



Jaywant Pratishthan Humgaon, Sanchalit

## Amdar Shashikant Shinde Mahavidyalay, Medha

### Programme outcome for B.Sc. Programme

#### Three-year B.Sc. Programme:

The Three-year B.Sc Programme at Amdar Shashikant Shinde Mahavidyalay, Medha offers courses at First, Second and Third year level in the subjects of Physics, Chemistry, Mathematics, Zoology, Botany, Statistics and Microbiology. All of these subjects are designed with a specific aim of introducing students to various laboratory methods thereby exposing them to several laboratory techniques in handling of state of the art equipment, critical thinking and being independent as well as team learning. They develop laboratory skills throughout the curriculum via hands-on experiences with diverse experimental techniques and tools. They learn several approaches to data analysis and become confident in using computational methods to analyze and solve various problems. Although the student's long term goals are quite varied, these courses help in drawing many to careers that demand scientific and technical knowhow and strong logical reasoning abilities. The following is a specification of the key Programme Outcomes (knowledge, skills, values and attitude) that highlight important areas in which the students are expected to gain proficiency at the end of the tenure of their undergraduate program.

**(1) PO-1: Knowledge:** Learners are encouraged to apply the knowledge of mathematics and science fundamentals to various solutions of complex problems. As such, knowledge of the subject is the sole objective of any student learner. A student is exposed to a wide range of topics in various subjects and is given intensive training in each of the courses that have laboratory related work. The learner is encouraged to use various mathematical methods (analytical and numerical) and experimental methods as an application to the acquired concepts and principles that help in studying various branches of sciences. At the end of the program, students are able to gain thorough knowledge in key areas in the subjects offered.

**(2) PO-2: Problem Analyses:** Well equipped with an understanding of the analytical methods involved, they are in a position to interpret and analyze results so obtained from experiments and draw suitable conclusions against their supported data acquired. At the end of the program, students will be able to identify, formulate and analyze scientific problems and reach concrete solutions using various principles of mathematics and sciences.

**(3) PO-3: Designing Solutions:** Having acquired knowledge of subjects, students are trained to think out of the box, design and conduct an experiment or a series of experiments that demonstrate their understanding of the methods and processes involved. For example, as a part of the project of the final year, students in the subject of Physics are encouraged to calculate the overall power consumption of the institution and think of ways and means of

minimizing this consumption through alternate sources of energy. This in turn helps in the learner; develop a holistic approach from real time solutions. As such, at the end of the program, learners will be able to design solutions for complex problems and design a process/processes that can meet specific needs. (Attainment of this is through projects at the final year level).

**(4) PO-4: Modern tool usage:** As an outcome of PO-1, PO-2 and PO-3, learners are trained to create, select, and apply appropriate techniques, resources and IT tools in the analysis and synthesis of data within limitations. (Outcome of final year project).

**(5) PO-5: Communication Development:** The medium of instruction being English, proficiency in the subject through English is one of the primary objectives of the science program. In order to improve the writing and oral skills of learners, the program caters to ensuring that learners become effective, clear communicators in written and oral work and are capable of explaining complex issues in accessible terms. With English language being the common mode of communication worldwide, all learners under the programme are encouraged to participate in courses designed to equip students with English-language proficiency through Grammar, Written and Spoken English to enable a holistic enhancement of communication. Through a selection of courses such as ability enhancement courses, learners are also trained to communicate efficiently in the languages of Hindi and Marathi. As such, at the end of the program, learners will be capable of oral and written communication, and will prove that they can think critically and work independently. Learners will be able to communicate effectively on scientific issues with the scientific community and society at large in writing effective reports and designing documentation, make effective presentations and give and receive instructions.

**(6) PO-6: Employability:** With our learners long-term professional pursuits being quite varied, many are drawn to careers that require scientific skills or technical expertise or strong quantitative reasoning abilities. Keeping this in mind, the institution apprises students of various employment opportunities that are available in areas of their choice through the Placement cell. To equip these learners with knowledge other than that of the subject such as skills required helping them qualify for jobs, all the science subjects offer skill enhancement courses and value added courses so that learners have a better edge over their counterparts. As such, at the end of the programme students will be able to increase their employability through subject knowledge and additional skills.

