

Department of Biotechnology

Proforma for submission of Annual Progress Report supported under Star College Scheme

(Kindly note that the annual report from Point 6 to 10, should not be more than 5 A4 size sheets, with font size 12pt and line spacing 1.5)

1. **Name of the College :** Lal Bahadur Shastri College of Arts, Science and Commerce , Satara

2. **Name of Coordinator, designation, Address, Phone nos.**

Mr. Ninad Ambadas Kadam,

Assistant. Professor

Department of Microbiology

Lal Bahadur Shastri College of Arts, Science and Commerce, Satara 415002


Mobile no. 9975061248

3. **Assessment duration :** 01/04/2020 to 31/03/2021 Duration in years :1

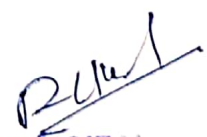
4. **Details of Departments Supported**

Sr. No	Name of Department	Courses (B.Sc./M.Sc./PG Diploma,certificate etc) offered	Regular Faculty Members	
			With Ph.D.	Without Ph.D.
			Total = 14	
1	Chemistry	B. Sc. , M,. Sc., Ph. D.	4	2
		Certificate Course in Analytical Instrumentation		
		Certificate Course in house hold chemical preparation		
2	Botany	B. Sc.	-	2
		Certificate Course in Mushroom cultivation		
3	Zoology	B. Sc. , M,. Sc., Ph. D.	3	
		Certificate Course in Aquarium maintenance and management		
		Certificate Course in preparation of ornamental articles from silkworm cocoon		
4	Microbiology	B. Sc.	1	1
		M. Sc. Environmental Science (YCMOU)		
5	Statistics	B. Sc.	-	1

5. **Number & Date of Advisory committee meeting:** Nil


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6. Qualitative improvements due to DBT support. Please highlight 5 salient points (within 500 words).

Inculcation of research culture and interdisciplinary approach among students

Department of Botany

Research projects undertaken by the students: one project is allotted to the students entitled assessment of endemic and threatened flowering plants of KAAS plateau. Kaas plateau is area in under world natural heritage site. So it is necessary to analyze status of flowering plant. The outcome will be helpful to forest departments and researchers, student's tourist and local people. The main purpose of the project is to create the awareness among local citizens and villagers. The area of research is biodiversity hotspot and it is under the threat due to mass tourism, anthropogenic activities. For conservation measures like in situ and ex situ the primary steps are undertaken, for in situ conservation we will expected to make MOU with forest department and local executive committee of KAAS.

Department of Statistics


Department of statistics also conduct the statistical analysis on wild animals in western ghat by employing the software like SPSS this project helps to inculcate interdisciplinary approach among the students and awareness of biodiversity conservation.

Department of Microbiology

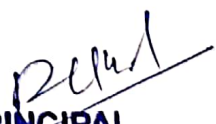
Excessive and inappropriate use of agrochemicals these days has resulted in negative and sometimes irreparable effects on the human health, environment and nation economy. Bio-fertilizers are option to chemical fertilizers and consist of the microbial preparations that help crop plants to uptake nutrients by their interactions in the rhizosphere when applied through seed or soil. Biofertilizers do not cause any harm to environment but benefits plants by providing nutrients and also growth factors to inculcate this idea among student and community a research project entitled "Production of nitrogen fixing Bio-fertilizers" was undertaken. The early outcomes are isolation and identification of promising symbiotic cultures from root nodules of local leguminous plants and expected to produce economically biomass of potent culture.

Department of Chemistry

The Chemistry Department also allotted the projects to the students. They done the analysis of the soil samples collected from farmyard of local nearby village, Nune. The projects aims at analyzing crop patterns in different fields, accordingly profile of soil, need of nutrients to added to soil so as to achieve the maximum product yield. With the assistance of local agricultural


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officers, students collected the soil samples by proper sampling methods with satellite locations. The outcome of project will help to achieve the national goal of agricultural productivity.

Dept also given project on synthesis of silver metal nanomaterials by biological methods. These nanomaterials are deposited on various types of cloths like silk, cotton, polyester, nylon, linen, etc, because silver nanoparticles are having antibacterial and antifungal properties. The antibacterial activity of silver nanoparticles binded clothes were studied

Department of Zoology

Department of Zoology allocated project "Commercial preparation of Vermiculture and vermicomposting to students". This project will be able to use the students' new idea for construction and maintaining vermicomposting plant. This project helps to develop entrepreneurship among the students by starting small scale business. This project helps to lead farming toward organic farming. It implements the habit of four R's –recycle, reduce, reuse and restore among the students.

Also increased availability of instrumentation and consumables is fulfilling the needs of ever increasing students strength of the college. Students can able to learn basic concepts through Experiential learning by field visits, industrial visits, and visits to nearby institutes during the short period of lock down relief. Introduction of new experiments correlated to existing syllabus helps to understand basic fundamental concepts and increases skill of students. Enhanced outreach activity increases.

