Rayat Shikshan Sanstha's
Annasaheb Awate Arts, Commerce & Hutatma Babu Genu Science College
Manchar, Tal. Ambegaon, Dist. Pune
(Reaccredited with 'A' Grade by NAAC)
Affiliated by Savitribai Phule Pune University, Pune

CRITERION II - TEACHING-LEARNING AND EVALUATION

AQAR 2022-23

2.6 - STUDENT PERFORMANCE AND LEARNING OUTCOMES

2.6.1 - Programme and course outcomes for all Programmes offered by the institution are stated and displayed on website and communicated to teachers and students.

List of Documents:

1. Syllabus (Sample).
2. PO, PSO, CO displayed on College Website.
3. PO, PSO, CO displayed on College Campus.
4. Notice regarding communicating PO, PSO, CO to students.
5. PO, PSO, CO communicated to students (Sample).

Savitribai Phule Pune University

(Formerly University of Pune)

Three Year B.Sc. Degree Program in Zoology

(Faculty of Science & Technology)

F.Y.B.Sc. Zoology

Choice Based Credit System Syllabus

to be implemented from

Academic Year 2019-2020

Preamble:

Zoology is one of the major subjects of Basic Sciences and deals with all aspects of animal biology. It includes an interesting range of highly diverse topics. A zoology student needs to gain understanding of many areas of the subject to keep pace with advancements in Life Sciences.

This under-graduate degree program has been designed by the Board of Studies in Zoology of Savitribai Phule Pune University with a substantial component of what is needed from zoologists as a skilled career and what zoologists need to pursue for post-graduation and further academic studies. It follows the guidelines laid down by the University Grants Commission, New Delhi. This newly designed curriculum is a perfect blend of the classical aspects in Zoology and the advanced and more specialized areas.

This degree offers Discipline Specific Core Courses **[CC]** in Animal Systematics, Animal Ecology, Animal Cell biology, Applied Zoology, Pest Management, Histology, Biological Chemistry, Genetics, Developmental Biology, Parasitology, Medical & Forensic Zoology, Animal Physiology, Molecular Biology, Entomology, Techniques in Biology and Evolutionary Biology.

In addition to the Core Courses, Ability Enhancement Compulsory Courses **[AECC]** have been added in the second year i.e. Semester III and Semester IV of the undergraduate course. In the third year i.e. Semester V and Semester VI, Discipline specific Elective Courses **[DSEC]** and Skill Enhancement Courses **[SEC**] have been offered. The students, therefore, have an opportunity to take courses in Environment Awareness, Language communication: English/Marathi, Aquarium Management, Poultry Management and Environmental Impact Assessment. In Semester VI the students also have a course dedicated to Project work.

The syllabus has been framed in such a way that the student gains each year, a broader perspective of the subject as he progresses towards completion of the degree program. Field trips, Educational visits and the Project work have been included for the student to experience the applications of the theory learnt in the classroom.

After completion of the program, it is expected that students will understand and appreciate: animal diversity, few applications of Zoology, the structure, functions and life processes at cellular, tissue, organ and system level, significance of evolution, and basic concepts of human health. The students would also gain an insight into laboratory and field work through the practical course, field work and the project.

While presenting this new syllabus to the teachers and students of F.Y.B.Sc. Zoology, I am extremely happy to state that efforts have been made to seek inputs of all the stake holders to make it more relevant.

The new course that will be effective from the academic year 2019- 2020 and will follow the Choice Based Credit System in a Semester mode. It has been primed keeping in view the distinctive requirements of B.Sc. Zoology students. The contents have been drawn-up to accommodate the widening prospects of the discipline of Life Sciences. They reflect the changing prerequisites of the students. This program has been introduced with 132 credits for the subject group while 08 credits to earn from any of the 08 groups offering a range of curricular, cocuricular and extracurricular activities. This pattern has been specially aimed towards the overall development of the students'. The calculation of credits and CGPA will

be as per the guidelines of the University. The B.Sc. Zoology program provides an appropriate blend of classical and applied aspects of the subject. This newly designed curriculum will allow students to acquire the skill in handling scientific instruments planning and performing in the laboratory and exercising critical judgement, independent thinking and problem solving skills. The Syllabus has been revised with the following aims

- To foster curiosity in the students for Zoology
- To create awareness amongst students for the basic and applied areas of Zoology
- To orient students about the importance of abiotic and biotic factors of environment and their conservation.
- To provide an insight to the aspects of animal diversity.
- To inculcate good laboratory practices in students and to train them about proper
- handling of lab instruments.

1. Course Structure:

Course Structure with Credit Distribution of the Undergraduate Science Program in Zoology

Course	Course Code and Name of the Course		Credits
F.Y.B.Sc.	**SEMESTER I**	**SEMESTER II**	
CC	ZO-111 Animal Diversity I	ZO-121 Animal Diversity II	2+2
CC	ZO-112 Animal Ecology	ZO-122 Cell Biology	2+2
CC	ZO-113 Zoology Practical Paper	ZO-123 Zoology Practical Paper	1.5 +1.5
S.Y.B.Sc.	**SEMESTER III**	**SEMESTER IV**	
CC	ZO-231 Animal Diversity III	ZO-241 Animal Diversity IV	2+2
CC	ZO-232 Applied Zoology I	ZO-242 Applied Zoology II	2+2
CC	ZO-233 Zoology Practical Paper	ZO-243 Zoology Practical Paper	2+2
AECC	EVS 231-Environment Awareness	EVA 241-Environment Awareness	2+2
AECC	LA 231-English/Marathi	LA 241- English /Marathi	2+2
T.Y.B.Sc.	**SEMESTER V**	**SEMESTER VI**	
DSEC	ZO-351 Pest Management	ZO-361 Medical & Forensic Zoology	2+2
DSEC	ZO-352 Histology	ZO-362 Animal Physiology	2+2
DSEC	ZO-353 Biological Chemistry	ZO-363 Molecular Biology	2+2
DSEC	ZO-354 Genetics	ZO-364 Entomology	2+2
DSEC	ZO-355 Developmental Biology	ZO-365 Techniques in Biology	2+2
DSEC	ZO-356 Parasitology	ZO-366 Evolutionary Biology	2+2
DSEC	ZO-357 Zoology Practical Paper 1	ZO-367 Zoology Practical Paper 1	2+2
DSEC	ZO-358 Zoology Practical Paper 2	ZO-368 Zoology Practical Paper 2	2+2
DSEC	ZO-359 Zoology Practical Paper 3	ZO-369 Zoology Practical Paper 3	2+2
SEC	ZO-3510 Aquarium Management	ZO-3610 Environmental Impact Assessment	2+2
SEC	ZO- 3511 Poultry Management	ZO-3611 Project	2+2

Detailed Syllabus of F.Y.B.Sc.

Paper	Semester I Course Code & Course	Credits	No of Lectures	Marks (Internal + University)		SemesterII Course Code & Course	Credits	No of Lectures	Marks (Internal + University)
I	ZO-111 Animal Diversity I	02	30	15+ 35= 50		ZO-121 Animal Diversity II	02	30	15+ 35 = 50
II	ZO-112 Animal Ecology	02	30	15+ 35 = 50		ZO-122 Cell Biology	02	30	15+ 35 = 50
III	ZO-113 Zoology Practical Paper	01	15 practical	15+ 35 = 50		ZO-123 Zoology Practical Paper	01	15 Practical	15+ 35 = 50

Course No.	Course Title	Total Number of lectures/practical per Term	Standard of passing		
			Internal marks	**University marks**	**Total marks**
ZO-111 (First term)	Animal Diversity–I	Three lectures/Week (Total 30 lectures per term)	15	35	50
ZO-121 (Second term)	Animal Diversity-II	Three lectures/Week (Total 30 lectures per term)	15	35	50
ZO-112 (First term)	Animal Ecology	Three lectures/Week (Total 30 lectures per term)	15	35	50
ZO-122 (Second Term)	Cell Biology	Three lectures/Week (Total 30 lectures per term)	15	35	50
ZO-113 (First term)	Zoology Practical Paper	Practical session of 3 hours. 15 Practicals	15	35	50
ZO-123 (Second Term)	Zoology Practical Paper	Practical session of 3 hours. 15 Practicals	15	35	50

Animal Diversity I & II

Objectives:

1. To understand the Animal diversity around us.
2. To understand the underlying principles of classification of animals.
3. To understand the terminology needed in classification.
4. To understand the differences and similarities in the various aspects of classification.
5. To classify invertebrates and to be able to understand the possible group of the invertebrate observed in nature.to understand our role as a caretaker and promoter of life.

