Shikshan Prasarak Mandal's

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NAAC Accredited "B" (C.G.P.A. 2.48) 3rd Cycle

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Ref. No.GKG/   /2022-2023   Date – / /2023

2.6 - STUDENT PERFORMANCE AND LEARNING OUTCOMES

2.6.2 - Attainment of Programme outcomes and course outcomes are evaluated by the institution.

✦ Introduction

The institution has stated its POs, PSOs and COs of all faculties. It makes sure that these outcomes are attained by the end of the academic year through a well-designed process of evaluation. In the beginning of the academic year, the IQAC prepares an academic calendar which is strictly followed by the institution to conduct curricular, co-curricular, extra-curricular activities and continuous internal evaluation of the students. Apart from this, different committees are also formed under the guidance of the head of the institution for smooth performance of the institution. Each committee plans and implements its academic activities during the entire academic year. Also the review of the concerned committees is taken by the Principal in the meeting. In respect to teaching-learning process, teachers use various innovative teaching methodologies such as experiential learning, participative learning, problem solving, survey method etc. After the completion of the teaching-learning process, attainment of all POs, PSOs and COs is evaluated. As a result, all POs, PSOs and COs are attained and evaluated by the institution.

✦ Objectives

i. To measure attainment of POs and Cos of all programs.

ii. To improve teaching-learning process through measurement of outcomes.

iii. To create quality culture in the institute.

3. Assessment Method

The learning outcomes attainment is calculated by using the direct and indirect method.

A. Direct method:-

The Attainment of course outcome is calculated by using the following formula; Attainment of Course at UG and PG level: Attainment of Course = 80% (Attainment level in university examination) + 20% (Attainment level in internal examination)

B. Indirect method:-

- ✦ **Student Progression:** Higher progression data of students is collected
- ✦ **Placements:** Placement data is collected from the office.

Part A

Name of Department: Chemistry

Department Vision:

- We are committed to develop and transform the skilled information professionals to meet the challenges of knowledge society.

Department Mission:

- To promote academic excellence in teaching, learning, research, collaboration and innovation for the purpose of producing competent professionals.
- To impart skill-based training with aptitudes for meeting the needs of global information society.

Name of Program: Bachelors of Chemistry

Program Outcomes (POs)

1. Explain scientific laws and principles and applies the scientific knowledge to overcome complex problems in the life.
2. Elaborate nature, environment and society critically and rationally.
3. Give explanation terms, facts, concepts, processes, techniques, and principles of subjects.
4. Communicate the scientific knowledge in lingua-franka of the world i.e. English and gain access to the current scientific affairs.
5. Enlighten the people around by uncovering the scientific principles behind the magic and superstitions.
6. Show sensitivity to the matters of environment sustainability and use science for the progress of humanity without damaging the ecosystem.
7. Students will enhance their skill for generating new knowledge through research.

Program Specific Outcomes (PSOs)

1. Students could understand the analytical techniques in chemistry.

2. Students could understand the applications of Chemistry Students develop their own business in small scale or large scale of some domestic chemicals such as phenyl, sanitary acids, liquid soaps, cold creams etc.

3. Students could acquire basic knowledge separation science.

4. Students could acquire basic knowledge of preparation of dyes & drugs and their applications in day today life.

5. Students acquire the knowledge of solvent extraction techniques.

6. Students acquire the knowledge of extraction some natural drugs, pigments and they are environmentally friendly keeping green approach in mind.

7. The students get develops skills in laboratory, experiments in laboratory which would be benefited in their future carrier.

Syllabus Structure: Current (Choice Based Credit System)

Year of Implementation of this syllabus: 2018-19

Part B

Syllabus Structure: Choice Based Credit System

- Three-year regular programin Six semesters with CBCS(64 Credits)
- Theory Examination: 16 Theory Papers: 800 Marks (40+10 Pattern)
- Practical Examination: 03 Practical Papers :250 marks (80+20 Pattern)
- Total Exam. Marks: 150 Marks for each semester.
- Grand Total (Sem. I + Sem.II+ Sem. III+ Sem. IV+ Sem. V+ Sem. VI) = 2400 Marks

Semester-wise courses, their COs and Mapping Matrices

Semester: I

Course Code- Name of Course: DSC-3A- Inorganic Chemistry paperI

Course Outcomes:

1. **CO1:** The students will understand Bhor's Theory, Shape of orbital, three laws related to electron filling rules & Periodic trends.
2. **CO2:** The students will appreciate formation of ionic bond, Born-Haber cycle &Fajan's Rule.
3. **CO3:** The students will realize Concept of hybridization, different types of hybridization and geometry.
4. **CO4:** The students will understand type of overlapping, molecular orbital diagram and bond order.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO\CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1	01	02	02	00	01	00	01	00	00	02	00	00	00	00
CO2	01	01	02	00	01	01	00	00	00	02	00	00	00	00
CO3	02	02	02	00	02	00	01	01	02	01	00	00	00	01
CO4	01	02	02	00	00	00	01	00	00	01	00	00	00	00
Total	05	07	08	00	04	01	03	01	02	06	00	00	00	01
Avg	1.25	1.75	02	00	1	0.25	0.75	0.25	0.50	1.5	00	00	00	0.25

Course Code- Name of Course: DSC-4A- Organic Chemistry paper II

Course Outcomes:

1. **CO1:** The students will capable to discuss Fundamentals of organic reactions mechanisms.
2. **CO2:** The student will explain brief idea of types of chemical reactions and reactive intermediates.
3. **CO3:** The students will able to discuss the concept of stereochemistry.
4. **CO4:** The students will able to discuss the optically active or inactive compounds, E,Z & R,S nomenclature.
5. **CO5:** The student will get the knowledge of aromatic and non-aromatic compounds.
6. **CO6:** The students will understand IUPAC nomenclature, Orbital Structures, synthesis methods, Chemical reaction in Cycloalkanes, cycloalkenes and alkadienes.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1	01	01	02	00	01	01	00	00	00	02	00	00	00	00
CO2	02	01	03	00	03	01	00	00	00	02	00	00	01	02
CO3	01	01	02	00	00	00	02	01	00	01	01	00	02	01
CO4	02	00	03	01	00	00	01	02	01	01	01	00	02	01
CO5	01	02	02	02	02	01	01	01	01	01	01	02	01	01
CO6	01	01	01	02	01	01	01	01	01	02	01	02	01	01
Total	08	06	13	05	07	04	05	05	03	09	04	04	07	06
Avg	1.33	1	2.16	0.83	1.17	0.67	0.83	0.83	0.5	1.5	0.67	0.67	1.17	1

Semester: II

Course Code- Name of Course: DSC 3B: Physical Chemistry Paper-III

Course Outcomes:

1. **CO1:** The students will understand law of thermodynamics Spontaneous and non-spontaneous process.
2. **CO2:** The students able to discuss Concept of standard state and standard enthalpies of formations & Kirchhoff's equation.
3. **CO3:** The students able to discuss Thermodynamic derivation of the law of chemical equilibrium & LeChatelier's principle.
4. **CO4:** The students get idea about ideal and non- ideal gases, Boyle law, Vander walls equation.
5. **CO5:** The students will identify order and molecularity of a chemical reaction.
6. **CO6:** The student will explain the velocity and productivity of reactions.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1	01	02	02	01	02	01	02	02	02	01	02	00	02	01
CO2	02	01	02	01	01	02	02	02	02	02	01	01	02	02
CO3	02	01	02	01	02	02	02	02	01	02	01	01	01	02
CO4	02	01	02	01	02	01	02	02	02	01	01	01	01	02
CO5	02	02	02	01	01	01	02	02	02	01	01	01	01	02
CO6	02	01	02	01	01	01	02	02	01	02	01	01	01	02
Total	11	08	12	06	09	08	12	12	10	09	07	05	08	11
Avg	1.83	1.33	2	01	1.5	1.33	2	2	1.66	1.5	1.17	0.83	1.33	1.83

Course Code- Name of Course: DSC-4B- Analytical Chemistry Paper IV

Course Outcomes:

1. **CO1:** The students will able to Analytical processes (Qualitative and Quantitative), Sampling, Methods of analysis, Errors & accuracy.
2. **CO2:** The students will understand Chromatography techniques.
3. **CO3:** The students will understand basic of titrations methods.
4. **CO4:** The student will get the knowledge physical & chemical analysisof water

5. **CO5:** The student will get the knowledge Fertilizer analysis.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1	02	02	02	01	01	01	02	02	02	02	01	02	02	02
CO2	02	01	02	01	01	01	02	02	02	02	02	02	02	02
CO3	02	02	02	01	01	01	02	02	02	02	01	01	01	02
CO4	02	02	02	01	02	02	02	02	02	02	01	02	02	02
CO5	02	02	02	01	02	02	02	02	02	02	01	01	01	02
Total	10	09	10	05	07	07	10	10	10	10	06	08	08	10
Avg	2	1.8	2	1	1.4	1.4	2	2	2	2	1.2	1.6	1.6	2

Semester: III

Course Code- Name of Course: DSC- C3 - Physical Chemistry paper no. V

Course Outcomes:

1. **CO1:** The students will understand conductivity and transport number of the aqueous solutions with different applications.
2. **CO2:** The students get knowledge about surface tension, viscosity and refractive index.
3. **CO3:** The students will understand surface phenomena at heterogeneous surfaces.
4. **CO4:** The students will acquire various nuclear phenomena and measurement of nuclear radiations.
5. **CO5:** The students will get the knowledge about third order reaction and theories of reaction rates.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1	02	01	02	01	01	01	02	02	02	02	01	01	01	02
CO2	02	02	02	01	02	01	02	02	02	02	01	01	01	02
CO3	02	02	02	01	02	01	02	02	02	02	02	02	02	02
CO4	01	02	02	01	00	03	01	01	02	01	00	00	01	02
CO5	01	01	02	01	01	01	02	00	00	01	00	00	00	02
Total	08	08	10	05	06	07	09	07	08	08	04	04	05	10
Avg	1.6	1.6	2	1	1.2	1.4	1.8	1.4	1.6	1.6	0.8	0.8	1	2

Course Code- Name of Course: DSC-C4- Industrial Chemistry paper No. VI

Course Outcomes:

1. **CO1:** The student will explain applications of some important methods of industrial processes.
2. **CO2:** The students will understand basic concepts and concentration terms distinguish between classical and industrial chemistry, unit operations and unit processes.
3. **CO3:** The students will get the knowledge of some unit operations.
4. **CO4:** The students will understand the process of corrosion and Knowledge of prevention from corrosion.
5. **CO5:** The students will get the knowledge of Indian paper industry.
6. **CO6:** The students will get the knowledge about the chemical nature and cleansing action of soap.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1	01	01	03	01	01	02	03	01	03	02	02	02	02	03
CO2	01	01	02	01	01	02	02	01	02	02	02	02	02	02
CO3	02	02	02	01	01	02	02	02	02	02	02	02	02	02
CO4	01	01	01	01	01	01	01	02	02	02	02	02	02	02
CO5	01	02	02	01	01	01	01	02	02	02	02	02	02	02
CO6	02	01	03	01	02	01	02	02	03	02	02	02	02	02
Total	08	08	13	06	07	09	11	10	14	12	12	12	12	13
Avg	1.33	1.33	2.16	1	1.16	1.5	1.83	1.67	2.33	2	2	2	2	2.17

Semester: IV

Course Code- Name of Course: DSC-D3- Inorganic Chemistry paper No. VII

Course Outcomes:

1. **CO1:**The students will understand basic concepts about coordination complexes.
2. **CO2:** The students will get the knowledge about application of chelates in analytical chemistry.
3. **CO3:** The student will understand the nature, applications of element of p block elements.
4. **CO4:** Student will be capable of understanding the properties of 3d series elements.

5. **CO5:** Student will learn the basic knowledge about the qualitative analysis of inorganic compounds.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1	03	03	03	02	02	02	02	03	03	02	03	02	03	02
CO2	03	03	03	02	02	02	01	03	03	03	02	03	02	03
CO3	02	02	02	03	02	02	01	03	02	03	03	02	03	02
CO4	03	02	02	03	02	02	02	03	02	02	03	03	02	03
CO5	03	02	03	03	02	02	01	03	03	02	02	02	03	02
Total	13	12	13	13	10	10	07	15	13	12	13	12	13	12
Avg	2.6	2.4	2.6	2.6	2	2	1.4	3	2.6	2.4	2.6	2.4	2.6	2.4

PO→ CO↓	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3
CO1	3	1	1	0	1	0	1
CO2	2	0	1	2	2	2	3
CO3							
CO4							
CO5							
Total	**5**	**1**	**2**	**2**	**3**	**2**	**4**
Average	**2.5**	**0.5**	**1**	**1**	**1.5**	**1**	**2**

Course Code- Name of Course: DSC- D4 - Organic Chemistry paper no. VIII

Course Outcomes:

1. **CO1:** The students will get the knowledge about the synthesis, reactivity and applications of carboxylic acids.
2. **CO2:** The students will get the knowledge about classification, preparation and applications of amines and diazonium salts.
3. **CO3:** The students will understand the classification, configuration and structure of carbohydrates.
4. **CO4:** Student will be capable of understanding the nomenclature and reactivity of aldehydes and ketones.
5. **CO5:** Student will learn the basic knowledge conformational analysis of organic compounds.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1	2	2	3	2	3	2	2	3	3	3	3	2	2	3
CO2	3	3	2	2	3	2	3	3	3	2	3	3	2	3
CO3	3	2	2	2	2	2	2	3	3	3	2	2	2	2
CO4	3	3	2	2	3	2	2	3	3	3	2	3	3	2
CO5	3	3	3	3	3	3	3	3	2	2	3	2	3	3
Total	14	13	12	11	14	11	12	15	14	13	13	12	12	13
Avg	2.8	2.6	2.4	2.2	2.8	2.2	2.4	3	2.8	2.6	2.6	2.4	2.4	2.6

PO→ CO↓	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3
CO1	2	0	0	2	1	1	1
CO2	1	1	1	2	1	1	1
Total	3	1	1	4	2	2	2
Average	1.5	0.5	0.5	2	1	1	1

Semester: V

Course Code- Name of Course: DSE-E5 - Inorganic Chemistry Paper no. –IX

Course Outcomes:

1. **CO1:** The students will get knowledge about of role of acids and bases, non –aqueous solvents & all chemical properties of solutes.
2. **CO2:** The students will understand geometry, stability and nature of bonding between metal ion and ligand in complexes.
3. **CO3:** The students will understand the synthesis and the applications of the semiconductors and Superconductors in electrical and electronic devices.
4. **CO4:** The students will understand the structure, method of preparation and the applications of organometallic compound in various fields.

