



SHRAMIK VIDYARTHI DNYANSEVA SANSTHA'S

# AMDAR DEEPAKBHAI KESARKAR SCIENCE COLLEGE

( AFFILIATED TO UNIVERSITY OF MUMBAI )

DODAMARG, DIST. – SINDHUDURG 416 512 ( M. S.)

EMAIL – [dkscsci@gmail.com](mailto:dkscsci@gmail.com)

TEL. NO. – 02363 256755

ESTD. – 2012

COLLEGE CODE – 166

## Criteria 2

### Teaching Learning and Evaluation

#### Key Indicator – 2.6. Students Performance & Learning Outcome





SHRAMIK VIDYARTHI DNYANSEVA SANSTHA'S

**AMDAR DEEPAKBHAI KESARKAR SCIENCE COLLEGE**

( AFFILIATED TO UNIVERSITY OF MUMBAI )

DODAMARG, DIST. – SINDHUDURG 416 512 ( M. S.)

EMAIL – [dkscsci@gmail.com](mailto:dkscsci@gmail.com)

TEL. NO. – 02363 256755

ESTD. – 2012

COLLEGE CODE – 166

## Criteria 2

### Teaching Learning and Evaluation

#### Key Indicator – 2.6.

#### Students Performance & Learning Outcome

**Metric No. 2.6.1. Programme Outcomes (POs) and Course Outcomes (COs) for all Programmes offered by the institution are stated and displayed on website**

  
Principal

Amdar. Deepakbhai Kesarkar Science College  
Dodamarg, Tal.Dodamarg, Dist.Sindhudrug





SHRAMIK VIDYARTHI DNYANSEVA SANSTHA'S

# AMDAR DEEPAKBHAI KESARKAR SCIENCE COLLEGE

( AFFILIATED TO UNIVERSITY OF MUMBAI )

DODAMARG, DIST. – SINDHUDURG 416 512 ( M. S. )

EMAIL – [dkscsci@gmail.com](mailto:dkscsci@gmail.com)

TEL. NO. – 02363 256755

ESTD. – 2012

COLLEGE CODE – 166

## **Criteria 2 - Teaching Learning and Evaluation**

### **Key Indicator – 2.6. Students Performance & Learning Outcome**

**Metric No. 2.6.1. Programme Outcomes (POs) and Course Outcomes (COs) for all Programmes offered by the institution are stated and displayed on website**

#### **Index**

Sr. No.	Particulars
1	Programme Outcomes
2	Programme Specific Outcome & Course Outcomes







SHRAMIK VIDYARTHI DNYANSEVA SANSTHA'S

# AMDAR DEEPAKBHAI KESARKAR SCIENCE COLLEGE

( AFFILIATED TO UNIVERSITY OF MUMBAI )

DODAMARG, DIST. – SINDHUDURG 416 512 ( M. S.)

EMAIL – [dkscsci@gmail.com](mailto:dkscsci@gmail.com)

TEL. NO. – 02363 256755

ESTD. – 2012

COLLEGE CODE – 166

## Program outcomes

### Bachelor of Science

After completing a BSc Program, a learner will be able to

1. Developing a scientific mindset and awareness as well as the capacity to employ the tools, abilities, and contemporary methods that are required
2. To provide the student with the opportunity to make practical explorations of the many ideas and methodologies found in various scientific disciplines.
3. Develop the process of designing, implementing, documenting, and evaluating the results of various experiments using scientific thinking and methodology.
4. To understand the impact of scientific measures on the environment and social environment and to emphasize the importance of sustainable development.
5. To gain proficiency in practical work, experiments, lab materials, and equipment as well as in the collection and interpretation of scientific data in order to contribute to science.
6. Provide practical experience to the students as a part of the course to develop scientific ability to work in the field of the research and other fields of their own interest to make them fit for the society.
7. To build capacity to use the information received to make the country self-reliant to grow in agriculture and other related sectors.
8. Inculcate scientific attitude to make the students open minded and critical curious.
9. To make use of scientific understanding in order to preserve, enhance, and harmonize our living environment.
10. To execute social competence including listening, speaking, observational, effective interactive skill and presentation skill to meet global competencies.



  
Principal  
Amdar, Deepakbhai Kesarkar Science College  
Dodamarg, Tal. Dodamarg, Dist. Sindhudurg





SHRAMIK VIDYARTHI DNYANSEVA SANSTHA'S

**AMDAR DEEPAKBHAI KESARKAR SCIENCE COLLEGE**

( AFFILIATED TO UNIVERSITY OF MUMBAI )

DODAMARG, DIST. – SINDHUDURG 416 512 ( M. S.)

EMAIL – [dkscsci@gmail.com](mailto:dkscsci@gmail.com)

TEL. NO. – 02363 256755

ESTD. – 2012

COLLEGE CODE – 166

---

## Criteria 2

### Teaching Learning and Evaluation

**Key Indicator – 2.6.**

**Students Performance & Learning Outcome**

**Programme Specific Outcome &**  
**Course Outcomes**



SHRAMIK VIDYARTHI DNYANSEVA SANSTHA'S

# AMDAR DEEPAKBHAI KESARKAR SCIENCE COLLEGE

( AFFILIATED TO UNIVERSITY OF MUMBAI )

DODAMARG, DIST. – SINDHUDURG 416 512 ( M. S.)

EMAIL – [dkscsci@gmail.com](mailto:dkscsci@gmail.com)

TEL. NO. – 02363 256755

ESTD. – 2012

COLLEGE CODE – 166

## Programme specific Outcomes

### B. Sc. Chemistry

The student graduating with the degree B. Sc. Chemistry Should be able to acquire;

- i) Core competency: students will acquire core competency in the subject Chemistry, and in allied subject areas.
- ii) A systematic and coherent understanding of the fundamental concepts in physical chemistry, Organic Chemistry, Inorganic Chemistry, Analytical Chemistry, and all other related allied chemistry subjects.
- iii) Students will be able to use the evidence based comparative chemistry approach to explain chemical synthesis and analysis.
- iv) Students will be able to characterize, identify and separate components of organic or inorganic origin and will also be able to analyze them by making use of the modern instrumental methods learned.
- v) Students will be able to demonstrate the experimental techniques and methods of their area of specialization in Chemistry.
- vi) Students will be able to understand the basic principle of equipment and instruments used in the chemistry laboratory.
- vii) The course curriculum also includes components that can be helpful to graduate students to develop critical thinking ability by way of solving problems / numerical using basic Chemistry Knowledge and concepts.
- viii) Appreciate the central role of Chemistry in our society and use this as a basis for ethical behavior in issues facing chemist including an understanding of safe handling of chemicals, environmental issues, and key issues facing our society in terms of energy, health, and medicine.
- ix) Lifelong Learner: the course curriculum is designed to inculcate a habit of learning continuously through the use of advanced ICT techniques and other available techniques/ books/ journals for personal academic growth as well as for increasing employability opportunity.



*(Signature)*  
Principal

Amdar, Deepakbhai Kesarkar Science College  
Dodamarg, Tal. Dodamarg, Dist. Sindhudurg

Shramik Vidyarthi Dnyanaseva Santha's  
**Amdar Deepakbhai Kesarkar Science College, Dodamarg**  
**Department of Chemistry**

**Course outcomes**  
**Subject: - Chemistry**  
**Course code: USCH101**  
**Semester I**

- CO1: Define and calculate the enthalpy of a system and understand its sign conventions for various type of reaction.
- CO2: To understand the position of elements and their classification in the long form of the periodic table.
- CO3: To understand periodic trends of atomic and ionic size, electron gain enthalpy, enthalpy of ionization.
- CO4: The students will be able to explain the fundamental concepts of an organic reaction mechanism.

**Course outcomes**  
**Subject: - Chemistry**  
**Course code: USCH102**  
**Semester I**

- CO1: To understand the principles of chemical kinetics and applied to chemical reactions.
- CO2: Learner should know the importance of physical measurements in elucidation of composition and structure of the molecule.
- CO3: Understand the periodic properties of main group elements and comparative chemistry of oxides and hydroxides.
- CO4: Students should know how projection formulae are interconverted and elaborate the stereoisomerism in the compound.





**Course outcomes**  
**Subject: - Chemistry**  
**Course code: USCH201**  
**Semester II**

- CO1: Students can understand the various properties gaseous molecules and gas laws.
- CO2: To explain to the students why molecules become stable by applying the principles of thermodynamics.
- CO3: students are able to apply the concept of qualitative analysis and its methods.
- CO4: Students can classify the chemical species into acid and base.
- CO5: Discuss the reaction mechanism of aliphatic hydrocarbon.

**Course outcomes**  
**Subject: - Chemistry**  
**Course code: USCH202**  
**Semester II**

- CO1: Determine the PH of the solutions and to solve numerical problems based on it. To study what is the effect of light on the matter
- CO2: Students get the knowledge of types of bonds and apply the VSEPR theory to draw the structures of compounds.
- CO3: Students should show the aromaticity in hydrocarbons and explain the electrophilic substitution reactions.
- CO4: explain the conformational analysis of Cyclohexane.