Learning outcomes for the course:

1. The student will be able to understand classify and identify the diversity of animals.
2. The student understands the importance of classification of animals and classifies them effectively using the six levels of classification.
3. The student knows his role in nature as a protector, preserver and promoter of life which he has achieved by learning, observing and understanding life.

Course Title: Animal Diversity –I

Course Code-ZO-111

Semester I **(2 credits-30 lectures)**

No.	Title & Contents	Number of lectures
1.	**Principles of Classification:**	**(05)**

Taxonomy & Systematics

1.1 Taxonomy: Basic terminology and Introuction

- Alpha, Beta and Gamma levels of taxonomy, Micro-taxonomy
- Macro taxonomy: Phenetics (numerical taxonomy, Cladistics (Phylogenetic systematics), Evolutionary taxonomy (evolutionary systematics)
- Classical taxonomy and experimental or neo taxonomy (biochemical taxonomy and Cytotaxonomy)
- Significance of Taxonomy

1.2 Systematics: definition introduction

1.3 Linnaean system of classification (Six level classification: Phylum, class, order, family, genus, species)

1.4 Concept of Species: Biological & Evolutionary

1.5 Introduction to Binomial Nomenclature.

1.6 Introduction to Five kingdom system.

2. **General Features of kingdom Animalia** **(02)**

2.1 General characters of Kingdom Animalia, Grades of organization

2.2 Symmetry.

3. **Kingdom Protista (Phylum: Protozoa)** **(07)**

3.1 Introduction to Phylum Protozoa

3.2 Salient features of Phylum Protozoa

3.3 Classification of Phylum Protozoa up to classes with two examples of each class (names only).

Class Rhizopoda (e.g :*Entamoeba histolytica, Arcella*),

Class Mastigophora (e.g: *Euglena viridis, Trypanosoma gambiense*),

Class Ciliata (e.g *Paramoecium caudatum, Opalina ranarum*),

Class Sporozoa (e.g *Plasmodium vivax, Toxoplasma gondii*)

3.4 Locomotion in Protozoa: Amoeboid, Ciliary and Flagellar with suitable examples

3.5 Type Study: ***Paramecium caudatum***: Classification, Habit and Habitat, External morphology, Feeding and digestion, Excretion, Reproduction (binary fission and conjugation)

3.6. Economic importance of Protozoa (three harmful and one useful protozoan)

3.6.1-**Harmful Protozoa**:

Plasmodium vivax (malarial parasite),

Entamoeba histolytica (Amoebic dysentery),

Trypanosoma gambiense (Gambian sleeping sickness).

3.6.2- **Useful Protozoa**:

Trichonympha

4. **Origin of Metazoa** **(01)**

4.1 Introduction Origin and importance of Metazoa

5. **Phylum Porifera** **(06)**

5.1. Introduction to Phylum Porifera

5.2 Classification of Phylum Porifera up to classes with two examples of each class (names only, no description of specimens).

Class Calcarea (e.g.: *Leucosolenia, Sycon (Scypha)*

Class Hexactinellida (e.g: *Euplectella* (venus flower basket), *Hyalonema* (glass sponge))

Class Demospongiae (e.g: *Chalina* (Mermaid's gloves, *Spongilla* (fresh water sponge))

5.3 Canal system in sponges: Ascon, Leucon and Rhagon type.

5.4 Skeleton in sponges: Spicules, its types:

Microscleres & Megascleres,

Monoaxon – monactinal, diactinal, Amphidiscs, Triaxon, Polyaxon,

Spongin fibres.

5.5 Regeneration in sponges.

5.6 Economic importance of Phylum Porifera.

6. **Phylum: Cnidaria** **(05)**

6.1 Introduction to Phylum Cnidaria

6.2 Salient features of Phylum Cnidaria

6.3 Classification of Phylum Cnidaria up to class level with given

examples each class (names of examples only)

Class Hydrozoa e.g.: Hydra, *Physalia* (Portuguese man of war)

Class Scyphozoa e.g: *Aurelia* (Jelly fish), *Leucernaria* (trumpet shaped Jellyfish)

Class Anthozoa: e.g; Metridium (Common sea anemone0

6.4 Polymorphism in Hydrozoa: Polyps & Medusa (polyp types: gastrozooids, dactylozooids, gonozooids) and functions

6.5 Economic importance of Cnidarians with reference to Corals and Coral reefs.

7. **Phylum Platyhelminthes** **(04)**

7.1 Introduction to Phylum Platyhelminthes

7.2 Salient features of Phylum Platyhelminthes

7.3 Classification of Phylum Platyhelminthes up to classes with two examples each class (names of examples only).

Class: Turbellaria (e.g: *Dugesia, Bipallium*)

Class: Trematoda (e.g*: Fasciola hepatica, Schistosoma haematobium*)

Class Cestoda: (*Taenia solium* (pork tape worm),*Echinococcus granulosus* (dog tapeworm)

7.4 Parasitic adaptations in Platyhelminthes: structural and physiological.

7.5 Economic importance of Platyhelminthes

Course Title: Animal Ecology

Course Code: ZO 112

Semester I **(2 Credits-30 Lectures)**

Learning outcomes for the course:

- The learners will be able to identify and critically evaluate their own beliefs, values and actions in relation to professional and societal standards of ethics and its impact on ecosystem and biosphere due to the dynamics in population.
- To understand anticipate, analyse and evaluate natural resource issues and act on a lifestyle that conserves nature.
- The Learner understands and appreciates the diversity of ecosystems and applies beyond the syllabi to understand the local lifestyle and problems of the community.
- The learner will be able to link the intricacies of food chains, food webs and link it with human life for its betterment and for non-exploitation of the biotic and abiotic components.
- The working in nature to save environment will help development of leadership skills to promote betterment of environment.

ZO 112: Animal Ecology **(2 Credits-30 Lectures)**

No.	Topic & Content	Number of lectures
1.	**Introduction to Ecology**	**(02)**
	1.1 Concepts of Ecology, Environment, Population, Community, Ecosystem, Biosphere, Autecology and synecology.	
2.	**Ecosystem**	**(08)**
	2.1 Types of ecosystems: Aquatic (Freshwater, estuarine, Marine and terrestrial (Forest, Grassland and Desert)	
	2.2 Structure and Composition of Ecosystem (Abiotic components and biotic components.	
	2.3 Food chain: Detritus and grazing food chains, Food web, Energy flow through the ecosystem, Ecological pyramids: Number, Biomass, and Energy.	
	2.4 concept of Eutrophication in lakes and rivers.	
3	**Population**	**(08)**
	3.1Characteristic of population: Density, Natality, Mortality, Fecundity tables, survivorship curves, age ratio, sex ratio, dispersal and dispersion.	
	3.2Exponential and logistic growth,	
	3.3 Population regulation – density-dependent and independent factors.	
	Population interactions, Gause's Principle with laboratory and field interactions,	
	3.4 Quadrate, line and belt transect methods.	
4.	**Community**	**(07)**
	4.1Community characteristics: species richness, dominance, diversity, abundance, vertical stratification, Eco tone and edge effect; Ecological succession with one example.	
5.	**Animal interactions**	**(05)**
	5.1Introduction to Animal interactions	
	5.2 Types of Animal interactions with at least to suitable examples of each	
	5.2.1-Competition: Interspecific and intraspecific	

5.2.2- Beneficial Associations:

Commensalism (remora fish on shark, Cattle egrets on livestock),

Mutualism (Termite and *Trichonympha*, bees and flowers, cleaning symbiosis in fish by prawns.