**(7) PO-7: Ethics:** While it is necessary to instil the spirit of competitiveness among students in a world of increasing competition, it is equally vital to develop a strong sense of ethics among learners that will help them develop some positive attitudes and values. This includes appreciation of the various principles and theories that evolved in science, the impact that science has on social, economical and environmental issues. One of the main objectives of any academic exercise, therefore, should be to produce well-groomed individuals who

understand the significance of ethical values and abide by them even in the most pressing circumstances. In this programme, this process is enabled through courses and facilitators who integrate the teaching of ethics in everyday pedagogy. As such, at the end of this programme students will be able to develop, internalise and exercise ethics in their professional as well as personal practices.

**(8) PO-8: Environment and Sustainability:** ‘Environmental sustainability’ has become the watchword of the 21st century. An increased engagement with environment-related concerns is appearing tangibly on global fronts; academics cannot and *should not* remain quarantined from this massive development. Through classroom-discussions and research projects, this programme facilitates active dialogues with factors which influence human-ecology interactions. As such, at the end of this programme students will be able to identify and analyze socio-political, cultural and economic problems which act as deterrents to environmental sustainability and provide creative solutions towards the same.

**(9) PO-9: Soft-Skill Development:** Apart from the attainment of knowledge and hands-on skills in practical applicability of the subject, learners need to be equipped with soft-skills and values which will help them function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary groups. These soft-skills include leadership, teamwork, project-management, positive outlook, innovative approaches and effective articulation. Several soft skill programs are organized for learners through various agencies that tie up with the state government. As such, at the end of this programme, students will be able to hone the soft-skills required in positively enhancing their academic, professional and personal pursuits towards self and societal advancement.

**(10) PO-10: Science and Society:** As an outcome of PO-1, PO-2 and PO-3, learners are encouraged to apply logical reasoning based on the knowledge, skills, designing solutions to assess societal, health, safety issues and the responsibilities that go along with the scientific practice. As an extension activity to society, learners are encouraged to take up specific projects such as impact of salinity on fresh water wells in an adopted village, and provide effective solutions.

**(11) PO-11: Life-long learning:** With the pursuit of knowledge for either personal or professional reasons, learners are also encouraged to volunteer and be self-motivated that not only enhances society values, active participation and personality development, but also enhances self-sustainability, competitiveness and employability. As such, learners will be able to recognize the need for, and have the preparation and ability to engage in independent and life-long learning in every broad context of technological changes.



**Amdar Shashikant Shinde Mahavidyalay, Medha**  
**Department of Botany**  
**Programme Specific Outcome and Course Outcome**  
**on CBCS syllabus of Botany**

**Programme Specific Outcome**

Sr. No.	Programme Specific Outcome
PSO 1	Acquisition of knowledge of molecular biology, biotechnology and bioinformatics
PSO 2	Acquiring the basic procedure in the field of microbiology and plant pathology.
PSO 3	Awareness of natural resources and environment
PSO 4	Aptitude for scientific work & ability to pursue studies far beyond graduation
PSO 5	Life science as a career, which is the need now-a-day
PSO 6	Applications of scientific principles for organization of scientific exhibitions and competitions
PSO 7	Development of presentation skills and confidence in students
PSO 8	Skills based practicals and experiments & development of skill of handling of instruments and practical material
PSO 9	Enhancement the interests in the subject
PSO 10	Enhancement of scientific attitude, temper & hobbies
PSO 11	Abilities to apply scientific methods, collection of scientific data, problem solving methodology, Research Paper & project writing, etc
PSO 12	Contribution in scientific method & scientific programs

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Head  
Department of Botany  
Amdar Shashikant Shinde  
Mahavidyalaya, Medha.



Jaywant Pratishthan Humgaon Sanchalit  
**Amdar Shashikant Shinde Mahavidyalay, Medha**  
**Department of Chemistry**  
**Programme Specific Outcome**

Sr. No.	Programme Specific Outcome
PSO 1	Promote understanding of basic facts & concepts in chemistry while retaining the excitement of chemistry.
PSO 2	Make students capable of studying chemistry in academic & industrial courses.
PSO 3	Expose the students to various emerging new areas of chemistry & apprise them with their prevalent in their future studies & their applications in various spheres of chemical sciences.
PSO 4	Develop problem solving skills in students.
PSO 5	Develop ability & to acquire the knowledge of terms, facts, concepts, processes techniques & principles of subjects.
PSO 6	Expose & develop interest in the field of chemistry.
PSO 7	Develop proper aptitude towards the subjects.
PSO 8	Skills in chemistry practical work, experiments, laboratory materials & proper handling of instruments
PSO 09	Enhancement of scientific attitude & scientific hobbies
PSO 10	Abilities to apply scientific methods, collection of scientific data, problem solving, Research Paper Writing, etc
PSO 11	Appreciation of the subject, contributions of scientists, scientific methods, scientific programs, etc