5. **CO5:** The students will understand the classification, types, mechanism and applications of catalyst in industrial fields.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1	03	03	02	03	03	03	02	03	03	03	03	03	03	03
CO2	03	02	02	02	03	02	02	03	03	03	03	03	02	03
CO3	03	03	03	03	02	03	02	03	03	03	03	02	02	03
CO4	03	03	03	03	03	02	02	03	03	02	02	03	03	02
CO5	03	03	03	03	03	03	03	03	03	03	02	02	02	03
Total	15	14	13	14	14	13	11	15	15	14	13	13	12	13
Avg	3	2.8	2.6	2.8	2.8	2.8	2.2	3	3	2.8	2.6	2.6	2.4	2.6

PO→ CO↓	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3
CO1	0	1	1	2	1	1	1
Total	**0**	**1**	**1**	**2**	**1**	**1**	**1**
Average	**0**	**1**	**1**	**2**	**1**	**1**	**1**

Course Code- Name of Course: DSE-E6 - Organic Chemistry Paper No. X

Course Outcomes:

1. **CO1:** The students will understand of energy associated with electromagnetic radiation and its use in analytical technique.
2. **CO2:** The students will get knowledge of chromophore, auxochrome and calculation of λmax..
3. **CO3:** The students will get knowledge of vibrational transitions, regions of IR spectrum, functional group recognition.
4. **CO4:** The students will understand of magnetic, non- magnetic nuclei, shielding-deshielding, chemical shift, splitting pattern.
5. **CO5:** The students will understand of molecular ion, fragmentation pattern and different types of ions produced.
6. **CO6:** Student will predict the structure of organic compound with the help of provided spectral data.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1	03	03	03	03	03	03	02	03	03	03	03	03	03	03
CO2	03	03	03	03	03	03	03	03	03	03	03	03	03	03
CO3	03	03	03	03	03	02	02	03	03	02	03	03	03	02
CO4	03	03	03	03	03	03	02	03	03	03	02	03	02	03
CO5	03	03	03	03	03	03	02	03	03	02	03	02	02	02
CO6	03	03	03	02	02	03	02	03	03	03	03	02	03	02
Total	18	18	18	17	17	17	13	18	18	16	17	13	13	12
Avg	3	3	3	2.8	2.8	2.8	2.1	3	3	2.6	2.8	2.1	2.1	2

PO→ / CO↓	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3
CO1	3	1	0	1	1	0	1
CO2	3	1	1	1	1	1	1
CO3	3	1	1	2	2	1	1
Total	**9**	**1**	**2**	**4**	**4**	**2**	**3**
Average	**3**	**1**	**0.666**	**1.333**	**1.333**	**0.666**	**1**

Course Code- Name of Course: DSE- E7- Physical Chemistry Paper No. XI

Course Outcomes:

1. **CO1:** The students will understand understanding quantum Chemistry, Heisenberg's uncertainty principle, concept of energy operators (Hamiltonian), Schrodinger wave equation, Physical interpretation of the ψ and $\psi2$ & particle in a one-dimensional box.
2. **CO2:** The students will get 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.
3. **CO3:** The students will understand photochemical laws, reactions and various photochemical phenomena.
4. **CO4:** The students will get knowledge the various types of solutions, relations vapour pressure, temperature relations.
5. **CO5:** The students will get knowledge of emf measurements, types of electrodes, different types of cells, various applications of emf measurements.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1	03	03	02	02	02	02	03	03	03	03	03	03	03	03
CO2	03	03	03	03	03	03	03	03	03	03	03	03	03	03
CO3	03	03	03	03	03	03	02	03	03	02	02	03	03	02
CO4	03	03	03	03	02	02	02	03	03	02	02	02	03	02
CO5	03	03	03	03	03	03	03	03	03	02	03	03	02	03
Total	15	15	14	14	13	13	13	15	15	12	13	14	14	13
Avg	3	3	2.8	2.8	2.6	2.6	2.6	3	3	2.4	2.6	2.8	2.8	2.6

PO→ CO↓	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3
CO1	0	0	3	1	1	1	2
CO2	0	0	2	1	2	1	2
CO3	0	0	1	1	0	0	3
Total	0	0	6	3	3	2	7
Average	0	0	2	1	1	0.666	2.333

Course Code- Name of Course: DSE-E8- Analytical Chemistry paper no. XII

Course Outcomes:

1. **CO1:** The students will able to understand the techniques of gravimetric analysis.
2. **CO2:** The students will get knowledge of instrumental analysis of alkali and alkaline earth elements.
3. **CO3:** The students will able to understand working and applications of optical methods as an analytical tool.
4. **CO4:** The students will get knowledge theory and applications of potentiometric titrations.
5. **CO5:** The students will able to understand the basics of ion exchange and column adsorption chromatography, Quality control practices in analytical industries /laboratories.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1	03	03	03	03	03	03	02	03	03	03	03	03	02	03
CO2	03	03	03	03	03	02	02	03	03	03	03	02	03	03
CO3	03	03	02	02	03	02	02	03	03	02	03	03	02	02
CO4	03	03	03	02	02	03	02	03	03	02	02	02	03	02
CO5	03	02	02	03	03	02	02	03	02	03	03	02	03	03
Total	15	14	13	13	13	12	10	15	14	13	14	12	13	13
Avg	3	2.8	2.6	2.6	2.6	2.4	2	3	2.8	2.6	2.8	2.4	2.6	2.6

PO→ CO↓	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3
CO1	0	1	1	2	0	2	1
CO2	1	2	1	2	2	3	1
Total	1	3	2	4	2	5	2
Average	0.5	1.5	1	2	1	2.5	1

Semester: VI

Course Code- Name of Course: DSE-F5- Inorganic Chemistry Paper no. –XIII
Course Outcomes:

1. **CO1:** The students will able to understand the mechanism of the reactions involved in inorganic complexes of transition metals and the thermodynamic and kinetic aspects of metal complexes.
2. **CO2:** The students will able to understand the generation of nuclear power with the help of nuclear reactions, role of radio isotopes in medicinal, industrial and Archaeology fields.
3. **CO3:** The students will able to understand the characteristics, properties and separation of lanthanides and Actinides, Synthesis and IUPAC Nomenclature of trans uranic elements (TU).
4. **CO4:** Students will able to understand iron and steel and their production technique.
5. **CO5:** Students will able to understand the concept bioinorganic chemistry, role of various metals and non-metals in our health.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1	03	03	02	02	03	02	02	03	03	02	03	02	03	02
CO2	03	03	03	02	02	03	02	03	03	03	02	03	02	03
CO3	03	03	03	03	02	03	02	03	03	02	02	03	02	02
CO4	03	03	03	03	03	03	03	03	03	03	02	03	03	02
CO5	03	02	02	03	02	02	02	03	03	02	03	03	02	02
Total	15	14	13	13	12	13	11	15	15	12	12	14	12	11
Avg	3	2.8	2.6	2.6	2.4	2.6	2.2	3	3	2.4	2.4	2.8	2.4	2.2

PO→ CO↓	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3
CO1	1	1	2	1	3	2	1
CO2	1	1	1	1	2	1	0
Total	**2**	**2**	**3**	**2**	**5**	**3**	**1**
Average	**1**	**1**	**1.5**	**1**	**2.5**	**1.5**	**0.5**

Course Code- Name of Course: DSE-F6- Organic Chemistry Paper No. XIV

Course Outcomes:

1. **CO1**: The students will get knowledge of reagents used in organic transformations and various reactions used in organic synthesis.
2. **CO2**: The students will get knowledge of basic terms used in retrosynthetic analysis, retrosynthesis of some organic compounds.
3. **CO3**: Student will learn addition reaction across $>C=C<$ bond w.r.t. hydrohalogenation, hydration hydroxylation, ozonolysis and addition of halogen, halogen acid, hydrogen, water, etc. across $-C≡C-$bond.
4. **CO4**: The students will get knowledge of terpenoids and alkaloids w.r.t. occurrence, isolation, characteristics and classification, Analytical and synthetic evidences of Citral and Nicotine.
5. **CO5**: Students will able to understand classification of drugs, qualities of ideal drug, synthesis and uses of some representative drugs and drug action of sulphadrugs..

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1	03	03	03	03	03	03	02	03	03	03	03	03	02	03
CO2	03	02	02	03	03	02	02	03	03	03	03	03	02	02
CO3	03	03	03	03	03	03	02	03	03	03	02	02	03	02
CO4	03	02	02	03	03	03	02	03	03	02	03	02	03	02
CO5	03	03	03	03	03	03	02	03	03	03	03	03	02	03
Total	15	13	12	15	15	14	10	15	15	14	14	13	12	12
Avg	3	2.6	2.4	3	3	2.8	2	3	3	2.8	2.8	2.6	2.4	2.4

PO→ CO↓	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3
CO1	0	0	2	2	0	1	2
Total	0	0	2	2	0	1	2
Average	0	0	2	2	0	1	2

Course Code- Name of Course: DSE-F 7- Physical Chemistry Paper No. XV

Course Outcomes:

1. **CO1:** The students will get knowledge of phase rule, learning of one component, two component and three component systems phase diagrams.
2. **CO2:** The students will get knowledge about basic concept of thermodynamics, free energy, Gibbs-Helmholtz equation and its applications.
3. **CO3:** Students will able to understand the term solid state chemistry, synthetic applications.
4. **CO4:** Students will able to understand of kinetics, Simultaneous reactions.
5. **CO5:** The students will get knowledge of distribution law, its modifications, applications of distribution laws, process of extraction, determination of solubility, distribution indicators, and molecular weights.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1	03	02	03	03	03	02	02	03	03	02	03	03	03	03
CO2	03	03	03	03	03	02	02	03	03	03	02	03	03	02
CO3	03	03	03	02	02	03	02	03	03	02	03	02	03	03
CO4	03	03	02	03	02	03	02	03	02	02	02	03	03	03
CO5	03	03	03	02	03	03	03	03	03	02	03	02	03	02
Total	15	14	14	13	13	13	11	15	11	11	13	13	15	13
Avg	3	2.8	2.8	2.6	2.6	2.6	2.2	3	2.2	2.2	2.6	2.6	3	2.6

PO→ CO↓	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3
CO1	1	1	0	2	2	2	1
CO2	0	0	1	1	1	1	1
CO3	1	1	1	2	2	1	1
Total	2	2	2	5	5	4	3
Average	0.666	0.666	0.666	1.666	1.666	1.333	1

Course Code- Name of Course: DSE-F8- Industrial Chemistry Paper No. XVI

Course Outcomes:

1. **CO1:** Students will able to understand the whole process of manufacture of sugar and byproducts of sugar industry.
2. **CO2:** Students will able to understand of physicochemical principles of production of ammonia, sulfuric acid, nitric acid and sodium carbonate along with its manufacturing plant.
3. **CO3:** Students will able to understand the classification, synthesis and applications of various polymers.
4. **CO4:** Students will able to understand the petroleum Industry, fuels and need of use of ecofriendly fuels.

5. **CO5:** Students will able to understand of nanotechnology including classification, optical properties, synthesis routes, characterization techniques and applications of nano-materials.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1	03	03	03	03	03	03	02	03	03	02	03	03	03	03
CO2	03	03	03	02	03	02	02	03	03	03	03	03	03	03
CO3	03	03	03	03	03	02	02	03	02	02	03	02	03	02
CO4	03	03	03	02	02	03	03	03	03	03	03	03	03	03
CO5	03	02	02	03	03	02	02	03	03	03	02	03	03	03
Total	15	14	14	13	14	12	11	12	11	11	11	11	12	11
Avg	3	2.8	2.8	2.6	2.8	2.4	2.2	2.4	2.2	2.2	2.2	2.2	2.4	2.2

PO→ CO↓	PO1	PO2	PO3	PO4	PSO1	PSO2	PSO3
CO1	1	1	1	2	2	1	2
CO2	1	1	1	2	2	1	2
CO3	1	1	1	2	1	1	2
Total	3	3	3	6	5	3	6
Average	1	1	1	2	1.666	1	1

Part A

Name of Department: Zoology

Department Vision:

- We are committed to develop and transform the skilled information professionals to meet the challenges of knowledge society.

Department Mission:

- To promote academic excellence in teaching, learning, research, collaboration and innovation for the purpose of producing competent professionals.
- To impart skill-based training with aptitudes for meeting the needs of global information society.

Name of Program: Bachelors of Zoology

Program Outcomes (POs)

8. Explain scientific laws and principles and applies the scientific knowledge to overcome complex problems in the life.
9. Elaborate nature, environment and society critically and rationally.
10. Give explanation terms, facts, concepts, processes, techniques, and principles of subjects.
11. Communicate the scientific knowledge in lingua-franka of the world i.e. English and gain access to the current scientific affairs.
12. Enlighten the people around by uncovering the scientific principles behind the magic and superstitions.
13. Show sensitivity to the matters of environment sustainability and use science for the progress of humanity without damaging the ecosystem.
14. Students will enhance their skill for generating new knowledge through research.

Program Specific Outcomes (PSOs)

1. Students could understand the non- chordates and chordate animal classification.

2. Students could understand the applications of Zoology.

3. Students could run the apiculture, poultry, dairy, vermitechnique , prawn culture and goat farming.

4. Students could acquire basic knowledge of sex- determination in man.

5. Students could acquire knowledge of inherited human diseases.

6. Students could acquire basic knowledge of histology of human organs which will be the foundation for pathology.

7. Students could acquire knowledge of complete B.sc. programme they could start additional source of income instead of running behind job.

8. The students get develops skills in laboratory, experiments in laboratory which would be benefited in their future carrier.

Syllabus Structure: Current (Choice Based Credit System)

Year of Implementation of this syllabus: 2018-19

Part B

Syllabus Structure: Choice Based Credit System

- Two-year regular program in Four semesters with CBCS (64 Credits)

- Theory Examination: 08 Theory Papers: 400 Marks (40+10 Pattern)

- Practical Examination: 02 Practical Papers: 200 marks (80+20 Pattern)

- Total Exam. Marks: 800 Marks for each semester.