5.3 Antagonistic associations: Parasitism (*Ascaris* and man, lice and humans), Prey predation (Lion and deer).

Course Title: Zoology Practical Paper

Course Code: ZO113

Semester I **(1.5 Credits-45 Hours)**

Animal Diversity –I

1. Museum Study of phylum Protozoa: Euglena, Paramecium, Amoeba, Plasmodium sp.
2. Museum study of Phylum Porifera: *Sycon*, *Euplectella*, *Chalina*, Spongilla.
3. Museum study of phylum Cnidaria: *Hydra*, *Physalia*, *Aurelia*, *Metridium*.
4 Museum Study of phylum Platyhelminthes: *Planeria*, *Faciola hepatica*, *Taenia solium*
5. Study of Paramecium: Culture, External morphology, Conjugation and Binary fission.
6. Study of permanent slides: Spicules and Gemmules in Sponges, T.S. of *Sycon*, T.S. of Hydra, Taeniasolium: Scolex, Gravid proglottid.
7. Identification of any three museum specimen with help of taxonomic identification key.
8. Visit to Zoological survey of India/ Museum/National Park.

Animal Ecology:

1. Estimation of Dissolved oxygen from given water sample.
2. Estimation of Water Alkalinity from given water sample.
3. Study of animal community structure by quadrate method (Field or Simulation).
4. Determination of density, frequency and abundance of species by quadrat method.
5. Study of microscopic fauna of freshwater ecosystem (from pond).
6. Estimation of water holding capacity of given soil sample.
7. Estimation of dissolved and free carbon dioxide from water sample.
8. Study of Eutrophication in lake/river.

Course Title: Animal Diversity –II

Course Code: ZO-121:

Semester II **(2 credits-30 lectures)**

No.	Title & Contents	Number of lectures
1.	**Phylum Aschelminthes**	**(04)**
	1.1 Introduction to phylum Aschelminthes 1.2 Salient features of Phylum Aschelminthes 1.3 Classification of Phylum Aschelminthes (Class Nematoda only with two examples – *Ascaris lumbricoides* (common round worm), *Wuchereria bancrofti* (Elephantiasis)). 1.4 Economic importance of class Nematoda.	
2.	**Phylum Annelida**	**(06)**
	2.1 Introduction to Phylum Annelida 2.2 Salient features of Phylum Annelida. 2.3 Classification of Phylum Annelida up to classes with examples of following classes (names of examples only). Class Polychaeta (e.g: *Nereis pelagica (neries/* sand worm, *Aphrodita aculeata* (=Aphrodite/ seamouse) Class Oligochaeta (e.g.: *Pheritima posthuma* (earthworm), Class Hirudinea (e.g: *Hirudinaria granulosa* common cattle leech) 2.4 Economic importance of Annelida with reference to earthworms as friends of farmers and in their role in vermicomposting.	
3.	**Phylum Arthropoda**	**(06)**
	3.1 Introduction to Phylum Arthropoda 3.2 Salient features of Phylum Arthropoda 3.3 Classification of Phylum Arthropoda with specific classes and mentioned examples (names only) Class:Crustacea*:Palaemon palaemon* (Prawn) *Brachyura* spp. crabs) Class: Chilopoda: *Scolopendra* sp. (centipede) Class: Diplopoda: *Julus* sp. (millipede)	

Class Insecta*: Periplaneta americana* (American Cockroach), *Anopheles stephensii* (mosquito).

Class: Arachnida- Spiders, *Buthus sp (*scorpion)

3.4 mouth parts in insects: Mandibulate (cockroach), Piercing and sucking (female Anopheles mosquito), chewing and lapping type (honey bee)

3.5 Economic importance of Arthropoda

Useful Insects: Honey bee, Lac insect, Silkworm.

Harmful insects: Female Anopheles mosquito, Red cotton bug, Rice weevil

4. **Phylum Mollusca** **(06)**

4.1 Introduction to Phylum Mollusca

4.2 Salient features of Phylum Mollusca

4.3 Classification of Phylum Mollusca with specific classes and mentioned examples (names only)

Class Gastropoda e.g *Pila globosa* (apple snail)

Class Pelecypoda e.g *Lamellidens marginalis*(Bivalve)

Class Polyplacophora e.g *Chiton*

Class: Cephalopodae.g: *Octopus vulgaris* (common octopus), *Sepia officinalis* (common Cuttle fish)

4.4 Economic importance of Mollusca.

5. **Study of Phylum Echinodermata** **(08)**

5.1 Introduction to Phylum Echinodermata

5.2 Salient features of Phylum Echinodermata.

5.3 Classification of Phylum Echinodermata with specific classes and mentioned examples (names only)

Class Asteroidea (*Asterias rubens* sea stars or starfish)

Class: Holothuroidea. *Holothuria sp*. sea cucumbers)

Class: Echinoidea *(Echinus esculentis* common sea urchins)

Class: Crinoidea (sea lilies or feather stars)

5.4 **Type study: *Asteriasrubens* (Sea Star):** Classification, Habit

Habitat, External Morphology, Digestive system, Water vascular

System and autotomy and regeneration

5.5 Pedicillaria in Echinodermata: straight, crossed, valvate, tridactylous, globigerous.

5.6 Economic importance of Echinidermata.

Course Title: Cell biology

Course Code: ZO122:

Semester II (2 credits-30 lectures)

Learning outcomes for Cell Biology

- The learner will understand the importance of cell as a structural and functional unit of life.
- The learner understands and compares between the prokaryotic and eukaryotic system and extrapolates the life to the aspect of development.
- The dynamism of bio membranes indicates the dynamism of life. Its working mechanism and precision are responsible for our performance in life.
- The cellular mechanisms and its functioning depends on endo-membranes and structures. They are best studied with microscopy.

ZO122: Cell biology (2 credits-30 lectures)

No. Title & Contents Number of lectures

1. **Introduction: (04)**

1.1 Introduction cell biology,

1.2 Cell as basic unit of life.

1.3 Importance of Cell Biology and its applications in industry.

Overview of Cells

1.3 Introduction to Prokaryotic and Eukaryotic cells.

1.4 Structure and function of Prokaryotic *(E. coli)*

1.5 Structure and function of Eukaryotic cells (Animal and Plant Cell)

2 **Techniques in Cell Biology:** **(04)**

3.1 Introduction

3.2 Microscopy: Basic Principle, Simple, Compound and applications of Electron Microscope.

3.3 Stains and dyes:
Types of Stain: Acidic, basic and neutral.

Dye (Preparation and chemistry of dyes not expected)

3.4 Micrometry.

3 **Plasma Membrane:** **(06)**

4.1Introduction

4.2 Structure of plasma membrane: Fluid mosaic model.

4.3Transport across membranes: Active and Passive transport, Facilitated transport, exocytosis, endocytosis, phagocytosis – vesicles and their importance in transport.

