

Progress Report
by colleges supported under
DBT Star College Scheme
(2019-20)

Submitted by:
Shri Shivaji Mahavidyalaya Barshi,
Dist: Solapur (MS)



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Department of Biotechnology

2019-20

Proforma for submission of progress reports by
colleges supported under Star College Scheme

S.No.	Name of the College	:	Shri Shivaji Mahavidyalaya Barshi
1	Name of Departments supported	:	Chemistry, Microbiology, Zoology, Physics, Botany, Electronics
2	Name of Coordinator, designation, address, phone nos.	:	Overall Co-ordinator/Member Secretary : Dr. V. M. Gurame, Assistant Professor, Department of Chemistry, Shri Shivaji Mahavidyalaya Barshi (9767131206) vmgurame@gmail.com
3	No. of regular faculty with Ph.D. in each participating department	:	Chemistry (5), Zoology(4) Microbiology(1), Botany(1), Electronics(2), Physics (3)
4	List of courses (B.Sc./M.Sc./PG Diploma, certificate etc) run by different participating departments	:	Chemistry (B. Sc., M.Sc., Ph.D), Microbiology (B. Sc., M.Sc., Ph.D.), Zoology (B. Sc., Ph.D), Physics (B. Sc., M.Sc., Ph.D.), Electronics(B. Sc., Ph.D.) Botany(B. Sc.), 1) Certificate Course in soil and water analysis 2) Certificate Course in Fundamentals of Electrocardiogram 3) Certificate Course in fermentation technology 4) Certificate Course in vermicomposting 5) Certificate Course in Agricultural food products 6) certificate course in PCB designing and prototype machine making
5.	Cut off percentage for admission in different courses in Participating departments, positions in university, Percentage of result in 2019-20 academic session :		57.10 % Number of students admitted to First Year B.Sc. (General), includes Chemistry, Zoology, Microbiology, Physics, Electronics, Botany, Mathematics, Statistics and computer science) Percentage result of participating departments in last examination is 94%

6. List of projects undertaken by students, industrial visits by students, summer training in last one year :

Sr No.	Name of Students	Title of Project
1	Mr. Sabale Rushikesh	Synthesis of Schiff bases and their characterizations
2	Miss. Dhavan Pragati Miss. Ghadade Priyanka	Soil and water analysis at Motirich aqua Barshi
3	Mr. Jagtap Mauli Mr. Pujari Ramesh	Analysis of micronutrients and Fertilizers at Sanghavi quality products Barshi



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4	Miss.Yadav Pallavi Miss.Bagwan Muskan	Synthesis of PTPT and Study of analytical applications
5	Mr.Salunke Ganesh Miss.Swami Rushali Miss.Mulik Komal	Synthesis and photocatalytic applications of ZnO nanoparticles
6	Mr.Waskar Gajanan Mr.Halladmal Prakash	Synthesis and photocatalytic applications of mixed metal oxide nanoparticles
7	Mr.Badude Akshay Mr.Mane Abhijit	Synthesis, characterization and applications of some heterocyclic compounds
8	Mr.Shinde Ajay Mr.Mote Pramod	Study of green chemistry metrics for synthesis of N-containing compounds
9	Nivedita Jarichand Chaudhari Miss.Ghante Mohini	Antibacterial Activity Of Different Fruit Extract
10	Pranali Sunil Kudale Miss.Kamble Asmita	Study of Endomycorrhizae on onion plant
11	Rupali Khandu Jadhav Miss.Darade Swati	Comparative toxicity of crude oil & Kerosene on the growth of nitrifying bacteria isolated from soil
12	Jyoti Rama More	Preparation & Characterisation of collagen from fresh water fish scales
13	Momin Alphiya Riyaj	Antimicrobial activity of different Medicinal Plant.
14	Anuradha Pandurang Pingale	Microbial Audit:- An approach of Environmental Monitoring
15	Sushilkumar Arjun Takbhate And Dnyaneshwar Hanumant Pawar	Photochemicals & Antimicrobial Acitivity of Different Spices
16	Prashant Jagannath Wagmode and Vikas Dilip Pawar	Antimicrobial Activity Checking in Spoiled Milk.
17	Sandhya Sanjay Jadhav and Ashish Ankush Khandekar	Biocontrol Potential of Bacillus thuringiensis Isolate From Soil sample against larva mosquito.



