



Sahyadri Shikshan Mandal's

Mahant Jamanadas Maharaj
Arts, Commerce and Science College

Karanjali, Tal. Peth, Dist. Nashik – 422208, (MS) India

(Affiliated to Savitribai Phule Pune University, Pune)

Accredited by NAAC- 'C' Grade (CGPA-1.72)



Criterion-II:

Teaching- Learning and Evaluation

2.6.: Student Performance and Learning Outcomes



ID No. PU/NS/ACS/150/2009

॥ स्वदेशे पुज्यते राजा विद्वांसर्वत्र पुज्यते ॥
Govt. of Mah. Order No. N.G.C. 2009 (152/09) MS R - 4
Sahyadri Shikshan Mandal's Dindori

Mahant Jamanadas Maharaj ARTS, COMMERCE & SCIENCE COLLEGE

Karanjali, Tal. Peth, Dist. Nashik. (Maharashtra) 422 208. Ph.No.: 02558 - 234666
E-mail : mjmcollge1@yahoo.com College Code - 908

जावक क्र.: 186/2024-25

दिनांक : 20/12/2024


DECLARATION

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


This declaration is for the purpose of NAAC accreditation of HEI for the 2nd cycle period 2018-2019 to 2022-23.

Date:-20/12/2024

Place:-Karanjali


Dr. M.S. Shinde
I.Q.A.C. Co-ordinator
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2.6.1 Programme Outcomes (POs) and Course Outcomes (COs)

Introduction:

The standard of the quality education provided by HEI is measured in terms of the outcomes. College has clearly stated the POs for each programme and COs for all the courses of the respective programmes. POs are the statements describing about knowledge, qualities, attitude, skills and competencies to be acquired by the students after the completion of the programme. POs stated are in tune with the Vision-Mission statement and learning objectives. The POs are defined in such a way that after the attainment of POs, students imbibe with the scientific knowledge, critical thinking, experimental skills, communication skills, management skills, problem-solving approach, team building, leadership qualities, proficiency towards modern equipments, environmental and social awareness, ethics and human values and a lifelong learning desire.

College has stated Graduate Attributes and POs on the basis of course curriculum and UGC's-LOCF. Cos for all courses are designed by faculties of the respective departments considering Bloom's taxonomy. PSOs describe the specific subject knowledge and skills to be acquired by the students after the completion of the programme and are defined by the respective departments. COs are the skills to be acquired by the students after the completion of each course. COs for the course are defined by the faculty and are stated in such a way that they should co-relate with the PSOs and ultimately the expected POs. Pre-stated COs and POs for all the programmes are communicated to students through the prospectus, departmental notice boards, college website and through the Principal's Address at the beginning of the academic session, student induction programmes and mentoring sessions. Also, the teachers use these outcomes for preparing teaching plans which are displayed on departmental notice boards and also communicated through classrooms. Teachers follow these POs, COs as while framing the questions for internal assessment. Prospectus of the college, website, departmental meetings and personal counseling proved to be important for the achievement of the outcomes.

Table of content	
Introduction	
List of Programme Offered by HEI	
Programme Outcomes (POs) and Course Outcomes (COs):	

QIM 2.6.1 Programme Outcomes (POs) and Course Outcomes (COs) for all Programmes offered by the institution are stated and displayed on website and attainment of POs and COs are evaluated:

Introduction:

Mahant Jamanadas Maharaj Arts, Commerce & Science College, Karanjali is dedicated to providing high-quality education to students from rural areas in the Peth tehsil, Nashik District. The college offers degree programs at the undergraduate level to meet the diverse needs of students with varying learning abilities. The institute's commitment to delivering quality education is measured by the outcomes achieved by its students. The college follows a university curriculum and employs an outcome-based education approach in line with UGC-Learning Outcomes-based Curriculum Framework (LOCF) guidelines. The faculty members of the academic departments clearly define the learning outcomes for each course and program, which are then made available on the college's website. These outcomes, known as course outcomes (COs) and program outcomes (POs), describe the knowledge, qualities, skills, and competencies that students are expected to acquire upon completion of their studies. The attainment of COs and POs is assessed by the respective departments using course files, results etc. The evaluation of attainment levels is based on the performance of students in both internal and external examinations. External attainments are measured through various means, such as degree percentages, rankings in university results, placements, higher progression, awards, achievements, feedback, and lifelong learning experiences. Surveys are also conducted upon the completion of courses and programs to assess the level of attainment.

Pre-stated COs and POs for all the programmes are communicated to students through the prospectus, departmental notice boards, college website and through the Principal's Address at the beginning of the academic session, student induction programmes and mentoring sessions. Also, the teachers use these outcomes for preparing teaching plans which are displayed on departmental notice boards and also communicated through classrooms. Teachers follow these POs, COs as while framing the questions for internal assessment. Prospectus of the college, website, departmental meetings and personal counseling proved to be important for the achievement of the outcomes.

A. UG Courses:

1. **B.A.** (English, Marathi, Economics, Political Science, History, Geography)
2. **B.Sc.** (Chemistry, Botany, Zoology, Physics, Mathematics)
3. **B.Com.**

Programme Outcomes (POs) and Course Outcomes (COs):

The PO and CO for various programmes are available on college website:

Link:

Programme Outcomes

1. Bachelor of Arts (B.A)

After completion of B.A. programme students will be able to:

1. Learn the field of humanities and language with conceptual clarity.
2. Become cultured and praiseworthy as a citizen of India
3. Secure employment/self-employment (entrepreneurship) opportunities.
4. Learn and adopt fundamental values /principles of Indian consciousness
5. Learn and adopt Communication and Soft Skills properly.
6. Become socially, politically, economically and culturally aware citizens.
7. Make his overall personality development.

2. Bachelor of Commerce (B.Com)

After completion of B.Com. programme students will be able to:

1. Learn and adopt specific skills like Planning, Controlling, Co-coordinating, Decision
2. Making and communicating required in the Trade, Commerce and Industry.
3. Build the entrepreneurship and communication skills to become self-reliant citizen. Prepare a business plan, set up and manage his/her own venture/project.
4. Maintain books of accounts of small-scale and medium-scale industrial units
5. Learn and comply with the Taxation and Legal procedures.

6. Contribute for growth and development of nation.

3. Bachelor of Science (B.Sc.)

After completion of B.Sc. programme, the students will be able:

1. Acquire knowledge with facts and figures related to various subjects in pure sciences.
2. Learn the basic concepts, scientific phenomena and their relevance in the day to day life.
3. Adopt the skills in handling scientific instruments, chemicals, glassware, planning and performance in laboratory experiments.
4. Analyze the given scientific data critically and systematically and the ability to draw objective conclusions.
5. Apply scientific temperament to address the social and global issues by sustainable development and solutions.
6. Contribute for growth and development of nation through scientific research.