**Course outcomes**  
**Subject: - Chemistry**  
**Course code: USCH301**  
**Semester III**

- CO1: Students understand the concept of Partial Molal Properties, Activity, Fugacity & transference number through moving boundary method
- CO2: Learn the concept of Directional & Non-directional Bonding & molecular orbital theory.
- CO3: Students get the knowledge of mechanism behind substitution reactions & preparation of Alcohols, Phenols & Epoxides.

**Course outcomes**  
**Subject: - Chemistry**  
**Course code: USCH302**  
**Semester III**

- CO1: Describe the concept of chemical kinetics.
- CO2: Elaborate the behaviour of ideal solutions, separation methods and techniques of solvent extraction.
- CO3: Describe the polymer classification, nomenclature and molecular structure.
- CO4: Describe the characteristics properties of B, N and C.
- CO5: Discuss the bonding in electron rich and electron deficient compound.
- CO6: Describe the synthesis, chemical reactivity and application of carbonyl compound.

**Course outcomes**  
**Subject: - Chemistry**  
**Course code: USCH303**  
**Semester III**

- CO1: Explain the Methods of Analysis, their types and Importance.
- CO2: Discuss the significance of sampling in Analytical chemistry
- CO3: Elaborate the Titrimetric methods and types of titrimetric.
- CO4: Explain the principle of Gravimetric Analysis and Elaborate types and their applications of gravimetric Method.
- CO5: Understand the different types of Analytical Instrumental Methods.
- CO6: Elaborate the Absorption and Emission spectroscopy.



**Course outcomes**  
**Subject: - Chemistry**  
**Course code: USCH401**  
**Semester IV**

- CO1: Students able to relate the Thermodynamic Parameters  $\Delta G$ ,  $\Delta H$ ,  $\Delta S$  with Electrochemistry and Apply the phase rule to one & two component system.
- CO2: Able to know the basic terms & theories related to Coordination Chemistry.
- CO3: Discuss the reactivity of Carbonyl compounds.

**Course outcomes**  
**Subject: - Chemistry**  
**Course code: USCH402**  
**Semester IV**

- CO1: Apply principles of solid state to determine structure of crystals.
- CO2: Discuss the types of catalyst and catalytic reactivity.
- CO3: Explain behaviour of ions in aqueous medium.
- CO4: Discuss the effect of oxide of S, N and P on environmental pollution.
- CO5: Describe synthesis and chemical behaviour of heterocyclic ring containing O, N and S.

**Course outcomes**  
**Subject: - Chemistry**  
**Course code: USCH403**  
**Semester IV**

- CO1: Discuss different types of separation Methods.
- CO2: Elaborate the classification of chromatography methods.
- CO3: Explain the principle of Potentiometry, PH-metry and Conductometry
- CO4: Illustrate the Applications of Potentiometry, PH -metry and Conductometry.
- CO5: Discuss the distribution of Random Error
- CO6: Explain the concept of Confidence Limits and Confidence interval and its Computation using Population Standard Deviation, Students test and Range.





**Course outcomes**  
**Subject: - Chemistry**  
**Course code: USCH501**  
**Semester V**

- CO1: To understand the concept of rotational, vibrational & Raman Spectroscopy.
- CO2: To learn about colligative properties & their determination methods. Also able to know kinetics of fast reactions.
- CO3: Discuss the measurement methods of nuclear radiations & applications of nuclear chemistry.
- CO4: To explain the concept of Surface chemistry & Colloidal State.

**Course outcomes**  
**Subject: - Chemistry**  
**Course code: USCH502**  
**Semester V**

- CO1:- Understand the student's importance of symmetry in chemistry and concept of point group.
- CO2:- Construct the MOT of Heteronuclear and polyatomic species.
- CO3:- Interpret the packing in SC, BCC and FCC lattices.
- CO4:- Differentiate between Schottky and Frenkel defects in solids.
- CO5:- Define superconductivity, critical Temperature and Messeners effect and categories the superconductors.
- CO6:- Discuss the properties of Lanthanide Elements
- CO7:- Illustrate extraction and separation techniques of lanthanoide.
- CO8:- Classify the solvents and describe the physio – chemical principles of Non- aqueous solvents.
- CO9:- Discuss the periodic properties of group 16 elements and outline the allotropic modification of Sulphur.
- CO10:- Elaborate the structures of Oxyacid's of Chlorine and interhalogen compounds.



**Course outcomes**  
**Subject: - Chemistry**  
**Course code: USCH503**  
**Semester V**

- CO1: Apply the principles of organic reaction mechanism to synthesis of organic compound.
- CO2: Discuss basic theory of photochemistry and photochemistry of carbonyl compound.
- CO3: Advantage and disadvantage of agrochemicals.
- CO4: Assign the IUPAC nomenclature of bicyclic, biphenyl, cumulate and heterocyclic compound.
- CO5: Uses of green chemistry principles.
- CO6: Discuss the chemistry of natural product.
- CO7: Discuss the basic theory of U.V spectroscopy and principle of mass spectroscopy.

**Course outcomes**  
**Subject: - Chemistry**  
**Course code: USCH504**  
**Semester V**

- CO1: Students can Control, quality in industry. Understand concept of quality Assurance and quality concept.
- CO2: Understand the Conversion of Concentration from one unit to another unit with numerical and word problems.
- CO3: Discuss the difficulties purpose, significance Encountered in Sampling.
- CO4: Learn the concept of redox Titration and Construct the titration curves and perform Calculation of electron system in aqueous medium.
- CO5: Understand the theory of redox indicator.
- CO6: Illustrate the concept of complexometric titrations and construction of titration curve.
- CO7: Understand the principle, instrumentation and applications of Molecular fluorescence and phosphorescence spectroscopy
- CO8: Explain principle, instrumentation and applications of Turbidimetry and Nephelometry.
- CO9: Learn Different Methods of separation.
- CO10: Describe the principle, instrumentation and application of HPLC and HPTLC.



**Course outcomes**  
**Subject: - Chemistry**  
**Course code: USCHDD501**  
**Semester V**

- CO1: Students can understand definition of drugs, various sources, requirement and classification of drug.
- CO2: Understand nomenclature and various different types of medicinal terms.
- CO3: Understand the various routes of drug administration & dosage form.
- CO4: Learn brief introduction, structures, class, Synthesis, therapeutic uses and side effects of Pharmacodynamic agents.
- CO5: Know the and synthesis, chemical class, structure, uses and side effects, general idea of analgesic, antipyretic and anti-inflammatory drugs.
- CO6: Understand general idea, classification of cardiovascular, antidiabetic, antiparkinsons drugs.
- CO7: Enable to Identify drugs for respiratory system & its Uses, Structure, synthesis & Side effects.
- CO8: Understand definition of dyes, requirement, nomenclature and characteristics of dyes.
- CO9: Discuss different types of fibers & application of dye along with its method.
- CO10: Understand relation between color and chemical constitution of dyes.
- CO11; Discuss a brief idea of unit process and dye intermediate.

**Course outcomes**  
**Subject: - Chemistry**  
**Course code: USCH601**  
**Semester VI**

- CO1: Student can classify electrochemical cell and able to derive the Nernst equation.
- CO2: Discuss the classification of polymers & methods of determining mass of polymers.
- CO3: To learn the basic concepts of quantum chemistry & renewable energy sources.
- CO4: To understand the principle, construction & working of NMR and ESR Spectroscopy.





**Course outcomes**  
**Subject: - Chemistry**  
**Course code: USCH602**  
**Semester VI**

- CO1: Compare the crystal field splitting in octahedral, tetrahedral, and square-planar complexes.
- CO2: Discuss the consequences of crystal field splitting on various properties.
- CO3: Explain the thermodynamic and kinetic perspectives of metal complexes.
- CO4: Learner should know the types of electronic transitions and determine the term symbols for configuration.
- CO5: Find the types of reactions in metal complexes and apply for hydrolysis reactions.
- CO6: Differentiate the types of organometallic compounds and compile the methods of synthesis and chemical reactions.
- CO7: Detailed study of Ferrocene and Identify the Basic steps in homogeneous catalysis.
- CO8: Describe the steps involved in the metallurgy.
- CO9: To study the discoveries of Nobel gases and study the compounds of Xenon.
- CO10: Students should identify the importance of metals and non-metals in biological systems.

**Course outcomes**  
**Subject: - Chemistry**  
**Course code: USCH603**  
**Semester VI**

- CO1: Predict stereo-chemical outcomes of common organic reaction.
- CO2: Illustrate the concept of the carbohydrate chemistry.
- CO3: Elucidate the structure of simple organic compound using U.V, I.R and NMR spectra.
- CO4: Draw mechanism of common organic reaction.
- CO5: Discuss the synthesis and characteristics of polymers.



**Course outcomes**  
**Subject: - Chemistry**  
**Course code: USCH604**  
**Semester VI**

- CO1: Explain the difference between potentiometry and voltammetry, Polarizable and Non-polarizable
- CO2: Understand the basic principles of polarography.
- CO3: Able to explain the principle. Advantages and limitations of Amperometric titration.
- CO4: Discuss the principle and instrumentation of gas chromatography
- CO5: Discuss the basic principle of Ion exchange chromatography
- CO6: Explain the Application of Ion Exchange chromatography
- CO7: Explain the basic approach of food preservation.
- CO8: Students can Learn about the food processing, preservation and study different cosmetic products
- CO9: Explain the principle and Instrumentation of thermometric titration
- CO10: Describe Analytical Method Validation and need for validation of a Method.