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18	Sagar Nagnath Langote and KaGanesh Chandrakant kadee	Production Of Biofertilizer Azotobacter
19	Sagar Bhimrao Ghadge and Navnath Ramdas Koli	Rhizobium as a Crop Enhancer With Increasing Cereal Production
20	Vaibhav Abhimanyu Andhare	Production Of Biofertilizer Azotobacter
21	Surwase Suraj Sudam	Production of Bio-fertilizer – Potassium Solubilizing Bacteria(KSB)
22	Miss.Shweta Babu Kshirsagar	Verticillium lecanii: a potential biopesticide
23	Ajinkya Babu Kshirsagar	Potential application of Bio-inoculants in agriculture
24	Dnyaneshwar Navnath Tanpure	Reutilization of agar medium
25	Onkar Limbraj Gore	Construction of Emergency water purifier
26	Jyoti Somnath Barangule	Production of ethanol from cellulolytic waste
27	Dhumal Pavan Shatrughna	Synthesis of Ferric oxide nanoparticles by Electro deposition Technique
28	Gaware Nishikant Umesh	Synthesis of NiCuZn ferrites
29	Kalel Prajakta Arun	Synthesis of zinc oxide (Zno) thin flim By SILAR method
30	Bhosale Pragati Bharat	Synthesis of NiCuZn ferrites
31	Gurav Vaishnavi Ramchandra	Synthesis of zinc oxide (Zno) thin flim By SILAR method
32	Satpute Dnyaneshwar Bhairu	Synthesis of Ferric oxide nanoparticles by Electro deposition Technique
33	Chavan Shital Dharmraj	Synthesis of NiCuZn ferrites
34	Yadav Supriya Vanraj	Synthesis of Ferric oxide nanoparticles by Electrode position Technique
35	Hogale Rajashri Umesh	Synthesis of zinc oxide (zno) thin flim By SILAR method
36	Unde Trupti Kailas	Synthesis of Zinc Oxide (ZnO) Nano particles By CBD (Chemical Bath Deposition)

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37	Barkul Aniket Ashruba	Synthesis of NiCuZn ferrites
38	Lamgunde Tejashri Kailas	Synthesis of Zinc Oxide (ZnO) Nano particles By CBD (Chemical Bath Deposition)
39	Jadhav Sonali Namdev	Synthesis of zinc oxide (zno) thin flim By SILAR method
4	Miss.Ankita Barkul	To study body mass index in girls of Shri shivaji hostel Barshi
41	Miss.Dilshaha Shaikh	Survey of sex,age, nutrition and hemoglobin percentage in girls of Shri Shivaji hostel Barshi
42	Miss.Rupali Mane	To study diversity of Arthropods in Barshi and around area
43	Mr.Akash Chobe	To study diversity of Birds in Paranda and around area.
44	Miss.Meera Karale	To study diversity of Birds in Barshi and around area.
45	Miss.Pooja Rasal	Survey of sex, age, nutrition and hemoglobin percentage in girls of Shri Shivaji hostel Barshi
46	Miss.Krutika Barbole	To study poultry breeds in Madha and around area.
47	Miss.Poonam Karkar	To study poultry breeds in Pranda and around area.
48	Mr.Sarade Akash	Effect of vehicular pollution on plants in Barshi region.
49	Mr.Khule Shriram	Quantitative analysis of of Biochemical content of plants.
50	Mohite Pradip Shankar	Digital distance meter with Arduino.
51	Bankar Prasad Gaburao, Bankar Vijaykumar Baban	Wireless Fence for kids.
52	Jagdale Rohit Dhanaji	Smart farming with Arduino.
53	Mohite Pradip Shankar	Security system using PIR sensor.
54	Zalate Sagar Balasaheb	Temperature dependent fan speed control .
55	Gotkhindi Bhushan Shrinivas	Tally ERP (GST).

