

**Shri Shivaji Science College,
Amravati**

**Pre-stated
Program
Specific
Outcomes**



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**Programme Specific
Outcomes
(PSOs)**

The Programme Specific Outcomes (PSOs)

PSOs of BSc. Programmes

PSOs for B.Sc. programme stated by Biotechnology Department

PSOs	The student graduating with the Degree B.Sc with Biotechnology as one of the three major subjects should be able to
PSO-1	The students will acquire skills to handle each and every instrument and tools in microbiology/Biotechnology Laboratory. (e.g. Inoculation needle and inoculation loops, Autoclave, Laminar air flow, Bacteriological Incubator, Hot air oven, Colony counter, pH meter, Electric balance, Spectrophotometer, centrifuge, Microscope, BOD incubator, CO ₂ Incubator, Small scale lab fermenter, inverted Microscope.).
PSO-2	The students will acquire skills to test physical and chemical parameters estimation of soil and water. (E.g. estimation of quantity of nitrogen Phosphorous, carbon, Sulphur, etc.) Production of Amino acid, Vitamins and Enzymes. Isolate genetic material like DNA and RNA from Microorganisms
PSO-3	Ability to use acquired skills in Biotechnology Students can work in water treatment plant as well as sewage treatment plant either as technician or as Laboratory Scientific officer
PSO-4	The students acquire skills for the Production of solid and Liquid Fertilizer.(e.g. Rhizobium, Azotobacter, PSB).
PSO-5	The students can work as tissue culturist at tissue culture institute in both plant and animal tissue culture.
PSO-6	Students can be entrepreneur in the business like production of bio fertilizer, production of tissue culture plants.
PSO-7	Spread and Promote scientific temperament in society.

PSOs for B.Sc. programme stated by Botany Department

PSOs	After successful completion of three year degree program in Botany a student is able to
PSO-1	Students acquire fundamental Botanical knowledge through theory and practical's. Mainly, acquired the skills in handling scientific instruments, planning and performing in laboratory experiments
PSO-2	They will achieve the highest level of expertise in Botany, master knowledge of this field and apply that knowledge to address novel and emerging problems.
PSO-3	To inculcate the scientific temperament in the students and outside the scientific community. The students will effectively communicate disciplinary knowledge to the scientific community and broader public.
PSO-4	They should seek to discover new information within a discipline
PSO-5	They should be aware of the expectations of a professional working environment upon graduation.

PSOs for B.Sc. programme stated by Chemistry Department

PSOs	The student graduating with the Degree B.Sc with Chemistry as one of the three major subjects should be able to
PSO-1	Identify and become familiar with the scope, methodology and application of modern chemistry and learn to appreciate its ability to explain various aspects
PSO-2	Understand theoretical and practical concepts of instruments that are commonly used in most chemistry fields.
PSO-3	Design and carry out scientific experiments and record the results of such experiments.
PSO-4	Understand safety of chemicals, transfer and measurement of chemical, preparation of solutions, and using physical properties to identify compounds and chemical reactions.
PSO-5	Explain how chemistry is useful for social, economic and environmental problems and issues facing our society in energy, medicine and health.

PSOs for B.Sc. programme stated by Computer Science Department

PSOs	The student graduating with the Degree B.Sc with Computer Science as one of the three major subjects should be able to
PSO-1	Provides basic knowledge on core concepts of Computer Science.
PSO-2	Ability to solve problems using programming languages and software tools.
PSO-3	Apply fundamental principles and methods of Computer Science to a wide range of applications. Design, correctly implement and document solutions to significant computational problems.
PSO-4	Apply problem-solving skills and the knowledge of computer science to solve real world problems.
PSO-5	Develop technical project reports and present them orally among the users.

PSOs	The student graduating with the Degree B.Sc with Computer Applications as one of the three major subjects should be able to
PSO-1	Provides basic knowledge on core concepts of Computer Science.
PSO-2	Ability to solve problems using programming languages and software tools.
PSO-3	Apply fundamental principles and methods of Computer Science to a wide range of applications. Design, correctly implement and document solutions to significant computational problems.
PSO-4	Apply problem-solving skills and the knowledge of computer science to solve real world problems.
PSO-5	Develop technical project reports and present them orally among the users. Serve as IT Officer in Banks and cooperative societies. Can work as Computer Operator in small scale industries.