Department of Marathi

Course Outcomes (COs)UG: Course Outcomes

<p>TYBA (CBCS-2021) Sem. VI</p>	<p>MarathiVangamayacha Sthul Itihas : A.D. 1601</p>	<p>मूल्यमापन करतात .</p> <p>CO 2. विद्यार्थी शिवकाल आणि पेशवेकाळातील सामाजिक, सांस्कृतिक पार्श्वभूमी अभ्यासतात .</p> <p>CO 3. विद्यार्थ्यांना बखर आणि गद्य वाङ् . मयनिर्मितीचे आकलन होते .</p> <p>CO 4. वारकरी पंथाचा अभ्यास करण्यासाठी विद्यार्थी क्षेत्र भेट देऊन संशोधनपर प्रकल्प लेखन करतात .</p>
	<p>S-4, DSE-2D, (36022) Varnatmak Bhashavidyan : Bhag-2</p>	<p>CO 1. रूपविन्यास आणि मराठीची रूपव्यवस्था लक्षात येते .</p> <p>CO 2. वाक्यविन्यास आणि वाक्यव्यवस्थेचा मराठी भाषेच्यासंदर्भात परिचय होतो .</p> <p>CO 3. विद्यार्थ्यांना अर्थविन्यास संकल्पना समजते .</p> <p>CO 4. अभ्यास विषयाच्या अनुषंगाने विद्यार्थी क्षेत्रकार्य विषयक प्रकल्प लेखन करतात .</p>
	<p>G-3, CC-1F, (36023) Bhashik Kaushalyavikas Ani Adhunik Marathi Sahitya Prakar : Kavi</p>	<p>CO 1. विद्यार्थ्यांना मराठी साहित्य, भाषिक कौशल्यविकास आणि शासनव्यवहार याची माहिती समजते .</p> <p>CO 2. कविता या साहित्यप्रकाराचे स्वरूप आकलन होते .</p> <p>CO 3. 'रूप : कवितेचे' या संपादित अभ्यासपुस्तकाचे विद्यार्थी आकलन, आस्वाद आणि विक्षेपण करतो .</p>
	<p>SEC- 2C (36025) Karyakram Sanyojanatil Bhashik Kaushalye : Bhag 2</p>	<p>CO 1. विद्यार्थी कार्यक्रम संयोजनातील लेखन कौशल्ये संपादन करतात .</p> <p>CO 2. आभासी कार्यक्रमांचे भाषिक कौशल्ये प्राप्त करतात .</p> <p>CO 3. विद्यार्थी कार्यक्रमाचे प्रभावी संयोजन आणि सूत्रसंचालन करतात .</p>

Criterion II: Teaching – Learning and Evaluation

<p>TYBA (CBCS-2021) Sem. V</p>	<p>S-3, DSE-1D (35021), Madhyayugin MarathiVangamayacha Sthul Itihas : Prarambh Te A. D.</p>	<p>CO 1. विद्यार्थ्यांना वाङ्. मयाचा इतिहास, संकल्पना, स्वरूप, प्रेरणा, प्रवृत्ती समजतात .</p> <p>CO 2. मध्ययुगीन कालखंडाची सामाजिक, सांस्कृतिक पार्श्वभूमी लक्षात येते .</p> <p>CO 3. मराठी साहित्याचा कालखंडानुरूप इतिहास समजून येतो .</p> <p>CO 4. मराठी वाङ्. मयाचा स्थूल इतिहास अभ्यासल्यानंतर विद्यार्थी संशोधन प्रकल्पाचे लेखन करतो .</p>
	<p>S-4, DSE-2C, (35022) Varnatmak Bhashavidyan : Bhag-1</p>	<p>CO 1. विद्यार्थ्यांना भाषेचे स्वरूप, वैशिष्ट्ये आणि कार्य समजते .</p> <p>CO 2. भाषा अभ्यासाच्या शाखा आणि विविध पद्धतींचा परिचय होतो .</p> <p>CO 3. विद्यार्थ्यांना मानवी वागिन्द्रियाची रचना आणि कार्य समजते .</p> <p>CO 4. विद्यार्थ्यांना मराठीची स्वनिम व्यवस्था समजते .</p> <p>CO 5. अभ्यास विषयाच्या अनुषंगाने विद्यार्थी संशोधनपर प्रकल्प लेखन करतात .</p>
	<p>G-3, CC-1E, (35023) Bhashik Kaushalyavikas Ani Adhunik Marathi Sahitya Prakar : Prav</p>	<p>CO 1. विद्यार्थी मुद्रित माध्यमांसाठी लेखन कौशल्ये आत्मसात करतो .</p> <p>CO 2. प्रवासवर्णन या साहित्य प्रकाराचे स्वरूप समजते .</p> <p>CO 3. 'तीन मुलांचे चार दिवस' या प्रवासवर्णनाचे विद्यार्थी विश्लेषण करतात .</p>
	<p>SEC- 2C (35025) Karyakram Sanyojanatil Bhashik Kaushalye : Bhag 1</p>	<p>CO 1. विद्यार्थ्यांना मराठी भाषेची संवाद कौशल्ये अवगत होतात .</p> <p>CO 2. विद्यार्थी कार्यक्रमांचे स्वरूप आणि प्रकार समजून घेते .</p> <p>CO 3. विद्यार्थ्यांना कार्यक्रम संयोजनातील भाषिक कौशल्ये प्राप्त होतात .</p> <p>CO 4. अभ्यासक्रमाचे अध्ययन केल्यानंतर विद्यार्थी 'मराठी भाषा दिन' कार्यक्रमाचे संयोजन करतात .</p>
	<p>S-3, DSE-1D, (36021), Madhyayugin</p>	<p>CO 1. विद्यार्थी काळानुरूप वाङ्. मयनिर्मितीचे आकलन करून</p>

Department of History

Course Outcomes (COs):

UG: Course Outcomes

Title of Course	CO. No.	Course Outcomes After successful completion of this Course a student will be able to
S-III DSE-3 C (3) Introduction to Historiography	CO1	Students will be introduced to the information and importance of Historiography.
	CO2	Students will be introduced to the different Methods and Tools of data collection.
	CO3	Students can study the interdisciplinary approach of History.
	CO4	Students will learn about the usefulness of History in the 21st century, its changing perspectives, the new ideas that have been invented, and the importance of History in a competitive World.
S-IV DSE-4 D (3) Maharashtra in the 19th Century	CO1	Student will develop the ability to analyses sources for 19 th century Maharashtra History.
	CO2	Student will learn significance of Regional History and Socio- religious reformism foundation of the region.
	CO3	It will enhance their perception of 19th Century Maharashtra.
	CO4	Appreciate the skills of leadership and the Socio-religious System of the Maharashtra.
G-III CC- 3(3) Indian National Movement (1885-1947)	CO1	It will enable students to develop an overall understanding of Modern India.
	CO2	It will increase the spirit of healthy Nationalism, Democratic Values and Secularism among the Students.
	CO3	Students will understand various aspects of the Indian Independence
	CO4	Movement and the creation of Modern India.
(SEC)-10. Research Paper Writing	CO1	Students will be introduced to the information and importance of Historiography.
	CO2	Students can study the interdisciplinary approach History
	CO3	This curriculum Will help to develop Research ability and process of research paper Writing
S-III DSE-3 C (3)10 Applied History	CO1	Students will be introduced to the information and importance of applied history
	CO2	Student will learn about the Historical significance of Archaeology and Archives and opportunities in the field of Archaeology and Archives.
	CO3	Through this course, students will be informed about the opportunities in the field of Media, Museums.
	CO4	the about learn will Students usefulness of history in the 21 st

