3: Use communication skills effectively in personal, social and working life.

PSO4 Communicate in English fluently as well as write appropriately.

PSO5 Inculcate moral and human values for transformation of behaviour.

PSO6 Write clearly, effectively, imaginatively and to accommodate writing skills to create text.

PSO6 Analyse the structure of English words, study etymology of words, to study texts from the point of view of morphology, phonology, grammar, syntax and semantics.

PSO7 Recognize and comprehend various aspects of English language.

Course Outcomes

After completion of these courses students will be able to:

B.A. Part I

Ability Enhancement Compulsory Course (AECC 1) (Compulsory English) (CBCS)

CO1: Implement use of vocabulary effectively

CO2: Motivate use of English for effective oral communication

CO3: Inculcate human values with the help of the course

CO4: To improve four basic skills of English language learning (LSRW)

CO5: Appreciate prose and poetry on various levels.

CO6: Discuss themes of poetry and prose texts.

B. A. Part II

Ability Enhancement Compulsory Course (AECC) (CBCS)

English for Communication (Compulsory English)

CO19: Highlight growth and development of oral and written communication skills in English.

CO20: Learn using language skills in personal, academic and professional life for presentation

CO21: Increase confidence and other soft skills as required in various jobs

CO22: Set an example of broad human and cultured perspective.

CO23: Read, understand and comprehend prose and poetry

CO24: Implement a drastic change and increase in vocabulary

(Discipline Specific Core) (DSC-C5)

English (Paper III) (Semester III) Literature and Cinema (CBCS)

CO25: Explain basic terminology in film

CO26: Discuss the characteristics of film adaptations

CO27: Enable and enhance active vocabulary

CO28: Study the text and film from the point of view of adaptation

CO29: Present a critical analysis of a work of art

CO30: Explore the central ideas and issues in film

(Discipline Specific Core) (DSC-C6)

English (Paper IV) (Semester III) Partition Literature (CBCS)

CO31: Highlight the hidden dimensions of the partition to the students

CO32: Present various stories and incidents during Partition

CO33: Give the dark side and violence appeared in works during partition

CO34: Discuss importance of peace, non-violence and brotherhood in the pre-independence as well as the contemporary scenario.

CO35: Explore human values that appear in literary works

CO36: Show increasing reading capability.

B.A. Part III

Compulsory English

Ability Enhancement Compulsory Course (CBCS)

ENGLISH FOR COMMUNICATION

CO37: Interact in English in oral and written forms, in their rout-in life and working places.

CO38: Show essential skills in face job interviews confidently and effectively.

CO39: Exemplify soft skills required at workplaces and in real life.

CO40: Maintain respect to others' opinions and views to develop democratic attitude in group discussions

CO41: Recite and comprehend poetry and prose passages.

CO42: Explore values of humanity.

INTRODUCTION TO LITERARY CRITICISM (CBCS) Discipline Specific Elective

Semester V (Paper VII) (DSE- E11) & Semester VI (Paper XII) (DSE- E136)

CO43: Study the concepts of literary criticism

CO44: High light the orists' contributions to the branch of literary criticism.

CO45: Discuss about multiple critical and literary movements.

CO46: Study themes and poetic devices in poetry

CO47: Focus contribution of the contemporary critics

CO48: Study and applythe definitions of critical terms

ENGLISH DRAMA (CBCS) Discipline Specific Elective

Semester V (Paper IX) ((DSE – E13) & Semester VI (Paper XIV) (DSE – E138)

CO49: Explore basic forms and several types of drama.

CO50: State ideological or socio-political relations of drama.

CO51: Perform interesting dialogues and actions on the stage

CO52: Enable the learners' of understanding human nature through the characters appearing in dramatic work

CO53: Elucidate various elements and movements in history of the drama

CO54: Study, analyse and observe characters in dramas

ENGLISH NOVEL (CBCS)

Discipline Specific Elective Semester V (Paper X) ((DSE – 14)& Semester VI (Paper XV) (DSE – E139)

CO55: increase capability of reading a text

CO56: State political or socio-cultural issues in the novels.

CO57: Understand various elements of the novel.

CO58: Write several short stories, articles and short stories

CO59: Study about the rise and development of novel

CO60: Observe and study the characters in the novel

English Special ENGLISH POETRY (CBCS)

Discipline Specific Elective

Semester V (Paper VIII) (DSE – E12) and Semester VI (Paper XIII) (DSE – E137)

CO61: Focus rise and development of the poetry in English from the days of Shakespearean times to the Digital age.

CO62: Recite and interpret the poems with implied meaning

CO63: Observe comparative sense between Western and Eastern poetic traditions as well as between literary movements.

CO64: Sing poem salong with proper pronunciation, music and rhythm.

CO65: Apply appropriate vocab while interacting.

CO66: Motivate an increase in literary and linguistic capability.

LANGUAGE AND LINGUISTICS (CBCS) Discipline Specific Elective

Semester V –Paper XI (DSE - E15) & Semester VI – Paper XVI (DSE - E140)

After completion of this course students will be able to:

CO67: Study the basic concept of communication.

CO68: Find similarities and dissimilarities between many languages.

CO69: Study the fundamentals of grammar

CO70: Understand importance of words and phrases.

CO71: Study basic elements and types of clauses.

CO72: Differentiate and identify the types of sentences and formal or functional label.

B.Sc. Part I

Ability Enhancement Compulsory Course (AECC –A) (Compulsory English) (CBCS)

English for Communication

CO73: Focus the effective use of diction and words

CO74: Choose English for effective written communication

CO75: Comprehend human values through English language

CO76: Learn the basic skills of English language (LSRW) effectively.

CO77: Share daily routine in English language

CO78: Learn describing objects, persons in English correctly

B. Sc. Part III

Compulsory English Ability Enhancement Compulsory Course (CBCS)

ENGLISH FOR COMMUNICATION

CO79: Grow Communication skills in English in oral and written forms.

CO80: Attain needful skills for job interviews.

CO81: Inculcate soft skills needed at job places and in real life.

CO82: Apply knowledge in written interaction for media writing

CO83: Comprehend and enjoy poetry and prose.

CO84: Find and present human values in literary works.

B.Com. Part I

Ability Enhancement Compulsory Course (Compulsory English) (CBCS)

English for Business Communication

CO85: Present use of vocabulary effectively.

CO86: Use English interaction in oral form

CO87: Find and inculcate human values through the text

CO88: Enhance of four basic skills of English language learning (LSRW)

CO89: Applying English from commercial point of view

CO90: Develop writing for business correspondence

B.COM. Part II

ABILITY ENHANCEMENT COMPULSORY COURSE (AECC) (CBCS)

ENGLISH FOR BUSINESS COMMUNICATION (Compulsory English)

CO91: Interacting in English in oral as well as written forms.

CO92: Applying Linguistic skills and competence in personal, academic and professional life.

CO93: Learn and develop soft skills required in job sector.

CO94: Increase active participation in the process of learning.

CO95: Set an example of humanity and civilised point of view.

CO96: Discuss about banking correspondence in English

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Mathematics Department

Programs Outcomes and Course Outcomes

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Department of Mathematics

Program Outcomes (POs)	
PO 1.	Find higher order derivatives, partial order derivatives of various functions.
PO 2.	Evaluate limits of various functions and use indeterminate forms to find it.
PO 3.	Identify whether the given function is continuous or discontinuous. If discontinuous, tell type of discontinuity.
PO 4.	Solve all the types of ordinary differential equations by choosing propermethod.
PO 5.	Determine solution of partial differential equations by choosing propermethod.
PO 6.	Develop an understanding of the underlying unifying structures of mathematics (sets, relations and functions, logical structure) and the relationshipsamong them.
PO 7.	Explain all the properties of real numbers.
PO 8.	Describe structure of group, rings and vector spaces and inner product spaces.
PO 9.	Apply various results to discuss convergence of sequences and series.
PO 10.	Define notions of logic and discuss graphs and trees.
PO 11.	Assess the Riemann Integrability of a given function.
PO 12.	Analyse the convergence of improper integrals.
PO 13.	Memorize all about the metric space.
PO 14.	Identify analyticity of a function of complex variable.
PO 15.	Evaluate complex integration.
PO 16.	Acquire knowledge of Scilab and Python programming.

Raje Ramrao Mahavidyalaya, Jath. Dist-Sangli ★ Estd. 1969

HEAD
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Raje Ramrao Mahavidyalaya, Jath

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Program Specific Outcomes (PSOs)	
PSO 1	To solve the problems in differential equations.
PSO 2	To train the students to handle the differentiation and integration in higher dimensions.
PSO 3.	To solve real-life problems using optimization technique.
PSO 4.	To use mathematical software to analyze the dynamical systems.
PSO 5.	To study abstract structures.

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Department of Mathematics

Course Outcomes (COs)		
B. Sc. Part – I		
Semester – I		
DSC – A5	Calculus	CO 1. Evaluate the limit and examine the continuity of a function at a point. CO 2. Understand the consequences of meanvalue theorems for differentiable functions. CO 3. Apply Leibnitz theorem to obtain higher derivatives of product of two differentiable functions.
DSC – A6	Differential Equations	CO 4. Understand types of differentialequations. CO 5. Solve different types of ordinarydifferential equations. CO 6. Understand applications of differential Equations.
Semester – II		
DSC – B5	Multivariable Calculus	CO 7. Learn conceptual variations whileadvancing from one variable to several variables in calculus. CO 8. Set up and solve optimization problemsinvolving several variables. CO 9. Learn the concept of Jacobian of a transformation.
DSC – B6	Basic Algebra	CO 11. Use fundamental concepts in Numbertheory. CO 12. Solve examples on congruence. CO 13. Determine nth roots of unity. CO 14. Understand various properties ofhyperbolic functions.
CCPM-I	Core Course Practical in mathematics-I	CO 15. Understand the concept of tracing ofcurves. CO 16.Solves the examples of plotting ofcurves using the open source software. CO 17. Understand applications of differential equations.

B.Sc. Part-II		
Semester–III		
DSC-5C	**Elements of Differential Equation**	CO18. Identify types of higher order ordinary differential equations. CO19.Solve different types of higher order ordinary differential equations. CO20.Understand geometrical interpretation of simultaneous and total differential equations.
DSC-6C	**Numerical Methods**	CO21.Find numerical solution of algebraic, transcendental and system of linear equations. CO22.Learn about various interpolating methods to find numerical solutions. CO23.Find numerical solutions of integration and ODE by using various methods. CO24.Apply various numerical methods in real life problems.
Semester IV		
DSC-5D	**Vector Calculus**	CO25.Understand and evaluate the concepts of gradient, divergence and curl of point functions in terms of Cartesian co-ordinate system. CO26. Understand and evaluate different types of line, surface and volume integrals and the two integral transformation theorems of Gauss and Stokes.
DSC-6D	**Integral Calculus**	CO27.Understand special functions. CO28.Understand types of multiple integrals. CO29.Apply special function in applications. CO30.Apply multiple integral in real life problems.
CCPM-II	**Core Course Practical in mathematics-II**	CO 31. Solve different types of differential equations and examples. CO 32.Apply various numerical methods to find approximate solutions of problem. CO 33. Understand different type of line, surface and volume integrals. CO34. Understand special function.
CCPM-III	**Core Course Practical in mathematics-III**	CO 35.Understand and implement basic numerical algorithms using scilab, including root-finding, interpolation, differentiation and integration. CO 36.Learn how to use Scilab built-in function and programming tools to solve mathematical problem, and how to create custom functions and script for more

		complex tasks. CO 37.Gain practical experience with real-world applications of mumerical methods such as data analysis, optimization, and simulation. CO38.Develop critical thinking skills and the ability to analyze and interpret numerical results.
B.Sc. Part-III		
Semester–V		
DSE – E9	**Mathematical Analysis**	CO 39. The integration of bounded function ona closed and bounded interval CO 40. Some of the families and properties ofRiemann integrable functions CO 41. The applications of the fundamentaltheorems of integration CO 42. Extension of Riemann integral to the improper integrals when either the interval of integration is infinite or the integrand has infinite limits at a finite number of points on theinterval of integration. CO 43. The expansion of functions in Fourier series and half range Fourier series
DSE -E10	**Abstract Algebra**	CO 44. Basic concepts of group and rings withexamples CO 45. Identify whether the given set with the compositions form Ring, Integral domain or field. CO 46. Understand the difference between theconcepts Group and Ring. CO 47. Apply fundamental theorem, Isomorphism theorems of groups to prove thesetheorems for Ring. CO 48. Understand the concepts of polynomial rings, unique factorization domain.
DSE – E11	**Optimization Technique**	CO 49. Provide student basic knowledge of a range of operation research models and techniques, which can be applied to a variety ofindustrial and real life applications. CO 50. Formulate and apply suitable methodsto solve problems. CO 51. Identify and select procedures for various sequencing, assignment, transportationproblems. CO 52. Identify and select suitable methods forvarious games. CO53. To apply linear programming and find algebraic solution to games
DSE – E12	**Integral Transforms**	CO 54. Understand concept of LaplaceTransform. CO 55. Apply properties of Laplace Transformto solve differential equations. CO 56. Understand relation between Laplaceand Fourier Transform.

		CO 57. Understand infinite and finite FourierTransform. CO 58. Apply Fourier transform to solve real life problems.
Semester–VI		
DSE – F9	**Metric Spaces**	CO 59. Acquire the knowledge of notion ofmetric space, open sets and closed sets. CO 60. Demonstrate the properties of continuous functions on metric spaces, CO 61. Apply the notion of metric space tocontinuous functions on metric spaces. CO 62. Understand the basic concepts of connectedness, completeness and compactnessof metric spaces, CO 63. Appreciate a process of abstraction of limits and continuity to metric spaces.
DSE – F10	**Linear Algebra**	CO 64. Understand notion of vector space,subspace, and basis. CO 65. Understand concept of linear transformation and its application to real lifesituation. CO 66. Work out algebra of linear transformations. CO 67. Appreciate connection between linear transformation and matrices. CO 68. Work out eigen values, eigen vectorsand its connection with real life situation.
DSE – F11	**Complex Analysis**	CO 69. Learn basic concepts of functions ofcomplex variable. CO 70. Be introduced to concept of analyticfunctions. CO 71. Learn concept of complex integrationand basic results thereof. CO 72. Be introduced to concept of sequenceand series of complex variable. CO 73. Learn to apply concept of residues to evaluate certain real integrals.
DSE – F12	**Discrete Mathematics**	CO 74. Use classical notions of logic: implications, equivalence, negation, proof bycontradiction, proof by induction, and quantifiers. CO 75. Apply notions in logic in other branchesof Mathematics. CO 76. Know elementary algorithms: searching algorithms, sorting, greedy algorithms, and theircomplexity. CO 77. Apply concepts of graph and trees totackle real situations. CO 78. Appreciate applications of shortest path algorithms in computer science.

CCPM-IV	**Practical in mathematics-II**	CO 79. Student will able to solve transportationproblem using various methods. CO 80. Understand the concepts of assignment problem and able to solve the problems. CO 81. Student able to solve problems in game theory and job processing problems.
CCPM-V	**Practical in mathematics-II**	CO 82. Students able to solve the problems onLaplace transform. CO 83. Student understands the concept ofinverse Laplace transform and solves the various problems. CO 84. Student able to apply and solve the problems in Fourier transform.
CCPM-VI	**Practical in mathematics-II**	CO 85. Students able to use basic operators inPython. CO 86.Student understands the concept offunctions in Python. CO 87.Student will be to solve the problems of numerical methods using Python.
CCPM-VII	**Practical in mathematics-II**	CO 88.Student able to read, collect, understandsthe culture of mathematics. CO 89. Student gain the knowledge about thehistoric development of mathematics. CO 90.Student gets the knowledge of various mathematical concepts, new innovations in mathematics.

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Political Science Department

Programs Outcomes and Course Outcomes

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Department of Political Science

Programme Specific Outcomes (PSOs)

1. **Political Science After completion of the programme, the students will develop ability:**
2. **Understand the history of political ideology and political thoughts from ancient to the modern age.**
3. **Understand the major political systems in the world.**
4. **Understand the dimensions of international politics.**
5. **Interpret the role of regional and international organization in the new world order.**
6. **Analyse the concepts of good governance and e-governance.**
7. **Realize the organs of government machinery and representation.**
8. **Understand the formulation and execution of decisions and laws made by the government.**

Course Outcomes (COs)

B.A. I – Paper No. I and II

Introduction to Political Science and Indian Constitution

1. **Students learn the political process and Indian Constitution.**
2. **To Increase knowledge of the political science discipline.**
3. **Introducing the Indian Constitution with a focus on the role of the Constituent Assembly and examining the essence of the Preamble.**
4. **Examining the Fundamental Rights and Duties of Indian citizens with a study of the significance and status of Directive Principles.**
5. **Assessing the nature of Indian Federalism with focus on Union-State Relations.**

B.A. II – Paper No. III, IV and V, VI

Political Process of India, Indian Political Thoughts and Local Self Government in Maharashtra

1. **Students realize the governing process.**
2. **Understand the history of political ideology and political thoughts from ancient and Modern India.**
3. **Understand Decentralization process in India and Maharashtra.**
4. **Promote participate of students in local governing process.**
5. **Tracing the evolution of Indian political thought from ancient India to modern India.**
6. **Assessing the various National and State Political parties in India.**

B.A. III

Paper No. VII and XII

Political Theory and Modern Political Concepts

1. **Students get theoretical knowledge and conceptual framework of the student is expanded.**
2. **Understand the history of political concept.**
3. **Increase recognition of the major problems, the leading policies, and the legal issues confronting contemporary political systems.**
4. **Provide opportunities to undergraduate and graduate students to link theory and practice and to apply political science knowledge and skills to actual problem-solving and community service.**

Paper No. VIII and XIII

Public Administration and Politics and Movements in Maharashtra

1. **Explaining the nature, scope and evolution of Public Administration; Private and Public Administration; Principles of Socialist Management.**
2. **Discussing making of Public Policy Making and methods of Implementation.**
3. **Analysing the major Concepts in Public Administration.**
4. **Tracing the Challenges in the discipline of Public Administration like New Public Administration (NPA); Comparative Public Administration (CPA) and Development Administration.**
5. **Analysing the Administrative Processes: decision making; communication and control; leadership; co-ordination.**
6. **Analysing the Civil Service in India.**

Paper No. IX and IVX

International Politics and Foreign Policy of India

1. **Analyse and explain contemporary international phenomena, including identifying and assessing the positions and interests of key international subjects.**
2. **Identify important historical continuities and changes in international relations and in the machinery of diplomacy.**
3. **Explaining scope and subject matter of International Relations as an autonomous academic discipline.**
4. **Approaches and methods to study the discipline through Political realism, Pluralism and Worlds System's Model.**
5. **Examining the issues of Underdevelopment, Terrorism, Regionalism and Integration that characterizes the Post-cold war order.**

Paper No. X and XV

Comparative Politics Comparative Government

(With special reference to UK & USA)

Tracing the evolution of Comparative Politics as a discipline and drawing a distinction between Comparative Politics and Comparative Government.