**Course outcomes**  
**Subject: - Chemistry**  
**Course code: USCHDD601**  
**Semester VI**

- CO1: Understand discovery of lead compound of medicinal properties of compound from natural sources.
- CO2: Different types of chemical transformation of drugs with Specific examples.
- CO3: Study Chemotherapeutic agents with respect to their chemical structure, Side effects, chemical class, therapeutic Uses.
- CO4: Learn different types of amebiasis & synthesis.
- CO5: Discuss general idea of antibiotics used in treatment.
- CO6: Functionalization for pharmaceutical applications.
- CO7: Discuss classification of dyes based on chemical constitution and Synthesis of selected dyes.
- CO8: Health & environmental Hazards of synthetic dyes and their remediation process.
- CO9: Discuss dyes used in food & cosmetics.
- CO10: Learn dye stuff Industry – Indian perspective.





SHRAMIK VIDYARTHI DNYANSEVA SANSTHA'S

# AMDAR DEEPAKBHAI KESARKAR SCIENCE COLLEGE

( AFFILIATED TO UNIVERSITY OF MUMBAI )

DODAMARG, DIST. – SINDHUDURG 416 512 ( M. S. )

EMAIL – [dkscsci@gmail.com](mailto:dkscsci@gmail.com)

TEL. NO. – 02363 256755

ESTD. – 2012

COLLEGE CODE – 166

## DEPARTMENT OF ZOOLOGY

### PROGRAMME OUTCOMES

- Nurture interest in students for the subject Zoology.
- Orient students above the importance of abiotic and biotic factor of environment and their conservation. and also Population dynamics.
- Provide an insight to the basic nutritional and health aspects of human life.
- Introduced the concept of Physiology of Nutrition, Excretion, Osmoregulation, complexity of respiratory and circulatory physiology, physiology of control and coordination, locomotion and reproduction.
- Developed conceptual clarity of Mendelian principles of inheritance and other forms and pattern of inheritance. Introduced the learner to the classical experiments providing DNA as the genetic material and concept of Central dogma of Molecular biology.
- Developed knowledge of Ethology, Parasitology and Economic Zoology.
- Developed knowledge of scientific attitude, methodology, scientific writing and ethics in scientific research.
- Introduced the learner understand the concept of molecular biology, Genetic engineering, and Bioinformatics.
- To developed knowledge of Marine fishes, Marine Instruments, Aquaculture practices and entrepreneurship.
- Introduced the learners to the principles of Toxicology, Pathology, Histology and Biostatistics
- Introduced the principles of Taxonomy and modern classification of Invertebrates.
- Comprehend the functioning of various aspects of dairy industry, sericulture and aquaculture.
- Introduced the learner importance of environment and Wildlife management, Bio prospecting and Zoopharmacognosy and Zoogeography.



*(Signature)*  
Principal

Amdar. Deepakbhai Kesarkar Science College  
Dodamarg, Tal. Dodamarg, Dist. Sindhudurg



Shramik Vidyarthi Dnyanaseva Santha's  
**Amdar Deepakbhai Kesarkar Science College, Dodamarg**  
**Department of Zoology**

**COURSE OUTCOMES**

**Subject Name: Wonders of Animal World**

**Course code: USZO101**

- CO1: Curiosity will be ignited in the mind of learners, to know more about the fascinating world of animals which would enhance their interest and love for subject of Zoology.
- CO2: Learners would appreciate treasure of biodiversity its importance and hence would contribute their best for its conservation.
- CO3: Learner should understands the foot step of great Indian social activists, scientist and entrepreneur

**Subject Name: Instrumentation and Biotechnology**

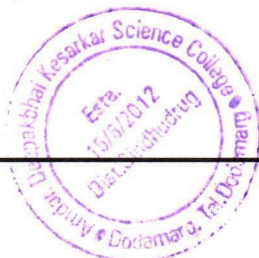
**Course code: USZO102**

- CO1: Learners would work safely in the laboratory and avoided occurrence of accidents.
- CO2: It will boost their scholastic performance and economic in use of materials/chemicals during practical session.
- CO3: Learner should learn about measurement of chemicals and calculations of the chemical related problems.

**Subject Name: Biodiversity and Population Dynamic's**

**Course code: USZO201**

- CO1: This unit would allow learner to study about nature of animal population, specific factors affecting its growth and its impact on the population on other life form.
- CO2: Learners will grasp the concept of interdependence and interaction of physical, chemical and biological factors in the environment
- CO3: It will lead to better understanding about implications of loss of fauna specifically on human being, erupting spur of desire for conservation of all flora and fauna.



**Subject Name: Health and Hygiene**

**Course code: USZO202**

- CO1: Healthy dietary habits would be inculcated in the life style of learners in order to prevent risk of developing health hazards in younger generation due to faulty eating habits.
- CO2: Learner should understand about the health abnormalities related diet.
- CO3: Learner should understand the how healthy diet recover physical and mental health.

**Subject Name: Genetics**

**Course code: USZO301**

- CO1: Understand the concept of multiple alleles, linkage and crossing over.
- CO2: Learners would understand the structure and types of chromosomes.
- CO3: Learners would understand mechanisms of sex determination.
- CO4: Learners would be able to correlate the disorders linked to a particular sex chromosome.

**Subject Name: Animal Physiology**

**Course code: USZO302**

- CO1: Learners would understand the increasing complexity of nutritional, excretory and osmoregulatory physiology in evolutionary hierarchy.
- CO2: Learners would be able to correlate the habit and habitat with nutritional, excretory and osmoregulatory structures.
- CO3: Learners would understand the increasing complexity of respiratory and circulatory physiology in evolutionary hierarchy.
- CO4: Learners would be able to correlate the habit and habitat with respiratory and circulatory structures.



**Subject Name: Applied Zoology**

**Course code: USZO303**

- CO1: Learners would gain an insight into different types of animal behaviour and their role in biological adaptations.
- CO2: Learners would be sensitized to the feelings instrumental in social behaviour.
- CO3: Learners would understand the general epidemiological aspects of parasites that affect humans and apply simple preventive measures for the same.
- CO4: Learners would comprehend the life cycle of specific parasites, the symptoms of the disease and its treatment.

**Subject Name: Evolution and research Methodology**

**Course code: USZO401**

- CO1: Learner will know about the different theories of evolution
- CO2: Learner would understand the forces that cause evolutionary changes in natural populations.
- CO3: Learner would comprehend the mechanisms of speciation.
- CO4: Learner should get knowledge of research methodology and different types of research.

**Subject Name: Cell ultrastructure and Biomolecules**

**Course code: USZO402**

- CO1: Learner would acquire insight of transport mechanisms for maintenance and composition of cell.
- CO2: Learner would appreciate the intricacy of endomembrane system.
- CO3: Learner would understand the interlinking of endomembrane system for functioning of cell.
- CO4: Learner should learn about Biomolecules.





**Subject Name: Economic Zoology**

**Course code: USZO403**

- CO1: Comprehend the functioning of various aspects of dairy industry.
- CO2: Learner would acquire knowledge of sericulture and aquaculture
- CO3: Learner would acquire knowledge of sericulture

**Subject Name: Taxonomy of invertebrates**

**Course code: USZO501**

- CO1: Learners will apprehend the basis of classification and modern classification up to class of the lower invertebrate animals.
- CO2: Learners will get an idea of higher groups of invertebrate animal life, their classification and their peculiar aspects.
- CO3: Learner should get knowledge about Sepia and full invertebrate type study.
- CO4: Learner should get all knowledge of all the phylum of invertebrate.

**Subject Name: Haematology**

**Course code: USZO502**

- CO1: The learner shall comprehend basic haematology. The learner will be able to identify various components of haemostatic systems
- CO2: The learner will be familiar with the terminology used and diagnostic tests performed in a pathological laboratory.
- CO3: The learner shall be acquainted with diagnostic approaches in haematological disorders.
- CO4: The learner will be better equipped for further pathological course or working in a diagnostic laboratory.



**Subject Name: Histology, Toxicology, Pathology and Biostatistics**

**Course code: USZO503**

- CO1: Learner would appreciate the well planned organization of tissues and cells in the organ systems
- CO2: The course will prepare learner to develop broad understanding of the different areas of toxicology.
- CO3: It will also develop critical thinking and assist students in preparation for employment in pharmaceutical industry
- CO4: It developed knowledge of medical related field and related areas

**Subject Name: Integumentary derivatives Humans skeletal system  
and Developmental Biology**

**Course code: USZO504**

- CO1: Learner will be able to understand the importance of various types of epidermal and dermal derivatives along with their functions.
- CO2: Learner will be able to understand the structure, types and functions of human skeleton
- CO3: Learner should get information of muscular system of human body.
- CO4: Learner should get information about chick embryology.

**Subject Name: Fishery Biology**

**Course code: USZO505**

- CO1: Learner shall understand about the use of sea safety navigational equipment and oceanographic equipment.
- CO2: Learner shall understand boat building techniques design of engines and operation of several of nets and fishing methods.
- CO3: Learner should understand the monoculture and poly culture.



**Subject Name: Taxonomy of chordates**

**Course code: USZO601**

- CO1: Learners will get an idea of origin of Chordates, its taxonomy up to class.
- CO2: Students also learn phylogeny and their special features.
- CO3: Learners will get an idea of origin of Chordates, its taxonomy of Protochordata
- CO4: Learner also learn type study of shark.