Criterion II: Teaching – Learning and Evaluation

		Century, its changing Perspectives, the new ideas that have been invented, and the importance of History in a Competitive World.
S-IVDSE-4 D (3) Maharashtra in the 20th Century	CO1	Student will develop the ability to analyses sources for 20 th Century Maharashtra History
	CO2	Student will learn significance of regional history and Socio-Religious Reformism foundation of the region
	CO3	It will enhance their Perception of 20 th Century Maharashtra
	CO4	Appreciate the skills of leadership and the Socio-Religious System of the Maharashtra.
G-III CC- 4(3) India After Independence- (1947-1991)	CO1	It will enable students to develop an overall understanding of the Contemporary India.
	CO2	To increase the spirit of healthy Nationalism, Democratic Values and Secularism among the students.
	CO3	Students will understand various aspects of Indias domestic and foreign policies that shaped Post Independence India.
SEC:14 Numismatics	CO1	Students will be able to identify and decipher the Coins.
	CO2	They will also be able to understand the Socio-Political background that accurse through the coinage of that time; thus getting holistic picture of that economic system prevalent in Ancient India.

Department of Economics

Course Outcomes (COs):

UG: Course Outcomes

Title of Course	CO. No.	Course Outcomes After successful completion of this Course a student will be able to
S-3: International Economics-I,II	CO1	This course provides the students a thorough understanding and deep knowledge about the basic principles that tend to govern the free flow of trade in goods and services at the global level.
	CO2	The contents of the Paper spread over various modules, lay stress both on theory and Applied nature of the subject that have registered rapid changes during the last decade.
	CO3	The students to know the impact of free trade and tariffs on the different sectors of the economy as well as at the macro level.
	CO4	The students would also be well trained about the rationale of recent changes in the export import policies of India
S-4: Public	CO1	Role and functions of the Government in an economy has been

Criterion II: Teaching – Learning and Evaluation

Finance-I, II	CO2	changing with the Passas of There is vast array of fiscal institutions -tax systems
SEC-3A Business Management-I, II	CO1	Business planning and decision making.
	CO2	Leadership Skills- Ability to work in teams at the same time, ability to show leadership Qualities.
	CO3	Analytical Skills–Ability to analyze data collected and interpret in the most logical manner.
	CO4	Project Report Writing Skills- Ability to comprehend and illustrate/demonstrate findings.
	CO5	Presentation Skills – PPT/Poster- Ability to illustrate findings in the most appealing manner.
	CO6	Leadership Skills: Ability to show leadership skills with business ideas or work on business ventures as a practical example
G-3 Indian Economic Development-I	CO1	To relate and recognize the concept and indicators of Economic Development
	CO2	To describe and analyze the concept and indicators of Human Development
	CO3	To explain the characteristics of Developing and Developed Countries.
	CO4	To describe the constraints to the process of Economic Development
	CO5	To describe and explain the process of Economic Planning.
	CO6	To describe and examine the changing structure of planning process in India.
	CO7	To describe and explain the relation between Economic Development and Environment
Indian Economic Development-II	CO1	The Study of Economic Development has gained importance because of staineed interest of the developing countries in uplifting their economic conditions restructuring their economics to acquire greater diversity, efficiency and equity in Consonance with their priorities.
	CO2	While few success stories can be counted, many have grappled with chronic problems of narrow economic Base, inefficiency and low standard of living. For this and other reasons, there have been many Approaches to economic development.
	CO3	In recent times, besides hard core economic prescriptions to development, concern hitherto relegated to background, like education, health, sanitation and infrastructural development, have found place of pride in explaining the preference of various

Department of English

Course Outcomes (COs):

UG: Course Outcomes

Title of Course	CO. No.	Course Outcomes After successful completion of this Course a student will be able to
SYBA (CBCS-2019) Semester-III &IV [23001/24001]	CO1 CO2 CO3 CO4 CO5	The students learned to appreciate literature Oral and written communication improved. Vocabulary is enhanced The students learned to make proper use of grammar The students learned to use English efficiently.
SEC-1A Advanced Study of English Language and Literature	CO1 CO2 CO3 CO4	They understood the difference between literary and ordinary language They became aware of fiction and short story The students were introduced to linguistics. The students can appreciate literature critically.
DSC: 1A Appreciating Drama	CO1 CO2 CO3 CO4	The Students learned performing arts The students became aware of the genre of drama The students learned the moralities of human life They learned value education through literature
DSC: Appreciating Poetry	CO1 CO2	The syllabus can implement the values of literature in life. The students develop approaches to appreciate literary works.
SEC: A Certificate Course in Skill Development	CO1 CO2 CO3	Students develop communication skills. Students acquaint with the verbal and non-verbal communication. Students are able to express their ideas, views, thoughts in English.

Department of Politics

Course Outcomes (COs):

UG: Course Outcomes

Title of Course	CO. No	Course Outcomes After successful completion of this Course a student will be able to
(G-2) (2167) Political Theory	CO1	Students enable to appreciate the procedure of different theoretical ideas in political theory.
	CO2	Students enable to appreciate the procedure of different theoretical ideas in political theory.
	CO3	Students enable to understand the various traditional and modern theories of political science.
	CO4	Students enable to evaluate the theories of origin of the state
CC 2C 23164 An Introduction to Political Ideologies	CO1	Students enable to understand the Role of Political Ideologies. Students
	CO2	enable to understand the Philosophical Basis of the Ideologies.
	CO3	Develop ability to Critically Analyze of Various Ideologies
DSE-1A 23161 Western Political Thought- I,II	CO1	Students Enable to Know Western Political Thought Process
	CO2	Students Make Good Understanding of Eminent Western Political
	CO3	Thinker's Thoughts
	CO4	Students Can Develop Their Critical Thinking Approach By Studying And Comparing thoughts Students Will Know Various Political Theories Of Great
Political Sociology 2169	CO1	Students get good knowledge about main issues and topics in political sociology.
	CO2	Achieve practical skills of analysis of social phenomena in their political settings
	CO3	Students able to understand basic principles of the exercise of power, of the state relations with civil society; individual and group interactions in the political realm.
	CO4	Students acquire habits of socio-political information finding, sorting and critical examining
DSE-2A & DSE- 2B Political Journalism-I,II	CO1	Students enable to understand complex relationship communication, media and power politics.
	CO2	Students get good understanding of practices of political image management, campaigns management, propaganda and censorship
	CO3	Students will know the role of media in Indian politics.
Basics of Indian Constitution-I, II	CO1	students acquire good knowledge about important features of Indian constitution.
	CO2	students enable to understand fundamental rights, duties of Indian citizen and
	CO3	guiding principal of state policy Indian citizen and guiding principal of state policy.