1. **Investigating the nature and scope of Comparative Politics.**
2. **Analysing the approaches the approaches and models of comparison: systems analysis; structural functionalism; and institutional approach.**
3. **Critically analysing the features of a liberal democratic and socialist political system with focus on UK, USA and the People's Republic of China.**

4. **Discussing the features of a federal system with special reference to USA and China.**
5. **Critically looking at the rights of the citizens of UK, USA and PRC from a comparative perspective.**

Paper No. XI and XVI

Western Political Thought I and Western Political Thought II

1. **Providing an insight into the dominant features of Ancient Western Political Thought: Ancient Greek political thought with focus on Aristotle and Plato; Roman Political Thought: its contributions with special emphasis on the emergence of Roman law.**
2. **Examining the features of Medieval Political Thought.**
3. **Evaluating the Renaissance; political thought of Reformation; and Machiavelli.**
4. **Critically examining and contributions to the theory of various western political thinkers.**

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BCA Department

Programs Outcomes and Course Outcomes

PO'S & CO's of B.C.A. Program

Program Outcomes

After completion of this program students should be able to --

PO1: Apply knowledge of ICT in solving business problems.
PO2: Learn various programming languages and custom software.
PO3: Design component, or processes to meet the needs within realistic constraints.
PO4: Identify, formulate, and solve problems using computational temperaments.
PO5: Comprehend professional and ethical responsibility in computing profession.
PO6: Express effective communication skills.
PO7: Recognize the need for interdisciplinary and an ability to engage in life-long learning.
PO8: Knowledge of contemporary issues and emerging developments in computing profession.
PO9: Utilize the techniques, skills and modern tools, for actual development process

Course Outcomes

B.C.A.-I Sem-I

1) Course Code: CC 101 Fundamentals of Computer

After completion of this Course students should be able to

1.Understand basic concepts of computer.
2. Describe peripheral devices and number systems.
3. Understand operating environment
4. Demonstrate the use of Linux Operating system commands

2) Course Code: CC 102 Introduction to Programming using 'C'

After completion of this Course students should be able to

1. Able to implement the algorithms and draw flowcharts for solving Mathematical problem.
2. Ability to design and develop Computer programs, analyzes, and interprets the concept of pointers, declarations, initialization, operations on pointers and their usage.
3. Able to define data types and use them in simple data processing applications.

3) Course Code: AEC 103 Principles of Management

After completion of this Course students should be able to

1) Understand the influence of historical forces on current practice of mgmt.
2) Understand frameworks in the four functions of management.
3) Understand leadership styles to anticipate the consequences of each style
4) Be able to identify and apply appropriate management techniques for Orgn.
5) Understand social responsibility involved in business situations

4) Course Code: AEC 104 Business Communication

After completion of this Course students should be able to

1) Communicate in English in written as well as oral mode
2) Make presentations in English
3) Do effective business correspondence

5) Course Code: AEC 105 Office Automation

After completion of this Course students should be able to

1) Understand the components of office automation
2) Perform operations using MS Word and PowerPoint
3) Surf details through Internet

6) Course Code: CCL 106 Lab Course-I based on CC 102

After completion of this Course students should be able to

1) Understand and trace the execution of programs written in C language.
2) Write the C code for a given algorithm
3) Implement program with pointers &arrays, perform pointer arithmetic.

7) Course Code: CCL107 Lab Course based on AEC107

After completion of this Course students should be able to

1) Use internet & internet tools
2) Performs operations using MS-Word & MS-Powerpoint
3) Create business presentation using Powerpoint.

B.C.A.- I Sem-II

1) Course Code: CC 201 Database Management System

After completion of this Course students should be able to

1)Describe basic concepts of DBMS
2) Demonstrate the principles behind systematic database design approaches.
3) Learn MS-Access for database creation & handling transaction.

2) Course Code: CC 202 Operating System

After completion of this Course students should be able to

1) Possess knowledge of Operating Systems and their types.
2) Apply the concept of a process and scheduling algorithms.
3) Realize the concept of deadlock and different ways to handle it.

3) Course Code: CC 203 Object Oriented Prog.Using C++

After completion of this Course students should be able to

1) Understand object-oriented programming and advanced C++ concept
2) Apply the concepts of object, classes and constructor.
3) Implement concept of polymorphism in program.

4) Course Code: AEC 204 Financial Accounting with Tally

After completion of this Course students should be able to

1) Use basic accounting terminology, procedures and systems of accounts.
2) Understand financial statements
3) Demonstrate MIS reports in Tally ERP.

5) Code:AEC 205 Mathematical Foundation for Comp. Applications

After completion of this Course students should be able to

1) Basic knowledge of set theory, functions and relations concepts matrix needed for designing and solving problems.
2) Use graph algorithms to solve problems.
3) Construct simple mathematical proofs and possess the ability to verify them.

6) Course Code: CCL 206 Lab Course-III based on CC 201 & AEC 204

After completion of this Course students should be able to

1) Use MS-Access DBMS and design database
2) Perform operations on data using MS access features
3) Create company using Tally ERP
4) Perform accounting using Tally ERP

7) Course Code: CCL 207 Lab Course-IV based on CC 203

After completion of this Course students should be able to

1) Understand the difference between the top-down and bottom-up approach.
2) Describe the object-oriented programming approach in connection with C+
3) Apply the concepts of object-oriented programming.
4) Illustrate the process of data file manipulations using C++

B.C.A.- II Sem-III

1) Course Code: CC 301 Web Technology

After completion of this Course students should be able to

1) Understand basics of website and web development life cycle.
2) Design website using HTML and CSS
3) Implement client side scripting for website development
4) Understand importance and working of HTML5

2) Course Code: CC 302 Computer Network & Internet

After completion of this Course students should be able to

1) Understand the concept of computer network.
2) Identify different components required to build different networks.
3) Recognize the functions of network layers and different protocols.
4) Discuss the important features of the Internet and Web.

3) Course Code: CC 303 Data Structure using C

After completion of this Course students should be able to

1) Understand various searching & sorting technique.
2) Implementing various data structures viz. Stacks, Queues.
3) Implementation of Linked Lists and Trees.

4) Course Code: AEC 304 Elements of Statistics

After completion of this Course students should be able to

1) Explain various term used in Statistics.
2) Describe the Measures of Central Tendency and Dispersion
3) Understand Analysis of Bivariate data(Correlation and Regression)
4) Elaborate Sampling Techniques and Time Series Analysis.

5) Course Code: AEC 305 HRM & Materials Management

After completion of this Course students should be able to

1) Understand Human Resource Planning Process.
2) Explain functions of material management.
3) Demonstrate 5 R in purchasing and Inventory control techniques.

6) Course Code: CCL 306 Lab Course V based on CC301

After completion of this Course students should be able to

1)Understand Web Design Concept
2) Design Web Pages using CSS, HTML & Java Script

7) Course Code: CCL 307 Lab Course VI based on CC303

After completion of this Course students should be able to

1) Implement various data structures viz. Stacks, Queues, Linked Lists & trees
2) Apply Ms Excel features for Data Manipulation and Analysis.

B.C.A.- II Sem-IV

1) Course Code: CC 401 RDBMS

After completion of this Course students should be able to

1)Describe the fundamental elements of Relational Database Management Systems.
2)Explain various commands in data languages with example.
3) Explain various commands in data languages with example.
4) Understand various subqueries & joins.

2) Course Code: CC 402 Software Engineering

After completion of this Course students should be able to

1) Develop SRS system.
2) Use of analysis and design tools for system development.
3) Apply software engineering concepts in software development.

3) Course Code: CC 403 Dot Net Technology

After completion of this Course students should be able to

1) Understand features of C# DOT NET.
2) Implement various server controls for website development.
3) Design and develop dynamic web application using ADO.Net

4) Course Code: CC 404 Entrepreneurship Development

After completion of this Course students should be able to

1) Identify Business Opportunities and prepare business plan.
2) Know project finance agencies.
3) Understand New Opportunities and Challenges in digital entrepreneurship

5) Course Code: CCL 405 PHP

After completion of this Course students should be able to

1) Understand the environment of PHP programming Language.
2) Develop web applications using PHP.

6) Course Code: CCL 406 Lab Course-VII based on CC401

After completion of this Course students should be able to

1) Design database for business applications.

2) Use of queries ,Sub queries, join , view & stored procedures on databases.

7) Course Code: CCL 407 Lab Course-VIII based on CC 403

After completion of this Course students should be able to

1) Design console applications using C#

2) Design web application using ASP.NET

8) Course Code: CCL 408 Mini Project

After completion of this Course students should be able to

1) Implement fundamental domain knowledge of core courses for developing simple Business application.
2) Utilize the software development techniques, skills and modern tool.

B.C.A.- III Sem-V

1) Course Code: CC 501 Java Programming

After completion of this Course students should be able to

1) Understand the features of Java Language.
2) Demonstrate Object-Oriented Programming using Java.
3) Develop Multithreaded and Networking applications.
4) Design GUI applications using AWT and Swing.

2) Course Code: CC 502 Data Warehousing & Data Mining

After completion of this Course students should be able to

1) Define the Data warehouse architecture and its Implementation.
2) Describe the Architecture of a Data Mining system.
3) Understand the various Data preprocessing Methods.
4) Perform classification and prediction of data

3) Course Code: CC 503 IT Security

After completion of this Course students should be able to

1) Understand the concept and need of IT security.
2) Identify different security threats to information system.
3) Describe security controls used for IS security.
4) Understand provisions in IT Act 2000 and Design security policy for IT Organistaion.

4) Course Code: DSE 504 Elective-I Python Programming

After completion of this Course students should be able to

1) Acquire programming skills in core Python.
2) Develop Python programs with conditionals and loops
3) Understand advance datatypes in Python Programming.
4) Develop problem solving skills.

5) Course Code: GE 505 Elective-II Digital Marketing

After completion of this Course students should be able to

1) Learn the applications of Digital Marketing.
2) Analyze the different digital marketing avenues.
3) Examine digital marketing tools.
4) Build real life problems in the domain of digital marketing.

5) Course Code: CCL 506 Lab Course –IX based on CC 501

After completion of this Course students should be able to

1) Implement the Concept of OOP in Java through simple programs.
2) Implementation & Evaluation of concept related to class & inheritance.

5) Course Code: CCL 507 Lab Course –X based on DSE 504

After completion of this Course students should be able to

1) Demonstrate and use different Datatypes in Python
2) Apply various built looping statements and Modules provided by Python.

B.C.A.- III Sem-VI

1) Course Code: CC 601 Cloud Computing

After completion of this Course students should be able to

1) Understand the fundamental principles of Cloud Computing
2) Understand the importance of virtualization in distributed computing.
3) Explain the core concepts of the cloud computing paradigm
4) Describe cloud computing applications

2) Course Code: Elective-I DSE 602 R- Programming

After completion of this Course students should be able to

1) Understand the fundamental syntax of R through practice exercises.
2) Describe the control statements and functions in R.
3) Use data visualization tools.
4) Analyze a data set in R and represent findings.

3) Course Code: Elective-II GE 603 M-Commerce

1) Understand the concepts and scope of E- Commerce
2) Differentiate between m commerce and E-Commerce.
3) Describe M commerce applications in industry.
4) Explain security issues and control measures in M-commerce.

4) Course Code: AEC 604 Soft Skills & Personality Development

After completion of this Course students should be able to

1) Reflect on the importance of Professional behavior.
2) Articulate and adapt the various facets that make up one's personality.

5) Course Code: AEC 605 Industrial Visit

After completion of this Course students should be able to

1) Linking existing knowledge with learning experience
2) Examining the gap between classroom theoretical training & practical learning in real life environment.

6) Course Code: CCI 606 Lab Course XI

1) Apply syntax of R through practice exercises.
2) Implement the control statements, functions, data visualization. in R

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Jr. College Code No. 22-02-001

"Dissemination of Education for Knowledge, Science & Culture"
-Shikshanmaharshi Dr. Bapuji Salunkhe

Shri Swami Vivekanand Shikshan Sanstha, Kolhapur's
RAJE RAMRAO MAHAVIDYALAYA, JATH
Dist. Sangli (Maharashtra) 416 404
UGC Recognition under 2F & 12 (B) UGC Act 1956
(Affiliated to Shivaji University, Kolhapur)
NAAC Reaccredited : "B" (Third Cycle)

Estd : June 1969

Office : (02344) 246251, Fax : (02344) 246015, Resi : (02344) 247251 | Email : rajeramrao@gmail.com | Website : www.rrcollege.org

Hindi Department

Programs Outcomes and Course Outcomes

"ज्ञान, विज्ञान आणि सुसंस्कार यांसाठी शिक्षणप्रसार"

शिक्षणमहर्षी डॉ.बापूजी साळुंखे

श्री स्वामी विवेकानंद शिक्षण संस्था कोल्हापूर, संचलित

राजे रामराव महाविद्यालय,जत,जि.सांगली

हिंदी विभाग

Programme Outcomes- B.A.

After the completion of three year graduation, students will be able to acquire the Following attributes.	
PO 1	**Ethics and Human Values**: Able to practice ethics in public life and demonstrate adherence to human values,
PO 2	**Application-** Able to apply techniques, skills and tools in new contexts.
PO 3	**Analysis-** Able to analyse problems objectively and find solutions.
PO 4	**Social Awareness-** Able to understand and interact with people belonging to diverse backgrounds (social, cultural, economic, religious and linguistic) And use culture-specific norms.
PO 5	**Individual and Team Work-** Able to use appropriate individual and group Behaviour in real life situations.
PO 6	**Domain Knowledge-** Acquire knowledge of fundamentals, principles and Methods.
PO 7	**Communication Skills-** Effective speaking, active listening, giving and Receiving feedback, empathy and respect for others.
PO 8	**Environment and Sustainability-** Able to use natural and community resources with a sense of responsibility and engage in environmentally Sustainable practices.
PO 9	**Skill Development-** Able to use skills acquired during the programme in Real life situations.

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B.A.-Hindi

Programme Specific Outcomes

हिंदी से स्नातक करने के बाद निम्नलिखित कौशल तथा ज्ञान छात्रों को प्राप्त होगा।	
PSO 1	सरकारी कार्यालयों में प्रयुक्त कार्यालयीन हिंदी का परिचय प्राप्त हुवा।
PSO 2	हिंदी साहित्य के विविध साहित्यिक विधाओं से परिचय हुवा।
PSO 3	हिंदी साहित्य के अध्ययन से सामाजिक, नैतिक, राष्ट्रीय मूल्यों का विकास हुवा।
PSO 4	अनुवादक ,राजभाषा अधिकारी, निवेदक, गीतकार, संवाददाता, पटकथा लेखक, विज्ञापन लेखक, प्रकाशक, संपादक आदि पदों पर रोजगारों के अवसरों का ज्ञान हवा।
PSO 5	साहित्यशास्त्र के विविध अंगो का परिचय हुवा।
PSO 6	हिंदी के प्राचीन तथा आधुनिक साहित्यकारों का परिचय हुवा।
PSO 7	प्रयोजनपरक साहित्य से परिचय हुवा।
PSO 8	हिंदी भाषा के उद्भव, विकास तथा विभिन्न रूपों का ज्ञान प्राप्त हुवा।
PSO 9	छात्रों को साहित्यिक समझ विकसित कर किसी रचना को समग्रता में समझने और जाँचने- परखने की दृष्टि प्रदान हुई।

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राजे रामराव महाविद्यालय,जत,जि.सांगली

हिंदी विभाग

B.A.-Hindi

Course Outcomes B.A-I, Sem-I

(Hindi Compulsory) सृजनात्मक लेखन Paper-A

At the end of the course, students will be able to…..	
CO 1	हिंदी भाषा तथा व्याकरण का परिचय।
CO 2	हिंदी के मानक वर्तनी का परिचय ।
CO 3	सुजनात्मक लेखन का परिचय।
CO 4	पत्रकारिता का परिचय।

(Hindi Optional) हिंदी आधुनिक कविता Paper-I

At the end of the course, students will be able to…..	
CO 1	कविता के प्रति छात्रों में रूचि बढ़ाना।
CO 2	हिंदी के आधुनिक कवियों का परिचय।
CO 3	हिंदी भाषा के श्रवण, लेखन, पठन कौशल्य विकसित करना।
CO 4	छात्रों की कल्पनाशक्ति को बढ़ावा देना।

B.A-I, Sem-II

(Hindi Compulsory) व्यावहारिक लेखन Paper-B

At the end of the course, students will be able to…..	
CO 1	हिंदी भाषा के विविध रूपों का परिचय करना।
CO 2	व्यावहारिक लेखन का परिचय करना।
CO 3	पत्रलेखन कौशल्य विकसित करना ।
CO 4	अनुवाद एवं विज्ञापन से परिचय करना।

(Hindi Optional) हिंदी आधुनिक गद्य साहित्य Paper-II

At the end of the course, students will be able to…..	
CO 1	हिंदी गद्य विधाओं का परिचय करना।
CO 2	हिंदी के गद्य रचनाकारों से परिचित करना।
CO 3	विविध मूल्यों का विकास करना।