- Grand Total (Sem. I + Sem. II+ Sem. III+ Sem. IV) = Marks

Semester-wise courses, their COs and Mapping Matrices

Semester: I

Course Code- Name of Course: DSC-15A- Animal Diversity I
Course Outcomes:

CO1: Impart knowledge of biodiversity related to non-chordates form Protista to hemichordate.
CO2: To make the pupils understand the Characters, classification and phylogenic relations among various phyla of non-chardates.
CO3: To make the pupil aware of importance of biodiversity and its conservation.
Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	2	2	2	1	0	2	3	3	3	2	0	0	2	1	1
CO2	2	2	1	1	1	0	1	2	3	3	2	2	1	2	2
CO3	2	2	1	2	0	2	3	3	3	2	1	0	2	1	1
Total	6	6	4	4	1	4	7	8	9	7	3	2	5	4	4
Avg	2	2	1.3	1.3	0.33	1.3	2.3	2.6	3	3	1	0.6	1.6	1.3	1.3

Course Code- Name of Course: DSC-16A- Animal Physiology
Course Outcomes:

CO1: To make the students understand various normal physiological activities in mammalian body.
CO2: To make the students aware of finely balanced metabolic activities carried out in the body and need for maintaining the homeostasis.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	1	2	3	2	2	1	1	0	3	0	3	3	3	1	2
CO2	2	1	3	2	1	2	1	1	2	2	2	1	2	1	1
Total	3	3	6	4	3	3	2	1	5	2	5	4	5	2	3
Avg	1.5	1.5	3	2	1.5	1.5	1	0.5	2.5	1	2.5	2	2.5	1	1.5

Semester: II

Course Code- Name of Course: DSC-15B- Cell Biology and Evolutionary Biology
Course Outcomes:

CO1: To impart knowledge of basic structural and functional unit of life and its organization.
CO2: To impart knowledge the structure and functions of various cell organelles.
CO3: To impart knowledge organic evolution and various theories of evolution.
   CO4: To impart knowledge evidences of evolution and mass extinctions.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	3	3	3	0	1	2	3	1	2	0	1	3	1	2	2

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO2	3	3	2	3	1	2	2	2	1	0	3	1	1	2	2
CO3	1	2	2	2	1	3	2	1	2	2	2	1	2	1	2
CO4	1	1	1	2	3	2	2	2	1	2	1	2	1	1	1
Total	8	9	8	7	6	9	9	6	6	4	7	7	5	6	7
Avg	2	4.5	2	3.5	1.5	2.25	2.25	1.5	1.5	1	1.75	1.75	1.25	1.5	1.75

Course Code- Name of Course: DSC-16B- Genetics
Course Outcomes:

CO1: To impart knowledge of basic structural and functional unit of life and its organization.
CO2: To impart knowledge the structure and functions of various cell organelles.
CO3: To impart knowledge organic evolution and various theories of evolution.
CO4: To impart knowledge evidences of evolution and mass extinctions.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	3	3	3	0	1	2	3	1	2	0	1	3	1	2	2
CO2	3	3	2	3	1	2	2	2	1	0	3	1	1	2	2
CO3	1	2	2	2	1	3	2	1	2	2	2	1	2	1	2

CO4	1	1	1	2	3	2	2	2	1	2	1	2	1	1	1
Total	8	9	8	7	6	9	9	6	6	4	7	7	5	6	7
Avg	2	2.25	2	1.75	1.5	2.25	2.25	1.5	1.5	1	1.75	1.75	1.25	1.5	1.75

Semester: III

Course Code- Name of Course: DSC-15C- Animal Diversity
Course Outcomes:

CO1: Impart knowledge of biodiversity related to chordates form Protochordate to Amphibia.
CO2: To make the pupils understand the Characters, classification and phylogenic relations among various phyla and classes of prochordata to amphibian.
CO3: To impart the knowledge of special characters of cephalochordate and amphibian by studying representative like Amphioxus and frog.
CO4: To make the students understand about the special characters of fish like scales, gills and fins.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	3	3	3	2	3	2	1	2	3	3	1	2	1	2	2
CO2	3	3	1	2	2	2	3	2	1	2	1	1	2	2	2
CO3	1	2	2	1	1	1	2	1	1	1	1	1	2	2	1
CO4	2	1	1	1	2	1	1	2	2	2	1	1	1	1	2
Total	9	9	8	6	8	6	7	7	7	8	4	5	6	7	7

Avg	2.25	2.25	2	1.5	2	1.5	1.75	1.75	1.75	2	1	1.25	1.5	1.75	1.75

Course Code- Name of Course: DSC-16C- BIOCHEMISTRY
Course Outcomes:

CO1: To impart knowledge of classification and biological significance of carbohydrates, proteins and lipids.
CO2: To impart knowledge about nucleic acids and enzymes.
    CO3: To make the students aware about the significance of metal ions to Human.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	2	2	1	1	1	2	2	1	2	2	2	1	1	2	2
CO2	3	2	2	1	2	2	1	1	2	2	2	1	2	2	2
CO3	2	2	2	2	2	1	1	2	2	2	1	2	2	1	2
Total	7	6	5	4	5	5	4	4	6	6	5	4	5	5	6
Avg	2.3	2	1.6	1.3	1.6	1.6	1.3	1.3	2	2	1.6	1.3	1.6	1.6	2

Semester: IV

Course Code- Name of Course: DSC-15D- REPRODUCTIVE BIOLOGY
Course Outcomes:

    CO1: The students will get the knowledge about histological structure of female reproductive system in rat and human
CO2: The students will get the knowledge about histology of male reproductive system in human
    CO3: Student will be capable of understanding the Infertility in male and female and related treatments

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	2	2	2	1	1	2	2	2	1	2	2	1	2	2	1
CO2	2	2	2	1	1	1	1	2	2	1	2	2	2	1	2
CO3	2	2	1	2	1	2	1	2	1	2	2	1	2	1	2
Total	6	6	5	4	3	5	4	6	4	4	6	4	6	4	5
Avg	2	2	1.6	1.3	1	1.6	1.3	2	1.3	1.3	2	1.3	2	1.3	1.6

<div style="text-align:center">Course Code- Name of Course: DSC-16D- APPLIED ZOOLOGY</div>

Course Outcomes:

CO1: The students will get knowledge about of role host and parasite.
CO2: The students will understand Host-parasite Relationship.
CO3: The students will understand the Transmission, Prevention and control of diseases: Tuberculosis, Typhoid.
CO4: The students will understand the Biology, Control and damage of various pests.
CO5: To impart the knowledge of poultry management.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	2	2	1	2	2	2	2	2	1	2	1	3	2	1	2
CO2	1	2	1	2	1	2	1	2	1	2	1	2	1	1	1
CO3	2	2	2	2	2	2	2	2	1	2	1	1	2	1	2
CO4	1	3	1	2	1	3	2	1	2	1	1	3	2	1	3

PO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO5	1	2	2	2	2	2	2	1	1	1	2	2	1	2	1
Total	7	11	7	10	8	11	9	8	6	8	6	11	8	6	9
Avg	1.4	2.2	1.4	2	1.6	2.2	1.8	1.6	1.2	1.6	1.2	2.2	1.6	1.2	1.8

Semester: V

Course Code- Name of Course: DSE-E29 COMPARATIVE ANATOMY OF VERTEBRATES –IX

Course Outcomes:
CO1: Impart knowledge of comparison of integument and Endoskeleton.
CO2: To make the pupils understand the comparison of Characters in digestive and respiratory systems of various chordates.
CO3: Impart knowledge of comparison of Circulatory and Nervous system.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	1	1	1	1	1	2	1	1	2	2	2	2	1	2	1
CO2	3	2	1	2	2	1	1	1	1	1	2	2	1	1	2
CO3	3	2	3	2	1	1	2	3	1	2	1	2	2	1	2
Total	7	5	5	5	4	4	4	5	4	5	5	6	4	4	5
Avg	2.3	1.6	1.6	1.6	1.3	1.3	1.3	1.6	1.3	1.6	1.6	2	1.3	1.3	1.6

Course Code- Name of Course: DSE-F29 - Molecular Cell Biology and Animal Biotechnology X

Course Outcomes:
CO1: To impart knowledge of cell biology concepts-DNA replication, genetic code, DNA damage and repair etc.
CO2: To impart knowledge of basic structural and functional unit of protein synthesis
CO3: To impart knowledge the structure and functions of various advanced techniques in biology such as rDNA technology, PCR, Blotting, Cloning, etc.
CO4: To impart knowledge the science of application of biotechnology.
CO5: To impart various biotechniques such as separation and animal cell culture.

Course Articulation Matrix:
COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	2	2	2	2	1	2	1	2	1	2	3	2	1	2	0
CO2	1	2	0	2	1	2	2	1	2	2	2	2	2	1	2
CO3	1	2	2	2	1	1	2	1	2	1	2	1	3	1	2
CO4	2	2	2	2	1	2	1	2	1	2	1	2	1	2	1
CO5	2	1	2	1	3	1	2	1	2	1	3	1	2	1	2
Total	7	9	8	7	7	8	8	8	8	9	11	8	9	7	7
Avg	1.4	1.8	1.6	1.4	1.4	1.6	1.6	1.6	1.6	1.8	2.2	1.6	1.8	1.4	1.4

Course Code- Name of Course: DSE-F30 - Biotechniques and Biostatistics - XI
Course Outcomes:
CO1: The students will understand understanding process of Production of cloned and transgenic animals.
CO2: The students will get knowledge about animal Culture Techniques and Applications.
CO3: The students will understand concept in Biostatistics.

Course Articulation Matrix:
COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	2	2	2	2	2	1	1	2	1	2	1	2	1	2	3
CO2	2	2	1	2	2	2	3	2	2	2	2	2	2	2	1
CO3	1	2	1	2	1	1	2	2	2	2	2	2	3	3	1
Total	5	6	4	6	5	4	6	6	5	6	5	6	5	7	5
Avg	1.6	2	1.3	2	1.6	1.3	2	2	1.6	2	1.6	2	2	2.3	1.6

Course Code- Name of Course: DSE-F31 - AQUATIC BIOLOGY - XII

Course Outcomes:

CO1: The students will get knowledge the Aquatic Biomes.

CO2: The students will get knowledge of lake and stream freshwater ecosystem.

CO3: To make the students to understand the structure and function of endocrine glands in body.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	3	3	2	1	2	1	2	1	2	3	1	2	2	2	2
CO2	1	2	1	2	1	2	1	2	1	2	2	2	2	3	1
CO3	2	2	2	1	2	1	2	1	2	1	2	1	2	2	1
Total	6	7	5	4	5	4	5	4	5	6	5	5	6	7	4
Avg	2	2.3	1.6	1.3	1.6	1.3	1.3	1.3	1.6	2	1.6	1.6	2	2.3	1.3

Course Code- Name of Course: DSE-E30 - DEVELOPMENTAL BIOLOGY OF VERTEBRATES -XIII

Course Outcomes:

CO1: To impart knowledge of formation of gametes and events in fertilization.

CO2: To impart knowledge of basic pattern of the cleavage.

CO3: To impart knowledge early embryonic development in chick.

CO4: To impart knowledge the concept of organizer.

CO5: To impart knowledge of cloning technique and ethical issues.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	2	2	2	1	2	2	2	1	2	1	2	2	3	2	2
CO2	1	2	1	2	1	2	3	2	2	1	2	1	2	1	3
CO3	2	2	2	2	2	1	2	1	2	1	2	2	1	2	2
CO4	2	2	2	1	2	1	1	2	1	2	1	2	2	1	2
CO5	1	2	1	2	1	1	1	1	2	2	2	2	2	2	2
Total	8	10	8	8	8	7	9	7	9	7	9	9	10	8	11
Avg	1.6	2	1.6	1.6	1.6	1.4	1.8	1.4	1.8	1.4	1.8	1.8	1.8	1.6	2.2

Course Code- Name of Course: DSE-E32 - IMMUNOLOGY - XIV

Course Outcomes:

CO1: The students will get knowledge of basic concept in immunology.

CO2: The students will get knowledge of Cells and Organs of the immune system.

CO3: The students will get knowledge of Antigens and antibody.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PS	PS	PS	PS	PS	PS	PS	PS

CO								O1	O2	O3	O4	O5	O6	O7	O8
CO1	2	1	1	1	2	1	2	2	2	2	1	2	1	2	1
CO2	1	2	1	2	1	2	1	2	2	1	2	1	2	1	2
CO3	2	2	1	1	1	3	2	2	2	3	1	2	1	2	1
Total	5	5	3	4	4	6	5	6	6	6	4	5	4	5	4
Avg	1.6	1.6	1	1.3	1.3	2	1.6	1.6	1.6	1.6	1.3	1.6	1.3	1.6	1.3

Course Code- Name of Course: DSE-E31 - Applied Zoology - II -XV

Course Outcomes:

CO1: To make the pupils understand the economic importance of various marine crustacean and Molluscan.

CO2: To make the students aware about the maintenance of aquarium fishes.

CO3: To make the students to understand the economic importance of apiculture, poultry, dairy and goat farming.

CO4: To generate the interest in prawn culture.

CO5: To impart knowledge of various fishing techniques.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	1	2	1	1	2	1	2	1	2	1	2	1	2	1	1
CO2	2	2	2	2	1	2	1	2	1	1	2	2	1	2	1
CO3	1	2	1	2	2	2	3	1	2	1	2	1	2	1	3
CO4	2	2	1	2	1	2	2	1	2	1	2	1	2	1	1
CO5	2	3	2	1	2	1	1	1	1	1	1	1	1	1	1

T o t a l	9	11	7	8	8	8	9	6	8	5	9	6	8	6	7
A v g	1.8	2.2	1.4	1.6	1.6	1.6	1.8	1.2	1.6	1	1.8	1.2	1.6	1.2	1.4

Course Code- Name of Course: DSE-F32 - Insect Vectors and Histology -XV

Course Outcomes:

CO1: Students will able to understand the various types of dipteran insect.
CO2: Students will able to understand how mosquitoes act as malaria vector.
CO3: Students will able to understand the Fleas a important insect vectors.
CO4: Students will able to understand the Histology of mammalian organs.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	1	2	2	2	2	2	1	1	1	1	1	0	2	2	2
CO2	1	1	1	1	1	2	1	2	0	1	1	1	1	1	1
CO3	2	2	2	2	1	2	1	2	1	2	1	2	1	2	1
CO4	1	2	1	2	1	3	1	2	1	2	1	2	1	2	1
Total	5	7	6	7	5	9	4	7	3	6	4	5	5	7	5
Avg	1.2	1.75	1.5	1.75	1.2	2.25	1	1.75	0.75	1.5	1	1.2	1.2	1.75	1.2

Part A

Name of Department: Mathematics

Department Vision:

- We are committed to develop and transform the skilled information professionals to meet the challenges of knowledge society.

Department Mission:

- To promote academic excellence in teaching, learning, research, collaboration and innovation for the purpose of producing competent professionals.
- To impart skill-based training with aptitudes for meeting the needs of global information society.

Name of Program: Bachelors of Mathematics

Program Outcomes (POs)

15. Explain scientific laws and principles and applies the scientific knowledge to overcome complex problems in the life.
16. Elaborate nature, environment and society critically and rationally.
17. Give explanation terms, facts, concepts, processes, techniques, and principles of subjects.
18. Communicate the scientific knowledge in lingua-franka of the world i.e., English and gain access to the current scientific affairs.
19. Enlighten the people around by uncovering the scientific principles behind the magic and superstitions.
20. Show sensitivity to the matters of environment sustainability and use science for the progress of humanity without damaging the ecosystem.
21. Students will enhance their skill for generating new knowledge through research.