4.4 Other functions of Cell membrane in brief Protection, cell recognition, shape, storage, cell signalling.

4.5 Cell Junctions: Tight junctions, gap junctions, Desmosomes.

4 **Nucleus: Structure and function** **(04)**

5.1Introduction to Nucleus

5.2 Structure of Nucleus: Nuclear envelope, Nuclear pore complex, Nucleoplasm, Nucleolus

5.3 Chromatin: Eu-chromatin and Hetro-chromatin, nature and differences.

5.4 Functions of nucleus

5. **Endomembrane System** **(04)**

6.1 Introduction

6.2 Structure, location and Functions: Endoplasmic Reticulum, Golgi apparatus, Lysosomes and vacuoles.

7. **Mitochondria and Peroxisomes** **(03)**

7.1 Introduction

7.2 Mitochondria: ultrastructure and function of mitochondrion.

7.3 Peroxisomes

Cell Division **(05)**

7.1 Introduction

7.2 Cell cycle (G1, S, G2, M phases),

7.3 Mitosis.

7.4 Meiosis.

Course Title: Zoology Practical Paper

Course Code: ZO123

Semester II **(1.5 Credits-45 Hours)**

Animal Diversity –II

1. Museum study of Phylum Aschelminthes: *Ascaris lumbricoides*,
2. Museum study of phylum Annelida: *Neries*, Earthworm, Leech.
3. Museum study of phylum Arthropoda: Prawn, Cockroach, Centipede, Millipede, Crab
4. Museum study of phylum Mollusca: *Pila*, *Chiton*, Bivalve, Octopus.
5. Museum study of phylum Echinodermata: Sea Star, Sea urchin, Brittle Star, sea cucumber.
6. Study of permanent slides: Mouthparts of Insects -Mandibulate, Piercing and sucking, Chewing and Lapping.
7. Types of Shells in Mollusca. *Pila*, Bivalve, Chiton, Sepia.
8. Economic importance of honey bees, Lac insects silk worms, red cotton bug, Anopheles mosquito
9. Earthworm: vermicomposting bin preparation and maintenance.
10. Visit to a vermicomposting unit/ field for insect pest collection and its identification

Cell Biology

1. Study of Microscope: Simple and Compound
2. Micrometry: Measurement of microscopic objects
3. Study of cell: Preparation of temporary mount of human buccal epithelial cells.
4. Preparation of blood smears to observe the blood cells
5. Temporary preparation of mitotic cell from onion roots
6. Study of Cell organelles (any three) by using microphotographs

Recommended Reference Books

Animal Diversity – I and II

1. Anderson, D.T (Ed) 1988: Invertebrate Zoology, Oxford University Press.
2. Barnes, R.D. (1982). Invertebrate Zoology, V Edition. Holt Saunders International Edition.
3. Barnes, R.S.K., Calow, P., Olive, P.J.W., Golding, D.W. and Spicer, J.I. (2002). The Invertebrates: A New Synthesis, III Edition, Blackwell Science
4. Barrington, E.J.W. (1979). Invertebrate Structure and Functions. II Edition, E.L.B.S. and Nelson
5. Boradale, L.A. and Potts, E.A. (1961). Invertebrates: A Manual for the use of Students. Asia Publishing Home.
6. Brusca, R.C andBrusca, G. J (2003): Invertebrate (2^{nd} ed.) Sinauer Associates Inc., Publishers Sunderland.
7. Hadzi, J (1963): The Evolution of Metazoa, Macmillan Newyork.
8. Hyman, L. H (1940): Invertebrates Vol I, Protozoa through ctenophore.
9. Hyman. L. H (1955): The Invertebrates Vol: IV, Echinodermata, the coelomate bilateria, Mcgraw Hill, Newyork.
10. Modern Text-Book of zoology, Vertebrates. By Kotpal, RL., Rastogi and Co., Meerut.
11. Nigam H.C., Zoology of Chordates, Vishal Publication, Jalandhar-144008.
12. Phylum Protozoa to Echinodermata (series) by Kotpal, RL. Rastogi and Co., Meerut
13. Parker T.J and W.A Haswell (1972): A text book of Zoology, Vol –I (7^{th} edition by Marshall and Williams) Mcmillan Press ltd.
14. Jordan, E.L. and P.s.Verma Invertebrate Zoology, S. Chand and Co., Ltd. Ram Nagar, New Delhi.
15. Russel Hunter: - A Biology of higher invertebrates, MacMillon Co. Ltd. London

Animal Ecology

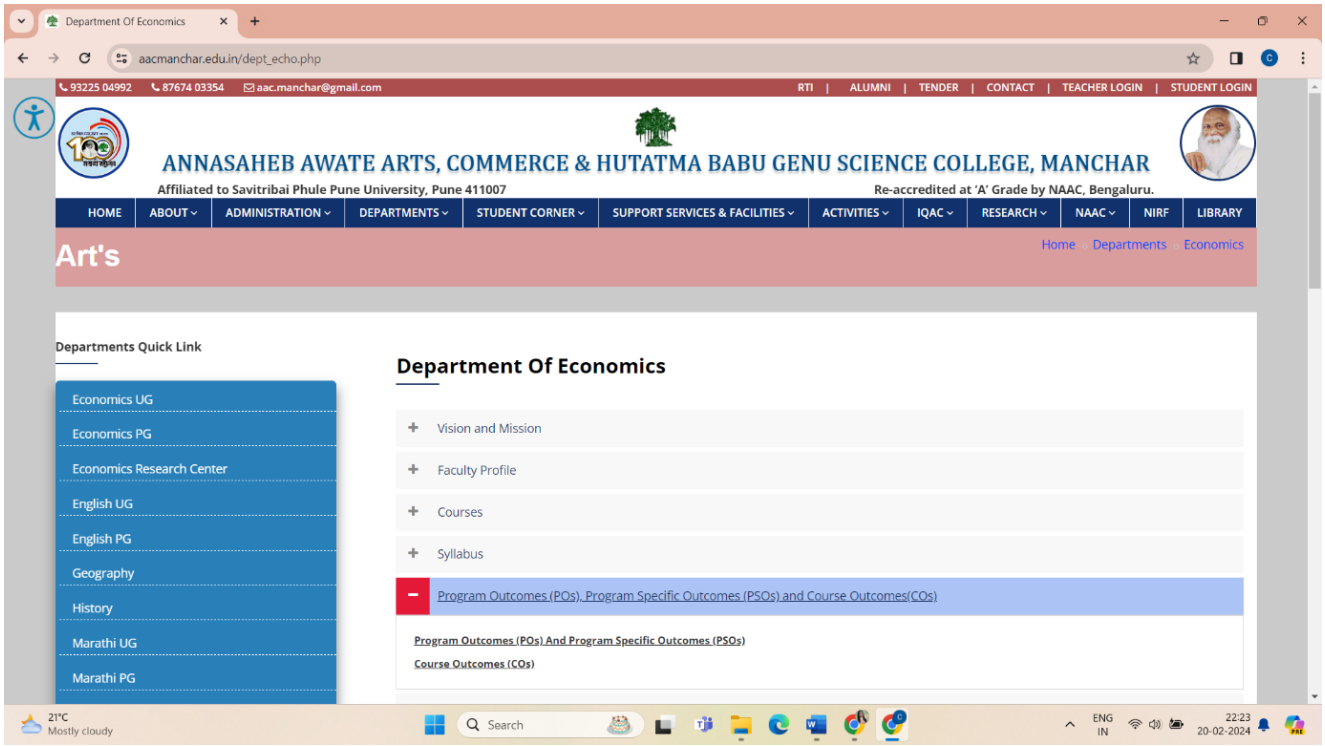
1. Colinvaux, P. A. (1993). Introduction to Ecology. II Edition. Wiley, John and Sons, Inc.
2. Krebs, C. J. (2001). Ecology: The Experimental Analysis of Distribution and Abundance, 6th Edition, ©2009, Pearson
3. Odum, E.P., (2008). Fundamentals of Ecology. Indian Edition. Brooks/Cole
4. Robert Leo Smith Ecology and field biology Harper and Row publisher
5. Ricklefs, R.E., (2000). Ecology. V Edition. Chiron Press
6. Sharma P.D. (2002) Ecology and Environment, Himalaya Publication