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B.A-II, Sem-III

(Hindi Opt) अस्मितामुलक विमर्श और हिंदी गद्य साहित्य Paper-III

At the end of the course, students will be able to…..	
CO 1	कहानी विधा का परिचय करना l
CO 2	हिंदी गद्य रचना तथा रचनाकारों का परिचय करना l
CO 3	विविध विमर्श से परिचय करना l
CO 4	कथेतर साहित्य से समीक्षात्मक परिचय करना l

(Hindi Opt) हिंदी संतकाव्य तथा आधुनिक कविता Paper-IV

At the end of the course, students will be able to…..	
CO 1	मध्यकलीन साहित्यकारों का परिचय करना l
CO 2	मध्यकालीन साहित्य से नैतिक मूल्यों का विकास करना l
CO 3	आधुनिक कविता तथा आधुनिक कवियों का परिचय करना l
CO 4	दोहें एवं पदों का परिचय करना l

B.A-II, Sem-IV

(Hindi Opt) रोजगारपरक् हिंदी Paper-V

At the end of the course, students will be able to…..	
CO 1	हिंदी में रोजगार के अवसरों की जानकारी प्रदान करना l
CO 2	पत्राचार से परिचित करना l
CO 3	रोजगारउन्मुख शिक्षा एवं कौशल्य विकसित करना l
CO 4	व्याकरण तथा अंको का परिचय करना l

(Hindi Opt) हिंदी आधुनिक गद्य साहित्य Paper-VI

At the end of the course, students will be able to…..	
CO 1	खंडकाव्य विधा से परिचित करना l
CO 2	नैतिक तथा राष्ट्रीय मूल्यों को विकसित करना l
CO 3	खंडकाव्य की कवयित्री से परिचित करना l
CO 4	खंडकाव्य के तत्व तथा भाषाशैली का परिचय करना l

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B.A-III, Sem-V

(Hindi Spl) विधा विशेष का अध्ययन (नाटक) Paper-VII

At the end of the course, students will be able to…..	
CO 1	नाटक विधा का स्वरुप तथा तत्वों से परिचय करना।
CO 2	नाटककार के जीवनपरिचय से अवगत करना।
CO 3	नैतिक तथा भावात्मक मूल्यों का विकास करना।
CO 4	छात्रों में संवाद कौशल्य विकसित करने में सहायक।

(Hindi Spl) साहित्यशास्त्र Paper-VIII

At the end of the course, students will be able to…..	
CO 1	काव्य का स्वरुप तथा तत्वों से परिचित करना।
CO 2	काव्य के विविध प्रकारों से परिचित करना।
CO 3	साहित्यिक सिद्धांतो की जानकारी प्राप्त करने में सहायक।
CO 4	अलंकारो का परिचय करने में सहायक।

(Hindi Spl) हिंदी साहित्य का इतिहास Paper-IX

At the end of the course, students will be able to…..	
CO 1	हिंदी की इतिहास लेखन परंपरा की जानकारी समझाना।
CO 2	हिंदी भाषा के साहित्य की विकास यात्रा से अवगत करना।
CO 3	विभिन्न काल की विविध परंपरा से अवगत करना।
CO 4	प्राचीन कवियों से आधुनिक काल तक के कवियों का परिचय।

(Hindi Spl) प्रयोजन मूलक हिंदी Paper-X

At the end of the course, students will be able to…..	
CO 1	पारिभाषिक शब्दों की जानकारी देना।
CO 2	सरकारी पत्राचार का परिचय करना।
CO 3	समाचार लेखन का परिचय करना
CO 4	रोजगारउन्मुख शिक्षा एवं कौशल्य विकसित करना।

(Hindi Spl) भाषाविज्ञान Paper-XI

At the end of the course, students will be able to…..	
CO 1	हिंदी भाषा एवं लिपि के उद्भव विकास का परिचय करना।
CO 2	भाषा शुद्धता के प्रति छात्रों को जागृत करना।
CO 3	भाषा की विविध बोलीओं की जानकारी प्रदान करना।
CO 4	भाषा के रूप,स्वरूप,विशेषताओं की जानकारी प्राप्त करना।

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B.A-III, Sem-VI

(Hindi Spl) विधा विशेष का अध्ययन (उपन्यास) Paper-XII

At the end of the course, students will be able to…..	
CO 1	उपन्यास विधा का स्वरुप तथा तत्वों से परिचय करना I
CO 2	उपन्यासकार के जीवन परिचय से अवगत करना I
CO 3	नैतिक तथा भावात्मक मूल्यों का विकास करना I
CO 4	छात्रों में संवाद कौशल्य विकसित करने में सहायक I

(Hindi Spl) साहित्यशास्त्र Paper-XIII

At the end of the course, students will be able to…..	
CO 1	महाकाव्य का स्वरुप तथा तत्वों से परिचित करना I
CO 2	साहित्य की विविध विधाओं से परिचित करना I
CO 3	साहित्य की विविध विधाओं से मूल्य प्राप्त करने में सहायक I
CO 4	छात्रों में आलोचनात्मक दृष्टि निर्माण करना I

(Hindi Spl) हिंदी साहित्य का इतिहास Paper-XIV

At the end of the course, students will be able to…..	
CO 1	हिंदी साहित्य की विभिन्न धाराओं से परिचित करना I
CO 2	रीतिकालीन साहित्य की विविध विशेषताओं का परिचय करना I
CO 3	आधुनिक काल की विविध विशेषताओं का परिचय करना I
CO 4	रीतिकाल तथा आधुनिक काल के कवियों का परिचय करना I

(Hindi Spl) प्रयोजन मूलक हिंदी Paper-XV

At the end of the course, students will be able to…..	
CO 1	अनुवाद कौशल्य विकसित करने में सहायक I
CO 2	संदर्भ स्त्रोतों का परिचय करने में सहायक I
CO 3	जनसंचार के इलेट्रोनिक माध्यमों की जानकारी देना I
CO 4	रोजगारपरक हिंदी की उपयोगिता स्पष्ट करना I

(Hindi Spl) भाषाविज्ञान Paper-XVI

At the end of the course, students will be able to…..	
CO 1	भाषाविज्ञान के अंगो का परिचय करना I
CO 2	भाषाविज्ञान का अन्य विज्ञानों से संबंध जोड़ना और महत्व समझाना I
CO 3	देवनागरी लिपि और विकास की जानकरी देना I
CO 4	मानक वर्तनी और व्याकरण से अवगत करना I

Raje Ramrao Mahavidyalaya Jath, Dist-Sangli ★ Estd. 1969

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"Dissemination of Education for Knowledge, Science & Culture"
-Shikshanmaharshi Dr. Bapuji Salunkhe

Shri Swami Vivekanand Shikshan Sanstha, Kolhapur's

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Geography Department

Programs Outcomes and Course Outcomes

"Dissemination of Education through Knowledge, Science and Culture"

--Shikshanmaharshi Dr. Bapuji Salunkhe

Shri Swami Vivekanand Shikshan Sanstha, Kolhapur's

Raje Ramrao Mahavidyalaya, Jath

Dist. Sangli-416 404 (MS)

Department of Geography

PROGRAMME SPECIFIC OUTCOMES AND COURSE OUTCOMES

A. PROGRAMME SPECIFIC OUTCOMES (PSO's):

On Completion of the BA (Geography) Students shall be able to.

1. Study the different branches of Physical and Human Geography with their interdisciplinary approaches.
2. Study the land forms and processes of their development.
3. Understand the structure and composition of Earth and its Atmosphere.
4. Study the factors affecting on distribution of population, patterns and functions of settlement andagriculture.
5. Understand importance of natural resources and find out the ways of their conservation.
6. Know the relationship of human activities with the resources and economic development of the countryat global context.
7. Acquire skills in Cartography, Preparation of thematic Maps, Map reading and interpretation.
8. Make use of M S Excel in representation of statistical data.
9. Know the importance and applications of GIS, GPS and Remote sensing data forgeographical study.
10. Able to conduct village survey and organization of study tour for understanding the geographicalregion.

B. COURSE OUTCOMES (CO's):

B. A. Part- I

Paper- I Physical Geography DEC –10

1. Know the basic Concepts of PhysicalGeography
2. Understand the nature of atmosphere and Learn basics of temperature and Atmosphericpressure
3. Have basic knowledge of interior of earthan internal forces
4. Aware about the forces and their effects
5. Learn processes behind the formation of fluvial cycle and landforms

6. Develop interest in landforms around and know the landforms seen in nearby areas

Paper- II Human GeographyDSC – B 24

1. Know the basic Concepts of HumanGeography
2. Develop interest in human imprints onEarth
3. Understand the concepts and theories ofpopulation
4. Learn about the settlements and theirfunctions
5. Know the agriculture and its problems
6. Become aware about agricultural problemsClass Course Semester Outcomes.

Understand the concept of Google Earth and Google Map.

B. A. Part- II

Paper- III Soil GeographyDSE – III

1. Know the fundamental concepts of soilgeography
2. Understand the soil is key resource for thedevelopment of the country
3. Aware about process of soil formation,development and soil properties
4. Know classification, characteristics anddistribution of soils
5. Aware about soil degradation, soil erosion
6. Know about conservation of soils andmethods of soil management

Aware about the soil profile and understand the soil sampling and soil analysis

Paper- IV Resource GeographyDSE - IV

1. Understand the concept resource geography and classification of resources
2. Acquire knowledge about major resourceswith their distribution, utilization and problems.
3. Study sustainable resource development
4. Familiarize with the cartographictechniques.

Paper- V OceanographyDSE- V

1. Know the oceanography is the fundamentalbranch of physical geography.
2. Understand marine is the key resource forthe development of the country
3. Know the properties and dynamics of the oceans.
4. Able to know and draw oceanic currents inAtlantic, Pacific and Indian ocean
5. Understand the Marine Resources and aware about Marine Deposits and Pollution
6. Understand theoretical concepts regardingHypsographic Curve, Wind Rose, Isohalines

and Isotherms with.

Paper- VI AgricultureGeographyDSE –VI

1. Understand concept and development of Agriculture. Examine the role of agricultural determinants towards the changing croppingpattern.
2. Know agricultural systems and land-usetheory.
3. Learn regionalization and agriculturalregionalization and associated problems.
4. Understand agricultural problems andsustainable development of agriculture.

Learn cartographic techniques and graphical representation.

B. A. Part- III

Paper No. VII Evolution of Geographical Thought

1. Student should be able to understand in-depth about the Evolution of Geographical Thought.
2. Students should be able to analyse the recent trends in geography.
3. Student should be able to make use of various models of paradigms and debates in the geographical studies.
4. Understanding of recent trends in geography.

Paper No. VIII Geography of India

1. Understand the physiographic profile of India
2. Aware about the climatic seasons in India
3. Know about soils, vegetation, drainage systems in India.
4. Learn about the mineral and power resources of India
5. Aware about Importance of Agriculture and Industries in Indian Economy.

Understand the distribution Production and trade of major crops and industries in India

Paper No. IX Population Geography

1. Understand the concept and fundamentals of population geography along with relevance of demographic data.
2. The students would get an understanding of distribution and trends of population growth in the developed and less developed countries, along with population concepts. Understand the process and value ofGeographical Research
3. Understand the dynamics of population

Understand of the implications of population composition in different regions of the world.

Paper X Economic Geography ofIndia

1. Study the basics of Economic Geography
2. Acquainted with the relationship of human activities with natural resources
3. Know about manufacturing and Agricultural Industries and its theories.
4. Study the core part of the subject at global level

5. Study global level situation and apply this knowledge at local level.

Understanding of the transport and trade.

Paper XI Urban Geography

1. Study the basics of Urban Geography
2. Know the types of Urban settlements, sitesand their situation and functions
3. Understand the relationship between humanactivities and Urban development
4. Understand the Structure and Morphology of Urban Centers
5. Capable to handling the problematic situation in urban and rural areas
6. Become good planners and environmental conservators.

Paper No. XII Political Geography

1. Understand the distinct dimensions ofPolitical Geography
2. Create awareness about the role ofgeographical factors influencing the political characters of countries and regions
3. Learn major concepts, theories and elements of the Political Geography
4. Understand the geo- Strategic views forgeographical regions
5. Aware about resource conflicts and politics of displacement.

Paper No. XIII Map Work and Map Interpretation (Practical Paper I)

1. Understand the importance of map makingand map interpretation
2. Know importance of Map, Map Projection and concept of Scale.
3. Become confident to analyze and identify the landforms
4. Develop skill in map reading and mapinterpretation
5. Getting knowledge about S. O. I. toposheet and I. M. D. weather maps
6. Familiarize with different cartographictechniques and methods to represent physio-socio-economic data.

Paper No. XIV Advance Tools Techniques and Field Work (Practical Paper II)

1. Understand the importance of Field workand Advanced techniques in Geography
2. Application of modern tools andtechniques in Geography
3. Enhance the skill of instrumental survey
4. Understand use of computer and its application for analysis of geographical Data
5. Know the basics of Remote Sensing, Arial Photographs, GIS and GPS and its application

Raje Ramrao Mahavidyalaya,Jath.Dist-Sangli Estd. 1969

Head
Dept. of Geography
Raje Ramrao Mahavidyalaya,Jath

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Chemistry Department

Programs Outcomes and Course Outcomes

Shri Swami Vivekanand Shikshan Sanstha Kolhapur's,

Raje Ramrao Mahavidyalaya Jath, Sangli

Department of Chemistry

Program Outcomes:

1. Student will gain fundamental knowledge of chemistry which will help the for-PG studies and Research
2. Student will be able to know good laboratory practices and lab safety.
3. To make the learner proficient in analyzing the various observations and chemical phenomena presented to him during the course.
4. Students will be able to apply the fundamental knowledge to address the cross- cutting issues such as sustainable development
5. Students will be able to solve various problems by identifying the essential parts of a problem, formulate strategy for solving the problem, applying appropriate techniques to arrive at a solution, test the precision and accuracy of the solution and interpret the results.
6. Students will be able to communicate effectively i.e. being able to articulate, comprehend and write effective reports, make effective presentations and documentation and capable of expressing the subject through technical writing as well as through oral presentation.

Program Specific Outcomes:

1. Students will be able to explain fundamental concepts of inorganic, physical,organic, industrial and analytical chemistry.
2. Identify chemical formulae and solve numerical problems.
3. Students can use modern chemical tools, Models, Charts and Equipments.
4. Students will be able to prepare and qualify for competitive examinations
5. Students will understand good laboratory practices and safety.
6. Students will develop research-oriented skills.

Course Outcomes

B. Sc.-I (Chemistry)	
Course	**Outcomes**
Paper No. I (Inorganic Chemistry)	**After completion of these courses, students should be able to,** 1. Able to write electronic configuration of elements, fill electrons in different orbitals, draw energy level sequence of different orbitals, differentiate between electronegativity and electron affinity. 2. Differentiate between different types of bonds and able to identify the ionic bond in compounds. 3. Able to draw molecular orbital diagrams of homonuclear and heteronuclear diatomic molecules. 4. Able to find hybridization, geometry and magnetic properties of transition metal complexes.
Paper No. II (Organic Chemistry)	1. Understand the basic concepts of Organic Chemistry. 2. Understand the concept of chirality, optical isomerism, and nomenclature. 3. Learn aromatic-non-aromatic compounds and to understandthe mechanism of electrophilic substitution reactions. 4. Understand method of formation and chemical reactions of cycloalkanes, cycloalkenes and alkadienes.
Paper No. III (Physical Chemistry)	1. Understand the carnot cycle and its efficiency and concepts of enthalpy and entropy 2. Understand the free energy and laws of chemical equilibrium. 3. Understand the Vander walls equations and MaxwellBoltzman distribution law. 4. Understand the First and second order reaction.
Paper No. IV (Analytical Chemistry)	1. Understand the difference between qualitative and quantitative analysis, understand the terms error and accuracy in analytical experiments. Able to calculate the mean, median of analytical data.

	2. Understand the importance of chromatography in analysis and the principles of separation of analyte from mixture using paper chromatography and thin layer chromatography. 3. Able to find out unknown concentration of analyte from sample by performing titration. 4. Understand the hardness, PH, alkalinity, acidity, BOD and COD of water. 5. Understand the estimation of NPK from fertilizer.
B.Sc.-I (Chemistry Practical)	
Laboratory practical	1. To know the unknown compounds by Organic Qualitative Analysis. 2. To learn the preparation of organic and inorganic materials synthesis. 3. To learn kinetics of reaction. 4. To learn separation and identification of different cations by Paper Chromatographic. 5. To learn heat of ionization, heat of ionization, heat capacity, enthalpy of hydration, solubility, and enthalpy of neutralization of different chemicals. 6. To determine the equivalent weight of Magnesium. 7. To learn preparation of standard solution. 8. To understand the estimation of metal ions.
B.Sc.-II (Chemistry)	
Paper No. V (Physical Chemistry)	1. Understand the basic terminologies electrolytic conductivityand different types of conductometric titrations. 2. Understand the different physical properties of liquidsdepends on density and viscosity. 3. Understand the adsorption phenomenon and differentadsorption isotherms and its applications. 4. Understand the types of nuclear radiations and their detection and measurements.

	5. Understand the order of reaction and theories of reaction rate.
Paper No. VI (Industrial Chemistry)	1. Learn different concentration terms. 2. Understand comparison between classical chemistry and Industrial chemistry. 3. Understand concept of unit processes and unit operation. 4. Study basic principle of corrosion and electroplating. 5. Learn different types of corrosion, applications of chromium electroplating 6. Learn manufacturing process of paper. 7. Study different types of soaps and their uses. 8. Study cleansing action of soap, saponification, detergents.
Paper No. VII (Inorganic Chemistry)	1. Understand the basic concepts of coordination chemistry. 2. Able to find the geometries of different transition metal complexes using Valence bond theory. 3. Study the concept of chelate formation. 4. Study the compounds of group 13, 14 and 15 of 'p-block' elements. 5. Understand the properties of elements of 3d series. 6. Learn the basic knowledge about inorganic semi-microanalysis
Paper No. VIII (Organic Chemistry)	1. Learn about the synthesis, reactivity and applications of carboxylic acids. 2. Study about classification, preparation and applications of amines and diazonium salts. 3. Understand the classification, configuration and structure of carbohydrates. 4. Understand the nomenclature and reactivity of aldehydes and ketones. 5. Study the basic knowledge conformational analysis of organic compound.