**Subject Name: Enzymology Endocrinology and Homeostasis**

**Course code: USZO602**

- CO1: The learner shall understand fundamentals of enzyme structure, action and kinetics
- CO2: The learner shall appreciate the enzyme assay procedures and the therapeutic applications of enzymes.
- CO3: The learner shall comprehend the adaptive responses of animals to environmental changes for their survival.

**Subject Name: Genetics**

**Course code: USZO603**

- CO1: Learner shall get an insight into the intricacies of chemical and molecular processes that affect genetic material.
- CO2: The course shall prepare learner to recognize the significance of molecular biology as a basis for the study of other areas of biology and biochemistry.
- CO3: The learner shall get acquainted with the vast array of techniques.
- CO4: Learner should get information of how to manipulate genes which can be applied in numerous fields like medicine, research, etc. for human benefit.





**Subject Name: Zoogeography and wild life management**

**Course code: USZO604**

- CO1: Learner will understand the different factors affecting environment, its impact and environment management laws.
- CO2: Learner will be able to understand various methods for wildlife conservation.
- CO3: Learner will be able to apply knowledge to overcome the issues related to wildlife conservation and management
- CO4: Learner should learn about central dogma protein.

**Subject Name: Fishery Biology**

**Course code: USZO605**

- CO1: Lerner shall understand commercial potential and know about the major landing center fishes.
- CO2: Lerner shall understand crustaceans and Mollusca, fishery and their landing centers.
- CO3: Learner should get information packaging of fishes





SHRAMIK VIDYARTHI DNYANSEVA SANSTHA'S

## AMDAR DEEPAKBHAI KESARKAR SCIENCE COLLEGE

( AFFILIATED TO UNIVERSITY OF MUMBAI )

DODAMARG, DIST. – SINDHUDURG 416 512 ( M. S.)

EMAIL – [dkscsci@gmail.com](mailto:dkscsci@gmail.com)

TEL. NO. – 02363 256755

ESTD. – 2012

COLLEGE CODE – 166

### SUBJECT - BOTANY

F. Y. B. Sc.

S. Y. B. Sc.

### Programme Specific Outcomes (Psos)

- Students perceive the basic environmental concepts, Plant identification and classification, Cell and molecular biology, Basic genetic concepts and ecological principles.
- Learner should understand economic and medicinal plants in agriculture and medicines for their valuable uses.
- Resolve the important relationship between plants and microorganisms and give idea about its need in plant association.
- Clarify the diversity of angiospermic plants and phanerogames.
- Understand the fossil types and gymnospermic plants with its economic importance.
- Students will understand and get knowledge, information about plant diseases and chemical properties and evolution relation in between taxonomic groups.
- This syllabus is pre requisite for any life science subject because it gives basic knowledge of laboratory techniques like microscopy, separation techniques that will helps to understand different tools and techniques used in basic research for life sciences.
- The students are learn and understand the different techniques in plant tissue culture, and breeding procedure that makes learner very skillful with the help of this students also learn the interesting processes of molecular biology which will referred as Central dogma of life.



  
Principal

Amdar. Deepakbhai Kesarkar Science College  
Dodamarg, Tal. Dodamarg, Dist. Sindhudurg

Shramik Vidyarthi Dnyanaseva Santha's  
**Amdar Deepakbhai Kesarkar Science College, Dodamarg**  
**Subject - Botany**

**Course Outcomes**  
**Class: F. Y. B.Sc. Botany (Theory)**  
**Semester I**  
**Course (Paper) Name & No.: Paper I: Plant Diversity I**  
**(USBO101)**

**On completion of the course, students are able:**

Sr. No.	Course outcomes	Bloom's Domains
1.	To explain structure, life cycle and systematic position of <i>Nostoc</i> & <i>Spirogyra</i> . To understand economic importance of Algae.	Understand
2.	To explain the structure, life cycle and systematic position of <i>Rhizopus</i> & <i>Aspergillus</i> . To understand the economic importance of Fungi.	Understand
3.	To know what are the modes of nutrition in Fungi.	Remember
4.	To know what the general characters of Hepaticae	Remember
5.	To explain structure, life cycle and systematic position of <i>Riccia</i> .	Understand





**Semester I**  
**Course (Paper) Name & No.: Paper II: Form & Function I**  
**(USBO102)**

**On completion of the course, students are able to:**

<b>SR. NO.</b>	<b>COURSE OUTCOMES</b>	<b>BLOOM'S DOMAINS</b>
1.	Understand the structure of plant cell with the reference of cell wall and plasma membrane with the help of bilayer lipid structure and fluid mosaic model.	Understand
2.	Learn about structure and function of cell organelles like endoplasmic reticulum & chloroplast.	Remember
3.	Compare the aquatic and terrestrial ecosystem. Demonstrate Energy pyramids and how energy flows in an ecosystem.	Analyse Understand
4.	Know the concept of Mendelian Genetics by Studying experiments on monohybrid, dihybrid, test & back cross along with their ratios.	Understand Apply
5.	Define non mendelian genetics like multiple alleles, Epistatic and non epistatic in contrast to Mendelian genetics.	Remember Analyze



## SEMESTER II

Course (Paper) Name & No.: Paper I: Plant Diversity I (USBO201)

On completion of the course, students are able to:

SR. NO.	COURSE OUTCOMES	BLOOM'S DOMAINS
1.	Explain the structure, life cycle, systematic position and illustrate alternation of generation in <i>Nephrolepis</i> .	Understand Analyse
2.	Recognize Stelar evolution in pteridophytes.	Remember
3.	Describe the structure, life cycle, systematic position and alternation of generation in <i>Cycas</i> & to know the economic importance of gymnosperms.	Understand
4.	Differentiate between types of leaves, Incisions, venation, phyllotaxy, leaf apex, margin, leaf base, shapes etc. Examine modifications of leaf: spine, tendril, hooks, phyllode. Compare leaf modifications in insectivorous plants like pitcher, <i>Drosera</i> and bladder. Explain and identify Inflorescence and its types.	Understand Analyse
5.	Discuss families like Malvaceae & Amaryllidaceae with reference to taxonomy.	Understand





## SEMESTER II

### COURSE NAME & NO.: PAPER II: FORM & FUNCTION I (USBO202)

On completion of the course, students are able to:

Sr. No.	Course Outcomes	Bloom's Domains
1.	Explain the simple & complex tissues and to compare primary structure of dicot and monocot root, stem and leaf.	Understand
2.	Recognise the epidermal tissue system in relation with their types of hairs. Differentiate between monocot and dicot stomata.	Remember Understand
3.	Explain the process of photosynthesis with particular emphasis on light reactions & dark reaction. Relate the concepts like photolysis of water, Cyclic and non-cyclic photophosphorylation. Compare carbon fixation phases i.e. C <sub>3</sub> , C <sub>4</sub> and CAM pathways.	Understand  Analyze
4.	Understand the concept of Medicinal Botany Distinguish between primary and secondary metabolites according to their characteristics.	Understand Analyze
5.	Relate the concept of Grandma's pouch and study the following plants with respect to botanical source, part of the plant used, active constituent's present and medicinal uses: <i>Oscimum sanctum</i> , <i>Adathoda vasica</i> , <i>Zinziber officinale</i> , <i>Curcuma longa</i> , <i>Santalum album</i> , <i>Aloe vera</i> .	Remember  Understand





**SEMESTER I**  
**CLASS: F. Y. B.SC. BOTANY (PRACTICAL)**

**(USBOP1) PRACTICAL BASED ON PAPER I: PLANT DIVERSITY I**

**COURSE OUTCOMES**

<b>CO 1</b>	Study of stages in the life cycle of <i>Nostoc</i> and <i>Spirogyra</i> from fresh / preserved material and permanent slides.
<b>CO 2</b>	Study of stages in the life cycle of <i>Rhizopus</i> and <i>Aspergillus</i> from fresh / preserved material and permanent slides.
<b>CO 3</b>	Study of stages in the life cycle of <i>Riccia</i> from fresh/ preserved material and permanent slides.
<b>CO 4</b>	Understand about economic importance of Algae: <i>Ulva</i> (Biofuel), <i>Spirulina</i> (Neutraceutical), <i>Gelidium</i> (Agar). Fungi: Mushroom, Yeast, wood rotting fungi (any bracket fungus)
<b>CO 5</b>	Understand how the color changes due to change in pH: Anthocyanin, Taking tests for tannins and Learn to identify different plants or plant parts from grandma's pouch as per theory.



## SEMESTER I

### USBOP1) PRACTICAL BASED ON PAPER II:

### FORM AND FUNCTIONS I

### COURSE OUTCOMES

<b>CO 1</b>	Examining various stages of mitosis in root tip cells ( <i>Allium</i> ), Understand Cell inclusions: Starch grains, Aleurone Layer, Cystolith, Raphides, Sphaeraphides.
<b>CO 2</b>	Identification of cell organelles with the help of photomicrograph: Plastids: Chloroplast, Amyloplast, Endoplasmic Reticulum and Nucleus.
<b>CO 3</b>	Identification of Plants adapted to different environmental conditions: Hydrophytes: Floating, Free floating, Rooted floating, Submerged, Mesophytes, Hygrophytes, Xerophytes, Woody xerophytes, Halophytes.
<b>CO 4</b>	Calculation of mean, median, mode, standard deviation. Frequency distribution, graphical representation of data- frequency polygon, histogram, pie chart. And studying the karyotypes: Human: Normal male and female, <i>Allium cepa</i> .