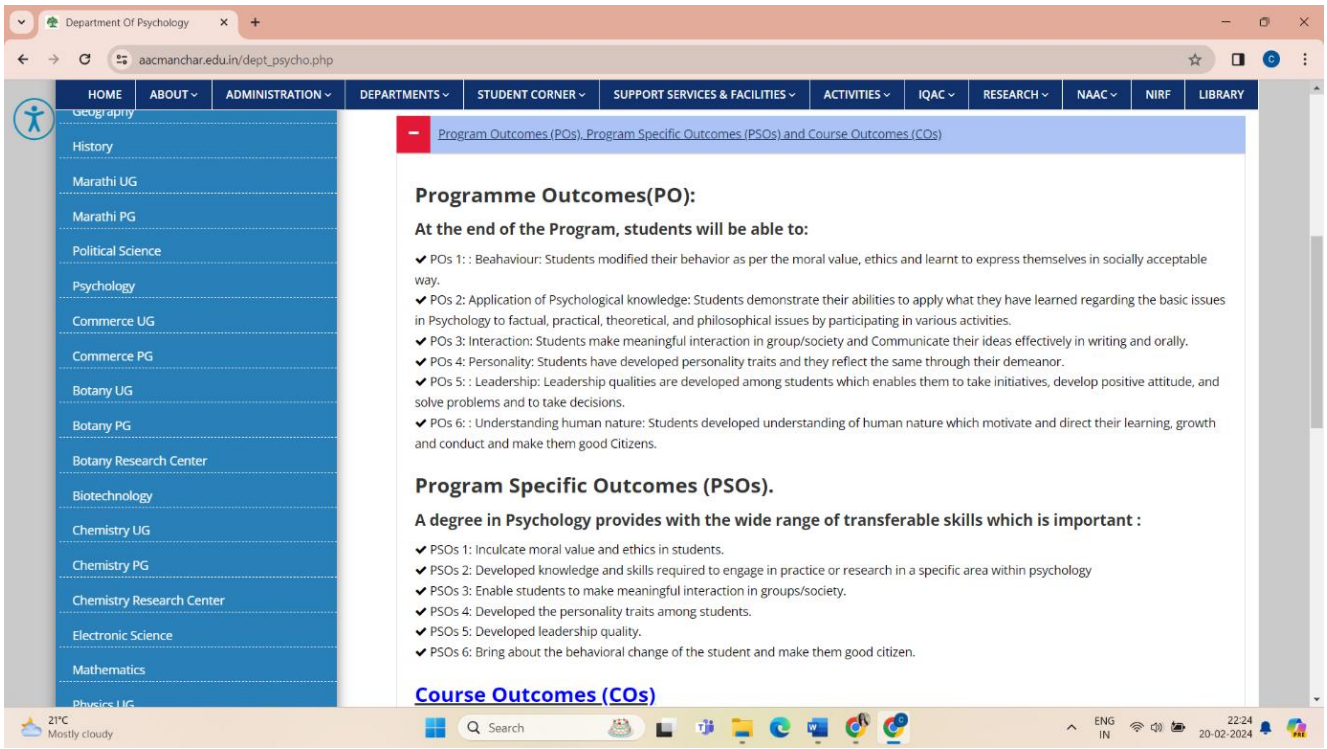
Cell Biology

1. Karp, G. (2010). *Cell and Molecular Biology: Concepts and Experiments*. VI EditionJohn Wiley and Sons. Inc.
2. De Robertis, E.D.P. and De Robertis, E.M.F. (2006). *Cell and Molecular Biology*. VIIEdition. Lippincott Williams and Wilkins, Philadelphia.
3. Cooper, G.M. and Hausman, R.E. (2009). *The Cell: A Molecular Approach*. V Edition.ASM Press and Sunderland, Washington, D.C.; Sinauer Associates, MA.
4. Becker, W.M., Kleinsmith, L.J., Hardin. J. and Bertoni, G. P. (2009). *The World of the Cell*. VII Edition. Pearson Benjamin Cummings Publishing, San Francisco.
5. Bruce Albert, Bray Dennis, Levis Julian, Raff Martin, Roberts Keith and Watson James (2008). *Molecular Biology of the Cell*, V Edition, Garland publishing Inc., New York and London
6. Inside the Cell (2005); US Department of Health Sciences, National Institute of Health, Natinal institute of General Medicine Sciences.
7. Lodish, H., D. Baltimore, A. Berk, L. Zipursky, M. Matsudaira and J. Darnell. (2010).
8. Molecular Cell Biology, Eds. 3, Scientific American & W. H. Freeman. New York.
9. Powar C B.: Cell Biology, Himalaya Publication, Meerut

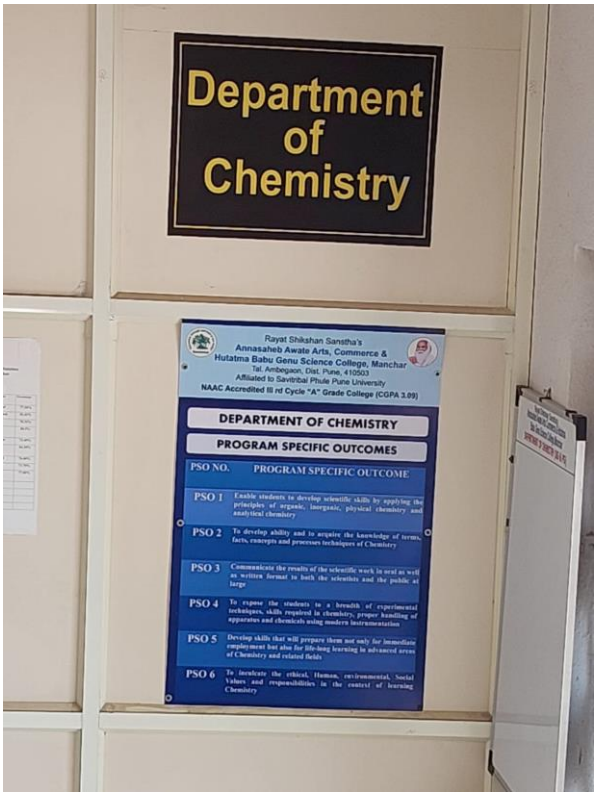
Note: Latest editions of the recommended books may be referred.

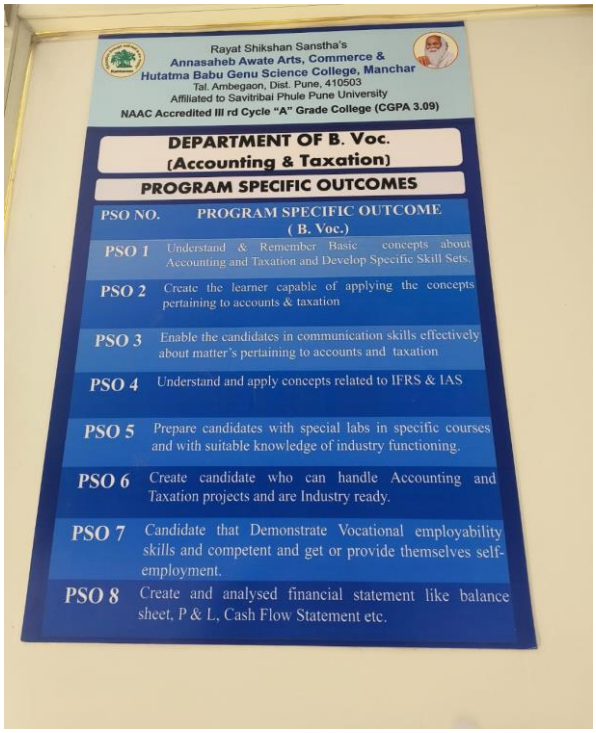
PO, PSO, CO DISPLAYED ON COLLEGE WEBSITE





PO, PSO, CO DISPLAYED ON COLLEGE CAMPUS





PO, PSO, CO QR CODES DISPLAYED ON COLLEGE CAMPUS

Rayat Shikshan Sanstha's

Annasaheb Awate Arts, Commerce & Hutatma Babu Genu Science College

Manchar, Tal. Ambegaon, Dist. Pune

NOTICE

Date: 02/09/2022

It is hereby informed to all the Head of the departments to make a provision to deliver **Program Outcomes (PO), Program Specific Outcomes (PSO) and Course Outcomes (CO)** by the respective teachers to the students of all the classes and keep a record it. Also, display the PO, PSO and CO on the department notice board.