Department of Commerce

Course Outcomes (COs):

UG: Course Outcomes

Title of Course	CO. No.	Course Outcomes After successful completion of this Course a student will be able to
TYB COM [2019 [Pattern] SEM-V & VI		
Auditing and Taxation I,II	CO1 CO2 CO3	To acquaint themselves about the concept and principles of Auditing, Audit process, Assurance Standards, Tax Audit, and Audit of computerized Systems. To get knowledge about preparation of Audit report. To understand the basic concepts and to acquire knowledge about Computation of Income, Submission of Income Tax Return, Advance Tax, and Tax deducted at Source, Tax Collection Authorities under the Income Tax Act, 1961..
Business Regulatory Framework I,II	CO1 CO2	To acquaint students with the basic concepts, terms & provisions of Mercantile and Business Laws. To develop the awareness among the students regarding these laws affecting business, trade and commerce.
Advance Accounting I,II	CO1 CO2 CO3	To impart the knowledge of various accounting concepts To instill the knowledge about accounting procedures, methods and techniques. To acquaint them with practical approach to accounts writing by using software package
Business Administration - II	CO1 CO2 CO3 CO4	To acquaint the students with basic concepts & functions of HRD and nature of Marketing functions of a business enterprise. Concept and Importance. Performance Appraisal Process. Methods and Techniques. Merits and limitations of performance appraisals.
Business Administration - III	CO1	To acquaint the students with the basic concepts in finance and production functions of a business enterprise. Shares, Debentures, Public Deposits, Ploughing back of profits, Loans from Bank and Financial Institutions, Trade

Criterion II: Teaching – Learning and Evaluation

	CO2	creditors, Installment credit etc.
International Economics II	CO1	Students will be able to comprehend the basic concepts of balance of payment and foreign exchange.
	CO2	Students will be able to evaluate the working and functions of international organizations and institutions. Students will be able to apply the knowledge while preparing for the competitive examinations and other future prospects.
	CO3	

Department of Geography

Course Outcomes (COs):

UG: Course Outcomes

Title of Course	CO. No.	Course Outcomes After successful completion of this Course a student will be able to
Environmental Geography-I	CO-1	Student will be familiar with the dynamic nature of the environment 17 Pattern
	CO-2	Students will be get acquainted with the fundamental concepts of Environmental Geography for development in different areas
	CO-3	They will be integrating various factors of Environment and dynamic aspect of Environmental Geography Student will be aware of the problems of environment, utilization and conservation of resources in view of sustainable development.
	CO-4	
Environmental Geography -II	CO-1	Students will be aware about the dynamic environment
	CO-2	Students will get acquainted with the fundamental concepts of Environmental Geography
	CO-3	Students will get acquainted with the past, present and future utility and potentials of natural resources
	CO-4	Students will aware about the problems of environment and they will know the concept of sustainable development
Population Geography-I	CO-1	Students will understand the history of population
	CO-2	They will know the basic concepts in Population Geography
	CO-3	They will know the types and sources of population

Criterion II: Teaching – Learning and Evaluation

		data
Population Geography-II	CO-1	Students will know the population policy of India and China.
	CO-2	They will know the health indicators of India
	CO-3	Students will be get acquainted with the concept of urbanization in Population Geography
	CO-4	They will understand the Population theories
Practical Geography-I (Scale and Map Projection)	CO-1	Students will know the basic concepts in Population Geography
	CO-2	Students will be enabled to use various scales and projection techniques in Geography
	CO-3	Students will use various projections for map making
	CO-4	They will be familiar with the elementary and essential principles of practical work in Geography.
Practical Geography-II (Cartographic Techniques, Surveying and Excursion /Village/ Project Report)	CO-1	Students will know the basic and contemporary concepts in Cartography
	CO-2	Students will get acquainted with the utility and applications of various cartographic techniques
	CO-3	Students will know the latest concepts regarding the modern cartography in the field of Geography
	CO-4	Students will know the elementary and essential principles of practical work in Geography

Department of Botany

Course Outcomes (COs):

UG: Course Outcomes

Title of Course	CO. No.	Course Outcomes After successful completion of this Course a student will be able to
BO 351: Cryptogamic botany (algae and fungi)	CO1	Learn characteristics of various lower plants with examples.
	CO2	Identify the Algal thallus.
	CO3	Understand the classification ,evolution, morphology and anatomy of algae.
	CO4	Identify the economic importance of algae.
	CO5	Learn general characters and classification of fungi
	CO6	Understand life cycle of different Fungi
	CO7	Learn the symbiotic Association of Lichens, Mycorrhiza
BO 352: archegoniate (bryophytes)	CO1	Gain the knowledge of Archegoniate.
	CO2	Identify the Bryophytes.
	CO3	Collect the knowledge of range of thallus organization.

Criterion II: Teaching – Learning and Evaluation

and pteridophytes)	CO4 CO5	Study the life cycles of Bryophytes. Compare different Bryophytes.
BO 353: Spermatophyta and Palaeobotany	CO1 CO2 CO3 CO4	Collect the information of origin of angiosperms. Gain the knowledge of Speciation & Endemism Learn the classifications Gather the information of Herbaria and Botanical Gardens.
BO 354: Plant Ecology	CO1 CO2 CO3 CO4 CO5 CO6	Learn the interrelationship between the living world and the environment. Gain the knowledge of Biogeography. Learn the population ecology and community ecology. Study of biogeochemical cycles. Define the terms in Cell Biology
BO 355: Cell and Molecular Biology	CO1 CO2 CO3 CO4 CO1	Collect the information on cell organelles. Identify nucleus, nucleolus and nucleolar organizer and nuclear envelope. Learn about Chromosomes Gets an idea of cell signaling.
BO 356: Genetics	CO1 CO2 CO3 CO4 CO5	Define genetics and terms involved in it. Gain the insights of Mendelism and Neo Mendelism (Gene Interaction). Learn the multiple alleles, linkage, recombination and crossing over and mutation. Solve the numerical and structural alterations of chromosomes. Learn the sex linked chromosomes.
BO 357: Practical	CO1 CO2 CO3 CO4	Correlate between practicals with theory to improve the understanding. Participate actively in educational tour for the study of Flora and characterization of biodifferent molecules Learn the plant related practical skills Gain insights of research related methodology.
BO 358: Practical	CO1 CO2 CO3 CO4	Correlate between practicals with theory to improve the understanding. Participate actively in educational tour. Study of families Nymphaeaceae, Oleaceae, Amaranthaceae and Cannaceae. Prepare Botanical keys by using vegetative and reproductive characters.
BO 359: Practical	CO1 CO2 CO3 CO4 CO5 CO6	Correlate between practicals with theory to improve the understanding. Cytological techniques-preparation of Fixatives, preparation of stains. Isolation of nuclei and characterization. Study of various stages of mitosis and meiosis. Study of Chromosomes Morphology Isolation of plant genomic DNA by suitable method.,