Syllabus Structure: Current (Choice Based Credit System)

Year of Implementation of this syllabus: 2018-19

Part B
Syllabus Structure: Choice Based Credit System
- Two-year regular program in Four semesters with CBCS (16 Credits)
- Theory Examination: 08 Theory Papers: 400 Marks (50 Pattern)
- Practical Examination: 02 Practical Papers :200 marks (80+20 Pattern)
- Total Exam. Marks: 100 Marks for each semester.
- Grand Total (Sem. I + Sem. II+ Sem. III+ Sem. IV) = 600 Marks

Semester-wise courses, their COs and Mapping Matrices

Semester: I

Course Code- Name of Course: DSC-5A- Differential Calculus Paper I

Course Outcomes:

> **CO1:** The students will understand the idea of derivatives.
>
> **CO2:** The students will appreciate roll of exponential function.
>
> **CO3:** The students will realize Concept of continuity.
>
> **CO4:** The students will understand relation between derivative and linear approximation.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	01	00	02	00	00	00	01
CO2	01	00	02	00	00	00	01
CO3	01	01	02	00	00	01	01
CO4	01	01	02	01	00	01	01
Total	04	02	08	01	00	02	04
Avg	1	0.5	2	0.25	00	0.5	1

Course Code- Name of Course: DSC-6A Calculus paper II

Course Outcomes:

> **CO1:** The students will capable to generate solutions to unfamiliar problems
>
> **CO2:** The student will explain brief idea of group setting
>
> **CO3:** The students will able to discuss the concept of mathematical language
>
> **CO4:** The students will able to discuss areas in mathematics and other fields where calculus is useful.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/ CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	01	02	02	00	00	01	01
CO2	01	01	02	01	00	01	01
CO3	01	02	02	01	00	00	01
CO4	02	02	02	01	01	01	02
Total	05	07	08	03	01	03	05
Avg	**1.25**	**1.75**	**2**	**0.75**	**0.25**	**0.75**	**1.25**

Semester: II

Course Code- Name of Course: DSC-5B Differential Equations Paper-III Course Outcomes:

CO1: The students will understands meaning of solution of differential equations

CO2: The students able to discuss Concept of exact differential equations

CO3: Students able to determine types of linear differential equations systems

CO4: Students able to solve homogeneous differential equations

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/ CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	01	01	02	01	02	01	01
CO2	01	01	02	00	00	01	01
CO3	01	01	02	00	00	01	00
CO4	01	01	02	00	00	00	01
Total	04	04	08	01	02	03	03
Avg	**1**	**1**	**2**	**0.25**	**0.5**	**0.75**	**0.75**

Course Code- Name of Course: DSC-6B-Higher order ODE and PDE IV

Course Outcomes:

    CO1: The students will able to knowledge of PDE

    CO2: The students will understand to solve practical PDE problems

    CO3: The students will understand basic PDE using conservation law

    CO4: The student will get the knowledge about types of PDE

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/ CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	01	01	02	00	00	00	00
CO2	01	00	02	00	00	00	01
CO3	01	00	02	00	00	01	01
CO4	01	01	02	00	01	01	00
Total	04	02	08	00	01	02	02
Avg	**1**	**0.5**	**2**	**0**	**0.25**	**0.5**	**0.5**

Semester: III

Course Code- Name of Course: DSC- 5C   Real Analysis-1- V

Course Outcomes:

    CO1: The students will understand sequence and series.

    CO2: The students get knowledge about convergence, limits and continuity.

    CO3: The students will understand differentiability and integrability.

    CO4: The students will understand study of complex numbers

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/ CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	01	02	03	01	02	01	00
CO2	02	01	02	00	01	01	00
CO3	01	01	02	00	01	00	01
CO4	01	01	02	00	01	01	00
Total	05	05	09	01	05	03	01
Avg	**1.25**	**1.25**	**2.25**	**0.25**	**1.25**	**0.75**	**0.25**

Course Code- Name of Course: DSC-6C- Algebra -1 paper No. V

Course Outcomes:

CO1: The student will explain applications of simplify some formulas

CO2: The students will understand basic concepts of algebra

CO3: The students will get the knowledge of expression using polynomial, rational, exponential terms.

CO4: The students will understand binary operations, group and field.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/ CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	01	00	02	00	00	00	00
CO2	01	01	02	00	00	00	00
CO3	01	00	01	00	01	00	00
CO4	01	01	02	00	01	01	01
Total	04	02	07	00	02	01	01
Avg	**1**	**0.5**	**1.75**	**0**	**0.5**	**0.25**	**0.25**

Semester: IV

Course Code- Name of Course: DSC-5D -. Real Analysis-2 paper No. VII

Course Outcomes:

 CO1: The students will understand basic concepts about Monotone sequence

 CO2: The students will get the knowledge about application of limit superior and limit inferior
  of sequences.

 CO3: The student will understand convergent and divergent series.

 CO4: Student will be capable of understanding comparison test..

Course Articulation Matrix:

 COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/ CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	01	01	02	00	01	00	00
CO2	01	01	02	00	00	00	00
CO3	01	01	02	00	01	00	00
CO4	01	01	02	00	00	00	00
Total	04	04	08	00	02	00	00
Avg	**1**	**1**	**2**	**0**	**0.5**	**0**	**0**

Course Code- Name of Course: DSC- 6D-Algebra 2 Paper No. VIII

Course Outcomes:

 CO1: The students will get the knowledge about Lagrange's theorem.

 CO2: The students will get the knowledge about Normal subgroup and its properties.

 CO3: The students will understand properties of factor group.

 CO4: Student will be capable of understanding Ring and subring.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	01	00	01	00	00	00	00
CO2	01	00	02	00	01	00	00
CO3	01	00	01	00	00	00	00
CO4	01	01	01	00	01	00	01
Total	04	01	05	00	02	00	01
Avg	**1**	**0.25**	**1.25**	**0**	**0.5**	**0**	**0.25**

Part A

Name of Department: Electronic

Department Vision:

▪ We are committed to develop and transform the skilled information professionals to meet the challenges of knowledge society.

Department Mission:

▪ To promote academic excellence in teaching, learning, research, collaboration and innovation for the purpose of producing competent professionals.

▪ To impart skill-based training with aptitudes for meeting the needs of global information society.

Name of Program: Bachelors of Electronic

Program Outcomes (POs)

1. Explain scientific laws and principles and applies the scientific knowledge to overcome complex problems in the life.
2. Elaborate nature, environment and society critically and rationally.
3. Give explanation terms, facts, concepts, processes, techniques, and principles of subjects.
4. Communicate the scientific knowledge in lingua-franka of the world i.e. English and gain access to the current scientific affairs.
5. Enlighten the people around by uncovering the scientific principles behind the magic and superstitions.
6. Show sensitivity to the matters of environment sustainability and use science for the progress of humanity without damaging the ecosystem.
7. Students will enhance their skill for generating new knowledge through research.

Syllabus Structure: Current (Choice Based Credit System)

Year of Implementation of this syllabus: 2018-19

Part B

Syllabus Structure: Choice Based Credit System

- Two-year regular program in Four semesters with CBCS (16 Credits)
- Theory Examination: 08 Theory Papers: 400 Marks (50 Pattern)
- Practical Examination: 02 Practical Papers: 200 marks (80+20 Pattern)
- Total Exam. Marks: 100 Marks for each semester.
- Grand Total (Sem. I + Sem. II+ Sem. III+ Sem. IV) = 600 Marks

Semester-wise courses, their COs and Mapping Matrices

Semester: I

Course Code- Name of Course: DSC-9A- NETWORK ANALYSIS AND ANALOG ELECTRONICS

Course Outcomes:

CO1: Understand functioning of basic electronic components.
CO2: Understand basic laws and rules of circuit analysis and network parameters.
CO3: Understand fundamentals of semiconductor diodes and its applications.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	02	03	03	01	00	02	01
CO2	02	02	02	01	00	01	02
CO3	02	03	02	01	00	01	02
Total	06	08	07	03	00	04	05
Avg	**2**	**2.66**	**2.33**	**3**	**0**	**1.33**	**1.66**

Course Code- Name of Course: DSC-10A- DIGITAL INTEGRATED CIRCUITS

Course Outcomes:

CO1: Understand functioning of basic digital electronics.
CO2: Understand number system, basic gates, basic laws and theorems for digital logic circuit design.
CO3: Understand Combinational Logic Analysis and Design, Arithmetic Circuits and Data processing circuits.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	03	02	02	01	00	01	01
CO2	02	03	02	02	00	02	02
CO3	02	02	01	01	00	01	02
Total	07	07	05	04	00	04	05
Avg	**2.33**	**2.33**	**1.66**	**1.33**	**0**	**1.33**	**1.66**

Semester: II

Course Code- Name of Course: DSC-9B- ANALOG ELECTRONIC CIRCUITS
Course Outcomes:

CO1: Understand construction and functioning of transistor.
CO2: Understand application of transistor as amplifier and oscillator.
CO3: Understand fundamentals of Field Effect Transistor (FET) and Unijunction Transistor (UJT).

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	03	02	03	02	00	01	01
CO2	02	03	03	02	00	02	01
CO3	02	02	02	01	00	02	01
Total	07	07	08	05	00	05	03
Avg	2.33	2.33	2.66	1.66	0	1.66	1

Course Code- Name of Course: DSC-10B- LINEAR AND DIGITAL INTEGRATED CIRCUITS
Course Outcomes:

CO1: Understand functioning of sequential digital circuits such as Flip-Flop.
CO2: Understand working of digital circuits such as counters and shift registers.
CO3: Understand function of data convertors such as DAC and ADC.
CO4: Understand function of Operational Amplifier (OPAMP) and their applications.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	03	02	02	01	00	02	01
CO2	02	03	02	02	00	02	01
CO3	02	02	02	01	00	02	01
CO4	02	02	02	01	00	01	01
Total	09	09	08	05	00	07	04
Avg	3	3	2.66	1.66	0	2.33	1.33

Semester: III

Course Code- Name of Course: DSC-9C- Communication Electronics
Course Outcomes:

CO1: Understand functioning of basic communication systems.
CO2: Understand analog modulation & demodulation techniques.
CO3: Understand satellite communication & navigation systems.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	03	03	02	02	00	02	01
CO2	03	02	01	02	00	02	01
CO3	02	02	02	01	00	01	01
Total	08	07	05	05	00	05	03
Avg	**2.66**	**2.33**	**1.66**	**1.66**	**0**	**1.66**	**1**

Course Code- Name of Course: DSC-10C- Introduction to microprocessor 8085 and Microcontroller 8051

Course Outcomes:

CO1: Understand microcomputer organization and architecture of µP 8085.
CO2: Understand instruction set and programming of µP 8085.
CO3: Understand 8051 family and architecture of µC 8051

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	03	03	02	02	00	02	01
CO2	02	03	02	02	00	02	01
CO3	03	02	02	02	00	01	02
Total	08	08	06	06	00	05	04
Avg	**2.66**	**2.66**	**2**	**2**	**00**	**1.66**	**1.33**

Semester: IV

Course Code- Name of Course: DSC-9D- Digital modulation and mobile telephone systems
Course Outcomes:

CO1: Understand analog pulse modulation techniques viz. PAM, PWM & PPM.
CO2: Understand digital pulse modulation techniques viz. ASK, FSK PSK & BPSK.
CO3: Understand mobile telephone system and networks Viz GSM, CDMA, TDMA & FDMA.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	03	02	02	01	00	01	01
CO2	02	02	02	01	00	00	01
CO3	02	02	02	01	00	01	01
Total	07	06	06	03	00	02	03
Avg	**2.33**	**2**	**2**	**1**	**0**	**0.66**	**1**

Course Code- Name of Course: DSC-10D- Microcontroller and Embedded Systems

Course Outcomes:

CO1: Understand addressing modes and instruction sets of μC 8051.

CO2: Understand facilities in μC 8051 viz. timer, time delay calculations in different modes and serial communications.

CO3: Understand programming of μC 8051 and real-world interfacing.

CO4: Introduction to embedded system and programming in C.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	02	02	03	01	00	02	01
CO2	03	02	02	02	00	01	01
CO3	02	02	03	01	00	01	01
CO4	02	02	02	01	00	01	01
Total	09	08	10	05	00	05	04
Avg	3	2.66	3.33	1.66	0	1.66	1.33

Part A

Name of Department: Botany

Department Vision:

- We are committed to develop and transform the skilled information professionals to meet the challenges of knowledge society.

Department Mission:

- To promote academic excellence in teaching, learning, research, collaboration and innovation for the purpose of producing competent professionals.

- To impart skill-based training with aptitudes for meeting the needs of global information society.

Name of Program: Bachelors of Botany

Program Outcomes (POs)

22. Explain scientific laws and principles and applies the scientific knowledge to overcome complex problems in the life.
23. Elaborate nature, environment and society critically and rationally.
24. Give explanation terms, facts, concepts, processes, techniques, and principles of subjects.
25. Communicate the scientific knowledge in lingua-franka of the world i.e., English and gain access to the current scientific affairs.
26. Enlighten the people around by uncovering the scientific principles behind the magic and superstitions.
27. Show sensitivity to the matters of environment sustainability and use science for the progress of humanity without damaging the ecosystem.
28. Students will enhance their skill for generating new knowledge through research.

Syllabus Structure: Current (Choice Based Credit System)

Year of Implementation of this syllabus: 2018-19

Part B

Syllabus Structure: Choice Based Credit System

- Two-year regular program in Four semesters with CBCS (16 Credits)

- Theory Examination: 08 Theory Papers: 400 Marks (50 Pattern)

- Practical Examination: 02 Practical Papers :150 marks (Pattern)

- Total Exam. Marks: 100 Marks for each semester.