**SEMESTER II**  
**(USBOP2) PRACTICAL BASED ON PAPER I: PLANT**  
**DIVERSITY I**

**COURSE OUTCOMES**

<b>CO 1</b>	Studying stages in the life cycle of <i>Nephrolepis</i> with mounting of ramentum, hydathode, T.S. of rachis, T.S. of pinna of <i>Nephrolepis</i> passing through sorus.
<b>CO 2</b>	Understand the Different types of steles and stelar evolution with the help of permanent slides.
<b>CO 3</b>	Getting all knowledge about <i>Cycas</i> by taking T.S. of leaflet ( <i>Cycas</i> pinna), L.S. of ovule and by showing specimens of Megasporophyll, Microsporophyll, Coralloid root, Microspore of <i>Cycas</i> .  Understand Economic importance of Gymnosperms ( <i>Pinus</i> ).
<b>CO 4</b>	Understand the leaf morphology. Study of types of inflorescence (as per theory). Study the families Malvaceae, Amaryllidaceae.





**SEMESTER II**  
**(USBOP2) PRACTICAL BASED ON PAPER II:**  
**FORM AND FUNCTIONS I**  
**COURSE OUTCOMES**

<b>CO 1</b>	Gain knowledge about primary structure of dicot and monocot root as well as dicot and monocot stem.
<b>CO 2</b>	Understand the structure of dicot and monocot stomata.
<b>CO 3</b>	Studying Epidermal outgrowths like Unicellular, Multicellular outgrowths with the help of mountings and Epidermal outgrowths like Glandular, Stinging outgrowths as well as Peltate, stellate, T-shaped outgrowth with the help of permanent slides.
<b>CO 4</b>	Learn the technique of separation of chlorophyll pigments by strip paper and separation of amino acids by paper chromatography .



**SEMESTER III**  
**CLASS: S. Y. B.SC. BOTANY (THEORY)**  
**COURSE (PAPER) NAME & NO.: PAPER I:**  
**PLANT DIVERSITY II (USBO301)**

**COURSE OUTCOMES**

<b>CO 1</b>	Getting knowledge about Thallophyta (Algae) & Bryophyta, Understand general characters of division phaeophyta: Distribution, cell structure, range of thallus, and economic importance. Understand structure, life cycle and systematic position of <i>Sargassum</i> .
<b>CO 2</b>	Getting all knowledge about class Anthocerotae and Musci by understanding structure, life cycle and systematic position of <i>Anthoceros</i> , <i>Funaria</i> .
<b>CO 3</b>	Understand Objectives and Goals of Plant systematic, Plant Nomenclature & Taxonomy in relation to Anatomy, Palynology, Chemical constituents, Embryology, Cytology and Ecology.
<b>CO 4</b>	Study vegetative, floral characters & economic importance of family Leguminosae, Asteraceae, Amaranthaceae, Palmae with the help of Bentham & Hooker's system of classification.
<b>CO 5</b>	Learn Modern Techniques of studying Plant Diversity like Dry & Wet preservation method. Principle & working of Light Microscopy, electron microscopy. Understand Paper Chromatography, Thin layer chromatography, Horizontal & Vertical electrophoresis.





### SEMESTER III

#### CLASS: S. Y. B.SC. BOTANY (THEORY)

Course (Paper) Name & No.: Paper II: Form & Function II (USBO302)

#### COURSE OUTCOMES

CO 1	Understand Cell Biology by learning ultrastructure and function of cell organelles like Mitochondrion (membrane, cristae, F1 particles, matrix), Peroxisomes, Glyoxysomes, Ribosomes (prokaryotic, eukaryotic, subunits)
CO 2	Know all about Cell division and its significance, cell cycle, structure of interphase nucleus (nuclear envelop, chromatin network, nucleolus, nucleoplasm), Mitosis, Meiosis and types, structure, functions of Nucleic acid like DNA, RNA.
CO 3	Understand Cytogenetics by learning about variation in chromosome structure, chromosomal aberrations, sex determination, sex linked, sex influenced, sex limited traits and extranuclear genetics with organelle heredity
CO 4	Learn all about Molecular Biology by understanding DNA replication, DNA replication in prokaryotes and eukaryotes & Protein synthesis.
CO 5	Learn DNA replication (Modes of Replication, Messelson and stahl experiment), DNA replication in prokaryotes and eukaryotes (enzymes involved and molecular mechanism of replication), Protein synthesis (Central dogma of protein synthesis, Transcription in prokaryotes and eukaryotes: promoter sites, initiation, elongation, termination), RNA processing (Adenylation & Capping)





**SEMESTER III**  
**CLASS: S. Y. B.SC. BOTANY (THEORY)**

**Course (Paper) Name & No.:**

**Paper III: Current Trends in Plant Sciences I(USBO303)**

**COURSE OUTCOMES**

<b>CO 1</b>	Know all about Pharmacognosy and Phytochemistry. Learn about Pharmacopoeia, Indian Pharmacopoeia, Indian Herbal Pharmacopoeia, Ayurvedic Pharmacopoeia, Monograph from Pharmacopoeia.
<b>CO 2</b>	Learn about Secondary Metabolites, its sources, properties, uses, adulterants, regional and seasonal variations. Adulterants like <i>Saraca asoca</i> & <i>Polyalthia longifolia</i> , <i>Terminalia arjuna</i> & <i>Terminalia tomentosa</i> , <i>Bacopa monnieri</i> & <i>Centella asiatica</i> , <i>Abrus</i> & <i>Glycyrrhiza</i> , <i>Phyllanthus amarus</i> (Bhuiamla)
<b>CO 3</b>	Learn all about forestry and economic botany, understand outline of types of forest in India, Agro-forestry, Urban forestry, Organic farming, silviculture. Learn types of fibers like jute, cotton. Know current trends in fiber industries. Learn about spices and condiments like Saffron and Cardamom. Know about commercial market of spices.
<b>CO 4</b>	Know all about Industry based on plant products like Introduction of Aromatherapy, uses of jojoba, lemon, jasmine oils. Botanical and nutraceuticals- <i>Spirulina</i> , <i>Vanillin</i> , <i>Garcinia indica</i> / <i>Garcinia cambogia</i> , <i>Chlorella</i> , <i>Kale</i> .
<b>CO 5</b>	Learn about Enzyme Industry: Enzymes like Cellulases, papain, Bromelain and concept of Biofuels.



**SEMESTER IV**  
**CLASS: S. Y. B.SC. BOTANY (THEORY)**

**Course (Paper) Name & No.: Paper I: Plant Diversity II (USBO401)**

**COURSE OUTCOMES**

<b>CO 1</b>	Learn general characters of Ascomycetae. Structure, life cycle and systematic position of <i>Erysiphe</i> & <i>Xylaria</i> .
<b>CO 2</b>	Learn about plant pathology- Study symptoms, causative organism, disease cycle. Control measures of Powdery mildew & Late blight of potato.
<b>CO 3</b>	Study lichens by understanding its classification, structure, Method of Reproduction. Aware of economic importance and ecological significance of lichens.
<b>CO 4</b>	Understand salient features and classification up to orders Psilophyta and Lepidophyta by following G. M. Smith's system of classification. Know about Structure, life cycle and systematic position of <i>Selaginella</i> .
<b>CO 5</b>	Understand Paleobotany by learning about geological time scale. Information about formation and types of fossils. Structure and systematic position of form genus <i>Rhynia</i> .
<b>CO 6</b>	Know all about gymnosperms by understanding salient features, classification up to orders and economic importance of Coniferophyta by following chamberlain's system of classification.
<b>CO 7</b>	Learn about structure, life cycle and systematic position of <i>Pinus</i> . Understand structure and systematic position of the form genus <i>Cordaitea</i> .





**SEMESTER IV**  
**CLASS: S. Y. B.SC. BOTANY (THEORY)**

Course (Paper) Name & No.: **Paper II: Form & Function II (USBO402)**

**COURSE OUTCOMES**

<b>CO 1</b>	Learn Anatomy by understanding normal secondary growth in Dicotyledonous stem, root, growth rings, periderm, lenticels, tyloses, heart wood, sap wood, mechanical tissue system and types of vascular bundles.
<b>CO 2</b>	Learn Plant Physiology and Plant Biotechnology. Understand Aerobic respiration (Glycolysis, TCA Cycle, ETS, Energetic of respiration), Anaerobic respiration, Photorespiration, Photoperiodism, mechanism and applications of vernalization.
<b>CO 3</b>	Understand Ecology and Environmental botany by learning about Biogeochemical cycles like carbon cycle, nitrogen cycle, water cycle, Ecological factors, concept of environmental factors like soil as an edaphic factor, soil composition, types of soil, soil formation, soil profile.
<b>CO 4</b>	Understand Community ecology by learning characters of community, quantitative characters and qualitative characters.