PSOs for B.Sc. programme stated by Environmental Science Department

PSOs	The student graduating with the Degree B. Sc with Environmental Science as one of the three major subjects should be able to
PSO-1	Profound understanding of various areas of Environmental Science such as Ecology, Ecosystem, Population ecology, Community ecology, Marine ecosystem, Environmental pollution and Environmental laws., and its linkages with related interdisciplinary areas/subjects like Chemistry, Botany, Zoology Geology, Metrology, Biochemistry, Statics, remote sensing, GIS and GPS.
PSO-2	Become versed in some of the specialized areas of Environmental science and upcoming developments in the field of Environmental pollution.
PSO-3	Can apply practical methods to solve a wide range of problems of quality deciding parameters with respect to water, air and soil. Population quantities studies can be done. Biodiversity studies quantities and qualitative
PSO-4	Working mechanism and Applications of Air Pollution control Techniques by using various sophisticated instruments. Environmental impact analysis studies and Audit can be applied.

PSOs for B.Sc. programme stated by Geology Department

PSOs	The student graduating with the Degree B.Sc with Geology as one of the three major subjects should be able to
PSO-1	Megascopic identification of Minerals samples through use of Physical properties of mineral example colour, habit, streak, lustre, hardness, and this enable students for field identification of minerals which is most essential part for Rock Identification.
PSO-2	Study of Optical properties of Minerals under petrological microscope and Symmetry of elements of crystals through wooden blocks which is used for detail identification of minerals, anomaly study and research purposes.
PSO-3	Toposheet reading and interpretation which is preliminarily requirement for Geological reconnaissance survey, field planning, locating study area on map and also used as a base map for digitization in GIS environment.
PSO-4	Megascopic Identification of Igneous, Sedimentary and Metamorphic Rocks on the basis of mineralogical composition, their textural arrangement and groundmass. Identification of rocks in field is the crux for a Geologist.
PSO-5	Rocks in thin section are studied under petrological microscope for detail Identification of rocks and mineralogical composition and inter-arrangement of minerals in rocks.
PSO-6	Exercise on ACF, AKF and AFM diagrams which are used for plotting unknown rock sample's chemical composition for interpretations of geochemical data.
PSO-7	Major stratigraphic division with description and Fossil study which is used for study of evolution of earth and its surface, sequential arrangement of rock strata according to age of formation important fossil used for stratigraphy establishment.
PSO-8	Structural Geology Problems where cross-section maps are prepared with the use of available exposures orientation which are useful in underground rock orientation predication which is used for civil engineering constructions like dam, tunnels and roads. Structural Geology problems are also used for mining and drilling exploration.
PSO-9	Economic Geology study where economic important minerals are specially studied with physical properties, maps are prepared for different economic deposits and special exploration. ore reserve calculation problems this are very important estimations which is to be done before mining activity which will lead to profit and loss calculation for mining activity.
PSO-10	Hydrogeology studies various hydro chemical and hydro physical parameters which are studied for predication of movement, availability and dynamics of surface and groundwater and its contents as it is much dependent upon geomorphology of the area, rocks and geological structures. Various Recharge structures are studied and those are used for rain water harvesting.
PSO-11	Remote Sensing study of Arial photographs and satellite images which are used in predication on the earth's surface various parameters which are used for geological predictions remotely.

PSOs for B.Sc. programme stated by Mathematics Department

PSOs	The student graduating with the Degree B.Sc with Mathematics as one of the three major subjects should be able to
PSO-1	Acquire fundamental understanding of various fields of Mathematics such as mechanics, Graph Theory, Relativity, Abstract algebra, linear algebra, Number theory, etc.
PSO-2	Acquire skills in some of the specialized areas of Mathematics and emerging developments in the field of Mathematics.
PSO-3	ability to use acquired skills in Mathematics to solve a wide range of problems associated with Mathematics.
PSO-4	Propagate scientific temperament in society.