7. Any Novel aspect introduced or planning to introduce during the Scheme duration.

Introduction of guest lectures on cross cutting issues in science through online platforms like zoom and google meet in corona pandemic. Expecting to carry out online demonstration of experiments and develop virtual laboratory for conditions like corona pandemic.

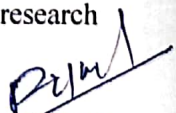
8. Lessons learnt / difficulties faced/suggestions if any, in implementation of the programme and utilization of DBT grant. (Max 3 points within 300 words).

For timely utilization of funds there is requirement of modification to introduce at current parent institutes policies regarding generation and utilization of funds. Currently parent institute implement approaches like transparency and justifiable use of funds which requires time period to receive permission from parent institute during purchase and expenditure.

Due to natural calamities like corona pandemic and heavy rain fall many times during this academic year institute remains close. The objectives like skill development increased exposure of students to instrumentation and experimentation hands on training to students by industries and institutes etc is remains under achieved. Due to restricted mobility research


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projects including population survey of biodiversity, clinical laboratory surveys remains underachieved. The options of online guest lecture, seminar organization also have the issues like student connectivity and availability of Smartphone's etc. because many students are from hilly remote rural areas

Suggestion to department of biotechnology to revise and match the dates for considering financial year with the academic year provided by UGC as assessment of key performance indicators to achieve requires at least completion of one academic year to find out pass percentage, drop out ratio, vertical mobility, etc


9. Key performance indicators

S. No	Indicator	Pre-support								During /After Support								Remarks
1	No. of students admitted	Total =933								Total = 993								
		M=561				F=372				M=638				F= 355				
		SC	ST	OBC	G	SC	ST	OBC	G	SC	ST	OBC	G	SC	ST	OBC	G	
		31	01	118	421	33	04	92	231	37	01	103	497	26	01	125	204	
2	No. of students passing out (%) Students admitted/passing out (pass %)	80.17 %								85.39 %								
3	Drop-out rates	6 %								4.028 %								
4	No. of students opting for MSc	30.21								35.02 %								
5	Average marks	67.23								81 %								
6	No. of hands-on experiments being conducted	Nil								08								
7	No. of new experiments introduced	Nil								12								
8	Publications (scopus indexed) /patents, if any.	15								09								
9	Training received by Faculty	Nil								Introduction to IPR								
10	Exhibitions/seminars /training courses conducted	02								04								
11	Books/journals subscribed from grants	Nil								Nil								
12	Outreach activities (Popular lectures)	Nil								07 visits to nearby industries and institutes								
13	Colleges mentored to apply for DBT Star College grants	Nil								Nil								
14	Invited lectures	02								10								

Proofs (S.No. 6-14 not more than 5 pages, 1.5 line spacing 11 times roman font size) to be provided duly attested by Principal and Coordinator.


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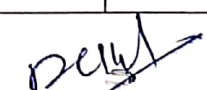
Self evaluation

Department	Objective (as stated in proposal)	% achieved	Reasons for under achievement If achieved, state in quantitative metrics
Chemistry	<ol style="list-style-type: none"> 1) To upgrade the laboratory facilities 2) To enrich the Central Facility Center 3) To add equipments in the laboratories for better practical exposure. 4) To inculcate research aptitude among the students. 5) To expose the students and faculties to the idea of integration of Science and Technology. 	80	Due to Corona pandemic
Botany	<ol style="list-style-type: none"> 1) To upgrade the laboratory facilities 2) To enrich the Central Facility Center 3) To add equipments in the laboratories for better practical exposure. 4) To inculcate research aptitude among the students. 5) To expose the students and faculties to the idea of integration of Science and Technology. 	70	Due to corona pandemic
Zoology	<ol style="list-style-type: none"> 1) To upgrade the laboratory facilities 2) To enrich the Central Facility Center 3) To add equipments in the laboratories for better practical exposure. 4) To inculcate research aptitude among the students. 5) To expose the students and faculties to the idea of integration of Science and Technology. 	80	Due to corona pandemic
Microbiology	<ol style="list-style-type: none"> 1) To upgrade the laboratory facilities 2) To enrich the Central Facility Centre 3) To add equipments in the laboratories for better practical exposure. 4) To inculcate research aptitude among the students. 5) To expose the students and faculties to the idea of integration of Science and Technology. 	80	Due to corona pandemic
Statistics	<ol style="list-style-type: none"> 1) To upgrade the laboratory facilities 2) To enrich the Central Facility Center 3) To add equipments in the laboratories for better practical exposure. 4) To inculcate research aptitude among the students. 5) To expose the students and faculties to the idea of integration of Science and Technology. 	60	Due to corona pandemic