B.Sc.-II (Chemistry Practical)	
Laboratory practical	1. Identification of organic compounds including acids, bases, phenols and neutrals. 2. Preparation of organic compounds and their purification. 3. Organic estimations such as acetone, Vitamin-C and ester. 4. Separation, identification and determination of R_f valuesusing TLC. 5. Understand the gravimetric analysis of Fe and Ba. 6. Preparation of inorganic complexes. 7. Able to find out the unknown concentration by performing titration. 8. Understand semimicro analysis. 9. Study the chemical kinetics of hydrolysis of ester. 10. Illustrate the experiment of instrumental methods such as conductometry, refractometry, polarimetry etc. 11. Able to measure viscosities of different liquids.
B.Sc.-III (Chemistry)	
Paper No. IX (Inorganic Chemistry)	1. Study the theoretical concepts of hard and soft acids andbases. 2. Understand the metal ligand bonding in transition metal complexes. 3. Study basic concepts and classification of inorganic polymers. 4. Study classification of conductors, insulators and semiconductor 5. Study synthesis and structures of organometallic compounds.
Paper No. X (Organic Chemistry)	1. Study the basic concept of spectroscopy. 2. Understand factors affecting UV-absorption spectra. 3. Understand factors affecting on vibrational frequency. 4. Interpret IR-spectra on basic values of IR-frequencies. 5. Learn basic principle of NMR spectroscopy, chemical shift, shielding and deshielding.

	6. Study instrumentation of mass spectrometry, and fragmentation pattern. 7. Solve the combined problem of UV, IR, and NMR.
Paper No. XI (Physical Chemistry)	1. Learn and understand quantum Chemistry, Heisenberg's uncertainty principle, concept of energy operators (Hamiltonian), learning of Schrodinger wave equation. Physical interpretation of the ψ and ψ2 . Particle in a one- dimensional box 2. Gain Knowledge about spectroscopy, Electromagnetic spectrum, Energy level diagram, Study of rotational spectra of diatomic molecules: Rigid rotor model, Microwave oven, vibrational spectra of diatomic molecules, simple Harmonic oscillator model, Raman spectra: Concept of polarizability, pure rotational and pure Vibrational Raman spectra of diatomic molecules, related knowledge will be gained by the students. 3. Learn and understand photochemical laws, reactions and various photochemical phenomena. 4. Learn the various types of solutions, vapour pressure, temperature relations. 5. Learn and understand the knowledge of emf measurements, types of electrodes, different types of cells, various applications of emf measurements.
Paper No. XII (Analytical Chemistry)	1. Understand the basic concepts of Gravimetric Analysis and learns different types of precipitations. 2. Understand the flame photometry and its applications and limitations. 3. Understand the theory of colorimetry, applications of colorimetry and spectrophotometry 4. Understand the different types of electrodes, titrations and their applications

	5. Understand the different types of chromatographic techniques and their applications
Paper No. XIII (Inorganic Chemistry)	1. Understand the thermodynamic and kinetic aspects of metal complexes. 2. Study the nuclear reactions and role of radio isotopes. 3. Understand properties and classification of lanthanides and actinides. 4. Study techniques involves in extraction of iron from its ore. 5. Understand role of metals and non-metals in our health.
Paper No. XIV (Organic Chemistry)	1. Study the various Name reaction and reagents with examples. 2. Learn mechanism of rearrangement reaction. 3. Understand basic terms used in retrosynthetic analysis. 4. Solve electrophilic and nucleophilic addition reaction problems 5. Study analytical and synthetic evidences of natural products such as citral and nicotine. 6. Learn different types of drugs and their synthesis and uses.
Paper No. XV (Physical Chemistry)	1. Learn and understand phase rule, Learn and understand One component, Two component and Three component systems phase diagrams with suitable examples. 2. Gain Knowledge about basic concept of Thermodyanamics, free energy, Gibbs-Helmholtz equation and its applications, Able to solve problem related with it. 3. Understand basic concept of solid state chemistry, learn basic terms, Laws of crystallography, learn crystal structure analysis using X-rays 4. Understand kinetics of Simultaneous reactions such as i)opposing reaction ii)side reaction iii)consecutive reactions: iv) chain reaction v) explosive reaction 5. Learn and understand the knowledge of distribution law, its modifications, applications of distribution laws, process of

	extraction, determination of solubility, distribution indicators, and molecular weights.
Paper No. XVI (Industrial Chemistry)	1. Understand the methods of manufacturing of sugar 2. Understand the mechanism of manufacture of industrialheavy chemicals. 3. Understand the different types of polymers and their applications 4. Understand the different types of hydrocarbons and application of petrochemicals. 5. Understand the different methods for nonmaterial preparations and their applications.
B.Sc.-III (Chemistry Practical)	
Laboratory practical	1. Understand the gravimetric estimation such as Fe, Ba, Ni. 2. Study different types of inorganic preparations. 3. Understand titration and percentage purity of different typesof solutions 4. Separate binary mixture and identify an individual compound. 5. Prepare organic compounds and purify them. 6. Prepare organic derivatives. 7. Estimate amount of organic content from mixture, tablets etc. 8. Understand the kinetic reactions and their mechanisms,energy of activation, partial molar volume. 9. Understand different instruments such as pH Meter, potentiometer, refract meter, colorimeter etc.

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M.Sc. Chemistry Department

Programs Outcomes and Course Outcomes

Shri Swami Vivekanand Shikshan Sanstha Kolhapur's,

Raje Ramrao Mahavidyalaya Jath, Sangli
M. Sc. Analytical Chemistry

PROGRAMME OUTCOMES

Name of Programme: **M. Sc. Chemistry**

The following outcomes are specified by Shivaji University, Kolhapur.

PO1: The M.Sc. analytical chemistry program at Shivaji University, Kolhapur provides the key knowledge base and laboratory resources to prepare students for careers as professionals in the field of chemistry and particularly in analytical chemistry enabling themto interface not only with various branches of chemistry (organic, inorganic, physical, biological, industrial, environmental, pharmaceuticals etc) but also with the related fields, and for professional courses and areas of research including medical, forensic, food, agriculture, dental, law, intellectual property, business programs etc.

PO2: Students will be able to solve various problems by identifying the essential parts of a problem, formulate strategy for solving the problem, applying appropriate techniques to arrive at a solution, test the precision and accuracy of the solution and interpret the results.

PO3: Students will be able to acquire domain specific knowledge and technical skills neededfor employment in industries, teaching fields and pursue research. Students will be skilled in problem solving, critical thinking and analytical reasoning

PO4: Students will be able to apply the fundamental knowledge to address the cross-cuttingissues such as sustainable development

PO5: Students will get perfect insight into qualitative and quantitative analytical chemistry and research ethics for production of quality research.

PO6: Students will be able to communicate effectively i.e. being able to articulate, comprehend and write effective reports, make effective presentations and documentation and capable of expressing the subject through technical writing as well as through oral presentation.

PROGRAMME SPECIFIC OUTCOMES

Name of Programme: M. Sc. Analytical Chemistry

The following outcomes are specified by **Shivaji University, Kolhapur.**

PSO1: Students will be able to prepare and qualify subject specific competitive exams like NET, SET and GATE and also other general public administration exams like M.P.S.C. and U.P.S.C. etc. exams.

PSO2: Student will be able to utilize the knowledge and analytical skills in QA-QC and R&D departments in almost all the industries enabling them to secure jobs where analytical chemistry is the core requirement to ensure and ascertain the quality of the product.

PSO3: Students will have opportunity for higher education leading to Ph.D. program.

PSO4: Students will be able to explore contemporary research in chemistry and allied fields of science and technology, collaborate in team projects, communicate the results of scientific work in oral, written and electronic formats to both scientists and the public at large.

PSO5: Students can start their own laboratories/startups/ chemical industry/ business (entrepreneurship).

PSO6: Students will be able to interpret data from the state of art Analytical instruments for ascertaining the product/material.

COURSE OUTCOMES: The course outcomes are specified by Shivaji University, Kolhapur

M. Sc. Analytical Chemistry:

Course	Outcome
CH-1.1 (Inorganic Chemistry – I)	1. Students will be able to explain the basic chemistry of transition metals and its compounds, spectroscopic characteristics of such compounds, nomenclature, reactions and applications. 2. Students will obtain knowledge about Preparation, structure, physical and chemical properties of metal carbonyls of transition metals. 3. Students will be able to understand the all aspects of synthesis, bonding, structure and reactivity of organometallic compounds and their applications in homogenous catalysis. 4. Student will be able determine the stability of the complexes and will be able to explain the nuclear stability and reactions.
CH-1.2 (Organic Chemistry – I)	1. Students will able to differentiate between various organic reactive intermediates. 2. Students can recognize, classify, explain, and apply fundamental organic reactions. 3. Students will have ability to distinguish between different kinds of isomers. 4. Course will develop interest in writing and finding mechanisms of new reactions.

CH-1.3 (Physical Chemistry – I)	1. Students will be able to understand basic principles of thermodynamics and statistical mechanics 2. Able to learn advanced topics like quantum statistics and molecular dynamic simulation methods. 3. Develop abilities to understand how to estimate and analyze the physicochemical properties of condensed and gas phase materials. 4. Able to utilize spectral data to estimate molecular thermodynamic properties through partition function calculations. 5. Understand properties of detergents and colloidalmaterials 6. Learns the principles and techniques to understand gas and liquid adsorptions on solid surfaces 7. Can learn spectral techniques to study surface adsorption phenomena. 8. Learn principles and techniques for estimation of average molecular weight of a polymer or biological macromolecules CO9: Develop abilities to characterize polymers through understanding theories of virial coefficients, concepts of glass transition temperatures, etc.
CH-1.4 (Analytical Chemistry – I)	1. Students would acquire the knowledge about the fundamentals of Analytical Chemistry including the sampling, sample pretreatment, basic techniques, methods and data handling, processing and statistical analysis of thesame. 2. Students would acquire the knowledge and understand the scope of Analytical Chemistry spanning various fields. The students will learn fundamentals of qualitative analysis using conventional techniques 3. Students will learn the chromatographic techniques, choice of chromatographic techniques and tuning of the chromatographic technique as per the need based on the samples to deal with, learn electroanalytical techniques and computation chemistry which would groom them for alternative analytical strategies which form one of the important components of analytical chemistry. 4. Students will learn about referring to the standard reference books and infer information from the same. Analytical case study problems would be discussed to familiarize with the scope and advantages of Analytical Chemistry.

CH-2.1 (Inorganic Chemistry – II)	1. Students will get the knowledge of the basic chemistry of non-transition elements and their compounds, synthesis and structural features, and applications. 2. To be able to explain the structures of inorganic compounds based on different theories. Student will understand the chemistry of various types of solvents. 3. Be well versed with the knowledge about the chemistry of Lanthanides and Actinides with respect to occurrence, separation, compounds and applications. 4. To understand the three dimensional structures of solid- state materials of industrial importance and to get the knowledge of bio-inorganic Chemistry.
CH-2.2 (Organic Chemistry – I)	1. Illustration of modern synthetic methods and applicationsof reagents. 2. Provide knowledge of different organometallic compounds and various coupling reactions. 3. Understand principle and applications of protection and deprotection of various functional groups. 4. It will elaborate to understand the concept of chemoselectivity, regioselectivity and enantioselectivity.
CH-2.3 (Physical Chemistry – I)	1. Students will learn basics of quantum mechanics. 2. Knowledge of the course will form the basis or essential requirement for the course "Advanced Quantum Chemistry" CO3: Able to understand selection rules and to predict the electronic spectra of conjugated organicmolecules. 3. Able to study photochemical and photophysicalphenomena 4. Capable of qualitative and quantitative analysis of various ingredients from industrial, food and pharma samples using techniques of emission spectroscopy. 5. Capable of understand the electrochemical aspects of materials, ionic processes and electrochemical sensors, battery materials and characterizations etc. 6. Able to study electrokinetic effects and their applications in the field of protein separation, characterization etc. 7. Understanding the molecular dynamics through kinetic studies. Applications to explore reaction pathways, protein-ligand binding rates, etc. will help to understand life governing processes.
CH 2.4 Analytical Chemistry- II	1. Students will acquire the knowledge of spectroscopic tools/instruments used in chemical analysis and interpretation of the data. The scope and limitations of the

	spectroscopic tools would be discussed so that the students learn about the type of samples which could be analyzed by these tools offering choices among thespectroscopic tools. 2. Students will learn about the simple and advanced instruments used for analysis like NMR, MS, AAS, ICP and thermal analysis (TGA, DTA, DSC etc.) techniques spanning wide variety of samples to be considered for analysis. 3. Students will learn about the instrumentation, sample preparation and handling of sample, analysis and data interpretation and structural elucidation. 4. Learning about different instruments will give them idea about appropriate choice of the instrument for analysis based on the source and type of analyte(s) in the sample under consideration.
PCH-I	1. Ability in professional sampling and sample treatmentbefore actual analysis 2. Ability to treat and evaluate the results of analysis 3. Understanding and capability of performing basic chemical processes in a chemical laboratory 4. Capability of performing measurements on basic analytical instruments (photometers, spectrometers, chromatographs, ion-selective electrodes)
PCH-I	5. Students can be able to prepare various concentration solutions like molar, normal, ppm, etc. 6. Determine the rate constants of various first order and second order reactions 7. Determine the redox potential of a system, relativestrength of acid etc using potentiometer, conductometer 8. Know the formation of alloys like Brass, Bronze, phase diagram for binary and ternary systems studied in details like a composition, critical temperature, etc 9. Validity of Freundlich adsorption isotherms to remove toxic material such as dye, acetic acid, and other industrial effluents
PCH-II	1. Students can be able to prepare various concentration solutions like molar, normal, ppm, etc. 2. Determine the rate constants of various first order and second order reactions 3. Determine the redox potential of a system, relative strength of acid etc using potentiometer, conductometer

	4. Know the formation of alloys like Brass, Bronze, phase diagram for binary and ternary systems studied in details like a composition, critical temperature, etc. 5. Validity of Freundlich adsorption isotherms to remove toxic material such as dye, acetic acid, and other industrial effluents
PCH 2.1	1. Students developed for precise sample solution preparation and sample treatment before actual analysis. 2. Students can be able to perform the calculations and error analysis 3. Develop understanding of basic chemical processes and deciding methods of analysis. 4. Capability of performing measurements on basic analytical instruments (photometers, spectrometers, chromatographs, high end thermometers, refractometer, pH meter etc.)
	1. Students can be able to prepare various concentration solutions like molar, normal, ppm, etc. 2. Determine the unknown concentration and thermodynamic parameters using conductometer. 3. Student will explore how to estimate order of reaction andthe catalysis. 4. Students can estimate refractive index and molecular weights of species. 5. Students can understand the estimation of equilibrium properties like redox potential, phase diagram etc.
ACH-3.1 (Advanced Analytical Techniques)	1. Develop knowledge of fundamental, instrumentation and working of state of art instrumental analytical techniques, effective use and choice of technique, written and/or oral communication of the concepts of analytical chemistry which will be useful as analytical chemist and R&D. 2. Acquire knowledge of mass spectrometry, type of MS, ionization types and specific practical applications of MS. 3. Acquire knowledge of basics of nanochemistry, nanomaterials and nanotechnology and application orientated synthesis and characterization of nanomaterials. 4. This course gives wide understanding about the instrumental analytical techniques (SEM, TEM, EDS, STM, AFM, Raman, XFS, ESR, XPS, AES, SIMS etc.) employed for qualitative and quantitative analysis for contemporary research.
ACH-3.2	1. Students will gain knowledge of the instruments used at

(Organic Analytical Chemistry)	the interface of Analytical-Organic chemistry useful forR&D and structural elucidation using UV-Visible, IR, 1H & 13C NMR, Mass spectrometry data and interpretation of the same. 2. Students will acquire knowledge about the drug, their classification, sources of impurities (chemical, atmospheric and microbial contamination) inpharmaceutical raw materials and analysis of the same. 3. Students will gain knowledge about the conventional and advanced analytical approaches for analysis of drug, vitamin, body fluids and clinical samples. 4. Students will have an idea of commonly used pesticides and their analysis and also about forensic science and forensic sample analysis.
ACH- 3.3: (Electroanalytical Techniques in Chemical Analysis)	1. Fundamental knowledge of electrochemistry, electrodes, types of electrodes, its construction will lay foundation forthe course. 2. Students will gain knowledge and skill in electroanalytical techniques like cyclic voltammetry and its types, polarography, coulometry and dynamic light scattering technique for qualitative and quantitative analysis. 3. Students will be familiar with the advanced electrodes used for chemical analysis, liquid-liquid membrane electrodes, enzymes and gas electrodes. 4. Students will learn about electrophoretic techniques, advances in electrophoresis techniques and its analytical applications.
ACH-3. 4) (A) (Environmental Chemical Analysis and Control)	1. Students will acquire knowledge about sampling, criteria of good sampling, handling, preservation and storage of the samples, pretreatment and post treatment of samples. 2. Students will acquire knowledge of conditions and strategies required during sampling and electrochemical and spectral methods for analysis of environmental samples. 3. Students will learn about the air and water pollution, sources of pollution, typical parameters and properties (physical, chemical and biological) to be measured in air and water pollution with relevance to specific case studies. 4. Students will be acquainted with organic pollutants and their analysis with special reference to pesticide analysis.