PSOs for B.Sc. programme stated by Microbiology Department

PSOs	The student graduating with the Degree B.Sc with Microbiology as one of the three major subjects should be able to
PSO-1	The students will acquire skills to handle each and every instrument and tools in microbiology/Biotechnology Laboratory. (e.g. Inoculation needle and inoculation loops, Autoclave, Laminar air flow, Bacteriological Incubator, Hot air oven, Colony counter, pH meter, Electric balance, Spectrophotometer, centrifuge, Microscope, BOD incubator, CO ₂ Incubator, Small scale lab fermenter, inverted Microscope.)
PSO-2	Acquire skills in some of the specialized areas of Medical Microbiology and Will be able to Diagnose and detect diseases caused by Microorganisms.(e.g. Pneumonia, Hepatitis, Typhoid, WIDAL test, Precipitation reaction based on immunodiffusion test, VDRL serological test for Syphilis, Detection of specific antigen by using ELISA technique, Blood examination for Rh Factor. They will work as a trainee technician in pathology labs.
PSO-3	Ability to use acquired skills in Microbiology. Students can work in water treatment plant as well as sewage treatment plant either as technician or as Laboratory Scientific officer
PSO-4	The students acquire skills for the Production of solid and Liquid Fertilizer.(e.g. Rhizobium, Azotobacter, PSB). Students can be entrepreneur in the business like production of biofertilizers.
PSO-5	Spread and Promote scientific temperament in society.

PSOs for B.Sc. programme stated by Physics Department

PSOs	The student graduating with the Degree B.Sc with Physics as one of the three major subjects should be able to
PSO-1	Acquire fundamental understanding of various fields of Physics such as mechanics, thermodynamics, optics, semiconductor physics, solid state physics, statistical mechanics, quantum mechanics, Astrophysics, Material science, Nuclear and Particle Physics, Atomic and Molecular Physics, Mathematical Physics, and its linkages with related disciplinary areas/subjects like Chemistry, Mathematics, Geology, Atmospheric Physics , Biophysics etc.
PSO-2	Acquire skills in some of the specialized areas of Physics and emerging developments in the field of Physics.
PSO-3	ability to use acquired skills in Physics to solve a wide range of problems associated with Physics.
PSO-4	design & perform Physics-related experiments and apply skills to interpret experimental data collected manually or using appropriate softwares.
PSO-5	Propagate scientific temperament in society.

PSOs for B.Sc. programme stated by Statistics Department

PSOs	The student graduating with the Degree B.Sc with Statistics as one of the three major subjects should be able to
PSO-1	Acquire fundamental understanding of various fields of Statistics such as Importance of data types , levels of measurement , working of various Statistical Organizations , Various types of Central Tendency , Variation , Skewness and Kurtosis Measures, Fundamental rules of probability and probability distributions.
PSO-2	Acquire skills like data presentation, visualization, analysis of Statistical Data and be able to understand emerging developments in the field of Statistics.
PSO-3	Be able to understand various Statistical techniques often used in various other fields and industry.
PSO-4	Be able to understand the various Statistical Quality Control techniques ,Sampling techniques and Econometric measurements
PSO-5	Be able to propagate importance of Statistical analysis to various organizations and society at large.
PSO-6	Be able to perform efficient data summarization and help in creating awareness about data driven solutions for the betterment of society .

PSOs for B.Sc. programme stated by Zoology Department

PSOs	The student graduating with the Degree B. Sc with Zoology Upon completion of the B. Sc Degree Programme the graduate will be able to
PSO-1	Inculcate analytical/critical/logical/innovative thinking skills in the fields of Animal Diversity and Evolution, Molecular Biology, Embryology, Environmental Biology, Human Genetics and Applied Zoology.
PSO-2	Acquire distinct traits and ethics with high professionalism to gain a broader insight into the domain concerned for nation building. Acquire skills in some of the specialized areas of Zoology.
PSO-3	Get acquainted with the recent advancements both in core and applied fields of Zoology for the higher studies and career opportunities.
PSO-4	Adopt scientific temper and give a positive correlation to live with scientific values and to acquire skills in biological/ analytical/ culture techniques.
PSO-5	Prepare them as flexible and versatile person in the work place, possess the capacity to embrace the emerging technologies, leadership and team work opportunities.