- Grand Total (Sem. I + Sem. II+ Sem. III+ Sem. IV) = 600 Marks

Semester-wise courses, their COs and Mapping Matrices

Semester: I

Course Code- Name of Course: DSC-13A-BIODIVERSITY OF MICROBES, ALGAE AND FUNGI

Course Outcomes:

CO1: To impart knowledge of science is the basic objective of education.
CO2: Discuss about importance of morphological structure, classification, reproduction and economic importance of Lower Plants.
CO3: Understand the diversity among Bacteria, Viruses and Algae
CO4: Understand the useful and harmful activities of Bacteria, Viruses and Algae.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	03	02	03	00	02	02	02
CO2	02	02	02	00	03	02	01
CO3	03	01	03	00	02	03	01
CO4	03	02	03	00	02	02	02
Total	11	07	11	00	09	09	06
Avg	**2.75**	**1.75**	**2.75**	**00**	**2.25**	**2.25**	**1.5**

Course Code- Name of Course: DSC-14A- BIODIVERSITY OF ARCHEGONIATE
Bryophytes, Pteridophytes, Gymnosperms

Course Outcomes:

CO1: To make the students aware of applications of different plants in various.
CO2: Impart the knowledge Plant Diversity.
CO3: To understand scientific terms, concepts, facts, phenomenon and their relationships.
CO4: The student can get practical skill and knowledge of vegetative plant propagation techniques.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	02	02	03	00	02	02	01
CO2	02	02	02	00	03	02	02
CO3	03	01	02	00	03	03	01
CO4	03	02	03	00	02	02	02
Total	10	07	10	00	10	09	06
Avg	2.5	1.75	2.5	00	2.5	2.25	1.5

Semester: II

Course Code- Name of Course: DSC-13B- PLANT ECOLOGY
Course Outcomes:

CO1: Students will acquire knowledge regarding vegetation and its analysis.
CO2: Students will deepen the vegetation types of Maharashtra.
CO3: Students will know about the floristic regions and plant formation of the planet.
CO4: Students learned about the interaction between biotic and abiotic components of the environment.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	02	02	03	00	02	02	01
CO2	03	02	02	01	03	03	02
CO3	03	01	02	00	03	03	01
CO4	03	02	03	00	02	02	02
Total	11	07	10	01	10	10	06
Avg	2.75	1.75	2.5	0.25	2.5	2.5	1.5

Course Code- Name of Course: DSC-14B- PLANT TAXONOMY
Course Outcomes:

CO1: To get acquainted with the subject in live form and visits to forests.
CO2: The students can get enough knowledge to identify flora.
CO3: Impart the Knowledge about Identification and conservation of Medicinal plants.
CO4: To develop scientific attitude is the major objective to make the students open minded, critical, curious.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	03	03	03	00	02	02	01
CO2	03	02	02	00	03	03	02
CO3	03	01	02	01	03	03	02
CO4	02	02	03	00	02	03	02
Total	11	08	10	01	10	11	07
Avg	2.75	2	2.5	0.25	2.5	2.75	1.75

Semester: III

Course Code- Name of Course: DSC-13C- EMBRYOLOGY OF ANGIOSPERMS
Course Outcomes:

CO1: Understand structure and development in microsporangium and megasporangium.

CO2: Understand microsporogenesis and megasporogenesis.
CO3: Know fertilization, endosperm and embryogeny.
CO4: To provide thorough knowledge about various highly evolved plant groups and their community structure.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	02	03	03	00	02	02	01
CO2	02	02	02	00	03	02	01
CO3	03	01	02	01	03	03	01
CO4	03	02	03	00	02	02	02
Total	10	08	10	01	10	09	05
Avg	2.5	2	2.5	0.25	2.5	2.25	1.25

Course Code- Name of Course: DSC-14C- PLANT PHYSIOLOGY
Course Outcomes:

CO1: To study the different metabolic process for synthesis of food material.
CO2: To become knowledgeable in plant and its water relations.
CO3: To acquire knowledge in plant growth regulator and its uses, understand the physiology of flowering and photoperiodism.
CO4: Studied the various advanced biotechniques of plant physiology experiments.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	02	02	03	00	02	02	01
CO2	02	02	02	00	03	02	01
CO3	03	03	02	00	03	02	01
CO4	03	02	03	00	02	02	01
Total	10	09	10	00	10	08	04
Avg	2.5	2.25	2.5	00	2.5	2	1

Semester: IV

Course Code- Name of Course: DSC-13D- PLANT ANATOMY
Course Outcomes:

CO1: Understand external and internal structure of plants.
CO2: Learn the microscopic technique, familiarize with the external and internal structure of lower and higher group organisms.
CO3: Know various tissue systems.
CO4: Perform the techniques in anatomy.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	02	02	03	00	02	02	01
CO2	03	02	02	00	03	02	02
CO3	02	03	02	01	03	02	01
CO4	03	02	03	00	02	02	02
Total	10	09	10	01	10	08	06
Avg	2.5	2.25	2.5	0.25	2.5	2	1.5

Course Code- Name of Course: DSC-14D- PLANT METABOLISM
Course Outcomes:

CO1: Understand the growth and developmental processes in plants.
CO2: Students will able to gain knowledge on role of micronutrients in plant growth, their development and understand the mechanism of nitrogen metabolism.
CO3: Acquire knowledge on the physiological functions of plants.
CO4: Learn and understand about the enzymes in plants.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	02	02	03	00	02	02	01
CO2	02	02	02	00	03	02	02
CO3	02	03	02	01	03	02	01
CO4	03	02	03	00	02	02	01
Total	09	09	10	01	10	08	05
Avg	2.25	2.25	2.5	0.25	2.5	2	1.25

Part A

Name of Department: Physics

Department Vision:

▪ We are committed to develop and transform the skilled information professionals to meet the challenges of knowledge society.

Department Mission:

▪ To promote academic excellence in teaching, learning, research, collaboration and innovation for the purpose of producing competent LIS professionals.

▪ To impart skill-based training with aptitudes for meeting the needs of global information society.

Name of Program: Bachelors of Physics

Program Outcomes (POs)

29. Explain scientific laws and principles and applies the scientific knowledge to overcome complex problems in the life.
30. Elaborate nature, environment and society critically and rationally.
31. Give explanation terms, facts, concepts, processes, techniques, and principles of subjects.

32. Communicate the scientific knowledge in lingua-franka of the world i.e. English and gain access to the current scientific affairs.
33. Enlighten the people around by uncovering the scientific principles behind the magic and superstitions.
34. Show sensitivity to the matters of environment sustainability and use science for the progress of humanity without damaging the ecosystem.
35. Students will enhance their skill for generating new knowledge through research.

Program Specific Outcomes (PSOs)

1. Demonstrate a rigorous understanding of the core theories & principles of physics, which include mechanics, electromagnetism, thermodynamics, & quantum mechanics.

2. Learn the Concept of Quantum Mechanics, Relativity, introduced at degree level in order to understand nature at atomic levels.

3. Provide knowledge about material properties and its application for developing technology to ease the problems related to society.

4. Understand the set of physical laws, describing the motion of bodies, under influence of system of forces.

5. Understand the relationship between particles & atom, as well as their creation & decay.

6. Relate the structure of atoms & subatomic particles.

7. Understand physical properties of molecule the chemical bonds between atom as well as molecular dynamics.

8. Analyze the application of mathematics to problem in physics & development of mathematical method suitable for such application & for formulation of physical theories.

9. Learn the structure of solid materials & their different physical properties along with metallurgy, cryogenics, electronics, & material science.

10. Understand fundamental theory of nature at small scale & energy levels of atom & sub-atomic particles.

Syllabus Structure: Current (Choice Based Credit System)

Year of Implementation of this syllabus: 2018-19

Part B

Syllabus Structure: Choice Based Credit System

- Three-year regular program in Six semesters with CBCS (32 Credits)
- Theory Examination: 16 Theory Papers: 800 Marks (50 Pattern)
- Practical Examination: 03 Practical Papers :300 marks (80+20 Pattern)
- Total Exam. Marks: 100 Marks for each semester.
- Grand Total (Sem. I + Sem. II + Sem. III + Sem. IV + Sem. V + Sem. VI) = 1100 Marks

Semester-wise courses, their COs and Mapping Matrices

Semester: I

Course Code- Name of Course: DSC -1A Mechanics - l paper I

Course Outcomes:

CO1: The students will understand exact how to know vector or scalar.

CO2: The students will learn difference between partial and ordinary differential equations.

CO3: The students learn Newton's laws of motion and how to calculate moment of inertia in rotational motion.

CO4: The students will understand laws of conservation of linear and angular momentum n it's uses.

Course Articulation Matrix:
COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO1
CO1	03	01	02	01	02	02	02	02	01	03	02	02	02	02	01	01	01
CO2	03	01	02	02	02	02	02	02	01	02	02	01	02	01	02	01	01
CO3	03	03	02	02	02	02	02	03	01	02	02	01	02	01	01	01	01
CO4	02	02	02	01	02	01	01	02	02	01	01	02	01	02	02	01	02
Total	11	07	08	06	08	07	07	09	05	08	07	06	07	06	06	04	05
Avg	2.75	1.75	2	1.5	2	1.75	1.75	2.25	1.25	2	1.75	1.5	1.75	1.5	1.5	1	1.25

Course Code- Name of Course: DSC-2A Mechanics -II paper II

Course Outcomes:

CO1: The students will capable to discuss gravitational laws of motion and how it's applicable in satellites.

CO2: The student will know the oscillation and from this how to calculate gravitational force.

CO3: The students will able to discuss elasticity and it's type.

CO4: The students will able to getting idea behind the surface tension and how it works exactly.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/ CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO1
CO1	02	02	02	02	01	02	02	02	02	02	02	01	02	01	02	01	02
CO2	03	02	02	02	01	02	02	03	02	02	02	02	01	02	01	02	01
CO3	02	02	01	02	02	01	02	02	01	02	01	02	02	01	02	02	02
CO4	02	01	02	01	02	01	01	01	02	01	02	01	01	02	01	02	01
Total	09	07	07	07	06	06	07	08	07	07	07	06	06	06	06	07	06
Avg	2.25	1.75	1.75	1.75	1.5	1.5	1.75	2	1.75	1.75	1.75	1.5	1.5	1.5	1.5	1.75	1.5

Semester: II

Course Code- Name of Course: DSC B: Electricity and Magnetism-l Paper-III
Course Outcomes:

CO1: The students will understand how to getting scalar and vector and also dot and cross products and its physical significance.

CO2: The students able to discuss concept of electrostatic field. Gauss's theorem and information about capacitance, condenser, light polarization.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	03	01	02	02	02	02	02	02	02	02	02	01	02	02	01	01	02
CO2	02	02	02	02	02	02	02	02	02	01	02	02	01	01	02	02	01
Total	05	03	04	04	04	04	04	04	04	03	04	03	03	03	03	03	03
Avg	2.5	1.5	2	2	2	2	2	2	2	1.5	2	1.5	1.5	1.5	1.5	1.5	1.5

Course Code- Name of Course: DSC-2B Electricity and Magnetism -II Paper IV

Course Outcomes:

CO1: The students will able to understand circuits in it LCR and how to introduce head phone and resistance control the voice.

CO2: The students will understand magnetism and its types.

CO3: The students will understand basics of Faraday's law, Lenz's law.

CO4: The student will get the knowledge of electromagnetic theory and basic Maxwell's laws.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	02	01	02	02	02	01	02	03	02	02	02	02	02	02	02	01	02
CO2	02	02	02	02	02	02	01	02	02	01	02	01	02	02	01	02	01
CO3	02	01	02	01	02	02	02	02	01	02	01	02	01	01	02	01	02
CO4	02	02	02	02	02	01	02	01	02	02	02	01	02	02	01	02	01
Total	08	06	08	07	08	06	07	08	07	07	07	06	07	07	06	06	06

Avg	2	1.5	2	1.75	2	1.5	1.75	2	1.75	1.75	1.75	1.5	1.75	1.75	1.5	1.5	1.5

Semester: III

Course Code- Name of Course: DSC-C1–Thermal physics and statistical Mechanics I paper

V

Course Outcomes:

CO1: The students will understand kinetic theory of gases and thermometry.

CO2: The students get knowledge about laws of thermodynamics, work done, how Carnot's engine work, Reversible and irreversible process.

Course Articulation Matrix:
COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/ CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	03	02	02	02	02	02	02	03	02	02	02	02	01	02	02	01	02
CO2	03	02	02	02	02	01	02	02	02	01	02	02	02	01	02	01	01
Total	06	04	04	04	04	03	04	05	04	03	04	04	03	03	04	02	03
Avg	3	2	2	2	2	1.5	2	2.5	2	1.5	2	2	1.5	1.5	2	1	1.5

Course Code- Name of Course: DSC-C2 Waves and optics I Paper VI

Course Outcomes:

CO1: The student will explain oscillations and how superimpose waves, Lissajous figures.

CO2: The students will understand basic concepts of oscillations.

CO3: The students will get the knowledge of waves and its motion and its velocity.

CO4: The students will understand basic ideas of sound and how to control it.

CO5: The students will get the knowledge to do experiment of viscosity.

CO6: The students will get the knowledge about basic of vacuum pumps and how to control pressure.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	03	01	02	02	02	01	02	03	02	02	02	02	01	02	01	01	02
CO2	03	02	02	02	01	02	02	02	01	02	01	02	01	02	01	01	01
CO3	02	02	02	02	02	02	02	01	02	02	02	01	02	01	01	02	02
CO4	02	01	02	02	02	02	01	02	01	02	01	02	01	02	02	02	02
CO5	02	02	02	01	01	02	02	01	02	02	01	02	01	02	02	01	02
CO6	02	02	01	02	01	02	01	02	01	02	02	01	02	01	02	02	01
Total	14	10	11	11	09	09	10	09	08	12	09	10	08	10	09	09	10
Avg	2.3	1.66	1.8	1.8	1.5	1.5	1.66	1.5	1.33	2	1.5	1.66	1.33	1.66	1.5	1.5	1.66

Semester: IV

Course Code- Name of Course: DSC-D1-Thermal physics and statistical mechanics-II
Paper VII

Course Outcomes:

CO1: The students will understand thermodynamics and its problem.

CO2: The students will get the knowledge about application of black body radiation. And laws in this.

CO3: The introduction of basic of classical statistics and it's states.

CO4: Student will learn the basics of quantum statistics.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/ CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	03	01	02	01	02	02	02	03	02	01	02	02	01	02	01	01	02
CO2	03	02	01	02	01	02	01	02	02	02	01	02	02	02	02	02	01
CO3	02	02	02	02	02	01	02	02	01	02	02	01	02	02	01	01	02
CO4	02	01	02	01	01	02	02	01	01	01	01	02	02	01	02	02	02
Total	10	06	07	06	06	07	07	08	06	06	06	07	07	07	06	06	07
Avg	2.5	1.5	1.75	1.5	1.5	1.75	1.75	2	1.5	1.5	1.5	1.75	1.75	1.75	1.5	1.5	1.75

Course Code- Name of Course: DSC- D2 Waves and optics -II Paper VIII

Course Outcomes:

CO1: The students will get the knowledge about the cardinal points.

CO2: The students will get the knowledge about resolving power of optical instruments basically optics.

CO3: The students will understand the polarization of light.

CO4: Student will be capable of understanding the interference of light., Newton's rings.