Criterion II: Teaching – Learning and Evaluation

	CO7	Estimation of Plant DNA by DPA method.
Skill enhancement course Bo 3510: medicinal botany	CO1 CO2 CO3 CO4 CO5 CO6	Study of medicinal plants: History, Scope and Importance Definition and Scope of Indigenous Medicinal Sciences. Study of Ayurveda, Siddha and Unani. Ethno botany and Folk medicines Learn the conservation of endangered and endemic medicinal plants Propagation of Medicinal Plants.
Bo 3511: Plant diversity and human health	CO1 CO2 CO3 CO4	Study of plant biodiversity, agro biodiversity and loss of biodiversity Study of Management of Plant Biodiversity and Biodiversity Study of role of plants in relation to Human Welfare. Prepare a list of plants.
Bo 361: Plant physiology and metabolism	CO1 CO2 CO3 CO4 CO5 CO6	Learn mineral nutrition. Gain the knowledge of mechanism of photosynthesis. Learn the respiration, types of respiration, mechanism of aerobic respiration. Learn stomatal biology. Gain knowledge of translocation in phloem. Learn plant growth regulators and Photo morphogenesis.
BO 362: Biochemistry	CO1 CO2 CO3 CO4 CO5 CO6	Learn the foundation of Biochemistry. Define the terms involved in it. Identify the importance of the solvent of life. Define enzymes and learn nature of enzymes and co-factors, Give classification and properties of enzymes. Learn stomatal biology.
BO 363: Plant Pathology	CO1 CO2 CO3 CO4 CO5 CO6	Learn non-Parasitic Diseases. Learn the fundamentals of Plant Pathology. Learn the concepts of plant pathology. Learn the defence mechanisms. Identify and use methods of studying plant diseases. Learn principles of plant diseases control
BO 364: Evolution and population genetics	CO1 CO2 CO3 CO4 CO5	Learn the concept organic evolution. Explain the evidence of evolution Learn the evolution through ages. Study population genetics and evolution. Learn the speciation and isolating mechanisms.
BO 365: Advanced plant biotechnology	CO1 CO2 CO3 CO4 CO5 CO6	Introduce biotechnology. Study plant tissue culture. Identify the techniques of genetic engineering and methods of gene transfer. Learn Cryopreservation and Germplasm Conservation Correlate the biotechnology and society Learn about microbial biotechnology and transgenic Plants.
BO 366:	CO1	Define and give scope and objectives of Plant breeding.

Criterion II: Teaching – Learning and Evaluation

Plant breeding and seed technology	CO2 CO3 CO4 CO5	Learn the techniques and practices of Plant. Identify and use advanced techniques in plant breeding. Give the introduction of Seed Technology Give the importance of Seed Technology.
BO 367: Practical	CO1 CO2 CO3 CO4 CO5 CO6	Correlation between practical's with theory to improve the understanding. To organize educational tour for study of flora To develop plant related practical skills among the students. To imbibe research related methodology in students. Determination of plasmolysis, stomatal index, catalase activity, photosynthesis and paper chromatography To demonstration physiological experiments.
BO 368: Practical	CO1 CO2 CO3 CO4 CO5 CO6	Study the preparation of any one culture media and culture technique for isolation of plant pathogens. Study of any two of fungal, bacterial, viral and mycoplasma diseases. Prepare 1% Bordeaux mixture, 10% Bordeaux paste and Jivamruta. Study of Koch's Postulates, Fungicides and Microbial pesticides. Study of geological time scale, types of fossils and evidences of Organic Evolution. Solve numerical problems.
BO 369: Practical	CO1 CO2 CO3 CO4 CO5 CO6 CO7 CO8	Identify the different tissue culture techniques Study of the equipment's used in genetic engineering and study of GM plants. Prepare plant based nano-particles. Demonstrate wine production from different fruits. Demonstrate Hybridization Techniques. Study of pollen viability and floral morphology of crops. Study of seed moisture, germination, purity and viability test of seed. Visit to a Plant Breeding Research Centre/ Seed Industry.
BO 3610: Nursery and gardening management	CO1 CO2 CO3 CO4	Study the different nursery management techniques Study of garden management and Sowing/raising seedlings. Prepare saplings. Learn the marketing of saplings.
BO 3611: Biofertilizers	CO1 CO2 CO3 CO4	Study the general account of the microbes used as Biofertilizers. Study of bacterial, algal, Azolla and fungal biofertilizers. Study the compost and manuring w.r.t. recycling, methods, vermicomposting and application Learn the marketing skills.

Department of Physics

Course Outcomes (COs):

UG: Course Outcomes

Title of Course	CO. No.	Course Outcomes After successful completion of this Course a student will be able to
PHY351: Mathematical methods of Physics	CO1	Define and generate a general equation for gradient, divergence, curl & laplacian in an orthogonal curvilinear coordinate system & their applications in physics.
	CO2	Define proper time, minkowskis space, Time dilation, length contraction
	CO3	Describe Michelson Morley experiment & its negative result.
	CO4	Illustrate the problems on Frobenius method of series solution and to differentiate point of expansion of given differential equations.
	CO5	Evaluate & plot Legendre polynomials, Hermite polynomials, Bessel functions of first kind.
	CO6	List the most important special functions in physics and to solve different properties related to special functions.
PHY352: Solid State Physics:	CO1	Define crystal structure to develop it in 2D as well as 3D and to determine Indices for 'Directions' and 'Planes' in a crystal structure.
	CO2	Give original examples of crystal structures and to analyze them with packing fraction, coordination number, number of atoms per unit cell etc.
	CO3	Derive Bragg Diffraction condition in direct lattice and to relate it in reciprocal lattice using Ewald construction.
	CO4	Classify the crystal structure by XRD diffraction and to simplify formula for interplaner distance.
	CO5	Apply free electron theory to restate thermal and electrical properties
	CO6	Explain superconductivity and Meissner effect
PHY353: Classical Mechanics:	CO1	Solve advanced problems involving the dynamic motion of classical mechanical systems with an intermediate knowledge of Newton's laws of motion
	CO2	Apply the concept of centre of mass and mechanics of system of particles and conservation of energy, linear and angular momentum to solve dynamics problems
	CO3	Demonstrate an intermediate knowledge of central-force motion and the concept of converting two body problems to single body problem and apply advanced methods to complex