ANNASAHEB AWATE COLLEGE MANCHAR

Principal

Annasaheb Awate Art's Commerce, &
Hutatma Babu Genu Science College,
Manchar, Tal.Ambegaon, Dist.Pune

Principal

रयत शिक्षण संस्थेचे

अण्णासाहेब अवते महाविद्यालय, मंचर

नोटीस

दि. २/९/२०२२

महाविद्यालयातील सीनियर विभागातील सर्व विभाग प्रमुखांना सूचित करण्यात येते की त्यांनी त्यांच्या विभागाच्या संबंधित प्राध्यापकांना त्यांच्या परिचायक व्याख्यानादरम्यान Program Outcomes, Program Specific Outcomes आणि Course Outcomes वितरीत करण्यासाठी सूचित करावे व त्याचा रेकॉर्ड लेक्चर नोट मध्ये करावा.

ANNASAHEB AWATE COLLEGE * MANCHAR *

Principal
Annasaheb Awate Art's Commerce, &
Hutatma Babu Genu Science College,
Manchar, Tal.Ambegaon, Dist.Pune

प्राचार्य

Rayat Shikshan Sanstha's

Annasaheb Awate Arts, Commerce & Hutatma Babu Genu Science College

Manchar, Dist. Pune. (MAHARASHTRA) 410 503

PERSONAL RECORD

Name of the Teacher : MS. AFROJ M. DANGE

Qualification : M.Sc., SET

Department : ELECTRONIC SCIENCE

Designation : ASSISTANT PROFESSOR

Date of oppointment : 06 | 01 | 2020

Present garde : IO

Residential address : MANCHAR, PUNE

Phone Number : 7507011878

Blood Group : B+ve

PAN No. :

Saving A/c. No. :

P.E.A/c. No.

DAILY RECORD

Date : 18 / 08 / 2022 Day : Thursday

Class / Time	Topic	Synopsis
F.Y. B.Sc. 1.25 - 2.10	Electronics Science	→ Introduction → Discussion about Programme outcomes. → Discussion about Programme specific outcomes F.Y. B.Sc. – Course outcome Paper II :- Electronic Devices & circuits. EL I 1 2 CO 1 :- To analyze performance parameters based on study of characteristics of electronics devices like, diode, transistors. CO 2 :- To choose proper electronic devices as per the need of application. CO 3 :- To perform simulations for designing & analyzing diode/Tran. CO 4 :- To build & test the ckts. like street light controller using electronic device.

Teaching Mathods / Teaching Aids : Black board

Books / References : Text book - Nitali Prakashan

Signature Teacher

Head
Department of Electronic-Science

DAILY RECORD

Date: 13/02/2023 Day: Monday

Class / Time	Topic	Synopsis
T.Y. B.SC	EL 361: Modern Communication systems	
	→	Syllabus Introduction
	→	Course Outcomes
		CO1:- Understand the digital modulation techniques
		CO2: Understand different types of Pulse modulation techniques.
		CO3: Describe the evolution & importance of Mobile communicⁿ & cellular communiⁿ
		CO4:- Know the basics of Satellite commⁿ systems.

Teaching Mathods / Teaching Aids: PPT

Books / References: Reference Book

Signature Teacher

Head Department of Ele-

Rayat Shikshan Sanstha's

Annasaheb Awate Arts, Commerce & Hutatma Babu Genu Science College

Manchar, Dist. Pune. (MAHARASHTRA) 410 503

PERSONAL RECORD

Name of the Teacher : Dr. Anandrao Akaram Kale

Qualification : M.Sc. B.Ed. M.phil. ph.D. M.B.A. (HR)

Department : Chemistry

Designation : Associate professor

Date of oppointment : 01-09-1994 Regular

Present garde :

Residential address : Flat No 11 Shriniwas Apartment 557 Ghorpade peth Pune 411042

Phone Number : 9922753472

Blood Group : o+ve

PAN No. : ABJPK0171A

Saving A/c. No. : 6000 1137164

P.F.A/c. No.

Rayat Shikshan Sanstha's

Annasaheb Awate Arts, Commerce & Hutatma Babu Genu Science College

Manchar, Dist. Pune. (MAHARASHTRA) 410 503

PERSONAL RECORD

Name of the Teacher : Dr. Anandrao Akaram Kale

Qualification : M.Sc. B.Ed. M.phil. ph.D. M.B.A. (HR)

Department : Chemistry

Designation : Associate professor

Date of oppointment : 01-09-1994 Regular

Present garde :

Residential address : Flat No 11 Shriniwas Apartment 557 Ghorpade peth Pune 411002

Phone Number : 9922753472

Blood Group : o+ve

PAN No. : ABJPK0171A

Saving A/c. No. : 6000 1137164

P.E.A/c. No.

DAILY RECORD

Date : 19 / 09 / 2022 Day : Monday

Class / Time	Topic	Synopsis
TY B Sc. CHO -507 11.10 to 11.50		#T.Y. B Sc Chemistry bridge course Lecture Importance & Applications of Science & Chemistry Discussion on CO, PSO and PO of the Course CHO-507 organic chemistry

Teaching Mathods / Teaching Aids : Lecture Method

Books / References : organic Chemistry by finar

Signature Teacher

Head
Department of Chemistry

DAILY RECORD

Date : 09/02/2023 Day : Thursday

Class / Time	Topic	Synopsis
TYBSc 11-55 to 12.40		Discussion on the syllabus CH-607 Introduction to spectroscopy UV-Visible spectroscopy IR spectroscopy PMR spectroscopy Combined problems based on Combined spectroscopy Stereochemistry of cyclohexane & Decalins Programme / Course out come and application of each point discussed

Teaching Mathods / Teaching Aids : Lecture method

Books / References :

Signature Teacher

Head
Department of Chemistry

Rayat Shikshan Sanstha's

Annasaheb Awate Arts, Commerce & Hutatma Babu Genu Science College

Manchar, Dist. Pune. (MAHARASHTRA) 410 503

PERSONAL RECORD

Name of the Teacher : Dr. Misal S.B.

Qualification : M.Sc. M.Phil Ph.D.

Department : Chemistry

Designation : Assistant Professor

Date of oppointment : 13 Jan 1992.

Present garde :

Residential address : S.No. 56/3, Flat No. 11, M.K. Apartment, Sai Mandir Marg, Kawadenagar, Pimplegurav Navi Sangavi

Phone Number : 8983715545

Blood Group : O Rh- ve

PAN No. : ABAPM 9952 G

Saving A/c. No. :

P.E.A/c. No.