Course Coordinator


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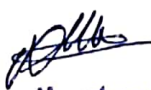



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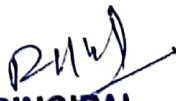
Proof of the point 6 to 14

Publications-

Author	Title of Paper	Name of Journal	ISSN No/doi
V. S. Patil	Serratia marcescens: A Plant Growth Promoting Potent Bacterial Isolate for Eco-friendly and Sustainable Development of Agriculture	Research journal of Agricultural sciences 11(3):605-612, May-June 2020	0976-1675
V. S. Patil and H.V. Deshmukh	Physico-chemical characterization of vegetable wastes for its prosper management	International Research Journal of Environmental Sciences Vol. 9(3),67-71, July 2020	2319-1414
V. S. Patil	Evaluation of Plant Growth Promoting Potential of Phosphate Solubilizing Bacteria Isolated from Digester Effluent of Vegetable waste Based Bio-methanation Plant	Research journal of Agricultural Sciences 12(2):442-447	0976-1675
Avinash Nalawade, Rekha Nalawade, Deepak Kumbhar	Effect of Mn ²⁺ substitution into the Host Lattice of ZnO via Sol-gel Route for Boosting the Dye- sensitized Solar Cell Performance	Chemical papers	https://doi.org/10.1007/s11696-021-01615-w
Datta Gunjal, Rajendra Shejwal	Sawmill waste derived carbon dots as a fluorescent probe for synthetic dyes in soft drinks	Nature Scientific reports (2021) 11:17996	www.nature.com/Scientific reports
Avinash Nalawade, Rekha Nalawade, Deepak Kumbhar	Enhanced photoelectrochemical cell performance of Co doped ZnO nanoparticles sensitized by affordable mixed dyes as sensitizer	Inorganic and Nano-metal Chemistry	https://10.1080/24701556.2020.1835963


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Avinash Nalawade, Balaji Londhe	Ultrasound assisted synthesis of 2,4,5-triarylimidazoles catalyzed Baker's Yeast	International Journal of Research in Engineering and Science (IJRES) Volume 9 Issue 1 2021 PP. 79-84	2320-9356 DOI: 10.1002/masy. 202100175
Avinash Nalawade, Rekha Nalawade, Deepak Kumbhar	Structural Morphological and Optical investigation of Ag-doped TiO ₂ /rGO Nanocomposite Synthesized by Ex Situ Route	Macromol. Symp. 2021, 400, 2100175	1521-3900
Avinash nalawade, Balaji Londhe	Baker's Yeast Catalyzed and Ultrasound Accelerated Synthesis Of 2-Amino-2-Chromenes	International Journal of Advanced Research 9(01) 189-195	2320-5407

New Experiment

Name of Experiment	Name of Teacher	Student benefited
Isolation of Bacterial DNA from coconut milk	Mr. R. R. Sable	30
Identification of Sugar by Chromatography	Mr. S. A. Mohite	32
To study pathogen with reference to disease	Dr. S. M. Pawar	25
Complete blood count of flour-mill workers	Dr. P. P. Yadav	25
Isolation of bacterial DNA from Amoeba	Mr.N. A. Kadam	22
Cultivation of bacterial viruses isolated from river water	Dr. V. S. patil	24
Statistical study of wild animals in Western Ghat	Miss M. A. Mulik	18
Study of Infant mortality rate in Satara municipal corporation	Mr. P. H. Borate	20
Synthesis of silver nanoparticles by chemical method	Dr. D. B. Gunjal	32
Synthesis of silver nanoparticles by using microorganisms	Dr. A. M. Nalawade	30
Synthesis of silver nanoparticles using plant extract	Dr C. P, Mane	28
Ton study antibacterial and antifungal properties of silver nanoparticle.	Dr. R. A. Nalawade	30


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List of hands on experiments conducted


Name of Experiment	Name of Teacher	Students benefited
Study of DNA packaging by micrographs	Mr. R. R. Sable	22
Horticultural techniques	Mr. S. A. Mohite	20
To demonstrate of ECG of human body	Dr. S. M. Pawar	35
To demonstrate the measurement of lung capacity	Dr. P. P. Yadav	40
Isolation of bacterial DNA from Bacillus Subtilis	Mr. N. A. Kadam	10
Isolation of bacterial viruses from river water	Dr. V. S. Patil	10
Trace elements in food samples by AAS	Dr. A. M. Nalawade	16
A study of smart phone users.	Shri Pramod Borate	18