7. Trainings, Workshops, conferences attended, scholarships received and tours/visits organized

- 250 students demonstrated experiments in VIII,IX, X standard to highschool students. in DBT Science fair (35 schools, 120 teachers, 2000 students)
- 260 students participated in Workshop on Laboratory Safety & Disaster Management
- 12 students of six departments have presented their poster at DBT Science popularization programme "Science Fair 2020" held at Modern College, Ganeshkhind Pune on 30/08/2019.
- 20 students participated in International Conference on "Recent advances in Physical and Chemical Sciences" held at Sangola College, Sangola Dist Solapur.
- Twelve students were awarded with DST Inspire scholarship, 110 students awarded with central sector scholarships and three got LIC golden Jubilee scholarship.

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- 650 B SC I, II, III students visited the science exhibition organized by SSPM Barshi.
- 34 students participated and qualified for Micro Olympiad
- 20 students Participated in Avishkar University level research competition and two got prizes
- 3 students of microbiology completed training at RRS Fertilizers Pvt. Ltd. Barshi
- 18 students of physics and electronics participated in Interaction Meet of Physics and Electronics Teachers & students 2020 at Panyashlok Ahilyadevi Holkar Solapur University, Solapur on 9/1/2020. Ku. Vaishali Harihar and Ku. Ankita Surde got Third prize in Poster competition.
- Four Students of zoology department participated in "107 International Science Conference ISCA 2020 at Bangalore
- 249 students of zoology department participated in Zoology Festival.
- Six students of Botany participated in workshop on Fruit and Vegetable Carving held at Sangola College.
- 262 students of Botany department have participated in Botany festival and Skill development workshop.
- 105 students participated in Rangoli Exhibition on Theme Immunity
- 235 students participated in Exhibition on fermented foods
- 170 students participated in Physics quiz.

Tours/visits Organized

Sr. No.	Locality	Number of Students participating
1	RRS Fertilizers Private Limited	30
2	Nargis Data Cancer Hospital Barshi	68
3	Hyderabad Osmania University	54
4	Maysur, ooty (CFTRI & Pasteur Institute)	18
5	Shivamrit Milk Dairy, Akluj	20
6	Mysuru Central Sericulture Training Institute	22
7	Cancer Hospital	57
8	National Center for Biological Sciences(NCBS) ,Bangalore	14
9	Balaghat (Ramling)	250
10	Smruti Van, Solapur	110
11	Lokmangal Biotechnology College, Wadala	110
12	Sorghum Research Institute, Solapur.	110
13	Campus Flora	430

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7. Training received by faculty from participating departments:

Sr.No.	Name of faculty	Training/conference Name
1	Dr. T. N. Lokhande	International Conference on "Recent advances in Physical and Chemical Sciences" 22 Jan-2020, Organized by Sangola Mahavidyalaya, Sangola Dist Solapur
		Lab Safety and Disaster Management, LSDM-2020 Organized by Shri Shivaji Mahavidyalaya Barshi on 25 th Feb. 2020
2	Dr. A. B. Shaikh	Workshop, K. N. Bhise Mahavidyalaya Kurduwadi
3	Dr. D. K. Jamale	Workshop, K. N. Bhise Mahavidyalaya Kurduwadi
4	Dr. P. R. Kate	International Conference on "Recent advances in Physical and Chemical Sciences" 22 Jan-2020, Organized by Sangola Mahavidyalaya, Sangola Dist Solapur
5	Mrs. R. S. Jangale	Orientation programme organized by Savitribai Phule Pune University, Pune, 14 th Nov.-04 th Dec. 2019
6	Dr V M Gurame	<ul style="list-style-type: none"> • UGC-HRDC Pune University Refresher course in disaster management organized at Indapur college July 2019 • Faculty Development Programme on MOOC organized by Ramanujan College New Delhi. • Faculty Development Programme for administrators organized by Ramanujan College New Delhi.
7	Mr. P. A. Patil	Two day's National Conference on "Biodiversity and Conservation of Wetlands"
8	Dr. S. P. Gaikwad	International Symposium on Biodiversity, Biology and Biotechnology of Algae at CAS in Botany University of Madras
9	Mr. D. S. Bhise	<ul style="list-style-type: none"> • State level workshop on "Vegetable and fruit carving" • Faculty Development Programme organized by Ramanujan College • Faculty Development Programme organized by KTHM College, Nashik and HRDC, Pune • Faculty Development Programme organized by Shardabai Pawar Mahila College, Baramati and HRDC, Pune
10	Mr SD Deokar	International Symposium on "Biodiversity, Biology and Biotechnology of Algae" 08 th - 10 th January 2020
		International Conference on Drug Discovery 2020 BITS Hyderabad 29 th Feb to 3 rd March2020
		National conference on Microbes for clean Environment & microbiology teachers meet 29 th sept-30 th sept 2019 Taywade College Koradi and NEERI Nagpur
		3rd Manipal International Infectious Diseases Conference at Manipal on 10th and 11th August 2019