Criterion II: Teaching – Learning and Evaluation

	CO4	central-force motion problems. Demonstrate an Intermediate knowledge of concept of laboratory frame and center of mass frame and their use to calculate results of scattering experiments.
	CO5	Apply the concept scattering to get important information regarding the nature of interaction between atomic and subatomic particles through experiments
	CO6	Derive Lagrange and Hamilton's equations and represent the equations of motion for simple mechanical systems such as: the Atwood's machine, Simple pendulum using these formulations of classical mechanics.
	CO7	Acquire working knowledge of the methods of Hamiltonian Dynamics and compute the Hamilton equations of motion for mechanical systems
PHY354: Atomic and Molecular Physics:	CO1	Derive the formulae for total energy of an atom so that energy level diagram can be drawn and also able to obtain the expression for spin orbit interaction energy.
	CO2	State laws, postulates in atomic and molecular Physics and able to compare various models of atomic structure.
	CO3	Calculate quantum state of electrons in an atom, spectral notation and electronic configuration of atom. Obtain formulae for Zeeman shift, wavelength of emitted X-ray s, Raman shift, rotational and vibrational energy for diatomic molecule and apply it.
	CO4	Explain origin of line spectra and able to compare continuous spectra, characteristic spectra and can differentiate between rotational, vibrational and electronic spectra.
	CO5	Explain application of Duane and Hunt's rule, Moseley's law and its importance, applications of X-rays, Raman effect and Auger effect.
	CO6	Draw and explain X-ray spectra, spectrum with and without magnetic field (Zeeman effect), Raman spectra and molecular spectra using quantum treatment
	CO7	Explain experimental arrangement to produce X-ray,, to observe Raman effect and Zeeman effect.
	CO8	
PHY355: Computational Physics:	CO1	define types of programming languages and their uses
	CO2	gain basic competency with a widely used C-language for both general and scientific programming
	CO3	define operators and expression in C-programming and navigate commands
	CO4	explain control statements and loops as well as capable of writing C-program to solve problems;

Criterion II: Teaching – Learning and Evaluation

	CO5 CO6 CO7 CO8	describe arrays and pointers and apply them in C program; critically present different numerical methods to solve different types of physical and technical problems; implement numerical algorithms into C-program and visualize the results of the computations demonstrate the ability to estimate the errors in the use of numerical methods
PHY356(B): Elements of Material Science	CO1 CO2 CO3 CO4 CO5 CO6 CO7	Define and outline the rules of solubility, deformation in metals, basic concepts in phase diagram, molecular phases and the concept of smart materials. Explain the imperfections in solids, mechanism of plastic deformation by slip, properties of ceramic materials, the importance and objective of phase diagram. Calculate and solve problems on stress and strain of materials, CRSS of single phase metals, weight in percentage of compositions using lever rule. List the defects in solids, diffusion mechanisms and types of phase diagram. Classify between elastic deformation and plastic deformation CO6: Derive the CRSS of metals and the lever rule for phase diagrams. Discuss the types of smart materials, properties of smart materials and their applications.
PHY-357 Physics Laboratory-3A	CO1 CO2 CO3 CO4 CO5 CO6 CO7	Describe the underlying theory of experiments in the course. Perform derivations of theoretical models of relevance for the experiments in the course. Follow instructions to perform laboratory experiments in Optics, Thermodynamics, Mechanics, Modern Physics, Electronics and Electromagnetics. Document their results, using correct procedures and protocols. Perform a quantitative analysis of experimental data including the use of computational and statistical methods where relevant. Interpret relationships in graphed data and develop an intuition for alternative plotting methods and communicate results from laboratory experiments, orally or in a written laboratory report. Calculate permissible standard error in any physics experiment Derive conclusions from the analysis of own data. Assess the language used to describe physics experiments and how it can alter perceptions of the method and results
PHY-358 Physics Laboratory-3B	CO1 CO2 CO3	Describe the underlying theory of experiments in the course. Perform derivations of theoretical models of relevance for the experiments in the course. Follow instructions to perform laboratory experiments in Optics, Thermodynamics, Mechanics, Modern Physics,

Criterion II: Teaching – Learning and Evaluation

	CO4 CO5 CO6 CO7 CO8 CO9	<p>Electronics and Electromagnetics.</p> <p>Document their results, using correct procedures and protocols.</p> <p>Perform a quantitative analysis of experimental data including the use of computational and statistical methods where relevant.</p> <p>Interpret relationships in graphed data and develop an intuition for alternative plotting methods and communicate results from laboratory experiments, orally or in a written laboratory report.</p> <p>Calculate permissible standard error in any physics experiment</p> <p>Derive conclusions from the analysis of own data.</p> <p>Assess the language used to describe physics experiments and how it can alter perceptions of the method and results</p>
PHY-359 Project-I	CO1 CO2 CO3 CO4 CO5 CO6 CO7 CO8	<p>design and test hypothesis</p> <p>Describe the underlying theory of experiments in the course.</p> <p>Perform derivations of theoretical models of relevance for the experiments in the course.</p> <p>Document their results, using correct procedures and protocols.</p> <p>Perform a quantitative analysis of experimental data including the use of computational and statistical methods where relevant.</p> <p>Interpret relationships in graphed data and develop an intuition for alternative plotting methods and communicate results from laboratory experiments, orally or in a written laboratory report.</p> <p>write a project report with literature review.</p> <p>defend the outcome of project work in scientific manner.</p>
PHY-3510(I) Energy studies	CO1 CO2 CO3 CO4 CO5 CO6 CO7	<p>Students become capable of conducting energy audits and give consultancy in that field.</p> <p>Students can design different types of solar heaters for small domestic as well as large scale community level applications.</p> <p>Students acquire skills to implement solar P-V systems at domestic levels as well as for office premises and educational institutions. Students become able to start their own enterprise in net metering.</p> <p>Students get ideas and hence become self-employed in the field of design, production, commissioning and implementation of bio- mass energy sources, bio-gas plants, gasifiers, wind mills, hybrid systems etc.</p> <p>Students can go for research in the fields of super-capacitors, battery technologies, fuel cells and material synthesis for implementation of these technologies.</p> <p>Students become successful entrepreneurs in the energy field.</p> <p>Students strive to make the regions where they live and work self-sufficient in generating and fulfilling their own energy needs using different energy solutions.</p>