List of projects allotted

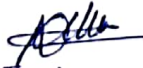
Name of Project	Name of Teacher	Name of students benefited
O ₂ estimation in different water reservoirs in Satara city	Mr. R. R. Sable	Dhembe Dipak Maruti Dhumal Rushikesh Balasaheb Jadhav Neha Dipak Chavan Rushikesh Shankar
Weed flora from commercial crops from Satara Tahsil	Mr. S. A. Mohite	Mane Rohini Dhanaji Kamble Prajakta Vijay Pawar Aniket Anil Raje Ankita Rajendra
The effect of Vermi-wash on Garden plant	Dr. V. B. Supugade	Chavan Bhagyshri S. Kamble Sumit D Bandger Mahesh M Mane Ashutosh
Blood sugar level from human population	Dr. S. M. pawar	Shinde Vikram S. Bhosale madhur D. Bagwan Sufia R. Devare Gauri B. Inamdar Joya S.
Characterization and identification of probiotics from dairy products of local dairies	Mr. N. A. Kadam	Aishwarya N. Ghadge Jhakiya U. Shaikh Ayesha M. Sayed Aditi v. Shinde Tejashree A. Koli Shalaka H. Kulkarni
Production of Nitrogen fixing biofertilizers	Dr. V. S. Patil	Suchita b. Satpute Saijida M. Bagwan


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		Nikita A. Sable Fija J. Bagwan Siddhi S. Sable Anisha A. Jadhav
Soil and water analysis of local region	Dr. C. P. Mane	Megha Pawar Sarika mane Rajashri Ghodake
Preparation and application of natural indicators	Dr. R. A. Nalawade	Sneha Devare Vaishnavi Mane Vaishnavi Katkar
Synthesis of carbon nanomaterials	Dr. A. M. Nalawade	Megha sawant Rajnish Jadhav Ankita Salunkhe Sanket Mane
Synthesis of graphene by hammer method for analytical applications	Dr. D. B. Gunjal	Sangram Tate Ganesh Kamble Shubham lagas Abhishek kharat
Synthesis of heterocyclic compounds and their activity	Dr. M. B. Gurme	Jadhav Prithaviraj Jadhav Rohit Siddika Attar
Effectiveness of animal feeds using design of experiments	Mr. Pamod Borate	Navnath baburao Nikam Amar vinayak More Ishaka Nandkumar Jadhav
Study of infant mortality rate in municipal, Satara	Mr. Pratima Jagtap	Mane Sangita Shankar Gouri Narayan More Savita Laxman
Development of Algorithm & flow chart for various statistical tech	Mr. Shivaji kinase	Pooja Raju chougule Manoj Chandrakant Ghorpade Akansha Shankr pawar
Defective and defect control chart	Mr. Shivaji Kanase	Akshay Rajaram Bhise Shrikant Avinash Mule Namrata vinayak Kambale
Study of public transport system	Miss Pratima Jagtap	Kalpana Chandrakant More Prathmesh Dadaso Pimpale Akshay Kisan Sapkal
Study of e-banking using various statistical technique	Mr. Pramod Borate	Akshay Appaso Kharat Priyanka rattan Jaddhav Amar vinayak More


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Invited lectures/training to faculty/training to students

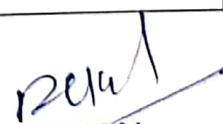
Name of activity	Name of resource person and Date	No o students /staff benefited
National webinar on COVID-19:present molecular diagnostic techniques and approaches toward vaccine development	Dr. Amey Jayant Bhide 22.03.2020	278.
Stem cell applications	Dr. Meghnad Joshi 15.03.2021	61
Sericulture	Dr. A. D. Jadhav 03.03.2021	79
Effect of raring Honey Bees on crop productivity on agricultural crop	Dr. V. S. Manne 05.03.2021	82
Vermitechnology: Effect of vermiwash on Garden plants	Dr. S. S.Patil 07.03.2021	87
Biodiversity of India	Dr Vinod B. Shimple 06.03.2021	67
R-software for web Applications	Dr. S. D. Pawar 19.03.2021	43
Excel for everyone		72
Plant tissue culture and its applications	Dr. Jay Chavan 10.03.2021	85
Statistical study of wild animals in western Ghat	Dr O. V Yadav 13.03.2021	62
Plagiarism and protection of copyright under Intellectual property right	Dr.Yogesh Desai 01.03.2021	80
Soil and water analysis Training workshop	Mr A. D. Lad 08.03.2021	20
Training programs for nonteaching staff	Adv Onkar Patil, 16.03.2021	39

Outreach activities

Name of activity	Date	Students benefited
Visit to Kaas plateau :world natural heritage	22 nd Feb 2021	68
Babasaheb Sawant Agriculture university, Dapoli	21 and 22 nd March 2021	70
Nilkanti fish farm,conservation ,Research and Guidance Centre	10 march 2021	72
Visit to Ajinkyatara Cooperative sugar Factory and Industrial waste water treatment plant	15 march 2021	78
Visit to national Chemical laboratory, Pune	28 march 2021	50
Visit to RCF laboratory, Satara	19 arch 2021	48
Visit to soil and water testing lab, Hamdabaj, Satara	26 march 2021	36


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