  
Head

Department of Chemistry  
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**Programme Specific Outcomes (PSO)**  
**Department of Mathematics**

Name of Subject	Class	Outcome
Mathematics	First Year	<ul style="list-style-type: none"><li>• Students will acquire basic domain knowledge of different subjects such as Differential calculus, Calculus, Differential Equations</li><li>• Students will be able to apply the concepts in solving the problems such as extreme values, electric circuit problems, and orthogonal trajectories.</li><li>• Students will be able to identify and solve ordinary and partial differential equations.</li></ul>
Mathematics	Second Year	<ul style="list-style-type: none"><li>• Students will be to understand the concepts of Real Analysis and Algebra.</li><li>• Student is equipped with mathematical analysis ability, problem solving skills, creative talent necessary for various kinds of employment.</li><li>• Students will be able to acquire basic Practical skills and exposure to computer programming through practical courses like SCILAB.</li></ul>
Mathematics	Third Year	<ul style="list-style-type: none"><li>• Students will possess subject knowledge required for higher studies, professional and applied courses like M. Sc., Computer studies, Management Studies.</li><li>• Introduction to various courses like group theory, ring theory, field theory, metric spaces, operation research.</li><li>• Students will be able to acquire programming skills through C++ programming.</li><li>• Students will become employable; they will be eligible for career opportunities in Industry, academia.</li></ul>

Head

Department of Mathematics  
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**Dept. of Microbiology**

**Program Specific Outcome**

<b>SR.NO.</b>	<b>Program Specific Outcome</b>
<b>PSO 1</b>	Study the microorganisms with regard to morphology, cultural and biochemical characteristics. It will help to classify the microbes to certain extent.
<b>PSO 2</b>	Understand microorganisms and their relationship with the environment and follow the aseptic techniques and conduct the process of sterilization as well as perform the techniques to control the microorganisms.
<b>PSO 3</b>	Conduct the basic research with these microorganisms and perform the diagnostic procedures required in food, milk and pharmaceutical industry.
<b>PSO 4</b>	Acquire knowledge and understanding the concepts of Microbial genetics, Molecular biology, Immunology, Biochemistry, Applied and Environmental Microbiology and Enzymology.

  
Head

Department of Microbiology  
Amdar Shashikant Shinde  
Mahavidyalaya, Medha.




## Amdar Shashikant Shinde Mahavidyalay, Medha.

### Department of Physics

### Programme Specific Outcomes

Sr. No.	Programme Specific Outcomes
PSO1	Demonstrate, solve and an understanding of major concepts in all disciplines of physics.
POS2	Solve the problem and also think methodically, independently and draw a logical conclusion.
PSO3	Employ critical thinking and the scientific knowledge to design, carry out, record and analyze the results of Physics experiments.
POS4	Create an awareness of the impact of Physics on the society and development outside the scientific community.
PSO5	To inculcate the scientific temperament in the students and outside the scientific community.
PSO6	Use modern techniques, decent equipments and Phonics softwares.
PSO7	Attract outstanding students from all backgrounds.

  
Head  
Department of Physics  
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**Department of Zoology**

**Programme Specific Outcome**

<b>Sr. No.</b>	<b>Programme Specific Outcome</b>
PSO 1	Acquisition of knowledge of animal science to the pupils
PSO 2	Acquisition of the knowledge of nutrition, agriculture & live stock in their daily life
PSO 3	Awareness of natural resources and environment
PSO 4	Aptitude for scientific work & ability to pursue studies far beyond graduation
PSO 5	Life science as a career, which is the need now-a-day
PSO 6	Applications of scientific principles for organization of scientific exhibitions and competitions
PSO 7	Presentation skills and confidence in students
PSO 8	Skills in practical work, experiments, laboratory materials & handling of instruments
PSO 9	Interests in the subject
PSO 10	Enhancement of scientific attitude & scientific hobbies
PSO 11	Abilities to apply scientific methods, collection of scientific data, problem solving, Research Paper Writing, etc
PSO 12	Appreciation of the subject, contributions of scientists, scientific methods, scientific programs, etc

  
Head  
Department of Zoology  
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