PSOs of B.C.A. Programmes

PSOs for BCA programme stated by Computer Science Department

PSOs	The student graduating with the Degree BCA should be able to
PSO-1	Learn applications, packages, programming languages and modern techniques of IT
PSO-2	Develop programming skills, networking skills, software development and testing skills
PSO-3	Get skill and info not only about computer and information technology but also in common, organization and management.
PSO-4	Serve in multinational companies as Software Developer, System Programmer.
PSO-5	Work as Web Designer, Network Analyst, Test Engineer, DBA, Technical Support Engineer, Network Administrator, Quality Assurance etc

PSOs of B.Voc. Forensic Science Programmes

PSOs for B.Voc. Forensic science programme stated by Chemistry Department

PSOs	The student graduating with the Degree BCA should be able to
PSO-1	Develop competence in problem solving, legal analysis and application.
PSO-2	Apply quantitative reasoning, investigation and scientific laboratory procedures to solve criminal cases or advanced study.
PSO-3	Develop with the specific knowledge of handling of different evidences and their analysis.
PSO-4	Develop the laboratory skill to examine different type of evidences on crime scene.

PSOs of M.Sc. Programmes

PSOs for M.Sc. Botany programme stated by Botany Department

PSOs	The student post graduating with the Degree M.Sc. Botany should be able to
PSO-1	To have knowledge about various plant groups from lower to higher. The students will have ability to identify and apply the core knowledge related to Botany
PSO-2	Knows the concepts of physiology, cell and molecular biology, plant and environmental ecology and the basis of plant development.
PSO-3	Students acquired knowledge through practical work in the fields as well as in laboratory.
PSO-4	Project work helped for creating research attitude among the post graduate students. The ability to apply broadly accepted scientific methodologies in their research project.
PSO-5	Students' Presentation of research work at national and international audiences through both peer-reviewed and popular publications, professional meetings and conference proceedings.
PSO-6	Development of professional foundations through activities such as teaching, internships, fellowships, and preparation of grant applications.
PSO-7	Students can express themselves critically and clearly in their area of specialization, demonstrates both breadth and depth of knowledge in their chosen area of specialization. They should make progress towards a leadership role in developing their research ideas.

PSOs for M.Sc. Bioinformatics programme stated by Botany Department

PSOs	The student graduating with the Degree M.Sc. Bioinformatics should be able to
PSO-1	A student completing a major in Bioinformatics acquire the knowledge and awareness of the basic principles and concepts of biology, computer science and mathematics.
PSO-2	An understanding of the intersection of life and information sciences, the core of shared concepts, language and skills the ability to speak the language of structure-function relationships, information theory, genomics, proteomics, drug designing, gene expression, and database queries.
PSO-3	They can use existing software effectively to extract information from large databases and to use this information in computer modelling.
PSO-4	Students get problem-solving skills, including the ability to develop new algorithms and analysis methods.
PSO-5	They can work with different Bio-IT firms, Pharmaceutical and biotech Industry, Research and Development Institute.

PSOs for M.Sc. programme stated by Chemistry Department

PSOs	The student graduating with the Degree M.Sc. Chemistry should be able to
PSO-1	Identify and become familiar with the scope, methodology and application of modern chemistry and learn to appreciate its ability to explain various aspects
PSO-2	Understand theoretical and practical concepts of instruments that are commonly used in most chemistry fields.
PSO-3	Design and carry out scientific experiments and record the results of such experiments.
PSO-4	Understand safety of chemicals, transfer and measurement of chemical, preparation of solutions, and using physical properties to identify compounds and chemical reactions.
PSO-5	Explain how chemistry is useful for social, economic and environmental problems and issues facing our society in energy, medicine and health.

PSOs for M.Sc. Computer Software programme stated by Computer Science Department

PSOs	The student graduating with the Degree M.Sc. Computer Software should be able to
PSO-1	Acquire depth knowledge in computer software and ability to identify, analyze, design, optimize and implement system solutions using appropriate algorithms of varying complexity.
PSO-2	Basic knowledge in software methods and tools for solving real-life and R&D problems and ability to work in multidisciplinary teams in small and large scale projects by utilizing modern software tools and emerging technologies to develop complex products for the societal needs.
PSO-3	Specialist in Data mining, embedded systems, Mobile computing, distributed computing, Image processing, Pattern recognition, Virtualization techniques and Cloud Computing.
PSO-4	Competent and complete software professional to meet the requirement of corporate world and Industry standard to provide solutions to industry, society and business.
PSO-5	Analyst who can apply latest technologies who can analyze and synthesize computing systems through quantitative and qualitative techniques to solve problems in the areas of Information Technology.