ACH-3.4) (B) (Recent Advances in Analytical Chemistry)	1. Students will be acquainted with ultra-purity and ultra- trace analysis required in electronic and semiconductor processing. 2. Students will learn Radio-Analytical techniques for analysis. 3. Student will be well versed with C13, P15 and O17 NMR Spectroscopy applications. 4. Student will learn about ESR spectrometry and its applications quantitative analysis.
ACH-3.4 (B) (Recent Advances in Analytical Chemistry)	1. Students will be acquainted with ultra-purity and ultra- trace analysis required in electronic and semiconductor processing. 2. Students will learn Radio-Analytical techniques for analysis. 3. Student will be well versed with C13, P15 and O17 NMR Spectroscopy applications. 4. Student will learn about ESR spectrometry and its applications quantitative analysis.
ACHP – V Practical -V	1. In-depth training on laboratory solution preparations onall concentration scales 2. Training on laboratory safety and lab ethics in scientific work 3. Training on planning, design and execution of experiments 4. Training on uncertainty estimations for experimentally measured and derived properties of solutions
ACHP – VI Practical-VI	1. Training on scientific literature search, defining the objective of the work, research skills, data representation in tabular and graphical form etc. 2. Training on experimental verification of fundamental theories, comparison of data with literature and scientific discussion on any deviation of data from expected theoretical values or reported literature. 3. Developing analytical skills 4. Training on qualitative and quantitative analysis of analyte
Part-II semester-IV	
ACH4.1 (Modern Separation Method in Analysis)	1. Students will learn about modern separation and chromatographic used for analysis of different type of samples. 2. The student will understand instrumentation and mechanism of various separation techniques. 3. Student will acquire knowledge regarding various choice of instrument and detectors to be used for analysis depending on the sample and matrix.

	4. Student will learn fundamentals of extractive chromatography, types of extraction techniques, advances in extraction methods and their hyphenations with chromatography leading to addressing challenging problems in analytical chemistry.
ACH-4.2 (Organic Industrial Analysis)	1. Acquire knowledge of handling and investigating the characteristics of the oils, fats, detergents and soap samples and analysis of the same providing opportunity in cosmetic, pharmaceuticals, dyes and polymers industries. 2. Student will gain knowledge and importance of food quality, probe for food adulteration and adulterants, food preservative, food flavors and analysis of their components. 3. Students will also gain knowledge about the animal food stuff and the additives added in the animal food stuff as antibiotics, dietary supplements and growth promoting drugs, preservatives etc. and analysis of the same. 4. Student will learn about the analysis of cosmetics, face powder, hair dyes and hair care products, types of cosmetics, precautionary measures and composition of the cosmetics and specific roles of the ingredients. Will acquire knowledge about the paints, pigments and petroleum products, composition and analysis of the same using conventional and instrumental techniques.
ACH- 4.3 (Advanced Methods in Chemical Analysis)	1. Students will be skilled in the techniques like fluorescence, phosphorescence, types of quenching, FRET and applications of the same in Analytical Chemistry and for addressing research problems. 2. Students will gain knowledge of the kinetic methods of analysis supporting the analysis and data procured in research. 3. The students will acquire the knowledge of advanced method of chemical analysis XPS, XRF, fluorescence and phosphorescence spectroscopy which will be beneficial in research. 4. Students will acquire knowledge of identifying types of plastic and will also be able to and determination of metallic impurities in plastics
ACH-4.4 (A) (Industrial Analytical Chemistry)	1. The students will acquire knowledge of analysis of metals, alloys, minerals and ores commonly used in the industry. 2. The students will be acquainted with the analysis of real samples like cement, plaster of Paris, different commercial

	ores, soil composition, soil fertility, fertilizers etc using conventional and instrumental methods of analysis. 3. Students will also gain the knowledge of analysis of commercial materials, explosives, polymers, resins, rubber, luminescent paints, lubricants and adhesives. 4. These would offer opportunity to the students to get employment in industries for quality assurance and quality control (QA-QC) of the product.
ACH-4.4 (B) (Quality Assurance and Accreditation)	1. Students will acquire knowledge of QA-QC which in essential for analytical chemist, This covers a variety of chemical fields and this knowledge would help students working on various materials, understanding the basics of samples, sampling, sample storage, and pre-post treatment of samples. 2. Students will acquire knowledge of good laboratory practices, professional ethics, and instrumental analytical chemistry, awareness of health hazards, remedial measures, analytical method development and validation. 3. The students would be aware of the importance of documentation for raw materials and finished products, their monitoring, maintenance and management. World- wide agencies involved in regulating the analytical protocols and establishing standards. 4. Students will gain knowledge about the quality assurance and accreditation, evolution and significance of quality management, available accreditation agencies and advantages of accreditation.
ACHP – VIII Practical-VIII	1. The students will acquire hands on training for conducting the representative experiments for the analysis of wide variety of samples of inorganic, organic and physical approaches by qualitative and quantitative analysis. Demonstrate professional and ethical attitude to serve the society 2. Students will have knowledge of safety signs on container of chemicals, safety in handling of chemicals, MSDS sheets, learn sample preparation and characterization for confirming the purity. 3. Students would acquire knowledge about the separation and estimation of amount of metal, metal ions, organic compounds etc. in given samples. 4. Based on the experience of project work, students will have ability to start their R & D laboratory.

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Shri Swami Vivekanand Shikshan Sanstha, Kolhapur's
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Commerce Department

Programs Outcomes and Course Outcomes

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Shri Swami Vivekanand Shikshan Sanstha Kolhapur's

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Dist- Sangli (Maharashtra) 416 404

Department Of Commerce

Programme Outcomes, Programme Specific Outcomes and Course Outcomes (POs, PSOs, Cos)

Program Outcomes (POs)

After completion B.Com programme, the students will develop ability:

1. To understand the principles and practices of management.

2. To acquire entrepreneurship qualities and skills.

3. To understand basic accounting knowledge as applicable to business.

4. To face changing environment of business in the process of globalization.

5. To understand basic knowledge of quantitative techniques applicable to business.

6. To understand the concepts in Insurance, Banking, Taxation, Banking, Marketing, and e-commerce.

Programme Specific Outcomes (PSOs)

1. Students can work in various functional areas like Marketing, Finance, Human Resource Management, Agri-business, and Operations Management.

2. Students are able to work in various industries like manufacturing, service, retail, telecommunication, automobile, banking and finance etc.

3. Programme prepares the students to set up business enterprise and manage diversified growth of entrepreneurship.

SURESH SOPANRAO PATIL
I attest to the accuracy and authenticity of this document

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PRINCIPAL, RAJE RAMRAO MAHAVIDYDYALA, JATH DIST-SANGLI.

Course Outcomes (Cos)

Class	Semester	Course Code	Title	Outcomes
B.Com-I CBCS (NEP)	I & II	DSC-1, DSC-5	Financial Accounting Paper-I & II	1. Familiar about the basic of accounting, accounting concepts and conventions and accounting process. 2. To acquaint with skill of recording transactions related to partnership firm, consignment transactions, and accounting of professionals. 3. To acquaint with skill of recording transactions related to single entry system. 4. To apply skills of accounting for Conversion of partnership firm into a limited company. 5. To make use of knowledge and skill for accounting of branches. 6. To understand the knowledge about computerized accounting.
		DSC-3, DSC-6	Management Functions & Applications Paper-I & II	1. To get an idea about the basic managerial process and planning works in real life 2. To develop decision making skills to evaluate various alternatives and situations. 3. To acquaint with the knowledge of organizing various resources. 4. To understand the concepts of authority and process of delegation of authority. 5. To understand importance of proper direction and to develop their communication skill. 6. To get an idea about motivation concept and theories, leadership skill. 7. To understand and utilize techniques of management functions. 8. To understand various emerging issues in management like CSR, Green marketing.

Raje Ramrao Mahavidyalaya,Jath.Dist.Sangli ★ Estd 1969

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		GEC-AA1, GEC-AA2	Principles of Marketing Paper- I & II	1. Able to access consumer behavior. 2. Understand various market segments and area. 3. Familiar about the element of marketing i.e 4P. 4. Skills of branding, labeling, and advertising. 5. To know about retail marketing.
		GEC-BB1, GEC-BB2	Insurance Paper- I & II	1. Knowledge about fundamentals of insurance. 2. Know about various insurance products. 3. Familiar about the life insurance terms and conditions. 4. Basic knows about fire, marine, and general insurance products.
B.Com-II CBCS	III & IV	CC- I & II	Corporate Accounting Paper I & II	1. Know about company accounting for issue of shares and debentures. 2. Compute the value of shares. 3. Preparation of financial statements as per the provisions of Indian Companies Act 2013. 4. Financial and inventory accounting process on Tally ERP. 5. Profit/loss prior to incorporation. 6. Simulate practice of accounting for liquidation of companies
		GEC-I & II	Fundamentals of Entrepreneurship Paper I & II	1. Theoretical knowledge of Entrepreneurship 2. To develop Entrepreneurship qualities and skills. 3. To familiarize students with Steps involved in the formation of Small Enterprises. 4. To impart conceptual knowledge of Service and Agro Entrepreneurship. 3. Awareness about Business Plan and Project [illegible]

B.Com-III CBCS	V & VI	CC-I, II	Modern Management Practice – Paper - I & II	1. Knowledge of modern management with concepts of emotional and social intelligence, lean and talent management. 2. To understand concepts of CRM. 3. Basic knowledge of quality standards. 4. To understand the Japanese and Chinese Management Practices 5. To know the concept of Event and Performance Management
		CC-C3-I & II	Business Regulatory Framework I & II	1. Know about contract act, labour law- PF, ESI, gratuity etc. 2. Basic of GST and sale of goods act. 3. Know about LLP and partnership act 1932. 4. Know about cyber laws, negotiable instrument act, and consumer protection act.
		DSE-A1 & DSE-A2, DSE-A3 & DSE-A4	Advanced Accountancy Paper I, II, III & IV	1. Practice the preparation of financial statements of banks, accounting for farms and hire purchase system, accounting for insurance claim. 2. Accounting process on Tally with GST. 3. To understand the concept and types of audit 4. Know the company audit with CARO, special audit, and preparation of audit report. 5. To understand the manner of computation of total income. 6. To identify the residential status and its implication on tax liability. 7. To understand the basic concepts of income tax and basis of charge. 8. To know the basic concepts about

		DSE – B1 & B2, DSE – B3 & B4	Industrial Management Paper I, II, III & IV	1. Understanding the concept Industrial Management. 2. Know about the Work Environment. 3. Identification of the Plant Maintenance. 4. Knowledge regards to the Financial Management. 5. Knowledge about the Human Resource Management, Employee Training. 6. Acquaintance with the Productivity, Inventory Management, Logistic Management and Employee Remuneration. 7. Acquaintance with the Industrial Relations. 8. Acquaintance with the Employee Safety, Health and Moral 9. Acquaintance of HR Accounting

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Economics Department

Programs Outcomes and Course Outcomes

Department of Economics

B.A., Economics

COs, PSOs and POs

Programme Outcomes (POs)	
B.A. Economics Programme Students will after successfully completing the programme will have	
PO 1	Develop the ability to explain core economic terms, concepts, and theories
PO 2	Demonstrate the ability to employ the "economic way of thinking."
PO 3	Demonstrate awareness of global, historical, and institutional forces
PO 4	Apply economics theories and concepts to contemporary social issues as well as formulation and analysis of policy.
PO 5	Recognize the role of ethical values in economic decisions
PO 6	Demonstrate the ability to collect, process and interpret data, including statistical inference
PO 7	Be able to use critical thinking skills within the discipline of economics about economic matters.
PO 8	Apply both oral and written communication skills within the discipline.

Programme Specific Outcomes (PSOs)	
After completing B. A. Economics students will have	
PSO 1	Understanding how different degrees of competition in a market affect pricing andoutput.
PSO 2	Understanding the efficiency and equity implications of market interference, includingGovernment policy.
PSO 3	Developing the research knowledge in economics and Applying quantitative or logical reasoning/research for problem solving
PSO 4	Developing the skills of data collection, data exploration and data analysis
PSO 5	Understanding Indian economy and economic environment

Course Outcomes

After successfully completing this course, students will be able to

B A –I Indian Economy.	CO.1	Understanding characteristics, features, structural changes in Indian Economy.
	CO.2	Comprehension of the nature and impact of New Economic Reforms on the Indian Economy
	CO.3	Knowing the problems of unemployment, poverty, rising economic and social inequality and problems of regional imbalance in India.
	CO.4	Evaluating the changing role of agriculture. Industrial and service sector and foreign sector in Indian Economy.
	CO.5	Measuring the problems prospects of cottage and small scale industries, and industrial sicknesses.
	CO.6	Measuring the growth, volume, composition and direction of India's foreign trade and capital inflow since 1991.
B A -II Banks and Financial Institutions .	CO.1	Understanding the meaning, function and role of commercial Banking.
	CO.2	Comprehending the procedure of an account opening, operating and Closing.
	CO.3	Knowing the structure, function and role of RBI in economic Development.
	CO. 4	Judging the progress of financial inclusion.
	CO.5	Evaluating the importance, characteristics and components of the Financial market.
	CO.6	Understanding the role and types of development banks and Non-Banking financial intermediaries.
	CO.7	Realizing the banking reforms and Basel norms-1 and 2.
	CO.8	Identifying recent trends in Indian banking such as E-Banking, MICR clearing, ATMs, Credit Cards and Debit Cards, Travelers Cheques, Gift cheques, Demat Account.
B A -II Macro Economics.	CO.1	Identifying the basic concepts and theories of Macro Economics
	CO.2	Awareness about changing macroeconomics policies and theories.
	CO.3	Understanding various concepts such as; GDP, GNP, NNP, Personal Income, Disposable Income, Per Capita Income, and National Incom
	CO.4	Identifying the factors determining gross domestic product, employment, the general level of prices, and interest rates.
	CO.5	Realizing the law of markets, consumption function and investment function.
	CO.6	Judging the role of fiscal policy and monetary policy in a Developing Economy.
	CO. 7	Knowing features, phases and theories of trade cycles.
	CO. 8	Evaluating types, merits and demerits of taxes.
	CO.9	Comprehending the role of public finance in developing.
B A -III Micro Economics	CO. 1	Knowing the decision making of consumer.
	CO. 2	Identifying the nature of revenue and cost of production.
	CO. 3	Comprehending the demand function and production function
	CO. 4	Realizing various production theories.
	CO. 5	Clarifying the meaning of marginal, average, total revenue, and marginal, average and total costs and its implication.

	CO. 6	Awareness of different markets structure
	CO. 7	Understanding pricing in different markets.
	CO. 8	Judging the factor pricing.
B A -III Research Methodology in Economics.	CO. 1	Understanding the basic framework of research process
	CO. 2	Defining various research designs and techniques.
	CO. 3	Identifying various sources of information for literature review and data collection.
	CO.4	Discussing the ethical dimensions of conducting applied research.
	CO.5	Appreciating the components of scholarly writing and evaluate itsquality
	CO. 6	Knowing various aspects of Research in Economics.
	CO.7	Understanding various data analysis techniques (Mean, Median, Mode,Range, Standard Deviation Karl Pearson coefficient of correlation).
	CO. 8	Ability to interpretation of data and report writing.
B A –III History of Economic Thoughts	CO. 1	Acquaintance with the economic thoughts of Classical, Nationalist and Socialist Thinkers
	CO. 2	Judging the development of economic thoughts.
	CO.3	Realizing the economic concepts and theories of Neo-Classical andIndian thinkers.
	CO. 4	Evaluating the development of Indian economic thoughts.
B A -III Economics of Development	CO.1	Understanding the concept and aspects of economic Development.
	CO. 2	Knowing the theories of economic growth and Development.
	CO. 3	Measuring the concept and issues of economic planning.
	CO. 4	Discussing the need, types and necessary conditions of economicPlanning.
B A -III International Economics.	CO. 1	Elaborating the importance of the study of International Economics
	CO. 2	Finding similarities and dissimilarities in inter-regional and internationaltrade.
	CO. 3	Knowing the changes in the import –export policies of India.
	CO. 4	Evaluating various types of exchange rates and its merits and demerits
	CO. 5	Discussing the types and effects of tariffs and quotas.
	CO. 6	Judging the function, merits and demerits of Foreign Capital, andInternational Corporation (IMF,IBRD, WTO, and SAARC)
	CO. 7	Realizing the volume, composition and direction of Balance of tradeand balance of payments.

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History Department

Programs Outcomes and Course Outcomes

POs, PSOs, Cos

Programme Outcomes

After completion of this Programme students will be able to:

POs1: Apply and Demonstrate practical knowledge of the subject in diverse sectors

POs2: Elucidate and explain the basic and fundamental concepts, critical terms and theories, advanced concepts and techniques in the programme.

POs3: Comprehend, Comment and appreciate literature in developing aesthetic, emotional, mental, moral, intellectual skills of an individual and creating a healthy society.

POs4: Relate the implications as well as influences of environmental, socio-economic, socio-cultural and socio-political literature to the daily life and how they can providesolutions to the social, political, economic, environmental and cultural issues through written articles, novels, dramas, poetries and stories to spread the message ofequality, nationality, social harmony, ecosystem, fraternity, brotherhood, etc.

POs5: Evaluate and analyze critically the literature inrelation to social issues and appreciate the strength, understand the challenges andsuggest the required and beneficial improvements for better results.

POs6: Apply multiple paradigms of literature and social sciences to make the life of human beings more joyful and meaningful.

POs7: Increase the participation in various social, political, environmental and cultural activities.

POs8: Establish an independent identity and constructa multifaceted and overall personality to enrich earning skills

POs9: Apply knowledge of literature in connection with social, economic, cultural, political and environmental approachesto cultivate human and moral valueswhich generate responsibility and positive attitude for leading well balancedlife for nation building.

POs10: Enrich and demonstrate development of communication skills like, listening, speaking, reading and writingwhich will help to express ideas, thoughts and views effectively.

Programme Specific Outcomes

On completion of graduation programme, students are able to:

PSOs 1. To acquaint students with the past and present of ethos and reality through teaching and research in History.

PSOs 2. On graduating, the students will be eligible for employment in tourism, Museum, media, and other field. Students also become employable in non-governmental organizations.

PSOs 3. To prepare students for a range of careers by teaching them courses which will impart them with a set of transferable skills while studying History.

PSOs 4. To acquaint the students with the various Indian and foreign traditions of History writing and the debates generated about the nature of History as a discipline.

PSOs 5. To provide students with critical understanding of Indian society, economy, polity and culture through a Historical perspective

PSOs 6. They will also be able to appear for competitive examinations conducted for public sector jobs. The general humanities education equips them to clear competitive exams.

PSOs 7. To stimulate intellectual curiosity and research attitude in the students through the study and research of local, regional, national and global History.

PSOs 8. It introduces the students to major concepts, ideas and events which created the modern world so that they will be able to place Historical events in a larger context.