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		National conference on Exploration on PR and Quality Practices in Research(IQPR-VGS 2020) at V G Shivdare College , Solapur
11	Mr Mane D B	International Symposium on "Biodiversity, Biology and Biotechnology of Algae"08 th - 10 th January 2020 National conference on Microbes for clean Environment & microbiology teachers meet 29 th sept-30 th sept 2019 Taywade College Koradi and NEERI Nagpur 3rd Manipal International Infectious Diseases Conference at Manipal on 10th and 11th August 2019
12	Dr U R Ghodake	one day webinar on Covid-19 Pandemic: spread and Solutions conducted by Science Popularization Team JNU. Webinar on "Future of AI" hosted by IETE-Mumbai in association with PANTECH. Webinar organized by IEEE standards Association & MHRD PMMNMTT FDC, Shivaji University, Kolhapur on "IEEE802.11 and Building Wireless Community Networks"
13	Dr K P Deshmukh	"Opportunities and Challenges in Electronics and Allied Industries in India post COVID-19", organized by Department of Electronics Engineering in Association with Institution's Innovation Council of Vivekanand Education Society's Institute of Technology, Mumbai. "ICT Tools for Effective Teaching, Learning and Administration" Department of Electronics, Y.C. Institute of Science, Satara and RUSA. "How to Conduct Virtual LABs" Webinar organized by Department of Electronics and Telecommunication, AISSMS Institute of Information Technology Pune.

- Eight teachers from these departments participated in study visit to Modern College Pune.
- Prin. Dr. P. R. Thorat and Dr V M Gurame presented the college activities under DBT star college scheme in review meeting held at Pondechery.

8. **List of exhibitions/seminars/training courses conducted by the college :**

Sr. No.	Name of exhibitions/seminars/training courses	Date of exhibitions/seminars/training courses
1	DBT Science popularization programme "Science Fair 2020" (35 schools, 120 teachers, 2000 students)	13-14 th Feb. 2020
2	Workshop on "Career in Chemistry"	03 rd Mar. 2020
3.	Covid-19 Awareness quiz (19816 participants)	From 28 th March 2020
4	Karmveer chemquiz 2020 for B Sc III chemistry (470 participants)	April 2020
5	Workshop on Laboratory Safety & Disaster Management	25/02/2020
6	Flower, Food, Fun and much more Exhibition	1 st Feb. 2020

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7	Exhibition of Flower Rangoli, Preparation of Bouquet, Garland Competition	2 nd Feb. 2020
8	Seminar, Group Discussion for B.Sc. III	Jan and Feb. 2020
9	Hands on training on Handling of Hightech Laboratory Instruments	August 2019
10	Training on Phenology of flowering Plants: useful in Plant identification	Sep.2019
11	Physica festival	27 feb. 2020
12	Zoo festival	24 feb 2020
13	Poster presentation competition by Zoology Department	3 March 2020
14	Rangoli Exhibition on Theme Immunity	13/8 2019 to 14/08/2019
15	Exhibition on fermented foods	14/02/2020
16	Physics quiz	April 2020