DAILY RECORD

Date : 22 / 8 / 2022 Day : Monday

Class / Time	Topic	Synopsis
M.Sc (II) Analytical Chemistry 2:00 to 3:00	CHA-391. CTP-8	Introduction to syllabus. Section I - Analytical Method development Section II - Analytical Extraction Technique Discussion of PO, CO References - For section I - (1) Development & validation of Analytical methods. Pro by Christopher M. Riley & Thomas W. Rosanske (2) Vogel's Textbook of quantitative chemical Analysis 6th edition by Mendham, Denney, Barnes, Thomas For section II (1) Extraction Techniques in Analytical science by John R. Dean.

Teaching Mathods / Teaching Aids : PPT presentation.

Books / References :

Signature Teacher

Head
Department of Chemistry

DAILY RECORD

Date : 15 / 9 / 2022 Day : Thursday

Class / Time	Topic	Synopsis
T.Y.B.Sc. 11:45 to 12:30		Importance of Chemistry - Scope. Introduction to syllabus Course outcomes of Inorganic Chemistry I CH - 504 (DSEC-D).

Teaching Mathods / Teaching Aids : Lecture

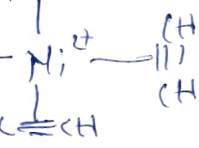
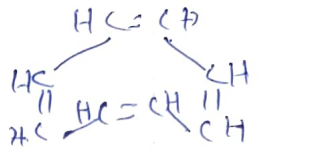
Books / References : —

Signature Teacher

Head
Department of Chemistry

DAILY RECORD

Date : 08 / 02 / 2023 Day : Wednesday

Class / Time	Topic	Synopsis
T.Y.B.Sc. 11:10 to 11:55	Organometallic Chemistry	Introduction to syllabus of 2nd term. Discussion of POs & COs Organometallic Chemistry Organometallic compound :- Compd. containing M-C bond. Historical background : $K[PtCl_3(C_2H_4)]$ · Zeise's salt - 1st O.M. compd. 1827 In 1900's $[(CH_3)_3PtI]_4$ - by Pope & Peachey 1951 - Ferrocene. Act as catalyst. Ex $Ni(CH)_2$ catalyst in formation of tetramer from acetylene to cyclooctatetrene $HC\equiv CH$ $Ni^{27} + 4\ HC\equiv CH \rightarrow$  
Date : 10/2/23		Day : Friday
T.Y.B.Sc. Batch A. 2:30 P.M. to 5:30	Practical	Volumetric estimation : Strength of medicinal H_2O_2
Date : 11/02/2023 T.Y.B.Sc Batch C	Practical	Day : Saturday Volumetric estimation : Strength of medicinal H_2O_2

Teaching Mathods / Teaching Aids : Lecture / Demonstration

Books / References : Concise inorganic chemistry by J.D. Lee

Signature Teacher

Head
Department of Chemistry

DAILY RECORD

Date : 11 / 09 / 2023 Day : Saturday

Class / Time	Topic	Synopsis
M.Sc (I) 11:00 to 12:00	Overview of Bioinorganic Chemistry.	Introduction to Syllabus - Course outcomes Overview of Bioinorganic chemistry What is bioinorganic chemistry? - Study of metal species in biological system Biological functions of selected metal ions like Na, K, Mg, Ca, V, Cr, Mo, Mn, Fe. Co, Ni, Cu, Zn 4 major categories ① Bulk elements ② Macrominerals & ions ③ Trace elements ④ Ultratrace elements (metals & non metals) Metals in Biological System : A survey. Historical background. Current Relevance & Perspective. Industrial sector Environmental sector Biomedical sector Current topics —

Teaching Mathods / Teaching Aids : Lecture

Books / References : Principles of bioinorganic chemistry by SJ. Lippard.

Signature Teacher

Head
Department of Chemistry

Rayat Shikshan Sanstha's

Annasaheb Awate Arts, Commerce & Hutatma Babu Genu Science College

Manchar, Dist. Pune. (MAHARASHTRA) 410 503

PERSONAL RECORD

Name of the Teacher : Dr. Arun Karansing Valvi

Qualification : M.Sc., Ph.D.

Department : of Chemistry

Designation : Assistant Professor

Date of oppointment : 15/02/2020

Present garde :

Residential address : 609, Madhuban Palace, Matoshri Builders, Manchar

Phone Number : +91 9921284548

Blood Group : O +ve

PAN No. : AKLPV5999E

Saving A/c. No. :

P.E.A/c. No.

DAILY RECORD

Date : 03 / 08 / 2022 Day : Wednesday

Class / Time	Topic	Synopsis
11 am to 12 p 30 pm M.Sc. II Organic chemistry	CHO: 352	> Introduction to Basics of Stereochemistry. > Introduction of Laboratory Safety. > Introduction of IPR. > Explained the PO, PSO and COs along with the Syllabus. > Career Guidance.
1 pm Onward	Documentation for Internal AAA visit, 2019-20/2020-21/2021-22 Criterion file Completion regarding 2.6.1 & 2.6.2	

Teaching Mathods / Teaching Aids : Chalk & Board

Books / References : —

Signature Teacher

Head
Department of Chemistry

DAILY RECORD

Date : 10 / 08 / 2022 Day : Wednesday.

Class / Time	Topic	Synopsis
11 am to 12 pm M.Sc. II CHO-352	Stereo-chemistry.	Basics / Fundamentals of Stereochemistry. > Explain CO, PO & PSO to the students > Discuss about IPR, start-up, "IDEA".

Teaching Mathods / Teaching Aids : Black Board. / PowerPoint.

Books / References :

Signature Teacher

Head
Department of chemistry.

Rayat Shikshan Sanstha's

Annasaheb Awate Arts, Commerce & Hutatma Babu Genu Science College

Manchar, Dist. Pune. (MAHARASHTRA) 410 503

PERSONAL RECORD

Name of the Teacher : Reshma Sachin Pawar

Qualification : MSc. B.Ed. SET.

Department : Chemistry

Designation : Assistant - Professor.

Date of oppointment : 15-01-2020

Present garde :

Residential address : Flat No.-801, Sukh Apt, Suham Nagari, Manchar

Phone Number : 9594637730

Blood Group : B +ve.

PAN No. :

Saving A/c. No. :

P.E.A/c. No.

DAILY RECORD

Date : 1 /08 /2022 Day : Monday.

Class / Time	Topic	Synopsis
Msc-II. Analytical Chemistry.	CHA 390 391 392 393	Introduction Syllabus 2022 CHA-390 Section I & II. CHA-391 Section I & II CHA-392 Section I & II. CHA-393 Section I & II. Syllabus discussion. Marks distribution. Discussion about - Course outcome. (CO) - Program outcome. (PO) - Program specific outcomes (PSO)

Teaching Mathods / Teaching Aids : Lecture Method

Books / References : ——

Signature Teacher

Head
Department of Chemistry

DAILY RECORD

Date : 15 / 02 / 2023 Day : Wednesday

Class / Time	Topic	Synopsis
MSc-II Analytical Chemistry Practical 9.00 – 12.30 pm	CHA-493 Section-II	Aim= Analysis of Mixed fertilizer sample for total Nitrogen.
MSc-II Analytical Chemistry Lecture.	CHA-490.	Introduction to syllabus of MSc-II Analytical Sem-IV. CHA – 490 Advanced Analytical spectroscopic techniques. Section-I CHA – 491 Atomic Spectroscopic techniq Section -II . Molecular Spectroscopic Meth CHA-491 : Chemical Methods of pharmaceutical Analysis Course outcomes, PO & PSO

Teaching Mathods / Teaching Aids : Lecture Method & PPT.

Books / References :

Signature Teacher

Head
Department of Chemistry.

Rayat Shikshan Sanstha's

Annasaheb Awate Arts, Commerce & Hutatma Babu Genu Science College

Manchar, Dist. Pune. (MAHARASHTRA) 410 503

Annasaheb Awate College Manchar

PERSONAL RECORD

Name of the Teacher : Temkar Monali Tukaram

Qualification : MBA finance, HR

Department : B.Voc (Account & Taxation) Dep of comm & mang

Designation : Assistance Proffeser.