CO5: Student will learn the basic knowledge Diffraction and theory of grating.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/ CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	03	02	01	02	02	02	02	02	02	01	02	02	01	02	02	01	02
CO2	03	02	02	02	01	02	02	02	01	02	01	02	02	01	02	01	02

CO3	02	02	01	02	01	02	01	02	02	02	01	02	01	02	02	02	01
CO4	02	01	02	10	02	01	02	01	01	01	02	01	02	01	01	02	02
CO5	02	01	01	02	01	02	02	01	02	02	02	02	01	02	02	01	01
Total	12	08	07	09	07	09	09	08	08	08	08	09	07	08	09	07	08
Avg	2.4	1.6	1.4	1.8	1.4	1.8	1.8	1.6	1.6	1.6	1.6	1.8	1.4	1.6	1.8	1.4	1.6

Semester: V

Course Code- Name of Course: DSE-E1 Mathematical Physics Paper –IX
Course Outcomes:

CO1: The students will get how to calculate partial differential equations and difference between partial and ordinary differential equation.

CO2: The students will understand frobenious method and special functions.

CO3: The students will acquire new concept of integrals.

CO4: The students will understand the complex analysis.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/ CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	00	00	03	00	00	00	01	01	00	00	00	00	00	00	03	00	00
CO2	00	00	03	00	00	00	01	02	00	00	00	00	00	00	03	00	00
CO3	00	00	02	00	00	00	02	02	00	00	00	00	00	00	03	00	00
CO4	00	00	02	00	00	00	02	01	00	00	01	00	00	00	02	00	00
Total	00	00	10	00	00	00	06	06	00	00	01	00	00	00	11	00	00
Avg	0	0	2.5	0	0	0	1.5	1.5	0	0	0.25	0	0	0	2.7	0	100

Course Code- Name of Course: DSE-E2-Quantum Mechanics Paper- X

Course Outcomes:

CO1: The students will be getting Idea of wave particles and uncertainty relation.

CO2: The students will get knowledge of Schrodinger's wave equations and how to calculate Wigan values.

CO3: The students will know idea of operators in quantum mechanics.

CO4: The students will understand application of Schrodinger's wave equations.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/ CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	00	00	03	00	00	00	02	03	03	00	00	00	00	00	02	00	00
CO2	00	00	03	00	00	00	02	02	03	00	00	00	00	00	02	00	00
CO3	00	00	03	00	00	00	02	02	03	00	00	00	00	00	02	00	00
CO4	00	00	03	00	00	00	02	03	03	00	00	00	00	00	02	00	00
Total	00	00	12	00	00	00	08	10	12	00	00	00	00	00	08	00	00
Avg	0	0	3	0	0	0	2	2.5	3	0	0	0	0	0	2	0	0

Course Code- Name of Course: DSE- E3- Classical Mechanics and classical Electrodynamics Paper XI

Course Outcomes:

CO1: The students will understand Lagrange formulation and in it how to calculate degrees of freedom D'Alembert principle.

CO2: The students will get knowledge of techniques of calculus of variation.

CO3: The students will understand special theory of relativity and some transformation.

CO4: The students will get knowledge of Poisson's and Laplace's equations and its physical significance.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/ CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	03	00	02	00	01	01	02	03	02	01	02	01	01	01	02	00	01
CO2	03	00	02	02	01	01	03	02	02	02	01	02	02	01	02	00	01
CO3	02	02	02	01	01	01	02	02	01	02	01	02	02	01	01	00	01
CO4	02	00	02	01	01	01	02	03	02	02	01	02	01	01	02	01	01
Total	10	02	08	04	04	04	09	10	07	07	05	07	06	04	07	00	04
Avg	2.5	.50	2	1	1	1	2.25	2.5	2.75	2.75	1.5	2.75	1.5	1	2.75	0	1

**Course Code- Name of Course: DSE-E4- Digital and analog circuits and instrumentation
Paper XII**

Course Outcomes:

    CO1: The students will able to understand basic digital logic gates.

    CO2: The students will get knowledge of transistor amplifier and sinusoidal oscillator and work.

    CO3: The students will able to basics of CRO.

    CO4: The students will get knowledge op-amp and its characteristics.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/ CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	03	00	02	01	01	01	02	03	02	02	01	02	02	02	01	00	02
CO2	03	01	02	01	02	02	01	02	02	01	02	01	02	01	01	00	02
CO3	02	01	02	02	02	02	01	02	02	01	02	02	01	01	01	00	02

CO4	02	01	02	02	02	01	02	01	02	01	02	02	02	02	02	01	02
Total	10	03	08	06	07	06	06	08	08	05	07	07	07	06	05	01	08
Avg	2.5	0.75	2	1.5	1.75	1.5	1.5	2	2	1.25	1.75	1.75	1.75	1.5	1.25	0.25	2

Semester: VI

Course Code- Name of Course: DSE-F1 Nuclear and particle physics Paper XIII
Course Outcomes:

CO1: The students will able to understand general properties of nuclei and nuclear model.
CO2: The students will able to understand the cyclotron it's construction and working. Same as Synchrocyclotron working and construction.
CO3: The students will able to understand which the nuclear detectors are.
CO4: Students will able to understand basic idea of particle physics.

Course Articulation Matrix:
COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/ CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	00	00	03	00	00	00	02	03	00	00	00	00	00	00	01	00	00
CO2	00	02	03	00	00	03	02	03	01	02	01	00	00	00	00	00	00
CO3	00	02	03	00	00	02	01	02	00	02	02	01	00	00	01	00	00
CO4	00	00	03	00	00	01	01	02	00	00	01	03	02	03	01	00	02
Total	00	04	12	00	00	06	06	10	01	04	04	04	02	03	03	00	02
Avg	0	1	3	0	0	1.5	1.5	2.5	0.25	1	1	1	0.5	0.75	0.75	0	0.5

Course Code- Name of Course: DSE-F2- Solid state physics Paper XIV
Course Outcomes:
CO1: The students will get knowledge of basic crystal structures.
CO2: The students will get knowledge X-rays diffraction, Brillouin zone and hysteresis.
CO3: Student will learn magnetic properties of matter and types of Magnetism.

CO4: The students will get knowledge of concepts of density states, Hall Effect and its related things

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	00	00	03	00	00	00	02	02	03	00	02	02	02	03	01	02	02
CO2	00	00	03	00	00	00	01	02	02	00	00	02	02	02	01	02	02
CO3	00	00	03	00	00	00	01	03	02	00	00	00	00	00	01	01	00
CO4	00	00	03	00	00	00	00	02	00	01	00	01	00	00	02	00	00
Total	00	00	12	00	00	00	04	09	07	01	02	05	04	05	05	05	04
Avg	0	0	3	0	0	0	1	2.5	1.75	0.25	0.5	1.25	1	1.25	1.25	1.25	1

Course Code- Name of Course: DSE- F3 -Atomic and molecular physics and Astrophysics Paper XV

Course Outcomes:

CO1: The students will get knowledge of atomic spectra, fine structure doublets.

CO2: The students will get knowledge about Molecular spectra mainly in hydrogen atom.

CO3: Students will able to understand the Raman spectra.

CO4: Students will able to understand big bang theory and some laws about galaxy.

CO5: The students will get knowledge stellar evolution, related to sun.

Course Articulation Matrix:
COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/ CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	00	00	02	00	00	00	00	02	01	00	00	01	00	00	00	02	02
CO2	00	00	02	00	00	00	01	02	03	00	00	02	02	01	01	01	02
CO3	00	00	02	00	00	00	01	02	03	00	00	02	02	01	01	01	02
CO4	03	02	02	02	03	02	02	02	03	02	01	01	01	02	02	02	02
CO5	03	02	02	02	03	02	02	02	03	02	01	01	01	02	02	02	00
Total	06	04	10	04	06	04	06	10	15	04	02	07	06	06	06	08	08
Avg	1.2	0.8	2	0.8	1.2	0.8	1.2	2	3	0.8	0.4	1.4	1.2	1.2	1.2	1.6	1.6

Course Code- Name of Course: DSE-F4 Energy studies and materials science Paper No. XVI

Course Outcomes:

CO1: Students will able to understand the energy and related are wind energy.

CO2: Students will able to understand solar energy and its utilization.

CO3: Students will able to understand the biomass energy.

CO4: Students will able to understand the Idea of superconductivity.

CO5: Students will able to understand of nanotechnology and how to synthesize the material.

Course Articulation Matrix:
COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
CO1	03	03	03	00	00	03	02	02	00	03	01	00	00	00	02	01	00
CO2	03	03	03	00	00	03	02	02	00	03	01	00	00	00	02	01	00
CO3	03	03	03	00	00	03	02	02	00	03	01	00	00	00	02	01	00
CO4	03	03	03	00	00	02	03	02	00	03	01	00	02	03	02	00	00
CO5	03	03	03	00	00	02	03	02	00	03	01	00	02	03	02	00	00
Total	15	15	15	00	00	13	12	12	10	15	05	00	04	06	10	03	00
Avg	3	3	3	0	0	2.6	2.4	2.4	2	3	1	0	0.8	1.2	2	0.6	0

Part A

Name of Department: Statistics

Department Vision:

▪ We are committed to develop and transform the skilled information professionals to meet the challenges of knowledge society.

Department Mission:

▪ To promote academic excellence in teaching, learning, research, collaboration and innovation for the purpose of producing competent professionals.

▪ To impart skill-based training with aptitudes for meeting the needs of global information society.

Name of Program: Bachelors of Statistics

Program Outcomes (POs)

8. Explain scientific laws and principles and applies the scientific knowledge to overcome complex problems in the life.
9. Elaborate nature, environment and society critically and rationally.
10. Give explanation terms, facts, concepts, processes, techniques, and principles of subjects.

11. Communicate the scientific knowledge in lingua-franka of the world i.e., English and gain access to the current scientific affairs.
12. Enlighten the people around by uncovering the scientific principles behind the magic and superstitions.
13. Show sensitivity to the matters of environment sustainability and use science for the progress of humanity without damaging the ecosystem.
14. Students will enhance their skill for generating new knowledge through research.

Syllabus Structure: Current (Choice Based Credit System)

Year of Implementation of this syllabus: 2018-19

Part B

Syllabus Structure: Choice Based Credit System

- Two-year regular program in Four semesters with CBCS (16 Credits)
- Theory Examination: 08 Theory Papers: 400 Marks (50 Pattern)
- Practical Examination: 02 Practical Papers: 200 marks (80+20 Pattern)
- Total Exam. Marks: 100 Marks for each semester.
- Grand Total (Sem. I + Sem. II+ Sem. III+ Sem. IV) = 600 Marks

Semester-wise courses, their COs and Mapping Matrices

Semester: I

 Course Code- Name of Course: DSC-7A – STATISTICS-1 – DISCRIPTIVE STATISTICS -I

Course Outcomes:

CO1: Compute various measures of central tendencies, dispersion, moments, skewness, kurtosis and to interpret them.

CO2: Analyze data pertaining to attributes and to interpret the results.

CO3: Distinguish between random and non-random experiments.

CO4: Find the probabilities of various events. To understand concept of conditional probability and independence of events.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/CO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	03	02	03	01	01	00
CO2	01	00	01	00	00	01
CO3	02	01	02	01	00	00
CO4	00	00	00	00	00	00
Total	06	03	06	02	01	01
Avg	1.5	0.75	1.5	0.5	0.25	0.25

Course Outcomes:

CO1: Compute various measures of central tendencies, dispersion, moments, skewness, kurtosis and to interpret them.

CO2: Analyze data pertaining to attributes and to interpret the results.

CO3: Distinguish between random and non-random experiments.

CO4: Find the probabilities of various events. To understand concept of conditional probability and independence of events.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/CO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	02	01	03	01	00	00
CO2	02	01	03	02	00	01
CO3	00	00	01	00	01	00
CO4	01	02	02	02	00	00
Total	05	04	09	05	01	01
Avg	1.25	1	2.25	1.25	0.25	0.25

Semester: II

Course Code- Name of Course: DSC-7B– STATISTICS-III – DISCRIPTIVE STATISTICS -II

Course Outcomes:

CO1: Compute correlation coefficient, interpret its value. Compute regression coefficient, interpret its value and use in regression analysis. Compute various index numbers.

CO2: Apply discrete probability distributions studied in this course in different situations.

CO3: Distinguish between discrete variables and study of their distributions. Know some standard discrete probability distributions with real life situations.

CO4: Understand concept of bivariate distributions and computation of related probabilities

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/CO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	01	02	03	01	00	01
CO2	02	01	03	00	01	00
CO3	01	00	02	01	01	01
CO4	02	02	03	01	02	01
Total	06	05	11	03	04	03
Avg	1.5	1.25	2.75	0.75	1	0.75

Course Code- Name of Course: DSC-8B– STATISTICS-IV- DISCRETE PROBABILITY DISTRIBUTIONS

Course Outcomes:

CO1: Compute correlation coefficient, interpret its value.
CO2: Compute regression coefficient, interpret its value and use in regression analysis.
CO3: Compute various index numbers.
CO4: Apply discrete probability distributions studied in this course in different situations. Distinguish between discrete variables and study of their distributions.
CO5: Know some standard discrete probability distributions with real life situations.
CO6: Understand concept of bivariate distributions and computation of related probabilities

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/CO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	02	01	02	03	01	01
CO2	02	03	03	01	01	00
CO3	02	02	01	03	01	01
CO4	03	02	03	02	00	01
CO5	02	01	02	01	00	01
CO6	02	03	01	02	00	00
Total	13	12	12	12	03	04
Avg	2.16	2	2	2	0.5	0.66

Semester: III

Course Code- Name of Course: DSC-7C– STATISTICS-V- PROBABILITY DISTRIBUTIONS-I

Course Outcomes:

CO1: Understand concept of discrete and continuous distributions with real life situations. Distinguish between discrete and continuous distribution.

CO2: Find various measures of r.v. and probabilities using its probability distributions

CO3: Know the relations among the different distributions.

CO4: Understand the concept of Transformation of Univariate and Bivariate continuous r. v.

CO5: Understand the concept of Multiple Linear Regression, Multiple correlation and partial correlation. Know the concept of sampling theory.

CO6: Understand the need of Vital Statistics and concept of mortality and fertility

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/CO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	02	03	03	01	02	01
CO2	02	01	03	02	01	00
CO3	01	02	03	02	01	00
CO4	02	03	02	01	00	02
CO5	02	01	03	02	01	00
CO6	02	03	02	03	00	02
Total	11	13	16	11	05	05
Avg	1.83	2.16	2.66	1.83	0.83	0.83

Course Code- Name of Course: DSC-8C– STATISTICS-VI- STATISTICAL METHODS-I

Course Outcomes:

CO1: Understand concept of discrete and continuous distributions with real life situations. Distinguish between discrete and continuous distribution.