9. Name, designation, host institute of guest faculty invited :

Sr No.	Name of resource person	Designation/Institute Name
1	Dr. Gulshan Rehlan	Ex. Scientist, BARC Mumbai
2	Dr. P. M. Baraskar	General Manager, Quality Control, Microlabs Ltd. South Sikkim
3	Mr. Santosh Babar	Manager, Cognizant Technology solution, Pune.
4	Dr. Mangesh Kaulage	PDF, Madison, Wisconsin
5	Mr. Sachin Patil	Director, Sparkprout Pharma Training Institute, Solapur
8	Dr. Uday Bhosale	Scientist, International Atomic Energy Agency, Austria.
10	Mr. V. I. Sutar	Incharge, R & D, Megha Pharma, Nasik
11	Dr. V. S. Kambale	Associate Professor in Zoology, Sangola College Sangola
12	Mr. S. G. Umbardand	Head, Sienna ECAD Technology, Bangalore
13	Mr. A.K. Rajguru	Assistant Manager, Embedded programmer, Sydler Electronics Pvt. Ltd. Pune.
14	Mr. Sanjay Disale	Senior Technical Assistant, DRDO, Bangalore
15	Dr. Shrikant Kokare	Director BOEE, P.A.H. Solapur University Solapur

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10. **Date of Advisory committee meeting:**

Local meetings 04/07/2019, 23/08/2019, 13/01/2020, 05/02/2020

11. **List of New Practicals/demonstrations introduced in different departments in last one year :**

Chemistry

- Analysis of Heavy metals ions in Environmental samples and health hazards(Zn)
 - To study pH, Conductivity and total solids in soil samples.
 - To study different parameters of water samples.
 - To determine dissociation constant of weak acid conductometrically
 - To verify the Onsager law.
 - Analysis of Commercial talcum powder
 - Distribution law
 - Glucose estimation by Polarimeter
 - Study of Iron salicylate complex by colorimetry
 - Dissociation constant of dibasic acid
 - Study of chromatography
 - Preparation of transition metal complex
 - Determination of total hardness of water
- Department has successfully conducted all other practicals by increasing the accessibility and handling of instruments/glasswares.

Botany

- Tissue culture techniques (Demo)
- Somatic embryogenesis (Demo)
- Micro propagation (Demo)
- Separation of Isozymes using electrophoresis. (Demo)
- Qualitative and Quantitative estimation of carbohydrate, protein, nucleic acid and fats from plant samples.
- Isolation of DNA from plant material.
- Separation of Amino-acid by chromatography
- Estimation of Vitamin C from different plant samples.
- Separation of Alkaloids

Zoology

- Estimation of Dissolved oxygen
- Isolation and separation of biomolecules
- To Check the weight of the given material
- Estimation of proteins and Carbohydrates
- Observation and identification given specimens/Slides/materials
- Parasitology .(methodology of identification of parasites)
- To find out Ph of given sample.

Department has successfully conducted all other practicals by increasing the accessibility / handling of instruments/ glasswares. Department has successfully conducted all other Demonstrations about dissection using LCD projector.

Physics

- Characteristics of FET.
- Constants of Ballistic Galvanometer
- Impedance of LCR series circuit
- Study of Characteristics of G M tube and determination of its operating voltage, Plate length and slope etc
- Logarithmic decrement to determine viscosity of a given liquid
- Motion of Spring and calculate (a) Spring Constant and (b) Value of G
- Diameter of a thin wire by studying the diffraction produced by it
- Equivalent conductivity of solution at it's infinite dilution..