**SEMESTER IV**  
**CLASS: S. Y. B.SC. BOTANY (THEORY)**

**Course (Paper) Name & No.:**

**Paper III: Current Trends in Plant Sciences I(USBO403)**

**COURSE OUTCOMES**

<b>CO 1</b>	Learn all about Horticulture and Gardening: Introduction, Branches of Horticulture and Gardening: different locations in garden with names of plants for each category, focal point. Outline of types of garden like Formal & Informal gardens. To know about National Parks like Sanjay Gandhi National Park, Veer Mata Jijabai Udyan (Victoria garden), Botanical garden.
<b>CO 2</b>	Understand concept of Biotechnology. Know about plant tissue culture, introduction, laboratory organization and techniques in plant tissue culture, Totipotency, Organogenesis, Organ culture like root culture, meristem culture, anther and pollen culture, embryo culture.
<b>CO 3</b>	Understand R-DNA technology- Gene cloning, Enzymes involved in Gene cloning, vectors used for gene cloning.
<b>CO 4</b>	Get basic information about Biostatistics and Bioinformatics: Understand Biostatistics, learn chi square test, correlation- calculation of coefficient of correlation.
<b>CO 5</b>	Learn about Bioinformatics, introduction, goal, need, scope, limitation. Information technology, its history, tools, internet and its uses. Aims of Bioinformatics, data organization, tools of bioinformatics, tools for web search, data retrieval tools- Entrez, BLAST, Bioinformatics programme in India.



### Semester III

Class: S. Y. B.Sc. Botany (Practical)

(USBOP3) Practical based on Paper I: Plant Diversity II

### COURSE OUTCOMES

CO 1	Study of stages in the life cycle of <i>Sargassum</i> from fresh/ preserved material & permanent slides. Understand Economic importance and range of thallus in Phaeophyta.
CO 2	Study of stages in the life cycle of <i>Anthoceros</i> and <i>Funaria</i> from fresh/ preserved material & permanent slides.
CO 3	Study of plants for anatomy in relation to taxonomy and chemotaxonomy like Phenols, Flavanoids.
CO 4	Study of one plant from each family prescribed for theory: morphological peculiarities and economic importance of the members of these families.
CO 5	Learn techniques to study plant diversity, Preparation of herbarium and wet preservation technique. Understand chromatography, Learn to separate the amino acids by circular paper chromatography, separate the Carotenoids by TLC, Demonstration of Horizontal and vertical gel electrophoresis.



### Semester III

**Class: S. Y. B.Sc. Botany (Practical)**

**(USBOP3) Practical based on Paper II: Form and Functions II**

### COURSE OUTCOMES

<b>CO 1</b>	Understand Cell Biology. Study ultra-structure of cell organelles prescribed for theory from Photomicrographs. Estimation of DNA and RNA from plant material.
<b>CO 2</b>	Know about Cytogenetic. Study of inheritance pattern with reference to Plastid Inheritance. Study of cytological consequences of chromosomal aberrations (Laggards, Chromosomal Bridge, Ring chromosome, Chromosomal ring) from permanent slides or photomicrographs. Study of mitosis and meiosis from suitable plant material.
<b>CO 3</b>	Learn all about Molecular Biology, Learn DNA sequencing – Sanger's method.
<b>CO 4</b>	Determining the sequence of amino acids in the protein molecules synthesized from the given m-RNA strand (prokaryotic and eukaryotic)





### Semester III

**Class: S. Y. B.Sc. Botany (Practical)**

**(USBOP3) Practical based on Paper III: Current Trends in Plant Sciences I**

### COURSE OUTCOMES

<b>CO 1</b>	Study of <i>Phyllanthus amarus</i> , <i>Saraca asoka</i> , <i>Bacopa monieri</i> .
<b>CO 2</b>	Study of Biodiversity by visiting the national park/ botanical garden. Learn about sources of Fibres & paper, Spices & condiments. Preparation of herbal cosmetics (Face pack/ De-tanning cream)
<b>CO 3</b>	Estimation of crude fibres in cereals & their products.
<b>CO 4</b>	Preparation & evaluation of probiotic foods.
<b>CO 5</b>	Evaluation of nutraceuticals value of mushroom/ wheat germ.



## Semester IV

Class: S. Y. B.Sc. Botany (Practical)

(USBOP4) Practical based on Paper I: Plant Diversity II

### COURSE OUTCOMES

CO 1	Learn all about Fungi and plant pathology, Study the stages in the life cycle of <i>Erysiphe</i> , <i>Xylaria</i> from fresh/ preserved material and permanent slides. Study fungal diseases as prescribed in theory.
CO 2	Study all about Lichens, types of Lichens (Crustose, foliose and fruticose)
CO 3	Learn more about Pteridophyta and Palaeobotany. Study of stages in the life cycle of <i>Selaginella</i> from fresh/ preserved material and permanent slides. Study of form genera <i>Rhynia</i> with the help of permanent slides/ photomicrographs.
CO 4	Understand Gymnosperms by studying of stages in the life cycle of <i>Pinus</i> from fresh/ preserved material and permanent slides.
CO 5	Study of the form genus <i>Cordiaites</i> with the help of permanent slide/ photomicrographs.



## Semester IV

Class: S. Y. B.Sc. Botany (Practical)

(USBOP4) Practical based on Paper II: Form and Functions II

### COURSE OUTCOMES

CO 1	Learn anatomy, Study of normal secondary growth in the stem and root of a Dicotyledonous plant. Types of mechanical tissues, mechanical tissue system in aerial, underground organs.
CO 2	Study of conducting tissues- Xylem and Phloem elements in Gymnosperms and Angiosperms as seen in L.S. and through maceration techniques. Different types of vascular bundles, Growth rings, periderm, lenticels, tyloses, heart wood and sap wood.
CO 3	Understand Plant Physiology and Plant Biochemistry- Q10-germinating seeds using phenol red indicator, NR activity- <i>in-vivo</i> , Estimation of proteins by Lowry's method.
CO 4	Learn about Ecology and Environmental Botany. Study of the working of Ecological instruments like Soil thermometer, Soil testing kit, Soil pH, Wind anemometer. Learn to do mechanical analysis of soil by the sieve method and pH of Soil, Quantitative estimation of organic matter of the soil by Walkley and Blacks Rapid titration method.
CO 5	Study of vegetation by the list quadrant method.





## Semester IV

Class: S. Y. B.Sc. Botany (Practical)

(USBOP4) Practical based on Paper III: Current Trends in Plant Sciences I

### COURSE OUTCOMES

CO 1	Learn basics of Horticulture. Study about plants for each garden location as prescribed for theory. Preparation of garden plans for formal and informal gardens. Preparation of Bottle and dish gardens.
CO 2	Understand Biotechnology by learning various sterilization techniques, Preparation of Stock solutions and MS medium.
CO 3	Learn about seed sterilization, callus induction, Regeneration of plantlet from callus. Identification of the cloning vectors- pBR322, pUC 18, Ti plasmid.
CO 4	Understand basics of Biostatistics and Bioinformatics, Learn Chi square test, Calculation of coefficient of correlation.
CO 5	Learn about Web Search – Google, Entrez. Learn about BLAST.





SHRAMIK VIDYARTHI DNYANSEVA SANSTHA'S

# AMDAR DEEPAKBHAI KESARKAR SCIENCE COLLEGE

( AFFILIATED TO UNIVERSITY OF MUMBAI )

DODAMARG, DIST. – SINDHUDURG 416 512 ( M. S.)

EMAIL – [dkscsci@gmail.com](mailto:dkscsci@gmail.com)

TEL. NO. – 02363 256755

ESTD. – 2012

COLLEGE CODE – 166

## Under Graduate Programme – Physics

- F.Y.B.Sc.
- S.Y.B.Sc

### 1. Programme Specific Outcomes

- It will develop analytical abilities among students towards real world problems
- The students are expected to familiarize with current and recent scientific and technological developments.
- It will induce the programming skills for C++ and microprocessors among students.
- With hands on experiments, students can correlate their theory with practicals.
- Students will be exposed to various measuring devices, equipment's, sensors, transducers and their daily applications.
- It will develop scientific temper among students and they can pursue their research interest in the relevant fields such as, radiology, tele communication, space science, nuclear physics, electronics, solid state physics, thermodynamics, cryogenics, geophysics, relativity etc.
- With proper knowledge of electrical components, they are expected to build basic electrical circuits.

The error analysis may develop scientific approach skills and accuracy among the students.



*(Signature)*  
Principal  
Amdar. Deepakbhai Kesarkar Science College  
Dodamarg, Tal. Dodamarg, Dist. Sindhudurg

**Course Outcomes**

**Class: F.Y.B. Sc. Physics:**

**Semester I**

**Course Name and code: Classical Physics, (USPH101)**

- CO1 Understand Newton's laws and apply them in calculations of the motion of simple systems.
- CO2 Use the free body diagrams to analyse the forces on the object.
- CO3 Understand the basic mathematical concepts and applications of them in physical situations
- CO4 Apply the laws of thermodynamics to formulate the relations necessary to analyse a thermodynamic process
- CO5 Understand the elasticity and fluid dynamics concepts and its applications in practical life

**Course Name and Code: Modern Physics, (USPH102)**

- CO1 Learners will get detailed knowledge about the discovery of the nucleus and learn all the properties of the nucleus.
- CO2 Learners will understand the phenomenon of Radioactivity, Radioactive elements, laws of Radioactive Decay and their applications to various fields of science.
- CO3 Learners will understand various kinds of Nuclear Reactions, Various laws related to Nuclear Reactions and how Nuclear Energy is produced.
- CO4 Learners will understand the Principles, Construction and Working of various types of Nuclear Detectors.
- CO5 Learners will understand the response of Resistor, Capacitor and Inductor to an Alternating Current (AC)
- CO6 Learners will understand various kinds of AC Bridges and their Operation.