PSOs for M.Sc. programme stated by Environmental Science Department

PSOs	The student graduating with the Degree M.Sc. Environmental Science should be able to
PSO-1	Students eligible for conduct of qualitative and quantitative analysis with air, water and soil. Waste water quality studies. Surface, Ground water analysis.
PSO-2	They can be able to perform and various parameters of ecological and ecosystem studies. Biodiversity index and register such skilful task can also they participate.
PSO-3	Toxicological Studies. Bioassay studies of water bodies. Get acquainted with various microbial application to recover the industrial hazardous waste.
PSO-4	EIA studies and Environmental Audit study. Application of all these tools in comparative studies of environmental segments. Industrial safety measures add more practical knowledge to maintain health and hygiene at work place.
PSO-5	Field work-based studies definitely divert and motivate students towards research.

PSOs for M.Sc. programme stated by Physics Department

PSOs	The student graduating with the Degree M.Sc. Physics should be able to
PSO-1	Acquire fundamental understanding of various fields of Physics such as, solid state physics, , Classical mechanics, statistical mechanics, quantum mechanics, Electrodynamics, Plasma Physics, Condensed matter physics, Nuclear and Particle Physics, Atomic and Molecular Physics, Mathematical Physics, Computational methods & programming, Network Theorems and solid state devices, Operational amplifier and its applications Material science, nanoscience and nanotechnology and its linkages with related disciplinary areas/subjects like Chemistry, Mathematics, Geology, Atmospheric Physics , Biophysics nanotechnology and material Science etc.
PSO-2	Acquire skills in some of the specialized areas of Physics like material science, electronic devices and emerging developments in the field of Physics.
PSO-3	Ability to use acquired skills in Physics to solve a wide range of problems associated with Physics.
PSO-4	Design & perform Physics-related experiments and apply skills to interpret experimental data collected manually or using appropriate software.
PSO-5	Propagate scientific temperament in society.
PSO-6	Able to transmit complex scientific and research knowledge in clear and concise manner.
PSO-7	Able to employ critical thinking and problem solving skills to undertake research problems in the emerging fields.
PSO-8	Able to handle sophisticated and advanced instruments for their research work.
PSO-9	Capable to think and behave rationally on the ethical issues they come across at their work place
PSO-10	Able to adopt lifelong learning to keep pace with emerging trends in physics and science.

PSOs for M.Sc. programme stated by Zoology Department

PSOs	The student graduating with the Degree M.Sc. Zoology should be able to
PSO-1	Students will have the ability to contribute effectively both individually as well as collectively in diverse and multi-disciplinary environments. To train academically sound researchers and intellectuals in the area of Zoology, like Genetics, Animal Physiology, Understand Gamete biology, Endocrinology.Explain Molecular Cell Biology.
PSO-2	To inculcate the understanding of diverse and complex fields of Zoology like Systematic and Taxonomy, Anatomy and Physiology, Evolutionary Biology and Ecology, Cell biology, Molecular biology and Biochemistry, to provide an appropriate foundation for a career in biomedical and agricultural sciences and effectively train for various challenges of the society.
PSO-3	Students will acquire the aptitude for creative thinking, critical analysis and decision making for productive research and development in the area of Zoological sciences. Acquire skills in Zoology in a global, economic, environmental, and societal context.
PSO-4	Students will have the ability to contribute effectively both individually as well as collectively in diverse and multi-disciplinary environments.
PSO-5	Students are prepared for National Level competitive exams. However, they may have different job opportunities in pharmaceutical companies, Medical colleges and if they

qualify NET, then these students are eligible for Assistant Professorship. The students may also have various openings in Fisheries, Forestry and agriculture; Teaching at Senior Secondary level and colleges & universities and Research Institutes.

PSO-6 Acquire techniques, skills, and modern technology necessary to communicate effectively with professional and ethical responsibility.

PSO-7 Collect, identify, preserve zoological specimens and assign systematic position based on International Code of Zoological Nomenclature.