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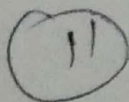
- SCR firing by UJT
- RS and JK flip flop
- FET as VVR
- Seven Segment Display
- Characteristics of SCR
- Estimation of efficiency of GM counter
- Determination of Beta particle range and maximum energy
- Hall effect
- Resistivity of semi conducting material by four probe method.
- Band gap/temperature sensor using semiconductor diode.
- Temperature sensor (PTCR & NTCR)
- Thin film preparation by any chemical method with different preparative parameters.
- Use of C.R.O. for measurement of AC, DC voltage and frequency.
- Synthesis of Ferric oxide and ZnO thin films
- Determination of Viscosity of various engine oils
- Designing of UPS (Uninterrupted power supply) for use in the laboratory
- Designing of digital board to set up in the dept
- Determination of wavelength using Michealson Interferometer
- Determination of electronic charge using Millikan's oil drop apparatus
- Preparation of ferrite samples
- Fabrication of thick/thin films
- Determination of elastic constants of various metals using any simple method of electricity
- Fabrication of temperature sensitive thermometer using sensor panel
- Determination of surface tension for various detergents available in the market

Electronics

- Op-amp as Band Pass Filter.
- Frequency Modulation/Demodulation .
- Op as log amplifier.
- Study of FSK Modulation.
- Study of DTMF decoder .
- AM Modulation/Demodulation.
- Study of IC NE 565 PLL.
- Study of LVDT.
- Study of microcontroller using IC 8051.
- Study of Fiber Optics Communication Analog/Digital Link.
- Time Division Multiplexer.
- Characteristics of JFET.
- NAND/NOR as Universal Gate.
- Study of De Morgan's Theorem.
- Study of RS, D, JK Flip Flops .
- Study of Counters (± 2 , ± 5 , ± 10).
- Study of Multiplexers and Demultiplexers.
- Study of Encoders and Decoders.
- Study of Amplifiers.(CE and CC configurations)
- Study of Oscillators.(RC and LC oscillators)
- Study of Multivibrators.(Astable, Monostable and Bistable)

Microbiology

- Microbiological analysis of drinking water
- SPC of market Biofertilizers/milk /water /food
- Examination of Milk. i) DMC ii) Quantitative analysis of milk iii) Efficiency of pasteurization
- Study of Determination of effectiveness of antiseptic agent.



- Isolation pathogens of clinical samples.
- Urin analysis, i) Microscopic examination ii) Chemical examination
- One step growth experiment
- Effect of environmental factors on Micro organisms
- Electrophoretic separation of DNA
- Isolation of DNA from Bacteria
- Experiments on bacterial recombination process
- Production of Biofertilizers & Biopesticides.
- Isolation of Bacteriophage & Phage titration
- Estimation of alcohol
- Estimation of available Nitrogen from Soil

Department has successfully conducted all other practicals by increasing the accessibility/handling of instruments/glasswares.

12. Details of equipment purchased in each department from DBT grant: Nil
(item, no., cost, date of order placed, purchase/installation)

Sr.No	Name of the Equipment	Number	Cost	Date of purchase	Remarks
Nil	Nil	Nil	Nil	Nil	Nil
Grand Total				Nil	

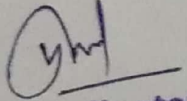
13. Details of books & journals subscribed from DBT grant.: Nil

14. Qualitative improvements due to DBT support Please highlight (5 salient lines) :

- Cut of % increased from 52.54 % (2016-17) to 57.10% (2019-20).
- Six departments have started one certificate course each in their department in support of curriculum of B Sc programme. B Sc III Students completed one certificate course along with their regular B Sc programme.
- Celebration of DBT week has helped in development of scientific attitude among students.
- Due to this scheme the flow of students towards basic and life science subjects is increased and the high-ranked students are also joining the basic and life science.
- More hands-on exposure and educational tours to students for better understanding of concepts are arranged.
- Students got opportunity to listen and interact with scientists, academician and researchers
- The scheme helped to improve the quality of teaching, to boost interest of students in the subject and motivate them for further studies and research.

15. Problems faced, if any, in implantation of the programme and utilization of DBT grant
(in two-three lines) :

Please release the funds for 2019-20.


Co-Ordinator
 DBT-Star College
 Shri Shivaji Mahavidyalaya, Barshi




PRINCIPAL
 Shri Shivaji Mahavidyalaya,
 Barshi, Dist. Solapur-413411.

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