Course Outcomes

B.A. Part - I, Semester- I

1. Paper No: I Rise of the Maratha Power (1600-1707)

After studying the course the student will be able to…

Cos 1. Describe the political conditions of the Marathas upto the year 1707

Cos 2. Describe the rise and growth of the Maratha Empire

Cos 3. Explain the role of Chhatrapati Shivaji Maharaja.

Cos 4. Explain the role of rulers like Chhatrapati Sambhaji Maharaj, Chhatrapati Rajaram Maharaj and Maharani Tarabai

B.A. Part - I, Semester- II

2. Paper No. II Polity, Society and Economy under the Marathas (1600-1707)

After studying the course the student will be able to…

Cos 1.Give an account of the Polity, Society and Economy under the Marathas

Cos 2. Elucidate the significant developments which took place in Polity, society and Economy

Cos 3.Acquaint himself with the contribution of the Society.

Cos 4. Explain the thought and work of Chhatrapati Shivaji Maharaja for Polity, society and Economy**.**

B.A.-II, Semester -III

3. Paper III- History of Modern Maharashtra (1900 to 1960)

After studying the course the student will be able to…

Cos 1.Understand the beginnings and growth of nationalist consciousness in Maharashtra

Cos 2. Explain the contribution of Maharashtra to the national movement

Cos 3. Give an account of various movements of the peasants, workers, women and backward classes

Cos 4. Know the background and events which led to the formation of separate state of Maharashtra.

4. Paper IV: History Of India (1757-1857)

After studying this course, the student will…

Cos 1. Acquaint himself with significant events leading to establishment of the rule of East India Company

Cos 2. Know the colonial policy adopted by the company to consolidate its rule in India

Cos 3. Understand the structural changes initiated by colonial rule in Indian economy.

Cos 4. Explain the various revolts against rule of the East India Company.

IDS PAPER I: Social Reforms In India

After completion of the course, the student will be able to …

Cos 1. Understand the salient features of prominent socio-religious reform movements

Cos 2. Explain the thought and work of Mahatma Phule for radical transformation of Indian society

Cos 3. Know the measures taken by Rajashri Shah Maharaj for emancipation of lower classes and women

Cos 4. Understand the thoughts of Ambedkar on the annihilation of the caste system and untouchability in India

Cos 5. Know how the Indian constitution embodies the values of social justice and equality

B.A.-II, SEMESTER -IV

5. Paper- V: History of Modern Maharashtra (1960-2000)

After completion of the course, the student will…

Cos 1. Acquaint himself with the contribution of eminent leaders of Maharashtra

Cos 2. Know about the economic transformation of Maharashtra

Cos 3. Understand the salient features of changes in society

Cos 4. Explain the growth of education

6. Paper VI: History of Freedom Struggle (1858-1947)

After completion of this course, the student will be able to…

Cos 1. Understand the events which lead to the growth of nationalism in India

Cos 2. Acquaint himself with major events of the freedom struggle under the leadership of Mahatma Gandhi 3. Explain the contribution of Revolutionaries, Left Movement and Indian National Army

Cos 4. Know the concept of Communalism and the causes and effects of the partition of India

IDS Paper- II: Social Reforms in Maharashtra

After studying the course, the student will be able to…

Cos 1. Know about the beginnings of social reforms in Maharashtra by the Paramhansa Mandali and Prarthana Samaj.

Cos 2. Understand the contribution of women reformers

Cos 3. Explain the contribution of Social reformers in the fight for social justice

Cos 4. Explain the role played by educational reforms in transformation of society.

B.A. Part -III, Semester –V

7. Paper No. VII: Early India (from beginning to 4th c. BC)

After studying the course the student will be able to …

Cos 1. Understand the transition of humans in India from Hunters to Farmers

Cos 2. Explain the transition from Early to Later Vedic period.

Cos 3. Clarify the causes for the first and second urbanizations

Cos 4. Give an account of the teachings of Gautama Buddha and Vardhamana Mahavira

Cos 5.Describe the rise and growth of the Mauryan Empire

Cos 6. Explain the salient features of Ashoka's Dhamma

8. Paper No. VIII: History of Medieval India (1206-1526 AD)

After studying the course the student will be able to…

Cos 1. Describe the different types of historical sources available for writing the history of medieval India

Cos 2. Explain the contributions of medieval rulers like Allaudin Khilji, Muhammad-binTuqhlaq, Krishnadevraya, and Mahmud Gavan

Cos 3. Give an account of the administration and economy of the Delhi sultanate and Vijayanagar Empire

Cos 4. Elucidate the significant developments which took place in religion, society and culture

9. Paper No. IX: Age of Revolutions

After studying the course the student will be able to…

Cos 1. Explain the causes and consequences of the Reformation

Cos 2. Give an account of the role played by Martin Luther

Cos 3. Explain the salient features of the Industrial revolution

Cos 4. Given an account of the American revolution

Cos 5. Explain the causes, effects and major events of French Revolution

Cos 6. Explain the role of major leaders of the French Revolution

10. Paper No. X: Political History of the Marathas

After studying the course the student will be able to…

Cos 1. Describe the political conditions of the Marathas upto the year 1740

Cos 2. Explain the role of Balaji Bajirao.

Cos 3. Explain the causes and effects of the Battle of Panipat.

Cos 4. Understand the political condition of the Marathas after 1761.

Cos 5. Critically analyze the causes for the decline of Maratha power.

11. Paper No. XI: History: Its Theory

After studying the course the student will be able to…

Cos 1. Understand the definition and scope of the subject of History

Cos 2. Know the process of acquiring historical data

Cos 3. Explain the process of presenting and writing history

Cos 4. Understand the methods of writing history

B.A. Part- III, Semester- VI

12. Paper No. XII: Ancient India (From 4th c. BC to 7th c. AD)

After studying the course the student will be able to…

Cos 1. Know the political ,economic and religious developments which took place in early historic India

Cos 2. Explain the role played by Major Satavahana, Kushana, Gupta and Vakataka Kings

Cos 3. Give an account of the developments in the Post-Gupta period

Cos 4. Have an informed opinion about the society and culture of Ancient India

13. Paper No. XIII: History of Medieval India (1526-1707 AD)

After studying the course the student will be able to…

Cos 1. Know about the various sources for writing Medieval Indian history

Cos 2. Explain the role of rulers like Babar, Akbar, Chandbibi and Ibrahim Adilshah II

Cos 3. Gain knowledge about the administrative and revenue system

Cos 4. Describe the condition of Industry and trade

Cos 5. Explain important developments in religion, society and culture

14. Paper No. XIV: Making of the Modern World (16th to 19th Century)

After studying the course the student will be able to…

Cos 1. Know the causes and consequences of the Glorious revolution in England

Cos 2. Explain the concept of Nationalism and account for its rise and spread.

Cos 3. Describe the unification of Italy and Germany.

Cos 4. Give an account of the rise, growth and impact of Imperialism

Cos 5. Explain the significance of the Partition of Africa

Cos 6. Know the life and thoughts of important leaders like Metternich, Karl Marx and Abraham Lincoln

15. Paper No. XV: Polity, Economy and Society under the Marathas

After studying the course the student will be able to…

Cos 1. Know the various sources for writing the history of the Marathas

Cos 2. Explain the significant developments in the polity of the Marathas

Cos 3. Describe the economic conditions

Cos 4. Explain the social conditions.

16. Paper No. XVI: Methods and Applications of History

After studying the course the student will be able to…

Cos 1. Understand the nature of archival sources

Cos 2. Gain conceptual clarity about recent trends in history.

Cos 3. Know about the application of history in museums.

Cos 4. Explain the concept and scope of heritage tourism.

Shri Swami Vivekanand Shikshan Sanstha Kolhapur's,

Raje Ramrao Mahavidyalaya Jath, Sangli
M. Sc. Analytical Chemistry

PROGRAMME OUTCOMES

Name of Programme: **M. Sc. Chemistry**

The following outcomes are specified by Shivaji University, Kolhapur.

PO1: The M.Sc. analytical chemistry program at Shivaji University, Kolhapur provides the key knowledge base and laboratory resources to prepare students for careers as professionals in the field of chemistry and particularly in analytical chemistry enabling themto interface not only with various branches of chemistry (organic, inorganic, physical, biological, industrial, environmental, pharmaceuticals etc) but also with the related fields, and for professional courses and areas of research including medical, forensic, food, agriculture, dental, law, intellectual property, business programs etc.

PO2: Students will be able to solve various problems by identifying the essential parts of a problem, formulate strategy for solving the problem, applying appropriate techniques to arrive at a solution, test the precision and accuracy of the solution and interpret the results.

PO3: Students will be able to acquire domain specific knowledge and technical skills neededfor employment in industries, teaching fields and pursue research. Students will be skilled in problem solving, critical thinking and analytical reasoning

PO4: Students will be able to apply the fundamental knowledge to address the cross-cuttingissues such as sustainable development

PO5: Students will get perfect insight into qualitative and quantitative analytical chemistry and research ethics for production of quality research.

PO6: Students will be able to communicate effectively i.e. being able to articulate, comprehend and write effective reports, make effective presentations and documentation and capable of expressing the subject through technical writing as well as through oral presentation.

PROGRAMME SPECIFIC OUTCOMES

Name of Programme: M. Sc. Analytical Chemistry

The following outcomes are specified by **Shivaji University, Kolhapur.**

PSO1: Students will be able to prepare and qualify subject specific competitive exams like NET, SET and GATE and also other general public administration exams like M.P.S.C. and U.P.S.C. etc. exams.

PSO2: Student will be able to utilize the knowledge and analytical skills in QA-QC and R&D departments in almost all the industries enabling them to secure jobs where analytical chemistry is the core requirement to ensure and ascertain the quality of the product.

PSO3: Students will have opportunity for higher education leading to Ph.D. program.

PSO4: Students will be able to explore contemporary research in chemistry and allied fields of science and technology, collaborate in team projects, communicate the results of scientific work in oral, written and electronic formats to both scientists and the public at large.

PSO5: Students can start their own laboratories/startups/ chemical industry/ business (entrepreneurship).

PSO6: Students will be able to interpret data from the state of art Analytical instruments for ascertaining the product/material.

COURSE OUTCOMES: The course outcomes are specified by Shivaji University, Kolhapur

M. Sc. Analytical Chemistry:

Course	Outcome
CH-1.1 (Inorganic Chemistry – I)	1. Students will be able to explain the basic chemistry of transition metals and its compounds, spectroscopic characteristics of such compounds, nomenclature, reactions and applications. 2. Students will obtain knowledge about Preparation, structure, physical and chemical properties of metal carbonyls of transition metals. 3. Students will be able to understand the all aspects of synthesis, bonding, structure and reactivity of organometallic compounds and their applications in homogenous catalysis. 4. Student will be able determine the stability of the complexes and will be able to explain the nuclear stability and reactions.
CH-1.2 (Organic Chemistry – I)	1. Students will able to differentiate between various organic reactive intermediates. 2. Students can recognize, classify, explain, and apply fundamental organic reactions. 3. Students will have ability to distinguish between different kinds of isomers. 4. Course will develop interest in writing and finding mechanisms of new reactions.

CH-1.3 (Physical Chemistry – I)	1. Students will be able to understand basic principles of thermodynamics and statistical mechanics 2. Able to learn advanced topics like quantum statistics and molecular dynamic simulation methods. 3. Develop abilities to understand how to estimate and analyze the physicochemical properties of condensed and gas phase materials. 4. Able to utilize spectral data to estimate molecular thermodynamic properties through partition function calculations. 5. Understand properties of detergents and colloidalmaterials 6. Learns the principles and techniques to understand gas and liquid adsorptions on solid surfaces 7. Can learn spectral techniques to study surface adsorption phenomena. 8. Learn principles and techniques for estimation of average molecular weight of a polymer or biological macromolecules CO9: Develop abilities to characterize polymers through understanding theories of virial coefficients, concepts of glass transition temperatures, etc.
CH-1.4 (Analytical Chemistry – I)	1. Students would acquire the knowledge about the fundamentals of Analytical Chemistry including the sampling, sample pretreatment, basic techniques, methods and data handling, processing and statistical analysis of thesame. 2. Students would acquire the knowledge and understand the scope of Analytical Chemistry spanning various fields. The students will learn fundamentals of qualitative analysis using conventional techniques 3. Students will learn the chromatographic techniques, choice of chromatographic techniques and tuning of the chromatographic technique as per the need based on the samples to deal with, learn electroanalytical techniques and computation chemistry which would groom them for alternative analytical strategies which form one of the important components of analytical chemistry. 4. Students will learn about referring to the standard reference books and infer information from the same. Analytical case study problems would be discussed to familiarize with the scope and advantages of Analytical Chemistry.

CH-2.1 (Inorganic Chemistry – II)	1. Students will get the knowledge of the basic chemistry of non-transition elements and their compounds, synthesis and structural features, and applications. 2. To be able to explain the structures of inorganic compounds based on different theories. Student will understand the chemistry of various types of solvents. 3. Be well versed with the knowledge about the chemistry of Lanthanides and Actinides with respect to occurrence, separation, compounds and applications. 4. To understand the three dimensional structures of solid- state materials of industrial importance and to get the knowledge of bio-inorganic Chemistry.
CH-2.2 (Organic Chemistry – I)	1. Illustration of modern synthetic methods and applicationsof reagents. 2. Provide knowledge of different organometallic compounds and various coupling reactions. 3. Understand principle and applications of protection and deprotection of various functional groups. 4. It will elaborate to understand the concept of chemoselectivity, regioselectivity and enantioselectivity.
CH-2.3 (Physical Chemistry – I)	1. Students will learn basics of quantum mechanics. 2. Knowledge of the course will form the basis or essential requirement for the course "Advanced Quantum Chemistry" CO3: Able to understand selection rules and to predict the electronic spectra of conjugated organicmolecules. 3. Able to study photochemical and photophysicalphenomena 4. Capable of qualitative and quantitative analysis of various ingredients from industrial, food and pharma samples using techniques of emission spectroscopy. 5. Capable of understand the electrochemical aspects of materials, ionic processes and electrochemical sensors, battery materials and characterizations etc. 6. Able to study electrokinetic effects and their applications in the field of protein separation, characterization etc. 7. Understanding the molecular dynamics through kinetic studies. Applications to explore reaction pathways, protein-ligand binding rates, etc. will help to understand life governing processes.
CH 2.4 Analytical Chemistry- II	1. Students will acquire the knowledge of spectroscopic tools/instruments used in chemical analysis and interpretation of the data. The scope and limitations of the

	spectroscopic tools would be discussed so that the students learn about the type of samples which could be analyzed by these tools offering choices among thespectroscopic tools. 2. Students will learn about the simple and advanced instruments used for analysis like NMR, MS, AAS, ICP and thermal analysis (TGA, DTA, DSC etc.) techniques spanning wide variety of samples to be considered for analysis. 3. Students will learn about the instrumentation, sample preparation and handling of sample, analysis and data interpretation and structural elucidation. 4. Learning about different instruments will give them idea about appropriate choice of the instrument for analysis based on the source and type of analyte(s) in the sample under consideration.
PCH-I	1. Ability in professional sampling and sample treatmentbefore actual analysis 2. Ability to treat and evaluate the results of analysis 3. Understanding and capability of performing basic chemical processes in a chemical laboratory 4. Capability of performing measurements on basic analytical instruments (photometers, spectrometers, chromatographs, ion-selective electrodes)
PCH-I	5. Students can be able to prepare various concentration solutions like molar, normal, ppm, etc. 6. Determine the rate constants of various first order and second order reactions 7. Determine the redox potential of a system, relativestrength of acid etc using potentiometer, conductometer 8. Know the formation of alloys like Brass, Bronze, phase diagram for binary and ternary systems studied in details like a composition, critical temperature, etc 9. Validity of Freundlich adsorption isotherms to remove toxic material such as dye, acetic acid, and other industrial effluents
PCH-II	1. Students can be able to prepare various concentration solutions like molar, normal, ppm, etc. 2. Determine the rate constants of various first order and second order reactions 3. Determine the redox potential of a system, relative strength of acid etc using potentiometer, conductometer

	4. Know the formation of alloys like Brass, Bronze, phase diagram for binary and ternary systems studied in details like a composition, critical temperature, etc. 5. Validity of Freundlich adsorption isotherms to remove toxic material such as dye, acetic acid, and other industrial effluents
PCH 2.1	1. Students developed for precise sample solution preparation and sample treatment before actual analysis. 2. Students can be able to perform the calculations and error analysis 3. Develop understanding of basic chemical processes and deciding methods of analysis. 4. Capability of performing measurements on basic analytical instruments (photometers, spectrometers, chromatographs, high end thermometers, refractometer, pH meter etc.)
	1. Students can be able to prepare various concentration solutions like molar, normal, ppm, etc. 2. Determine the unknown concentration and thermodynamic parameters using conductometer. 3. Student will explore how to estimate order of reaction andthe catalysis. 4. Students can estimate refractive index and molecular weights of species. 5. Students can understand the estimation of equilibrium properties like redox potential, phase diagram etc.
ACH-3.1 (Advanced Analytical Techniques)	1. Develop knowledge of fundamental, instrumentation and working of state of art instrumental analytical techniques, effective use and choice of technique, written and/or oral communication of the concepts of analytical chemistry which will be useful as analytical chemist and R&D. 2. Acquire knowledge of mass spectrometry, type of MS, ionization types and specific practical applications of MS. 3. Acquire knowledge of basics of nanochemistry, nanomaterials and nanotechnology and application orientated synthesis and characterization of nanomaterials. 4. This course gives wide understanding about the instrumental analytical techniques (SEM, TEM, EDS, STM, AFM, Raman, XFS, ESR, XPS, AES, SIMS etc.) employed for qualitative and quantitative analysis for contemporary research.
ACH-3.2	1. Students will gain knowledge of the instruments used at

(Organic Analytical Chemistry)	the interface of Analytical-Organic chemistry useful forR&D and structural elucidation using UV-Visible, IR, 1H & 13C NMR, Mass spectrometry data and interpretation of the same. 2. Students will acquire knowledge about the drug, their classification, sources of impurities (chemical, atmospheric and microbial contamination) inpharmaceutical raw materials and analysis of the same. 3. Students will gain knowledge about the conventional and advanced analytical approaches for analysis of drug, vitamin, body fluids and clinical samples. 4. Students will have an idea of commonly used pesticides and their analysis and also about forensic science and forensic sample analysis.
ACH- 3.3: (Electroanalytical Techniques in Chemical Analysis)	1. Fundamental knowledge of electrochemistry, electrodes, types of electrodes, its construction will lay foundation forthe course. 2. Students will gain knowledge and skill in electroanalytical techniques like cyclic voltammetry and its types, polarography, coulometry and dynamic light scattering technique for qualitative and quantitative analysis. 3. Students will be familiar with the advanced electrodes used for chemical analysis, liquid-liquid membrane electrodes, enzymes and gas electrodes. 4. Students will learn about electrophoretic techniques, advances in electrophoresis techniques and its analytical applications.
ACH-3. 4) (A) (Environmental Chemical Analysis and Control)	1. Students will acquire knowledge about sampling, criteria of good sampling, handling, preservation and storage of the samples, pretreatment and post treatment of samples. 2. Students will acquire knowledge of conditions and strategies required during sampling and electrochemical and spectral methods for analysis of environmental samples. 3. Students will learn about the air and water pollution, sources of pollution, typical parameters and properties (physical, chemical and biological) to be measured in air and water pollution with relevance to specific case studies. 4. Students will be acquainted with organic pollutants and their analysis with special reference to pesticide analysis.