Date of oppointment : 7/10/2022

Present garde :

Residential address : A/P Awasari Khurd.

Phone Number : 9730346144 / 9730606144

Blood Group : B+ve

PAN No. : AYEPT6956t

Saving A/c. No. :

P.E.A/c. No.

ALLOTMENT OF WORK LOAD

So. No.	Calss	Subject	Paper	Work load
1	S.Y.B voc	Risk Management	Risk Management	04 | 48
2	T.Y.B.Voc	Indian finance System	Indian Finance system	04 | 48
3	T.Y.B.Voc	finishing School	Finishing school	04 | 48
4.	F.Y.B.Voc	Indirect Tax	Indirect Tax	04 | 48
5	F.Y.B.Voc	Lab in Indirect Tax	Lab in Indirect Tax	04 | 10
6	S.Y.B.Voc	company Law :- Business Law	company Law : Business Law	04 | 48
7	T.Y.B.Voc	E-commerce	Ecommerce	04 | 48
8.	T.Y.B. voc	Lab in IFRS	Lab in IFRS.	04 | 48.

Signature of the Teacher

Head HOD
Department of B.Voc(Acco & Tax)
Annasaheb Awate College
Manchar, Tal. Ambegaon Dist. Pune

Principal

(Semester / Annual I)

Sr. No	Time	Mon.	Tue.	Wed.	Thu.	Fri.	Sat.
1	8.00 - 8.45	S.Y. B VOC	S.Y. B VOC	S.Y B VOC	-	-	-
2	8.45 - 9.30	T.Y. B VOC	T.Y. B VOC	T.Y.B VOC	T.Y. B VOC	T.Y. B VOC	T.Y. B VOC
3	9.45 - 10.30						
4	10.30 - 11.15	T.Y. B VOC	T.Y B VOC	T.Y. B VOC		T.Y. B NOC	T.Y. B VOC
5	11.15 - 12.00						T.Y B VOC
	S.Y. B VOC	Risk Management					
	T.Y. B VOC	finishing school					
	T.Y B VOC	Indian financial system					

HOD

TIME TABLE 2022 - 2023

(Semester / Annual II)

Sr. No.	Time	Mon.	Tue.	Wed.	Thu.	Fri.	Sat.
1	8-00 - 8.45	S.Y. B VOC	S.Y B VOC	S.Y B VOC			
2	8.45 - 9-30	T.Y B VOC	T.Y B VOC	T.Y B VOC	F.Y. B VOC	F.Y B VO	F.Y B VOC
3	9.30 - 10.15	T.Y.B VOC	T.Y B VOC	T.Y B VOC	F.Y. B VOC	F.Y B VOC	F.Y B VOC
4	10.30 - 11.10	S.Y B.VOC	T.Y. B VOC	T.Y. B. VOC			F.Y B VOC
	S.Y.B VOC	Business Law & company Law					
	T.Y. B VOC	E-commerce					
	T.Y. B VOC	Lab in IFRS					
	F.Y B VOC	Indirect Tax					
	F.Y. B VOC	Lab in Indirect Tax					

Rayat Shikshan Sanstha's

Annasaheb Awate Arts, Commerce & Hutatma Babu Genu Science College

Manchar, Dist. Pune. (MAHARASHTRA) 410 503

PERSONAL RECORD

Name of the Teacher : Professor Bhor P.B.

Qualification : M.com

Department : B.Voc Account & taxation.

Designation : Assistance Professor

Date of oppointment : 31/10/2022.

Present garde :

Residential address : A/p Awasri khurd.

Phone Number : 7447832827.

Blood Group : B^+

PAN No. :

Saving A/c. No. :

P.E.A/c. No.

Calss	Subject	Paper	Work load
FY B.Voc I	Tally (Lab in tally)	Lab intally practical	4/48
FY B Voc	Macro economics.	Macro economics Theory.	4/48
SY B.voc	payroll Inv. & Alc Man. (Theory)	Payroll Inventory & Accounting Managem ent. Theory	4/48
SY B.voc	payroll Inv. & Alc Man. (practical)	— practical	4/48.
SY B.com	enviromental studies	enviromental studies	4/48
FY B.voc	Labin tally	Lab intally.	4/48
SY B.Voc	CGST (central Goods & ser. tax)	Central Goods & service tax.	4/48
TY B.voc	entreprenur ship dev. lab p Theory.	entreprenurship derelopement.	4/48
SY B.com.	EVS.	enviromental studies.	4/48.

HOD
Department of B Voc(Acco & Tax)
Annasaheb Awate College
Manchar Tal. Ambegaon Dist. Pune
Head
Department of _____

Signature of the Teacher

Annasaheb Awate College Manchar

Principal

(Semester / Annual I.)

Sr. No.	Time	Mon.	Tue.	Wed.	Thu.	Fri.	Sat.
1	8 to 8 45	FY B.Voc	FY B.Voc	FY B.Voc	FY B.Voc Macro economics	Macro Eco	Macr Eco FY·B
2	8 45 to 9.30				SY B.Voc	SY B.Voc	SY B.V
3	9.45 to 10.30						
4.	10.30 to 11.15.				I SY B.Voc		
	11.15 to 12.	EVS	EVS	EVS.			

HOD

Department of [illegible]
[illegible] College
[illegible] Dist.Pune

TIME TABLE 2022-2023

(Semester / Annual II.)

Sr. No.	Time	Mon.	Tue.	Wed.	Thu.	Fri.	Sat.
1]	8 to 8.45	TY B.Voc ED	entrepr enurship Dev.	TY ED Theory.	TY (pra) ED	TY (pra) ED	TY (pra) ED
2]	8.45 to 9.30	FY Tally	FY Tally	FY Tally			
3]	9.30 to 10.15.	SY B.Voc CGST	CGST	SY B.Voc CGST			
4]	10.30 to 11.10						
	11.15 11.45.		FY. Tally		TY B.Voc ED.		

DAILY RECORD

Date : 21 / 08 / 2022 Day :

Class / Time	Topic	Synopsis
T. Y. B.Voc.	CO, PO, PSO of Relevant Subject.	* Programme outcomes :- Food plant Design & layout * Course outcomes :- Plant Design
S. Y. B.Voc.	— 11 —	Processing of plantation Crops.

Teaching Mathods / Teaching Aids : ICT based

Books / References :

Signature Teacher

Annasaheb Awate College, Manchar
Dept. of B. Voc (Food Processing & Quality Management)

Head
Department of FPQM

DAILY RECORD

Date : 22/08/2022 Day :

Class / Time	Topic	Synopsis
T. Y.	- PO - PSO - CO	- Programme outcomes Food plant Design & layout - plant location & plant layout - Raw material handling & end product Delivery.

Teaching Mathods / Teaching Aids : ICT based

Books / References :

Signature Teacher

Annasaheb Awate College, Manchar
Dept. of B. Voc (Food Processing & Quality Management)

Head
Department of FPQM

DAILY RECORD

Date: 21 / 11 / 2022 Day: Monday

Class / Time	Topic	Synopsis
FY. B.VOC	Cereal, Legumes, and oilseeds Processing.	Course Overview introduced the Course. It gives an idea of how course is structured and what approaches to learning & change it takes.
SY. B.Voc.	Snack Food Technology	Course Overview introduced the Course. It gives an idea of how course is structured and what approaches to learning. &
TY B.VOC.	Snack Food Tech, & Processing	Course Overview introduced the Course. It gives an idea of how Course is structured & what approaches to learning.

Teaching Mathods / Teaching Aids : Books,

Books / References :

Signature Teacher

Annasaheb Awate College, Manjari
Dept. of B. Voc (Food Processing & Quality Management)

Head
Department of