**Course Name: Practical's, (USPHP01)**

- CO1 Learners will get hands-on training on various measuring devices such as Digital Multimeter, Vernier Caliper, Micrometer Screw Gauge, Travelling Microscope and other such devices.
- CO2 Learners will understand various methods for finding different mechanical properties of Solids like the Moment of Inertia, Modulus of Elasticity and the Young's Modulus.
- CO3 Learners will understand various methods for finding different mechanical properties of liquids like the Coefficient of Viscosity, Surface Tension & Angle of Contact.
- CO4 Learners will understand the Thermoelectric Characteristics of Thermistor and be able use it as a temperature sensor.
- CO5 Learners will understand the proper way of connecting various electrical components like Resistors, Inductors, Capacitors, Voltmeter, Ammeter, etc in different types of circuits.
- CO6 Learners will practically understand the response of Resistor, Capacitor and Inductance to an Alternating Current. Also the learners will get Hands-On Training for handling such electrical components



**Department of Physics**

**Course Outcomes**

**Class: F.Y.B. Sc.**

**Physics: Semester II**

**Course Name and code: Optics, (USPH201)**

- CO1 Able to explain natural physical processes related to light waves
- CO2 Use of understanding application of basic differential equation in various circuits
- CO3 Able to differentiate the transverse and spherical waves
- CO4 Able to apply superposition principle for various harmonic oscillations
- CO5 Able to differentiate the different aberrations of light and understands the various methods to eliminate it

**Course Name and code:**

**Modern Physics, DC Circuits & Digital Electronics, Electrostatics, Magnetostatics, Geophysics, (USPH202)**

- CO1 After the completion of the course learners will get knowledge about Quantum Physics, Geophysics, and Electrodynamics
- CO2 This course will also develop the skills among the learners to handle D.C. circuits and Digital Circuits
- CO3 Learners will be able to do the circuit analysis using various network theorems.
- CO4 Learners will understand the concept of Electrostatic field in detail.
- CO5 Learners will understand the concept of Magnetic fields in detail.



**Course Name and code:      Practicals**

- CO1 Learners will get demonstration of various Phenomenons such as LASER Beam Diversion, Charging & Discharging of Capacitor, Conservation of Angular Momentum, etc.
- CO2 Learners will understand how to use various Optical Instruments such as the Spectrometer, Prism, Lenses, etc.
- CO3 Learners will be able to determine Optical properties like the Refractive Index of the material of the Prism by observing the Spectrum emitted by different sources of light.
- CO4 Learners will get hands-on training on how lenses are used and how to find various properties of the lens systems.
- CO5 Learners will be able to use Diodes for the purpose of Voltage Regulations and for converting an AC signal into a DC signal (Rectification).
- CO6 Learners will get hands-on training of Digital Electronic Circuits and study their Applications.





**Department of Physics**

**Course Outcomes**

**Class: S.Y.B. Sc.**

**Physics: Semester III**

**Course Name and Code: Mechanics & Thermodynamics, (USPH301)**

- CO1 Learners will understand the Laws of Conservation Linear Momentum, Angular Momentum & Energy and be able to apply the laws to study the Dynamics of System of Particles.
- CO2 Learners will be able to understand the Simple Harmonic Oscillations of Simple Pendulum & Compound Pendulum and write their equations.
- CO3 Learners will understand the Simple Harmonic Motion and the effect of damping forces on such motions and equation of motion related to particles performing Damped Simple Harmonic Motion.
- CO4 Learners will understand the Forced Damped Simple Harmonic Motion and Resonance.
- CO5 Learners will understand various Laws of Thermodynamics and their implications in daily life.
- CO6 Learners will understand various Thermodynamic Processes and various Thermodynamic Cycles (P-V graph).
- CO7 Learners will understand the Construction & Working of different types of Heat Engines and the Thermodynamical Processes inside the heat engines.

**Course Name and Code: Vector Calculus, Analog Electronics, (USPH302)**

- CO1 Understand learners the basic concepts of Mathematical physics and their applications in physical situations
- CO2 Understand the basics of transistor biasing, Op-Amp and their applications
- CO3 Understand different types of oscillator and find its frequency.
- CO4 Evaluate line and surface integrals
- CO5 Apply Fundamental Theorem of Line Integrals, Green's Theorem, Stokes' Theorem, or Divergence Theorem to evaluate integrals
- CO6 Design basic amplifier circuits using Op-amp



**Course Name and Code: Acoustics, Laser, Fibre optics, Crystal Physics, Material Physics, Biophysics, (USPH303)**

- CO1 After the completion of the course learners will understand the Factors affecting Acoustics and use of fibre in optical communication
- CO2 Learners will also understand the different types of crystal structures
- CO3 Learners will understand propagation of light through Optical Fiber, Different types of fibre and Application of Optical Fibres
- CO4 Learners will understand working of Laser and also application of Laser in Holography
- CO5 Learners will understand the Electrical and Magnetic properties of the materials
- CO6 Learners will understand the concepts of Continental drift, Plate tectonics and cause of Earthquake

**Course Name and No.: Practical's**

- CO1 Learners will understand to test electronic components like resistor, capacitor, diode, transistor etc.
- CO2 learners will understand how to connect electronic circuit using Breadboard
- CO3 Learners will understand how to use Cathode ray oscilloscope (CRO) to measure time period and amplitude of different waveforms
- CO4 Learners will develop the skill to use transistor as an amplifier in common emitter mode (CE mode)
- CO5 Learners will understand the working of passive filter like RC Low Pass Filter, RC Low Pass Filter, RC Band Pass Filter using Breadboard
- CO6 Learners will develop the skill to use IC 741 (Op-Amp) as a Inverting amplifier, Non-inverting amplifier, Differential amplifier and Voltage follower
- CO7 Learners will develop the skill to determine Young's modulus, Thermal conductivity, Moment of inertia, Surface tension and Acceleration due to gravity (g)
- CO8 Learners will understand Brewster's Law using Polarisation by reflection method
- CO9 Learners will understand how to determine Charge to the mass ratio (e/m) of an electron by J. J. Thomson's method





**Department of Physics**

**Course Outcomes**

**Class: S.Y.B. Sc.**

**Physics: Semester IV**

**Course Name and Code: Optics and Digital Electronics, (USPH401)**

- CO1 Learners will understand various natural phenomenon related to light like Interference, Diffraction, Polarization, etc.
- CO2 Learners will understand the Phenomenon of Interference in details.
- CO3 Learners will understand the Principle, Construction and Working Michelson's Interferometer & Febry-Perot Interferometer.
- CO4 Learners will be able to differentiate between the Fresnel & Fraunhofer class of Diffraction.
- CO5 Learners will understand Fresnel and Fraunhofer class of Diffraction at various obstacles or slits.
- CO6 Learners will understand the phenomenon of Polarization in details and various ways of Polarizing the Light and the applications of Polarized light in daily life.

**Course Name and Code: Quantum Physics, (USPH402)**

- CO1 Able to understand the postulate of Quantum Mechanics
- CO2 Use of Quantum Mechanics , its relevance in explaining significant phenomena in Physics
- CO3 Gained knowledge about basic non-relativistic quantum mechanics, the time-dependent and time-independent Schrödinger equation for simple potentials like for instance the harmonic oscillator and hydrogen like atoms
- CO4 Solve the time-independent Schrodinger equation as an intermediate step to solve the Time-dependent Schrodinger equation.
- CO5 boundary conditions to constraint the set of possible states.
- CO6 Find the transmission and reflection coefficients for one-dimensional barriers





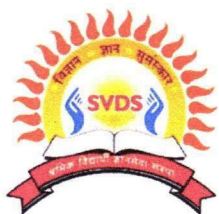
**Course Name and Code: Applied Physics II, (USPH403)**

- CO1 Learners will understand the different types of Number systems like Binary, Octal, Hexadecimal.
- CO2 After the completion of the course learners will develop the skill of programming using microprocessor 8085
- CO3 Learners will also understand the various modulation techniques used in the communication system
- CO4 Learners will understand different types of Flip-Flops
- CO5 Learners will understand the working of shift registers and counters
- CO6 Learners will understand different types of Addressing modes used in microprocessor 8085

**Course Name and Code: Practicals**

- CO1 Learners will get the demonstration of Waveform generator using Op-amp
- CO2 Learners will develop the skill of Error analysis of Physics experiments
- CO3 Learners will be able to determine the Resolving power of telescope, Resolving power of grating
- CO4 Learners will understand the working of MS-JK flip flop (IC 7476), Latch (IC 7400/IC 7402)
- CO5 Learners will be able to do Programming using 8085 microprocessor
- CO6 Learners will understand the working of Op-amp as a Differentiator and Integrator
- CO7 Learners will understand the working of 8:3 Priority Encoder (IC 74LS148) and 3:8 Decoder (IC 74LS138)
- CO8 Learners will be able to determine the wavelength of the monochromatic light using Cylindrical obstacle and Fresnel's biprism.
- CO9 Learners will understand the working of Half adder and full adder using EX-OR gate





SHRAMIK VIDYARTHI DNYANSEVA SANSTHA'S

## AMDAR DEEPAKBHAI KESARKAR SCIENCE COLLEGE

( AFFILIATED TO UNIVERSITY OF MUMBAI )

DODAMARG, DIST. - SINDHUDURG 416 512 ( M. S.)