ACH-3.4) (B) (Recent Advances in Analytical Chemistry)	1. Students will be acquainted with ultra-purity and ultra- trace analysis required in electronic and semiconductor processing. 2. Students will learn Radio-Analytical techniques for analysis. 3. Student will be well versed with C13, P15 and O17 NMR Spectroscopy applications. 4. Student will learn about ESR spectrometry and its applications quantitative analysis.
ACH-3.4 (B) (Recent Advances in Analytical Chemistry)	1. Students will be acquainted with ultra-purity and ultra- trace analysis required in electronic and semiconductor processing. 2. Students will learn Radio-Analytical techniques for analysis. 3. Student will be well versed with C13, P15 and O17 NMR Spectroscopy applications. 4. Student will learn about ESR spectrometry and its applications quantitative analysis.
ACHP – V Practical -V	1. In-depth training on laboratory solution preparations onall concentration scales 2. Training on laboratory safety and lab ethics in scientific work 3. Training on planning, design and execution of experiments 4. Training on uncertainty estimations for experimentally measured and derived properties of solutions
ACHP – VI Practical-VI	1. Training on scientific literature search, defining the objective of the work, research skills, data representation in tabular and graphical form etc. 2. Training on experimental verification of fundamental theories, comparison of data with literature and scientific discussion on any deviation of data from expected theoretical values or reported literature. 3. Developing analytical skills 4. Training on qualitative and quantitative analysis of analyte
Part-II semester-IV	
ACH4.1 (Modern Separation Method in Analysis)	1. Students will learn about modern separation and chromatographic used for analysis of different type of samples. 2. The student will understand instrumentation and mechanism of various separation techniques. 3. Student will acquire knowledge regarding various choice of instrument and detectors to be used for analysis depending on the sample and matrix.

	4. Student will learn fundamentals of extractive chromatography, types of extraction techniques, advances in extraction methods and their hyphenations with chromatography leading to addressing challenging problems in analytical chemistry.
ACH-4.2 (Organic Industrial Analysis)	1. Acquire knowledge of handling and investigating the characteristics of the oils, fats, detergents and soap samples and analysis of the same providing opportunity in cosmetic, pharmaceuticals, dyes and polymers industries. 2. Student will gain knowledge and importance of food quality, probe for food adulteration and adulterants, food preservative, food flavors and analysis of their components. 3. Students will also gain knowledge about the animal food stuff and the additives added in the animal food stuff as antibiotics, dietary supplements and growth promoting drugs, preservatives etc. and analysis of the same. 4. Student will learn about the analysis of cosmetics, face powder, hair dyes and hair care products, types of cosmetics, precautionary measures and composition of the cosmetics and specific roles of the ingredients. Will acquire knowledge about the paints, pigments and petroleum products, composition and analysis of the same using conventional and instrumental techniques.
ACH- 4.3 (Advanced Methods in Chemical Analysis)	1. Students will be skilled in the techniques like fluorescence, phosphorescence, types of quenching, FRET and applications of the same in Analytical Chemistry and for addressing research problems. 2. Students will gain knowledge of the kinetic methods of analysis supporting the analysis and data procured in research. 3. The students will acquire the knowledge of advanced method of chemical analysis XPS, XRF, fluorescence and phosphorescence spectroscopy which will be beneficial in research. 4. Students will acquire knowledge of identifying types of plastic and will also be able to and determination of metallic impurities in plastics
ACH-4.4 (A) (Industrial Analytical Chemistry)	1. The students will acquire knowledge of analysis of metals, alloys, minerals and ores commonly used in the industry. 2. The students will be acquainted with the analysis of real samples like cement, plaster of Paris, different commercial

	ores, soil composition, soil fertility, fertilizers etc using conventional and instrumental methods of analysis. 3. Students will also gain the knowledge of analysis of commercial materials, explosives, polymers, resins, rubber, luminescent paints, lubricants and adhesives. 4. These would offer opportunity to the students to get employment in industries for quality assurance and quality control (QA-QC) of the product.
ACH-4.4 (B) (Quality Assurance and Accreditation)	1. Students will acquire knowledge of QA-QC which in essential for analytical chemist, This covers a variety of chemical fields and this knowledge would help students working on various materials, understanding the basics of samples, sampling, sample storage, and pre-post treatment of samples. 2. Students will acquire knowledge of good laboratory practices, professional ethics, and instrumental analytical chemistry, awareness of health hazards, remedial measures, analytical method development and validation. 3. The students would be aware of the importance of documentation for raw materials and finished products, their monitoring, maintenance and management. World- wide agencies involved in regulating the analytical protocols and establishing standards. 4. Students will gain knowledge about the quality assurance and accreditation, evolution and significance of quality management, available accreditation agencies and advantages of accreditation.
ACHP – VIII Practical-VIII	1. The students will acquire hands on training for conducting the representative experiments for the analysis of wide variety of samples of inorganic, organic and physical approaches by qualitative and quantitative analysis. Demonstrate professional and ethical attitude to serve the society 2. Students will have knowledge of safety signs on container of chemicals, safety in handling of chemicals, MSDS sheets, learn sample preparation and characterization for confirming the purity. 3. Students would acquire knowledge about the separation and estimation of amount of metal, metal ions, organic compounds etc. in given samples. 4. Based on the experience of project work, students will have ability to start their R & D laboratory.

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"Dissemination of Education for Knowledge, Science & Culture"
-Shikshanmaharshi Dr. Bapuji Salunkhe

Shri Swami Vivekanand Shikshan Sanstha, Kolhapur's
RAJE RAMRAO MAHAVIDYALAYA, JATH
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Estd : June 1969

Office : (02344) 246251, Fax : (02344) 246015, Resi : (02344) 247251 | Email : rajeramrao@gmail.com | Website : www.rrcollege.org

Marathi Department

Programs Outcomes and Course Outcomes

"ज्ञान, विज्ञान आणि सुसंस्कार यांसाठी शिक्षण प्रसार"

शिक्षणमहर्षी डॉ. बापूजी साळुंखे

श्री स्वामी विवेकानंद शिक्षण संस्था कोल्हापूर, संचालित

राजे रामराव महाविद्यालय, जत

मराठी विभाग

Course Outcomes

(२०१८ - २०२३)

B. A. - I

अभ्यासपत्रिका क्र. 1 (अक्षरबंध)

१. विद्याथ्र्यांची मराठी भाषा आणि साहित्याविषयी अभिरूची विकसित करणे.

२. मराठी साहित्य परंपरा, लेखक, कवी यांचा परिचय करून देणे.

३. विद्यार्थ्यांमध्ये मातृभाषा, राष्ट्रीय एकात्मता आणि उच्च मानवी मूल्यांविषयी जाणीव निर्माण करणे.

४. विदयार्थ्याचा व्यक्तिमत्व विकास घडवून विविध परीक्षा आणि स्पर्धा परीक्षांची पूर्वतयारी करून घेणे.

५. चित्रपट आणि प्रसारमाध्यमे यांच्या लेखन आणि उपयोजनाच्या आकलनाचा अवकाश वाढविणे.

अभ्यासपत्रिका क्र. २ अक्षरबंध

१. मराठी साहित्यातील काव्य परंपरेचा परिचय करून देणे.

२. वृतपत्रीय लेखन प्रकारांचा परिचय करून देणे..

३. पत्रलेखन आणि आकलनाचे स्वरूप व प्रकार यांचा परिचय करून देणे.

Course Outcomes

B. A. II

अभ्यासपत्रिका क्र. III काय डेंजर वर सुटलाय व मराठी भाषिक कौशल्ये

१. नाटक या वाङ्मय प्रकाराचे आकलन करून घेणे.

२. समकालीन नाटकातून नाटककाराच्या साम्कालाचे प्रतिबिंब कशाप्रकारे प्रकट होते याचा अभ्यास करणे.

३. नाट्याभ्यासाद्वारे प्रयोगरूप नाटक व नाट्यक्षेत्रातील ज्ञानसंपादनास चालना देणे.

४. नाट्याभ्यासातून सभ्यता, संस्कृती, राष्ट्रीय एकात्मता व बंधुता वाढीस लावणे.

५. विद्यार्थ्यांमध्ये संवादलेखन कौशल्ये विकसित करणे.

अभ्यासपत्रिका क्र. IV काव्यगंध व मराठी भाषिक कौशल्ये

१. मराठी काव्यपरंपरा व प्रवाहांची ओळख करून घेणे.

२. मराठी काव्यातून प्रकट होणारे माणूस आणि समाज यातील परस्परसंबंध शोधणे.

३. कवितेच्या काव्यात्मक आकृतीबंधाचे मोल अभ्यासणे.

४. काव्याप्रवाहानुरूप काव्यालेखानाचे विशेष अभ्यासणे.

५. प्रात्यक्षिकादवारे काव्यलेखन कौशल्ये रुजविणे.

अभ्यासपत्रिका क्र. V माती, पंख आणि आकाश व मराठी भाषिक कौशल्ये

१. आत्मचरित्र या वाङ्मय प्रकारची ओळख करून देणे.

२. आत्मचरित्रकाराच्या व्यक्तिमत्वाची जडण-घडण आणि त्याचा संकल समजून देणे.

३. आत्मवृत लेखन कौशल्ये विकसित करणे.

अभ्यासपत्रिका क्र. VI जुगाड व मराठी भाषिक कौशल्ये

१. कादंबरी या वाङ्मय प्रकारची ओळख करून देणे.

२. मानवी मूल्यांविषयी जाणीव निर्माण करणे,

३. कादंबरीलेखनाचे विशेष अभ्यासणे.

४. वृत्तांतलेखन कौशल्ये रुजविणे.

Course Outcomes

B. A. III

अभ्यासपत्रिका क्र. VII (साहित्यविचार)

१. पौर्व्यात्य, पाश्चात्य व आधुनिक भारतीय साहित्यशास्त्राचे स्वरूप समजून घेणे.

२. ललित व ललितेतर साहित्याचे स्वरूप समजून घेणे.

३. साहित्य प्रयोजनांचे आकलन करून घेणे,

४. साहित्याची निर्मितीप्रक्रिया आणि त्याचे स्वरूप समजून

५. भाषेतील अलंकार समजून घेणे.

अभ्यासपत्रिका क्र. VIII मराठी भाषा व भाषाविज्ञान

१. भाषोत्पत्तीचा अभ्यास करणे.

२. भाषाविज्ञानाचा परिचय करून देणे.

3. भाषाविज्ञान आणि मराठी भाषा यांचा सहसंबंध जाणून घेणे.

४. स्वनविचार, रुपविचार व वाक्यविचारांचा परिचय करून घेणे.

५. मराठी भाषेविषयी विद्यार्थ्यांची आवड विकसित करणे.

अभ्यासपत्रिका क्र. IX मध्ययुगीन मराठी वाङ्मयाचा इतिहास (प्रारंभ ते इ.स. १५००)

१. मध्ययुगीन मराठी वाङ्मयाचा कालिक अभ्यास करणे.
२. मध्ययुगीन मराठी वाङ्मयाचा स्थूल परिचय करून घेणे.
३. मध्ययुगीन मराठी वाङ्मयाचे स्वरूप, वैशिष्ट्ये अभ्यासणे.
४. मध्ययुगीन मराठी वाङ्मयातील महत्वाचे ग्रंथकार आणि ग्रंथ यांचा स्थूल परिचय करून घेणे
५. मध्ययुगीन मराठी वाङ्मयाच्या गद्य, पद्य रचनेचे विशेष अभ्यासणे.

अभ्यासपत्रिका क्र. X मराठी भाषा व अर्थार्जनाच्या संधी

१. सर्जनशील लेखनप्रक्रिया समजून घेणे.
२. वैचारिक लेखनाचे स्वरूप अभ्यासणे.
३. शोधनिबंध व प्रकल्पलेखन कौशल्य समजून घेणे.
४. आंतरजालावरील मराठी लेखनपद्धती अभ्यासणे.

अभ्यासपत्रिका क्र. XI वाङ्मय प्रवाहाचे अध्ययन : मध्ययुगीन

१. मध्ययुगीन महाराष्ट्र व महानुभाव पंथ यांचा परिचय करून घेणे.
२. महानुभाव वाङ्मयाच्या प्रेरणा व स्वरूप समजून घेणे.
३. महानुभावीय ग्रंथकार केसोबास यांचा परिचय करून घेणे.
४. दृष्टांतपाठातील आशयस्वरूप व अभिव्यक्ती विशेष अभ्यासणे,
५. दृष्टांतपाठातील भाषिक वैभवाचा परिचय करून घेणे.

अभ्यासपत्रिका क्र. XII साहित्यविचार

१. शब्दशक्तींचे आकलन करून घेणे.
२. साहित्यातील रसाचे स्वरूप व रसप्रक्रिया समजून घेणे.
३. निर्मितीच्या आनंदाची मीमांसा करणे.
४. व्यवहार भाषा, शास्त्रभाषा आणि साहित्यभाषा यातील भेद समजून घेणे..
५. साहित्यभाषेचे आकलन करुन घेणे.
६. भाषेतील छंद व वृते यांचा अभ्यास करणे.

अभ्यासपत्रिका क्र. XIII मराठी भाषा व भाषाविज्ञान

१. मराठी भाषेची वर्णव्यवस्था समजून घेणे.
२. ध्वनी व अर्थपरिवर्तनाची कारणे व प्रकार यांची माहिती करून घेणे.
३. प्रमाणभाषेचे स्वरूप व विशेष अभ्यासणे.
४. बोलींचे स्वरूप व विशेष समजून घेणे.

अभ्यासपत्रिका क्र. XIV मध्ययुगीन मराठी वाङ्मयाचा इतिहास (इ.स. १५०० ते इ.स. १८००)

१. पंडित कवी व त्यांची रचना यांचा परिचय करून घेणे.

२. बखर वाङ्मय आणि शाहिरी वाङ्मय यांचे स्वरूप, विशेष अभ्यासणे.

अभ्यासपत्रिका क्र. XV मराठी भाषा व अर्थार्जनाच्या संधी

१. प्रसारमाध्यमातील अर्थार्जनाच्या संधी आणि भाषिक कौशल्ये यांचा परिचय करून घेणे.

२. स्पर्धा परीक्षांमध्ये मराठी भाषा विषयाचे महत्त्व समजून घेणे.

३. उद्योग व सेवा क्षेत्रात मराठी भाषेद्वारे अर्थार्जनप्राप्ती संदर्भात ज्ञान संपादन करणे.

४. मुद्रित शोधनाची पद्धत अभ्यासणे.

अभ्यासपत्रिका क्र. XVI (वाङ्मय प्रकाराचे अध्ययन : ललित गद्य (व्यक्तिचित्रे)

१. ललित गद्य वाङ्मय प्रकाराचे स्वरूप अभ्यासणे.

२. व्यक्तिचित्र संकल्पना व स्वरूप समजून घेणे.

३. प्रवाहानुरूप मराठीतील व्यक्तिचित्रांचे स्वरूप अभ्यासणे.

४. 'मुलखावेगळी माणसं'मधील शैक्षणिक, सामाजिक, सांस्कृतिक, राजकीय पर्यावरण आणि कौटुंबिक भावविश्व अभ्यासणे.

५. 'मुलखावेगळी माणसं'मधील ग्रामीण व उपेक्षितांच्या जीवनाचे आकलन करून घेणे. ६. 'मुलखावेगळी माणसं'मधील अभिव्यक्ती, निवेदनशैली व भाषाविशेष अभ्यासणे.

Jr. College Recog. No. H.S.C./1077/31029/XII/HS dt.10/06/1977
Jr. College Code No. 22-02-001

"Dissemination of Education for Knowledge, Science & Culture"
-Shikshanmaharshi Dr. Bapuji Salunkhe

Shri Swami Vivekanand Shikshan Sanstha, Kolhapur's

RAJE RAMRAO MAHAVIDYALAYA, JATH

Dist. Sangli (Maharashtra) 416 404
UGC Recognition under 2F & 12 (B) UGC Act 1956
(Affiliated to Shivaji University, Kolhapur)
NAAC Reaccredited : "B" (Third Cycle)

Estd : June 1969

Office : (02344) 246251, Fax : (02344) 246015, Resi : (02344) 247251 | Email : rajeramrao@gmail.com | Website : www.rrcollege.org

M.Sc. Physics Department

Programs Outcomes and Course Outcomes

Dissemination of Education for Knowledge, Science, and Culture"

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PG DEPARTMENT OF PHYSICS

PO's

(Program Outcomes)

PSO's

(Program Specific Outcomes)

CO's

(Course Outcomes)

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M.Sc. Physics

Program Outcomes.