CO2: Find various measures of r.v. and probabilities using its probability distributions. Know the relations among the different distributions.

CO3: Understand the concept of Transformation of Univariate and Bivariate continuous r. v.

CO4: Understand the concept of Multiple Linear Regression, Multiple correlation and partial correlation.

CO5: Know the concept of sampling theory. Understand the need of Vital Statistics and concept of mortality and fertility

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/CO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	02	02	03	02	01	00
CO2	01	02	03	02	01	00
CO3	02	03	02	02	00	01
CO4	02	02	03	01	01	00
CO5	01	02	01	02	01	01
Total	08	11	12	09	04	02
Avg	1.6	2.2	2.4	1.8	0.8	0.4

Semester: IV

Course Code- Name of Course: DSC-7D– STATISTICS-VII- PROBABILITY DISTRIBUTIONS-II

Course Outcomes:

CO1: Know some standard continuous probability distributions with real life situations. Distinguish between various continuous distributions.

CO2: Find the various measures of continuous r. v. and probabilities using its probability distributions. Understand the relation among the different distributions.

CO3: Understand the Chi-square, t and F distributions with their applications and inter relations. Know the concept and use of time series,

CO4: Understand the meaning, purpose and use of Statistical Quality Control,

construction and working of control charts for variables and attributes.

CO5: Apply the small sample test and large sample test in various situations.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/CO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	02	03	02	03	01	01
CO2	02	03	02	01	01	00
CO3	01	01	03	02	02	00
CO4	02	02	03	02	00	01
CO5	01	02	03	02	02	01
Total	08	11	13	10	06	03
Avg	**1.6**	**2.2**	**2.6**	**2**	**1.2**	**0.6**

Course Code- Name of Course: DSC-8D– STATISTICS-VIII- STATISTICAL METHODS-II

Course Outcomes:

CO1: Know some standard continuous probability distributions with real life situations. Distinguish between various continuous distributions.

CO2: Find the various measures of continuous r. v. and probabilities using its probability distributions. Understand the relation among the different distributions.

CO3: Understand the Chi-square, t and F distributions with their applications and inter relations.

CO4: Know the concept and use of time series, Understand the meaning, purpose and use of Statistical Quality Control, construction and working of control charts for variables and attributes.

CO5: Apply the small sample test and large sample test in various situations.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/CO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	01	02	03	01	01	01
CO2	02	01	03	02	01	01
CO3	02	01	02	01	00	01
CO4	01	00	01	02	00	00
CO5	02	02	02	01	00	01
Total	08	06	11	07	02	04
Avg	**1.6**	**1.2**	**2.2**	**1.4**	**0.4**	**0.8**

Part A

Name of Department: History

Department Vision:

- We are committed to develop and transform the skilled information professionals to meet the challenges of knowledge society.

Department Mission:

- To promote academic excellence in teaching, learning, research, collaboration and innovation for the purpose of producing competent LIS professionals.
- To impart skill-based training with aptitudes for meeting the needs of global information society.

Name of Program: Bachelors of History

Program Outcomes (POs)

1. Attained knowledge with facts and figures related to subjects of the concerned discipline.
2. Understood the basic concepts, fundamental principles, and various theories in the above-mentioned subjects.
3. Realized the importance literature in creating aesthetic, mental, moral, intellectual development of an individual and increasing a healthy society.
4. Understood how issues in social science influence literature and how literature can provide solutions to the social issues.
5. Gained the analytical ability to analyze critically the literature and social issues, appreciate the strength and suggest the improvements for better results.
6. Appreciated that social issues are no longer permanent and largely depend on political, economic changes and also on the developments in science and technology.
7. Convinced himself/herself that study of literature and social sciences not only help to evolve better individual and better society but also help to make the life of an individual happier and more meaningful.
8. Participated in various social and cultural activities voluntarily.
9. Written articles, novels, stories to spread the message of equality, nationality, social harmony, etc.
10. Emerged as a multifaceted personality who is self-dependent; earning his own bread and butter and also creating opportunities to do so.
11. Realized that pursuit of knowledge is a lifelong process and in combination with untiring efforts and positive attitude are necessary qualities for leading a successful life.
12. Developed various communication skills such as reading, listing, speaking, etc., which will help in expressing ideas and views clearly and effectively.

Program Specific Outcomes (PSOs)

1. Acquired Knowledge with facts and figures related concerned with subjects such as History.
2. Know the background and events regarding the formation of Maharashtra.
3. Understanding the basic concepts, fundamental principles and various theories in the above-mentioned subjects.

4. The students will know about the agricultural condition development of trade and industry as well as the social religious and architectural milieu of the period.

Syllabus Structure: Current (Choice Based Credit System)

Year of Implementation of this syllabus: 2018-19

Part B

Syllabus Structure: Choice Based Credit System

- Three-year regular program in Six semesters with CBCS (64 Credits)
- Theory Examination: 16 Theory Papers: 800 Marks (40+10 Pattern)
- Practical Examination: 03 Practical Papers :300 marks (80+20 Pattern)
- Total Exam. Marks: Marks for each semester.
- Grand Total (Sem. I + Sem. II + Sem. III + Sem. IV + Sem. V + Sem. VI) = 2400 Marks

Semester-wise courses, their COs and Mapping Matrices

Semester: I

Course Code- Name of Course: Rise of MarathaPower (1600-1707) (I) Polity,Society and Economy underthe Marathas (1600-1707) (II) Paper I
Course Outcomes:

> **CO1:** Evaluate the socio-economic and political condition of Maharashtra in the early 17th century.
> **CO2:** Explain the contributions of immigrants (Marathas) on region.
> **CO3:** Reflect in written and oral form on various aspects of Maharashtra tradition, its heritage and contemporary identity.
> **CO4:** Explain the reasons behind Chhatrapati Shivaji early conflicts with the regional lords and the outsiders.
> **CO5:** Compare socio-economic and political condition of Maratha period and present

Course Articulation Matrix:
COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CO1	01	02	02	03	03	03	02	00	03	00	01	00	03	02	02	03
CO2	02	02	02	03	02	03	03	00	01	00	02	00	03	02	02	03
CO3	02	02	03	02	02	03	03	01	02	02	02	02	02	02	02	02
CO4	03	02	02	03	02	03	02	00	00	00	01	00	02	02	02	02

PO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CO5	01	02	02	02	01	02	02	01	00	00	01	02	02	02	02	02
Total	09	10	11	13	10	14	12	02	06	02	07	04	12	10	10	12
Avg	1.8	2	2.2	2.6	2	2.8	2.4	0.4	1.2	0.4	1.4	0.8	2.4	2	2	2.4

Semester II

Course Code- Name of Course: Polity,Society and Economy under the Marathas (1600-1707) (II) Paper II

Course Outcomes:

CO1: Evaluate the socio-economic and political condition of Maharashtrain the early 17th century.
CO2: Explain the contributions of immigrants (Marathas) on region.
CO3: Reflect in written and oral form on various aspects of Maharashtratradition, its heritage and contemporary identity.
CO4: Explain the reasons behind Chhatrapati Shivaji early conflicts with theregional lords and the outsiders.
 CO5: Compare socio-economic and political condition of Maratha period and present

Course Articulation Matrix:
COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO/CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CO1	01	02	02	03	03	03	02	00	03	00	01	00	03	02	02	03
CO2	02	02	02	03	02	03	03	00	01	00	02	00	03	02	02	03
CO3	02	02	03	02	02	03	03	01	02	02	02	02	02	02	02	02
CO4	03	02	02	03	02	03	02	00	00	00	01	00	02	02	02	02
CO5	01	02	02	02	01	02	02	01	00	00	01	02	02	02	02	02
Total	09	10	11	13	10	14	12	02	06	02	07	04	12	10	10	12
Avg	1.8	2	2.2	2.6	2	2.8	2.4	0.4	1.2	0.4	1.4	0.8	2.4	2	2	2.4

Semester: III

Course Code- Name of Course: History of Modern Maharashtra (1900-1960) (CBCS)
Paper III

Course Outcomes:

CO1: Understand the beginnings and growth of nationalist consciousness in Maharashtra
CO2: Explain the contribution of Maharashtra to the national movement
CO3: Give an account of various movements of the peasants, workers, women and backward classes.
CO4: Know the background and events which lead to the formation of separate state of Maharashtra

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CO1	02	02	02	02	02	03	02	00	01	00	01	00	02	02	02	01
CO2	02	02	02	03	02	03	02	01	00	00	01	01	02	02	02	01
CO3	02	02	02	02	02	02	02	01	01	01	01	01	02	02	02	01
CO4	02	02	02	02	02	02	02	00	01	01	01	01	02	02	02	01
Total	08	08	08	09	08	10	08	02	03	02	04	03	08	08	08	04
Avg	2	2	2	2.25	2	2.5	2	0.5	0.75	0.5	1	0.75	2	2	2	1

Course Code- Name of Course: History of India (1757-1857) IV

Course Outcomes:

CO1: Acquaint himself with significant events leading to establishment of the rule of East India Company**.**

CO2: Know the Colonial policy adopted ny the company to consolidate its rule in

India.

CO3: Explain the various revolts against rule of East India Company.

Course Articulation Matrix:
COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CO1	02	02	02	03	03	03	02	02	02	00	03	00	02	02	02	01
CO2	02	01	02	03	02	02	01	02	02	01	02	00	02	02	02	01
CO3	01	02	02	02	02	01	02	01	02	01	02	00	02	02	02	01
Total	05	05	06	08	07	06	05	05	06	02	07	00	06	06	06	03
Avg	1.67	1.67	2	2.67	2.33	2	1.67	1.67	2	0.67	2.33	0	2	2	2	1

Semester IV

Course Code- Name of Course: History of modern Maharashtra (1960 - 2000) Paper V
Course Outcomes:

CO1: Know the background and events which lead to the formation ofseparate state of Maharashtra

CO2: Acquaint himself with the contribution of eminent leaders ofMaharashtra

CO3: Know about the economic transformation of Maharashtra

CO4: Understand the salient features of changes in society

CO5: Explain the growth of education

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CO1	02	02	02	02	02	03	02	00	01	00	01	00	02	02	02	01
CO2	02	02	02	03	02	03	02	01	00	00	01	01	02	02	02	01
CO3	02	02	02	02	02	02	02	01	01	01	01	01	02	02	02	01
CO4	02	02	02	02	02	02	02	00	01	01	01	01	02	02	02	01
Total	08	08	08	09	08	10	08	02	03	02	04	03	08	08	08	04

| Avg | 2 | 2 | 2 | 2.25 | 2 | 2.5 | 2 | 0.5 | 0.75 | 0.5 | 1 | 0.75 | 2 | 2 | 2 | 1 |

Course Code- Name of Course: History of freedom struggle (1858- 1947) (CBCS) VI
Course Outcomes:

CO1: Understand the events which lead to the growth of nationalism in India
CO2: Acquaint himself with the major events of the freedom struggle underthe leadership of Mahatma Gandhi
CO3: Know the concept of communalism and the causes and effects of thepartition of India

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CO1	02	02	02	03	03	03	02	02	02	00	03	00	02	02	02	01
CO2	02	01	02	03	02	02	01	02	02	01	02	00	02	02	02	01
CO3	01	02	02	02	02	01	02	01	02	01	02	00	02	02	02	01
Total	05	05	06	08	07	06	05	05	06	02	07	00	06	06	06	03
Avg	1.67	1.67	2	2.67	2.33	2	1.67	1.67	2	0.67	2.33	0	2	2	2	1

Semester: V

Course Code- Name of Course: DSE- E61 – Early India (from beginning to 4th c. BC) Paper VII

Course Outcomes:

> **CO1:** Understand the transition of humans in India from hunters to farmers
> **CO2:** Explain the transition from early to later Vedic Period
> **CO3:** Clarify the causes for the first and second urbanizations
> **CO4:** Give an account of teaching of Gautam Buddha and VardhamanaMahavir
> **CO5:** Describe the rise and growth of Mauryan Empire
> **CO6:** Explain the silent features of Ashokas Dhamma
> **CO7:** Know the political,economy and religious development which tookplace in early historic India
> **CO8:** Explain the role played by major Satavahana,kushana,gupta and vakataka Kings
> **CO9:** Give an account of the developments in the post gupta period
> **CO10:** Have an informed opinion about the society and culture of ancientIndia

Course Articulation Matrix:
COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CO1	02	02	01	02	02	03	02	00	01	00	02	00	02	02	02	02
CO2	02	02	01	02	01	02	02	00	01	00	02	00	02	02	02	01
CO3	02	02	02	02	01	02	02	00	02	00	01	00	02	02	02	01
CO4	02	02	01	02	02	03	02	00	01	00	02	00	02	02	02	02
CO5	02	02	01	02	01	02	02	00	01	00	02	00	02	02	02	01
CO6	02	02	02	02	01	02	02	00	02	00	01	00	02	02	02	01
CO7	02	02	01	02	01	02	02	00	01	00	02	00	02	02	02	01
CO8	02	02	02	02	01	02	02	00	02	00	01	00	02	02	02	01
CO9	02	02	01	02	01	02	02	00	01	00	02	00	02	02	02	01
CO10	02	02	02	02	01	02	02	00	02	00	01	00	02	02	02	01
Total	20	20	14	20	12	22	20	00	14	00	16	00	20	20	20	12
Avg	**2**	**2**	**1.4**	**2**	**1.2**	**2.2**	**2**	**0**	**1.4**	**0**	**1.6**	**0**	**2**	**2**	**2**	**1.2**

Course Code- Name of Course: DSE-E62- History of Medieval India (1206-1526 AD)
Paper VIII

Course Outcomes:

CO1: Evaluate the socio-economic and political history of Medieval India.

CO2: Interpret the various institutions developed by Medieval rulers.

CO3: Compare the nature of rule.

CO4: Evaluate the significance of the rulers in various fields.

CO5: Comprehend the basic features of various institutions developed inthis period.

CO6: Demonstrate the continuity and change in Indian History.

CO7: Compare the system of trade & commerce during the period ofMughals.

CO8: Criticize the nature of village community.