EMAIL - [dkscsci@gmail.com](mailto:dkscsci@gmail.com)

TEL. NO. - 02363 256755

ESTD. - 2012

COLLEGE CODE - 166

### Department of Mathematics

F. Y. B. Sc.

S. Y. B. Sc.

### Program Specific Outcomes (PSOs)

- Develop fundamental mathematical techniques to aid learners in succeeding in competitive examinations.
- Equip learners with the necessary skills for distinguished careers in industry, banking, and advanced academic pursuits.
- Enable learners to construct and solve mathematical models for real-world problems.
- Learners possess the adaptability to excel in diverse roles across scientific, governmental, financial, healthcare, and other sectors.
- Cultivate mathematical logic essential for solving problems that require mathematical reasoning.
- Develop the capability to perform calculations and apply reasoning skills to design intricate financial models for banking and insurance industries.



  
Principal

Amdar. Deepakbhai Kesarkar Science College  
Dodamarg, Tal. Dodamarg, Dist. Sindhudurg

Shramik Vidyarthi Dnyanaseva Santha's  
Amdar Deepakbhai Kesarkar Science College, Dodamarg  
**Subject – Mathematics**

**Course Outcomes**

**Subject: Mathematics**  
**Class: F. Y. B. Sc.**  
**Semester I**  
**Paper 01 - USMT101: Calculus I**

- CO1: Learners grasp the fundamental concepts of the real number system.
- CO2: Learners comprehend the concept of sequences and their properties.
- CO3: Learners understand first-order, first-degree differential equations.

**Subject: Mathematics**  
**Class: F. Y. B. Sc.**  
**Semester I**  
**Paper 02 - USMT102: Algebra I**

- CO1: Learners grasp the properties of least common multiple (LCM) and greatest common divisor (GCD), as well as the properties of integers and divisibility.
- CO2: Learners comprehend the concepts of functions, relations, and binary operations.
- CO3: Learners understand algebra and the properties of polynomials.





**Subject: Mathematics**  
**Class: F. Y. B. Sc.**  
**Semester II**  
**Paper 01 - USMT201: Discrete Mathematics**

- CO1: Learners grasp the fundamentals of basic counting techniques.
- CO2: Learners comprehend the concepts involved in advanced counting methods.
- CO3: Learners understand the principles of permutations and recurrence relations.

**Subject: Mathematics**  
**Class: F. Y. B. Sc.**  
**Semester II**  
**Paper 02 - USMT202: Calculus II**

- CO1: Learners grasp the fundamental concepts of limits and continuity.
- CO2: Learners understand the differentiability of functions and its applications.
- CO3: Learners understand basic concepts of integrals and its applications.



**Subject: Mathematics**  
**Class: S. Y. B. Sc.**  
**Semester III**  
**Paper 01 - USMT301: Calculus III**

- CO1: Learners understand the foundational concepts of Analysis with a high level of rigor and precision.
- CO2: Learners understand the critical principles and methodologies that form the basis for advanced studies in Analysis.
- CO3: Learners understand the essential analytical skills and knowledge required to excel in more specialized and advanced courses in Analysis.

**Subject: Mathematics**  
**Class: S. Y. B. Sc.**  
**Semester III**  
**Paper 02 - USMT302: Linear Algebra I**

- CO1: Learners understand the theory and methods for solving systems of linear equations and working with matrices.
- CO2: Learners understand the concepts of vector spaces, including their structure and properties.
- CO3: Learners understand the concepts of basis and dimension within vector spaces and their applications.



**Subject: Mathematics**  
**Class: S. Y. B. Sc.**  
**Semester III**  
**Paper 03 - USMT303: Ordinary Differential Equations**

- CO1: Learners understand how to apply problem-solving techniques to a wide range of scientific disciplines.
- CO2: Learners understand the methods for addressing various types of problems across different fields of science.
- CO3: Learners understand the foundational knowledge necessary for advanced study in differential equations and related areas.

**Subject: Mathematics**  
**Class: S. Y. B. Sc.**  
**Semester IV**  
**Paper 01 - USMT401: Multivariable Calculus I**

- CO1: Learners understand the crucial role of formal proofs, which are heavily emphasized throughout the course.
- CO2: Learners understand how rigorous proof techniques significantly enhance their overall comprehension of mathematical concepts.
- CO3: Learners understand that mastering formal proofs deepens their understanding of the entire field of Mathematics.





**Subject: Mathematics**  
**Class: S. Y. B. Sc.**  
**Semester III**  
**Paper 02 - USMT402: Linear Algebra II**

- CO1: Learners understand the concept and applications of linear transformations.
- CO2: Learners understand the properties and significance of inner product spaces.
- CO3: Learners understand the importance of eigenvalues and eigenvectors in various mathematical contexts.

**Subject: Mathematics**  
**Class: S. Y. B. Sc.**  
**Semester III**  
**Paper 03 - USMT403: Numerical Methods**

- CO1: Learners understand how to solve both algebraic and transcendental equations.
- CO2: Learners understand methods for solving systems of equations.
- CO3: Learners understand the techniques of interpolation and numerical integration.





SHRAMIK VIDYARTHI DNYANSEVA SANSTHA'S

# AMDAR DEEPAKBHAI KESARKAR SCIENCE COLLEGE

( AFFILIATED TO UNIVERSITY OF MUMBAI )

DODAMARG, DIST. - SINDHUDURG 416 512 ( M. S.)

EMAIL - [dkscsci@gmail.com](mailto:dkscsci@gmail.com)

TEL. NO. - 02363 256755

ESTD. - 2012

COLLEGE CODE - 166

## FOUNDATION COURSE

### PROGRAMME SPECIFIC OUTCOMES

- To understand different cultural diversity and its importance
- To understand characteristics of the language differences, rural & tribal community variations.
- To learn aspects of Indian Constitution.
- To understand about increasing social problem and there solutions.
- To obtain knowledge of Indian politics.
- To understand globalization and Indian society.
- To learn reasons of stress and stress management.
- To understand modern social problems and there management.
- Sensitize with social issues
- Understand the human rights
- Awareness about right to information
- To understand values of the environment and its importance
- To learn about various techniques of science and technology
- To obtain knowledge of competitive exams of Indian Government
- To understand natural calamity and their management
- To learn about science and technology in our daily life



  
Principal

Amdar. Deepakbhai Kesarkar Science College  
Dodamarg, Tal. Dodamarg, Dist. Sindhudurg

**FOUNDATION COURSE**

**Course outcomes**

**Subject: - Foundation Course**

**Course code: USFC101**

**Semester I**

- CO1: Learner would understand the multi-cultural diversity of Indian society through its demographic composition.
- CO2: This unit would allow learner to study about regional variations according to rural, urban and tribal characteristics.
- CO3: Learner would understand the concept of disparity as arising out of stratification and inequality.
- CO4: Learner would understand inter-group conflicts arising out of communalism.
- CO5: Learner would obtain information about the structure of the Constitution-the Preamble, Main Body and Schedules.
- CO6: Learners will grasp the concept of role and significance of women in politics
- CO7: Learners were grasped the detail information about HIV and AIDS.

**Course outcomes**

**Subject: - Foundation Course**

**Course code: USFC201**

**Semester II**

- CO1: Learner would understand the concepts of liberalization, privatization and globalization.
- CO2: Learners were grasped the detail information about concept of Human Rights; origin and evolution of the concept.
- CO3: Learners were collecting the knowledge Environmental Degradation- causes and impact on human life.
- CO4: Learner would understand the Stress and Conflict.
- CO5: Learner would understand types of conflicts and use of coping mechanisms for managing individual stress.
- CO6: Learners were obtaining the knowledge about the development projects and Human Rights violations.





**Course outcomes**

**Subject: - Foundation Course**

**Course code: USFC301**

**Semester III**

- CO1: Learner would understand about basic issues related to Human Rights of weaker sections.
- CO2: Learner would gain an overview of significant skills required to address competition in career choices.
- CO3: Learner would understand women- Constitutional and legal rights.
- CO4: Learner would understand Concept of Disaster and general effects of disasters on human life.
- CO5: Learner would understand the ancient cultures, the Classical era, the middle Ages, the Renaissance, the Age of Reason and Enlightenment.
- CO6: Learner would understand the barriers to effective communication.

**Course outcomes**

**Subject: - Foundation Course**

**Course code: USFC401**

**Semester IV**

- CO1: Learner were obtained information about Rights of Consumers.
- CO2: Learner were obtained information about Right to Information.
- CO3: Learner would understand concept of ecology.
- CO4: Learner would understand the concept of environment and sustainable development.
- CO5: Learner would understand the concept of laser in remote sensing, GIS/ GPS mapping, and medical use.
- CO6: Learner would understand the concept of nanotechnology