PO1	To create, apply, and disseminate knowledge of physics in theoretical and experimental domains under Materials science specializations.
PO2	To develop the ability to identify, formulate, analyze, and solve problems in theoretical and experimental domains of physics at both curricular and research levels through critical thinking.
PO3	To enable students to apply ICT-based skills and make them scientific software literate to use in academics
PO4	To encourage research culture, provide research ambience, and develop related technical proficiency
PO5	To develop an attitude to pursue further research and find placement avenues through it.
PO6	To teach academic and social ethical values among the students

Program Specific Outcomes.

After the successful completion of two-year Master's Degree programme in Physics, students are able to -----	
PSO1	Create, apply and disseminate knowledge of physics in theoretical and experimental domains under solid state physics specializations.
PSO2	Learn concepts of physics, particularly concepts in classical mechanics, quantum mechanics, statistical mechanics, electrodynamics, condensed matter physics, atomic and molecular physics and nuclear and particle physics.
PSO3	Develop the ability to identify, formulate, analyse and solve problems in theoretical and experimental domains of physics at both curricular and research level through critical thinking.
PSO4	Feel encouraged undertaking research and developing related technical proficiency.
PSO5	Develop attitude to pursue further research and find placement avenues through it
PSO6	Imbibe academic and social ethical values.

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Course Outcomes

M.Sc. I Semester I

Mathematical Physics (CC- 101)

At the end of this course, ------	
CO1	Students are able to understand and calculate matrix Algebra and Eigen value problems.
CO 2	Students are able to learn complex variables like complex numbers, complex algebra, etc.
CO 3	Students are able to understand calculus of Residues theorem.
CO 4	Students are able to apply Fourier series analysis to solve numerical.

Classical Mechanics (CC-102)

At the end of this course, ------	
CO1	Students are able to understand electron and neutron diffraction methods.
CO 2	Students are able to solve the problems related to Kepler's laws.
CO 3	Students are able to understand fundamental special relativity in classical mechanics.
CO 4	Students are able to know variation principle and Hamiltonian formulation.

Quantum Mechanics I (CC-103)

At the end of this course, ------	
CO1	Students are able to understand fundamental concepts and formalism of quantum mechanics.
CO 2	Students are able to solve problems related to one-dimensional problems and Schrödinger equation
CO 3	Students are able to calculate Eigen values and Eigen states of angular momentum.
CO 4	Students are able to analyse Ket and Bra spaces and inner products

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Condensed Matter Physics (CC-104)

At the end of this course, ------	
CO1	Students are able to understand unit cell and Bravais lattice with the concept of Brillouin zones.
CO 2	Students are able to learn types of crystal defects.
CO 3	Students are able to know theory of diamagnetism.
CO 4	Students are able to understand fundamental dielectric and magnetic properties of the material.

Physics Lab (CCPR-105)

At the end of this course, ------	
CO1	Students are able to understand and calculate crystal structure and F.C.C. & B.C.C.
CO 2	Students are able to understand Hall Effect and solve problems related to it.
CO 3	Students are able to understand and design experimental set up of heat capacity of material.
CO 4	Students are able to design experimental set up of temperature transducer for RTD and thermocouple
CO 5	Students are able to design circuits of a stable and monostable multivibrators.
CO 6	Students are able to understand fundamentals of Mathematica and are able to solve various problems using it.
CO 7	Students are able to understand the theory behind B-H curve and apply the same for different materials

M.Sc. I Semester II

Quantum Mechanics II (CC-201)

At the end of this course, ------	
CO1	Students are able to understand and calculate Time dependent potentials.
CO 2	Students are able to learn scattering theory.
CO 3	Students are able to understand Spin Angular Momentum and theory of wave function.
CO 4	Students are able to know the concept of radiation and selection rule.

Statistical Mechanics (CC-202)

At the end of this course, ------	
CO1	1 Students are able to understand and think critically about concepts, statistical equilibrium and thermodynamic laws and functions.
CO 2	Students are able to solve numerical Statistical Ensembles Theory
CO 3	Students are able to understand and apply quantum distribution functions
CO 4	Students are able to understand Phase Transitions and Critical Phenomenon.
CO 5	Students are able to understand Entropy and specific heat of a perfect gas, entropy and probability distribution.

Electrodynamics (CC-203)

At the end of this course, ------	
CO1	Students are able to solve E.M. wave equations in waveguide of the arbitrary cross section: TE and TM modes. Students are able to understand and analyse reflection and refraction, polarization, Fresnel's law, interference, coherence and diffraction
CO 2	Students are able to learn scattering theory. Students are able to understand the applications to linear and circular motions: cyclotron and synchrotron radiations.
CO 3	Students are able to understand the Cerenkov radiation and Bremsstrahlung and to understand the structure of space time, Relativistic Mechanics.
CO 4	Students are able to solve numerical on Relativistic Energy and Momentum, Relativistic Kinematics, Relativistic Dynamics, Relativistic Electrodynamics, Magnetism as a Relativistic Phenomenon

Atomic and Molecular Physics (CC-204)

At the end of this course, ------	
CO1	Students are able to understand and distinguish Atom Model for Two Valence Electrons i. e. l-s coupling, j-j coupling and the Pauli exclusion principle.
CO 2	Students are able to understand and differentiate various Zeeman Effect,

	Panchen- Back Effect and Stark basic effect.
CO 3	Students are able to understand basic phenomenon of microwave spectroscopy and classification of molecules.
CO 4	Students are able to understand fundamental the simple harmonic oscillator, the anharmonic oscillator instrumentation and chemical analysis by infra-red spectroscopy

Physics Lab (CCPR-205)

At the end of this course, ------	
CO1	Students are able to gain knowledge of fourier analysis, passive filters and solar cell
CO 2	Students are able to understand mutual inductance of coil and series and parallel resonant circuits
CO 3	Students are able to understand numerical solutions and plotting of simple functions using python
CO 4	Students are able to understand fundamental and programming of Mathematica including 2D and 3D plots.
CO5	Students are able to write seminar reports.
CO6	Students are able to submit certified seminar reports.

M.Sc. II. Semester III

Nuclear and Particle Physics (CC-301)

At the end of this course, ------	
CO1	Students are able to understand the nuclear forces and their potential to apply in experiments
CO 2	Students are able to analyse the single particle nuclear shell model and related phenomena
CO 3	Students are able to understand and apply selection rule of elementary particles and fission, fusion reactions. .
CO 4	Students are able to understand and apply the Gellman Nishijima formula to solve numerical problems

Statistical data analysis (COC-302)

At the end of this course, ------	
CO1	Students are able to understand the nuclear forces and their potential to apply in experiments
CO 2	Students are able to analyse the single particle nuclear shell model and related phenomena

Material science -I (COC-302)

At the end of this course, ------	
CO1	Students are able to understand the nuclear forces and their potential to apply in experiments
CO 2	Students are able to analyse the single particle nuclear shell model and related phenomena
CO 3	Students are able to understand and apply selection rule of elementary particles and fission, fusion reactions. .
CO 4	Students are able to understand and apply the Gellman Nishijima formula to solve numerical problems

Material science -II (COC-303)

At the end of this course, ------	
CO1	Students are able to understand the Physical and mechanical properties of materials.
CO 2	Students are able to analyse the thermal properties of materials.
CO 3	Students are able to understand Electric and magnetic properties of materials.
CO 4	Students are able to understand optical properties of materials.

Practical on Specialization Subject: LAB-I+ Project on Specialization Subject: Project

At the end of this course, ------	
CO1	Students are able to understand thin film deposition techniques.
CO 2	Students are able to learn different synthesis techniques of the thin film.
CO 3	Students are able to know the physical properties of thin film by XRD, FTIR and analyse them.

CO 4	Students are able to understand the structural properties of thin film by SEM, FESEM and analyse them.
CO 5	Students are able to understand deposition techniques.
CO 6	Students are able to synthesize thin film material.
CO 7	Students are able to characterize thin film material for different applications.

M.Sc.II, Semester IV

Experimental Techniques (CC-401)

At the end of this course, ------	
CO1	Students are able to understand working, measurement of various types of the pumps and simple methods related to detectors.
CO 2	Students are able to understand low temperature and microscopy.
CO 3	Students are able to understand fundamentals of atomic absorption spectroscopy.
CO 4	Students are able to understand the principle of X-Ray Fluorescence spectrometry and Mossbauer spectrometry.
CO 5	Students are able to work on spectroscopy

Energy Conversion and Storage Devices (DSE-404)

At the end of this course, ------	
CO1	Students are able to understand solar photovoltaics.
CO 2	Students are able to learn dye sensitized and quantum dot sensitized solar cells.
CO 3	Students are able to learn organic and perovskite solar cells.
CO 4	Students are able to understand energy storage device like supercapacitors and batteries.

Materials science-III(COS-402)

At the end of this course, ------	
CO1	Students are able to understand solar photovoltaics.
CO 2	Students are able to learn dye sensitized and quantum dot sensitized solar

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	cells.
CO 3	Students are able to learn organic and perovskite solar cells.
CO 4	Students are able to understand energy storage device like supercapacitors and batteries.

Materials science-IV(COS-403)

At the end of this course, ------	
CO1	Students are able to understand solar photovoltaics.
CO 2	Students are able to learn dye sensitized and quantum dot sensitized solar cells.
CO 3	Students are able to learn organic and perovskite solar cells.
CO 4	Students are able to understand energy storage device like supercapacitors and batteries.

Project -II + Practical on Specialization Subject: LAB-II (CCPR-405)

At the end of this course, ------	
CO1	Students are able to perform experiments- PEC solar cell, phototransistor and LDR.
CO 2	Students are able to learn gas sensing mechanism and its calculations.
CO 3	Students are able to synthesize thin film material.
CO 4	Students are able to know IV characteristics of solar cell.
CO 5	Students are able to characterize thin film material and analyse them.
CO 6	Students are able to learn deposition techniques

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HEAD,
Department of Physics,
Raje Ramrao College, Jath.

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Zoology Department

Programs Outcomes and Course Outcomes

Department of Zoology

Learning Outcomes:

A graduate of B.Sc. Zoology programme after three years will be able to:

- Develop critical understanding how a single-celled fertilized egg becomes an embryo and then a fully formed adult by going through three important processes of cell division, cell differentiation and morphogenesis.
- Understand how developmental processes and gene functions within a particular tissue or organism can provide insight into functions of other tissues and organisms.
- Realize that very similar mechanisms are used in very diverse organisms; and development is controlled through molecular changes resulting in variation in the expression and function of gene networks.
- Understand how the field of developmental biology has changed since the beginning of the 19th century with different phases of developmental research predominating at different times.
- Examine the evolutionary history of the taxa based on developmental affinities.
- Understand the relevance of developmental biology in medicine or its role in development of diseases.
- Develop an understanding of the characters used to classify besides being able to differentiate the organisms belonging to different taxa.
- Acquire knowledge of the coordinated functioning of complex human body machine.
- Have hands on experience of materials demonstrating the diversity of protists and non-chordates.
- Understand the relative position of individual organs and associated structures through dissection of the invertebrate representatives.
- Realize that very similar physiological mechanisms are used in very diverse organisms.
- Get a flavour of research by working on project besides improving their writing skills. It will further enable the students to think and interpret individually.
- Undertake research in any aspect of animal physiology in future.

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Course Outcome:

B. SC. I SEMESTER I

DSC – 15B ANIMAL DIVERSITY- I

At the end of the course, students will be able to....

CO1. To understand the role of invertebrates in ecosystem.

CO2. To classify the invertebrates up to the class.

CO3. To understand the different types of locomotion and its mechanism.

CO4. To understand the developmental stages of helminths.

CO5. To understand the food and feeding mechanism of invertebrates.

DSC – 16A CELLBIOLOGY AND EVOLUTIONARY BIOLOGY

At the end of the course, students will be able to understand

CO1. The functions and the composition of the plasma membrane.

CO2. The importance of the nucleus and its functions.

CO3. The Lamarckism and Darwinism.

CO4. The different change occurs during the evolution of earth.

CO5. How fossils are important to study the evolution.

B. SC. I SEMESTER II

DSC – 15 B - ANIMAL DIVERSITY AND INSECT VECTORS

At the end of the course, students will be able to understand

CO1. The working of nerve cell and its signalling.

CO2. The types of food, digestive system and importance of the digestive juices and enzymes.

CO3. The importance of respiratory gases and mechanisms of transportation.

CO4. The functions of kidney, different excretory products and structure of kidney and nephron. Understand the meaning of Osmotic pressure, isotonic, hypotonic, hypertonic

CO5. The structure, function and importance of heart.

DSC – 16 B GENETICS

At the end of the course, students will be able to understand

CO1. The working of nerve cell and its signalling.

CO2. The mechanism of inheritance, gene interaction, lethal genes and multiple alleles

CO3. The Linkage and Crossing over.

CO4. The different types of mutations.

CO5. The different types sex of determination.

B. SC. II SEMESTER III

Paper No. V Course: DSC – C ANIMAL DIVERSITY-II

At the end of the course, students will be able to understand

CO1. The classification and general characters of protochordates.

CO2. The cyclostome and general characteristics of Agnathans

CO3. The unique characters of Pisces and Mechanism of Respiration.

CO4. The Venomous and non-venomous snakes, Biting mechanism in snakes.

CO5. The general characters and mechanism of circulation in mammals.

Paper No. VI Course: DSC – C BIOCHEMISTRY

At the end of the course, students will be able to understand

CO1. The structure and different types (DNA- A, B, Z form) (RNA tRNA, rRNA, mRNA) and different functions of DNA and RNA.

CO2. The different types of carbohydrates metabolism such as Glycolysis, Gluconeogenesis, Glycogenolysis, Kreb's Cycle, Pentose Phosphate Pathway.

CO3. The different types of Protein metabolism such as transamination and deamination. Student will be able to understand the Mechanism of Ornithine Cycle

CO4. The Mechanism biosynthesis and breakdown of lipids by beta oxidation process.

CO5. The nomenclature, Classification, enzyme kinetics, Inhibition, regulations and Isozymes.

B.Sc. II Semester IV

Paper No. VII Course: DSC – C REPRODUCTIVE BIOLOGY

At the end of the course, students will be able to understand

CO1. The histological structure and functions of different cells

CO2. The Reproductive cycle of human and its regulations.

CO3. The process of fertilization in human.

CO4. The Male Reproductive systems and organs, glands associated with it.

CO5. The causes, diagnosis & management of infertility in male and female.

Paper No. VIII Course: DSC – C APPLIED ZOOLOGY- I

At the end of the course, students will be able to understand

CO1. The Host, Definitive host, Intermediate host, Parasitism, Symbiosis, Commensalism, Reservoir, Zoonosis

CO2. The Biology, Control and damage caused by Helicoverpa armigera, Pyrilla perpusilla.

CO3. The Principles of poultry breeding, Management of breeding stock and broilers, Processing and Preservation of eggs.

CO4. The Transmission, Prevention and control of diseases: Tuberculosis, Typhoid.

CO5. The Rickettsia prowazekii, Borrelia recurrentis and Treponema pallidum.

B. SC. III SEMESTER V

Paper- IX DSE-E29 COMPARATIVE ANATOMY OF VERTEBRATES

At the end of the course, students will be able to understand

CO1. The structure functions and different types of Integuments and its derivatives of vertebrates.

CO2. The digestive systems of different vertebrates.

CO3. The respiratory system of different vertebrates.

CO4. The circulatory systems of different vertebrates.

CO5. The Nervous systems of different vertebrates.

Zoology Paper- X

DSE-F29 MOLECULAR CELL BIOLOGY AND ANIMAL BIOTECHNOLOGY

At the end of the course, students will be able to understand

CO1. The process of DNA Replication, Transcription and translation

CO2. The different Molecular Techniques used in Gene manipulation.

CO3. The procedure of Construction of genomic and cDNA libraries

CO4. The different types of the DNA sequencing.

CO5. The procedure and application of DNA Finger Printing and DNA micro array

Zoology Paper- XI

DSE-F30 BIOTECHNIQUES AND BIOSTATISTICS

At the end of the course, students will be able to understand

CO1. The procedure of Production of cloned and transgenic animals

CO2. The applications of the transgenic animals.

CO3. The different Culture Techniques and its Applications.

CO4. The different types of Classification of Biological data.

CO5. The different biostatistical techniques used in zoology.

Zoology Paper- XII

DSE-F31 AQUATIC BIOLOGY

At the end of the course, students will be able to understand

CO1. The different types of the Aquatic Biomes

CO2. The Freshwater Biology and its significance.

CO3. The Anatomy and histology different endocrine glands and importance of hormones.

CO4. The Nature, role, regulation and Hormonal disorders.

B. SC. III SEMESTER VI

Zoology Paper- XIII

DSE-E30 DEVELOPMENTAL BIOLOGY OF VERTEBRATES

At the end of the course, students will be able to understand

CO1. The different process of formation of gametes.

CO2. The different stages of Early Development of Frog.

CO3. The Metamorphosis in frog and its hormonal regulation.

CO4. The different stages of Chick Development.

CO5. The different types, Formation and significance of placenta.

Zoology Paper- XIV

DSE-E32 IMMUNOLOGY

At the end of the course, students will be able to understand

CO1. The principles of innate and adaptive immune system.

CO2. The different Cells and Organs of the immune system

CO3. The basic properties of antigens

CO4. The Structure, Classes and Functions of Antibodies

CO5. The Hybridoma Technology used in Monoclonal Antibodies production.

Zoology Paper- XV

DSE-E31 APPLIED ZOOLOGY - II

At the end of the course, students will be able to understand

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CO1. The Apiculture techniques.

CO2. The Indigenous and exotic breeds of cattle and commercial importance of dairy farming

CO3. The Process of Pearl formation: natural and artificial, Maintenance of oysters, Harvesting and . Importance of Pearl

CO4. The Species of Prawn , Site selection, Farm Construction and Production system: fertilization, Larval Development, Food and feeding

CO5. Genetic improvements in aquaculture industry

Zoology Paper- XVI

DSE-F32 INSECT VECTORS AND HISTOLOGY

At the end of the course, students will be acquiring information about

CO1. Dipteran as important insect vectors

CO2. Control measures of Mosquitoes

CO3. Fleas as important insect vectors

CO4. Flea-borne diseases

CO5. Different histological structure of mammalian organs.