CO9: Link some aspects of fiscals & monetary system of Mughals with other regional rulers.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CO1	02	02	01	02	02	03	02	00	01	00	02	00	02	02	02	02
CO2	02	02	01	02	01	02	02	00	01	00	02	00	02	02	02	01
CO3	02	02	02	02	01	02	02	00	02	00	01	00	02	02	02	01
CO4	02	02	01	02	02	03	02	00	01	00	02	00	02	02	02	02
CO5	02	02	01	02	01	02	02	00	01	00	02	00	02	02	02	01
CO6	02	02	02	02	01	02	02	00	02	00	01	00	02	02	02	01
CO7	02	02	01	02	01	02	02	00	01	00	02	00	02	02	02	01
CO8	02	02	02	02	01	02	02	00	02	00	01	00	02	02	02	01
CO9	02	02	01	02	01	02	02	00	01	00	02	00	02	02	02	01
Total	18	18	11	16	09	17	16	00	11	00	13	00	16	16	16	09
Avg	2	2	1.22	1.77	1	1.88	1.77	0	1.22	0	1.44	0	1.77	1.77	1.77	1

Course Code- Name of Course: DSE-E63- Age of Revolution Paper IX
Course Outcomes:
     CO1: Explain the causes and consequences of the Reformation
     CO2: Give an account of the role played by Martin Luther
     CO3: Explain the silent features of the Industrial Revolution
     CO4: Give an account of the American Revolution
     CO5: Explain the causes, effects and major events of French Revolution
     CO6: Explain the role of major leaders of the French Revolution.
     CO7: Know the causes and consequences of the Glorious Revolution inEngland
     CO8: Explain the concept of Nationalism and account for its rise and spread
     CO9: Describe the unification of Italy and Germany
     CO10: Give an account of the rise, growth and impact of imperialism
     CO11: Explain the signification of the partition of Africa
     CO12: Know the life and thoughts of important leaders like Metternich, Karl Marx and
Abraham Lincoln

Course Articulation Matrix:
COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CO1	02	02	01	02	02	03	02	00	01	00	02	00	02	02	02	02
CO2	02	02	01	02	01	02	02	00	01	00	02	00	02	02	02	01
CO3	02	02	02	02	01	02	02	00	02	00	01	00	02	02	02	01
CO4	02	02	01	02	02	03	02	00	01	00	02	00	02	02	02	02
CO5	02	02	01	02	01	02	02	00	01	00	02	00	02	02	02	01
CO6	02	02	02	02	01	02	02	00	02	00	01	00	02	02	02	01
CO7	02	02	01	02	01	02	02	00	01	00	02	00	02	02	02	01
CO8	02	02	02	02	01	02	02	00	02	00	01	00	02	02	02	01
CO9	02	02	01	02	01	02	02	00	01	00	02	00	02	02	02	01

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CO10	02	02	02	02	01	02	02	00	02	00	01	00	02	02	02	01
CO11	02	02	02	02	01	02	02	00	02	00	01	00	02	02	02	01
CO12	02	02	01	02	01	02	02	00	01	00	02	00	02	02	02	01
Total	24	24	17	24	14	26	24	00	17	00	19	00	24	24	24	14
Avg	2	2	1.42	2	1.17	2.17	2	0	1.42	0	1.58	0	2	2	2	1.17

Course Code- Name of Course: DSE-E64- Political History of Marathas Paper X
Course Outcomes:

CO1: Describe the political conditions of the Marathas up to the year 1740
CO2: Explain the role of Balaji Bajirao
CO3: Explain the causes and effects if the battle of Panipat
CO4: Understand the political condition of the Marathas after 1761
CO5: Critically analyze the causes for the decline of Maratha power.
CO6: Know the various sources for the writing the history of Marathas
CO7: Explain the significant development in the polity of Marathas
CO8: Describe the economic conditions
CO9: Explain the social conditions

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CO1	02	02	01	02	02	03	02	00	01	00	02	00	02	02	02	02
CO2	02	02	01	02	01	02	02	00	01	00	02	00	02	02	02	01
CO3	02	02	02	02	01	02	02	00	02	00	01	00	02	02	02	01
CO4	02	02	01	02	02	03	02	00	01	00	02	00	02	02	02	02
CO5	02	02	01	02	01	02	02	00	01	00	02	00	02	02	02	01

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CO6	02	02	02	02	01	02	02	00	02	00	01	00	02	02	02	01
CO7	02	02	01	02	01	02	02	00	01	00	02	00	02	02	02	01
CO8	02	02	02	02	01	02	02	00	02	00	01	00	02	02	02	01
CO9	02	02	01	02	01	02	02	00	01	00	02	00	02	02	02	01
Total	18	18	12	18	11	20	18	00	12	00	15	0	18	18	18	11
Avg	2	2	1.33	2	1.22	2.22	2	0	1.33	0	1.67	0	2	2	2	1.22

Course Code- Name of Course: DSE-E65- History: Its Theory Paper XI

Course Outcomes:

CO1: Understand the definition and scope of the subject of History

CO2: Know the process of acquiring historical data

CO3: Explain the process of presenting and writing history

CO4: Understand the methods of writing history

CO5: Understand the nature of archival sources

CO6: Gain conceptual clarity about recent trends in History

CO7: Know about the application of history in Museums

CO8: Explain the concept and scope Heritage tourism

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CO1	02	02	01	02	02	03	02	00	01	00	02	00	02	02	02	02
CO2	02	02	01	02	01	02	02	00	01	00	02	00	02	02	02	01
CO3	02	02	02	02	01	02	02	00	02	00	01	00	02	02	02	01
CO4	02	02	01	02	02	03	02	00	01	00	02	00	02	02	02	02

CO5	02	02	01	02	01	02	02	00	01	00	02	00	02	02	02	01
CO6	02	02	02	02	01	02	02	00	02	00	01	00	02	02	02	01
CO7	02	02	01	02	01	02	02	00	01	00	02	00	02	02	02	01
CO8	02	02	02	02	01	02	02	00	02	00	01	00	02	02	02	01
Total	16	16	11	16	10	18	16	00	11	00	13	00	16	16	16	10
Avg	**2**	**2**	**1.375**	**2**	**1.25**	**2.25**	**2**	**0**	**1.375**	**0**	**1.625**	**0**	**2**	**2**	**2**	**1.25**

Semester VI
Course Code- Name of Course: DSE- Ancient India (From 4th c. BC to 7th c. AD)
Course Outcomes:

CO1: Understand the transition of humans in India from hunters to farmers
CO2: Explain the transition from early to later Vedic Period
CO3: Clarify the causes for the first and second urbanizations
CO4: Give an account of teaching of Gautam Buddha and Vardhman Mahavir
CO5: Describe the rise and growth of Mauryan Empire
CO6: Explain the silent features of Ashoka's Dhamma
CO7: Know the political, economy and religious development which tookplace in early historic India
CO8: Explain the role played by major Satavahana, Kushana, Gupta and vakataka Kings
CO9: Give an account of the developments in the post Gupta period
CO10: Have an informed opinion about the society and culture of ancientIndia

Course Articulation Matrix:
COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CO1	02	02	01	02	02	03	02	00	01	00	02	00	02	02	02	02
CO2	02	02	01	02	01	02	02	00	01	00	02	00	02	02	02	01
CO3	02	02	02	02	01	02	02	00	02	00	01	00	02	02	02	01

CO4	02	02	01	02	02	03	02	00	01	00	02	00	02	02	02	02
CO5	02	02	01	02	01	02	02	00	01	00	02	00	02	02	02	01
CO6	02	02	02	02	01	02	02	00	02	00	01	00	02	02	02	01
CO7	02	02	01	02	01	02	02	00	01	00	02	00	02	02	02	01
CO8	02	02	02	02	01	02	02	00	02	00	01	00	02	02	02	01
CO9	02	02	01	02	01	02	02	00	01	00	02	00	02	02	02	01
CO10	02	02	02	02	01	02	02	00	02	00	01	00	02	02	02	01
Total	20	20	14	20	12	22	20	00	14	00	16	00	20	20	20	12
Avg	**2**	**2**	**1.4**	**2**	**1.2**	**2.2**	**2**	**0**	**1.4**	**0**	**1.6**	**0**	**2**	**2**	**2**	**1.2**

Course Code- Name of Course: DSE- E187 - History of Medieval India(1526-1707) AD Paper XIII

Course Outcomes:

CO1: Evaluate the socio-economic and political history of Medieval India.
CO2: Interpret the various institutions developed by Medieval rulers.
CO3: Compare the nature of rule.
CO4: Evaluate the significance of the rulers in various fields.
CO5: Comprehend the basic features of various institutions developed inthis period.
CO6: Demonstrate the continuity and change in Indian History.
CO7: Compare the system of trade & commerce during the period ofMughals.
CO8: Criticize the nature of village community.
CO9: Link some aspects of fiscals & monetary system of Mughals with other regional rulers.

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CO1	02	02	01	02	02	03	02	00	01	00	02	00	02	02	02	02
CO2	02	02	01	02	01	02	02	00	01	00	02	00	02	02	02	01
CO3	02	02	02	02	01	02	02	00	02	00	01	00	02	02	02	01
CO4	02	02	01	02	02	03	02	00	01	00	02	00	02	02	02	02
CO5	02	02	01	02	01	02	02	00	01	00	02	00	02	02	02	01
CO6	02	02	02	02	01	02	02	00	02	00	01	00	02	02	02	01
CO7	02	02	01	02	01	02	02	00	01	00	02	00	02	02	02	01
CO8	02	02	02	02	01	02	02	00	02	00	01	00	02	02	02	01
CO9	02	02	01	02	01	02	02	00	01	00	02	00	02	02	02	01
Total	18	18	12	18	11	20	18	00	12	00	15	00	18	18	18	11
Avg	**2**	**2**	**1.33**	**2**	**1.22**	**2.22**	**2**	**0**	**1.33**	**0**	**1.67**	**0**	**2**	**2**	**2**	**1.22**

Course Code- Name of Course: DSE-E188- Making of Modern world(16ᵗʰ to 19ᵗʰ Century) Paper XIV

Course Outcomes:

CO1: Explain the causes and consequences of the Reformation
CO2: Give an account of the role played by Martin Luther
CO3: Explain the silent features of the Industrial Revolution
CO4: Give an account of the American Revolution
CO5: Explain the causes, effects and major events of French Revolution
CO6: Explain the role of major leaders of the French Revolution.
CO7: Know the causes and consequences of the Glorious Revolution inEngland
CO8: Explain the concept of Nationalism and account for its rise and spread
CO9: Describe the unification of Italy and Germany
CO10: Give an account of the rise, growth and impact of imperialism
CO11: Explain the signification of the partition of Africa
CO12: Know the life and thoughts of important leaders like Metternich, Karl Marx and Abraham Lincoln

Course Articulation Matrix:
COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CO1	02	02	01	02	02	03	02	00	01	00	02	00	02	02	02	02
CO2	02	02	01	02	01	02	02	00	01	00	02	00	02	02	02	01
CO3	02	02	02	02	01	02	02	00	02	00	01	00	02	02	02	01
CO4	02	02	01	02	02	03	02	00	01	00	02	00	02	02	02	02
CO5	02	02	01	02	01	02	02	00	01	00	02	00	02	02	02	01
CO6	02	02	02	02	01	02	02	00	02	00	01	00	02	02	02	01
CO7	02	02	01	02	01	02	02	00	01	00	02	00	02	02	02	01
CO8	02	02	02	02	01	02	02	00	02	00	01	00	02	02	02	01
CO9	02	02	01	02	01	02	02	00	01	00	02	00	02	02	02	01

CO10	02	02	02	02	01	02	02	00	02	00	01	00	02	02	02	01
CO11	02	02	02	02	01	02	02	00	02	00	01	00	02	02	02	01
CO12	02	02	01	02	01	02	02	00	01	00	02	00	02	02	02	01
Total	24	24	17	24	14	26	24	00	17	00	19	00	24	24	24	14
Avg	2	2	1.42	2	1.17	2.17	2	0	1.42	0	1.58	0	2	2	2	1.17

Course Code- Name of Course: DSE-E189- Polity, Economy and Society under the Marathas Paper XV

Course Outcomes:

CO1: Describe the political conditions of the Marathas upto the year 1740

CO2: Explain the role of Balaji Bajirao

CO3: Explain the causes and effects if the battle of Panipat

CO4: Understand the political condition of the Marathas after 1761

CO5: Critically analyze the causes for the decline of Maratha power.

CO6: Know the various sources for the writing the history of Marathas

CO7: Explain the significant development in the polity of Marathas

CO8: Describe the economic conditions

CO9: Explain the social conditions

Course Articulation Matrix:

COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CO1	02	02	01	02	02	03	02	00	01	00	02	00	02	02	02	02
CO2	02	02	01	02	01	02	02	00	01	00	02	00	02	02	02	01
CO3	02	02	02	02	01	02	02	00	02	00	01	00	02	02	02	01
CO4	02	02	01	02	02	03	02	00	01	00	02	00	02	02	02	02
CO5	02	02	01	02	01	02	02	00	01	00	02	00	02	02	02	01

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CO6	02	02	02	02	01	02	02	00	02	00	01	00	02	02	02	01
CO7	02	02	01	02	01	02	02	00	01	00	02	00	02	02	02	01
CO8	02	02	02	02	01	02	02	00	02	00	01	00	02	02	02	01
CO9	02	02	01	02	01	02	02	00	01	00	02	00	02	02	02	01
Total	18	18	12	18	11	20	18	00	12	00	15	00	18	18	18	11
Avg	2	2	1.33	2	1.22	2.22	2	0	1.33	0	1.67	0	2	2	2	1.22

Course Code- Name of Course: DSE-E190- Methods and application of History Paper XVI
Course Outcomes:

    CO1: Understand the definition and scope of the subject of History
    CO2: Know the process of acquiring historical data
    CO3: Explain the process of presenting and writing history
    CO4: Understand the methods of writing history
    CO5: Understand the nature of archival sources
    CO6: Gain conceptual clarity about recent trends in History
    CO7: Know about the application of history in Museums
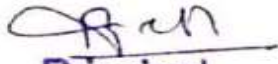   **CO8:** Explain the concept and scope Heritage tourism

Course Articulation Matrix:
COs – POs& PSOs mapping matrix (1-low, 2-medium, 3-high, 0-No correlation)

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CO1	02	02	01	02	02	03	02	00	01	00	02	00	02	02	02	02
CO2	02	02	01	02	01	02	02	00	01	00	02	00	02	02	02	01
CO3	02	02	02	02	01	02	02	00	02	00	01	00	02	02	02	01
CO4	02	02	01	02	02	03	02	00	01	00	02	00	02	02	02	02

CO5	02	02	01	02	01	02	02	00	01	00	02	00	02	02	02	01
CO6	02	02	02	02	01	02	02	00	02	00	01	00	02	02	02	01
CO7	02	02	01	02	01	02	02	00	01	00	02	00	02	02	02	01
CO8	02	02	02	02	01	02	02	00	02	00	01	00	02	02	02	01
Total	16	16	11	16	10	18	16	00	11	00	13	00	16	16	16	10
Avg	**2**	**2**	**1.38**	**2**	**1.25**	**2.25**	**2**	**0**	**1.375**	**0**	**1.63**	**0**	**2**	**2**	**2**	**1.25**