Criterion II: Teaching – Learning and Evaluation

PHY-3511 SEC (M): Biomedical Instruments	CO1 CO2 CO3 CO4	Students will acquire basic knowledge of biomedical instrumentation. Students can handle and operate different equipment's like ECG, Oxymeter and Glucometer. Students will be able to record the different health parameters using it. Student will also able to analyze and interpret the recorded data.
PHY361: Classical Electrodynamics:	CO1 CO2 CO3 CO4 CO5 CO6 CO7	Define the Biot-savart law, Amperes law, Coulombs law, Electric field, Electric susceptibility, Magnetic field & Faradays law. Equation of continuity, Magnetic vector potential, B.H curve, Maxwell's equation & wave equations. Solve numerical problem on coulombs force, magnetic induction, magnetic permeability and induced voltage, magnitude of electric & magnetic vectors. Summarize pointing vector, polarization, reflection & refraction. Apply Biot Savart law in different symmetry problem. List the applications of Amperes law, Biot Savart law, Poynting theorem. Elaborate magnetic properties of the material.
PHY362: Quantum Mechanics:	CO1 CO2 CO3 CO4 CO5 CO6 CO7 CO8	outline the historical aspects of development of quantum mechanics; explain the differences between classical and quantum mechanics; describe matter waves, wave function and uncertainty principle; describe Schrodinger's equation and its steady state form; solve Schrodinger's steady state equation for simple potentials to obtain eigen functions and eigen values apply Schrodinger's steady state equation for spherically symmetric potentials obtain eigen functions and eigen values; interpret quantum numbers in atomic system; discuss operator algebra in quantum mechanics.
PHY363: Thermodynamics and statistical physics:	CO1 CO2 CO3 CO4	Describe transport phenomena and compute coefficient of thermal conductivity, viscosity and diffusion in terms of mean free path Define and discuss the concepts and roles of thermodynamic functions from the view point of statistical mechanics Derive Binomial distribution and Gaussian probability distribution using random walk problem and calculate mean values for a statistical system Discuss the concepts of microstate and macro state, basic postulates and behaviour of density of states for model system and calculate the number of microstates for different statistical

Criterion II: Teaching – Learning and Evaluation

	CO5	systems Differentiate thermal, mechanical and general interaction between statistical system
	CO6	Derive and compare Maxwell Boltzmann, Bose-Einstein and Fermi-Dirac distributions; state where they are applicable and explain the connection between classical
	CO7	Derive probability distribution formula for micro canonical, canonical ensemble and calculate mean values in canonical ensemble
	CO8	Discuss applications for canonical ensemble
PHY364: Nuclear Physics:	CO1	Define threshold voltage, dead time and recovery time in GM counter, threshold energy, nuclear fission, nuclear fusion, critical size, critical mass.
	CO2	Determine the basic properties of nucleus.
	CO3	Classify nuclear radiations, elementary particles and nuclear states, nuclear detectors.
	CO4	Compose baryons and mesons with Quark model.
	CO5	Derive expression for energy of ions and frequency of RF signal in cyclotron, Q value equation, threshold energy, decay constant.
	CO6	Estimate binding energy from fission
	CO7	Justify nuclear reactions using conservation laws
	CO8	Explain the different processes by which energetic particles interact with matter, kinematics of various reactors and decay processes
PHY365: Advanced Electronics:	CO1	Know basic components like diode and its types, BJT, FET
	CO2	Study of amplifiers and its types.
	CO3	Introduction to power supplies.
	CO4	Details of Digital electronics.
PHY366(Q): Physics of Nanomaterials (Elective)	CO1	To introduce the basic physics behind size and effect of nano materials.
	CO2	To understand the working principle of equipments used in nanostructures.
	CO3	students will gain knowledge of introduction to nanomaterials and their properties and growth techniques.
	CO4	It also discusses tools like UV, XRD, SEM and TEM to characterize the nanomaterials and applications of nanomaterials. broadening.
PHY367: Laboratory course I	CO1	Describe the underlying theory of experiments in the course.
	CO2	Perform derivations of theoretical models of relevance for the experiments in the course.
	CO3	Follow instructions to perform laboratory experiments in Optics, Thermodynamics, Mechanics, Modern Physics, Electronics and Electromagnetics.
	CO4	Document their results, using correct procedures and protocols.
	CO5	

Criterion II: Teaching – Learning and Evaluation

	CO6 CO7 CO8 CO9	<p>Perform a quantitative analysis of experimental data including the use of computational and statistical methods where relevant.</p> <p>Interpret relationships in graphed data and develop an intuition for alternative plotting methods and communicate results from laboratory experiments, orally or in a written laboratory report.</p> <p>Calculate permissible standard error in any physics experiment</p> <p>Derive conclusions from the analysis of own data.</p> <p>Assess the language used to describe physics experiments and how it can alter perceptions of the method and results</p>
PHY368: Laboratory course II	CO1 CO2 CO3 CO4 CO5 CO6 CO7 CO8 CO9	<p>Describe the underlying theory of experiments in the course.</p> <p>Perform derivations of theoretical models of relevance for the experiments in the course.</p> <p>Follow instructions to perform laboratory experiments in Optics, Thermodynamics, Mechanics, Modern Physics, Electronics and Electromagnetics.</p> <p>Document their results, using correct procedures and protocols.</p> <p>Perform a quantitative analysis of experimental data including the use of computational and statistical methods where relevant.</p> <p>Interpret relationships in graphed data and develop an intuition for alternative plotting methods and communicate results from laboratory experiments, orally or in a written laboratory report.</p> <p>Calculate permissible standard error in any physics experiment</p> <p>Derive conclusions from the analysis of own data.</p> <p>Assess the language used to describe physics experiments and how it can alter perceptions of the method and results</p>
PHY369: Laboratory course III (Project)	CO1 CO2 CO3 CO4 CO5 CO6 CO7 CO8	<p>design and test hypothesis</p> <p>Describe the underlying theory of experiments in the course.</p> <p>Perform derivations of theoretical models of relevance for the experiments in the course.</p> <p>Document their results, using correct procedures and protocols.</p> <p>Perform a quantitative analysis of experimental data including the use of computational and statistical methods where relevant.</p> <p>Interpret relationships in graphed data and develop an intuition for alternative plotting methods and communicate results from laboratory experiments, orally or in a written laboratory report.</p> <p>write a project report with literature review.</p> <p>defend the outcome of project work in scientific manner.</p>
PHY-3610(Z) Caibration Techniques	CO1	<p>Calibrate hydraulic, pneumatic and mechanical measuring and control equipment: setting, adjustment, validation or verification of mechanical, pneumatic, hydraulic, measuring and control instruments using reference standards in</p>

Criterion II: Teaching – Learning and Evaluation

	CO2	accordance with predetermined procedures. Calibrate electrical and electronic measuring and control equipment: setting, adjustment, validation or verification of electrical, electronic measuring and control instruments using reference standards in accordance with predetermined procedures.
	CO3	Carryout maintenance activities on instrumentation and control panel.
PHY- 3611(AB) Instrumentation for Agriculture	CO1	Able to test soil and water parameters.
	CO2	Able to develop their own juice extract plant.
	CO3	Able to developed their own green house

Department of Chemistry

Course Outcomes (COs)

UG: Course Outcomes

Title of Course	CO. No.	Course Outcomes After successful completion of this Course a student will be able to
CH-501: Physical Chemistry-I	CO1 CO2 CO3 CO4	Define the terms and laws. List the equations. Give examples, solve problems. Learn the principles.
CH-502: Analytical Chemistry- I	CO-1 CO-2 CO-3 CO-4 CO-5	Know the principles of common ion effect and solubility Product. Study the methods of thermo-gravimetric analysis. Understand the principles of Spectro-photometric analysis and Properties of electromagnetic radiations. Study the Voltammetry and Polarography as an analytical tool. Measure the absorbance of atoms by AAS.
CH-503: Physical Chemistry Practical- I	CO 1 CO 2 CO 3 CO 4 CO 5 CO 6 CO 7	Prepare the solutions. Perform the experiment. Learn the principle of experiment. Perform the calculations. Find conclusions. Correlate theory with practical's. Write reports.
CH-504: Inorganic Chemistry – I	CO1 CO2 CO3 CO4	Define the terms and principles. Draw a periodic table. Learn the theories of bonding. Make a list of examples.

Criterion II: Teaching – Learning and Evaluation

	CO5 CO6	Learn the properties. Solve the examples.
CH-505: Industrial Chemistry – I	CO 1 CO 2 CO 3 CO 4 CO 5	Define the terms and principles. Make a list of industries. Learn the principles. Solve the examples. Manufacture of basic chemicals having household applications.
CH-506: Inorganic Chemistry Practical-I	CO 1 CO 2 CO 3 CO 4 CO 5 CO 6	Prepare the solutions. Perform the experiment. Learn the principle of experiment. Perform the calculations. Find conclusions. Correlate theory with practical
CH-507: Organic Chemistry – I	CO 1 CO 2 CO 3 CO 4 CO 5 CO 6	Define the terms. Give the chemical formulae and structures of chemical Compounds. Write the reactions. Identify Functional group for compounds. Solve the reactions/problems. Suggest the mechanisms.
CH-508: Chemistry of Biomolecules	CO 1 CO 2 CO 3 CO 4 CO 5 CO 6	Define the terms. Give the chemical formulae and structures of Compounds. Write the reactions. Solve the reactions/problems. Learn the functions Make a list of molecules involved in the life of living Organisms.
CH-509: Organic Chemistry Practical-I	CO 1 CO 2 CO 3 CO 4 CO 5	Prepare solutions. Find out quantities of reactants for reactions. Write chemical equations. Perform the experiments. Use of microscale equipments.
CH-510 (B) Polymer Chemistry	CO 1 CO 2 CO 3	History of Polymers. Polymerization and types of polymers Important polymers and their applications.
CH-601: Physical Chemistry-II	CO 1 CO 2 CO 3 CO 4 CO 5 CO 6	Define the terms and laws. List the equations. Learn the principles. Give examples, solve problems Write electrochemical cells. Draw the crystal structures.
CH-602: Physical Chemistry-III	CO 1 CO 2 CO 3	Define the terms and laws. List the equations. Learn the principles. Give examples, solve problems.

Criterion II: Teaching – Learning and Evaluation

	CO 4 CO 5 CO 6	Write equations. Draw the structures.
CH-603: Physical Chemistry Practical-II	CO 1 CO 2 CO 3 CO 4 CO 5 CO 6 CO 7	Define the terms and laws. List the equations. Learn the principles. Give examples, solve problems. Write equations. Draw the structures. Give the properties.
CH-604: Inorganic Chemistry -II	CO 1 CO 2 CO 3 CO 4 CO 5 CO6	Define the terms. Learn the principles. Give examples, solve problems. Write equations. Draw the structures. Give the properties and suggest applications.
CH-605: Inorganic Chemistry -III	CO 1 CO 2 CO 3 CO 4 CO 5 CO 6	Define the terms. Learn the principles. Give examples, solve problems. Write equations. Draw the structures. Give the properties and suggest applications.
CH-606: Inorganic Chemistry Practical-II	CO 1 CO 2 CO 3 CO 4 CO 5 CO 6 CO 7	Prepare the solutions. Perform the experiment. Learn the principle of experiment. Perform the calculations. Find conclusions. Correlate theory with practicals. Write reports.
CH-607: Organic Chemistry-II	CO 1 CO 2 CO 3 CO 4	Define the terms in spectroscopy and stereochemistry. Draw the structures. Identify the isomers. Learn the principles.
CH-608: Organic Chemistry-III	CO 1 CO 2 CO 3 CO 4 CO 5 CO 6	Define the terms. Draw the structures Write the reactions. Learn the principals Learn the functions Write reaction and suggest the mechanisms.
CH-609: Organic Chemistry Practical-II	CO 1 CO 2 CO 3 CO 4	Prepare the reagents and solutions. Perform the reactions. Apply the principles. Analyse the spectra.
CH-610 (A) Analytical	CO 1	Define the terms.

Criterion II: Teaching – Learning and Evaluation

Chemistry-II	CO 2	Learn the principles.
	CO 3	Make list of equations.
	CO 4	Suggest the method for analysis.

Department of Zoology

Course Outcomes (COs)

UG: Course Outcomes

Title of Course	CO. No.	Course Outcomes After successful completion of this Course a student will be able to
S. Y. B.Sc. Course [2019 [Pattern] SEM-III & IV ZO 211, 221: Animal Systematic and Diversity	CO1	Understands processes of fisheries, sericulture, along with crop pest management techniques.
	CO2	Students gain knowledge about various disease related vectors and their impact on human.
	CO3	Understands concepts of apiculture, poultry, dairy along with tissue and cell culture. techniques.
ZO 212, 222: Applied Zoology I & II	CO1	Understands processes of fisheries, sericulture, along with crop pest management techniques.
	CO2	Students gain knowledge about various disease related vectors and their impact on human.
	CO3	Understands concepts of apiculture, poultry, dairy along with tissue and cell culture. techniques.
ZO 223: Practical course	CO1	First-hand knowledge about identification of non chordate and chordate specimens (fresh and preserved) along with larval forms and study of endoskeleton of vertebrates.
	CO2	Understand the nature and basic concepts of cell biology, genetics, taxonomy, physiology, ecology and applied Zoology.
	CO3	Analyze the relationships among animals, plants and microbes

Department of Mathematics

Course Outcomes (COs)

UG: Course Outcomes

Title of Course	CO. No.	Course Outcomes After successful completion of this Course a student will be able to
Multivariable Calculus I [2019 [Pattern] SEM-III & IV	CO1	Students learn analysis of multivariable functions, continuity, and differentiability.
	CO2	learn the concepts of multiple integrals and their Application to area and volumes
Laplace Transforms and Fourier Series	CO1	Learn the methods and properties of Laplace transform and Inverse Laplace Transform, apply them to solve
	CO2	Apply the fundamental concepts of Fourier series,
	CO3	Fourier Sine series, Fourier Cosine series to find series representation of irrational numbers.
Linear Algebra	CO1	Use the concept of inner products to find norm of vectors, distance between vectors, check the orthogonality of vectors.
	CO2	Apply the properties of linear transformations to linearity of transformations.
Numerical differentiation and integration	CO1	Students develop knowledge in the error and solution of differential equation.
	CO2	Students develop knowledge in the fitting of various curves and numerical diffraction and integration