

Palus Shikshan Prasarak Mandal's  
ARTS, COMMERCE AND SCIENCE COLLEGE PALUS  
District: Sangli, Maharashtra, India  
Affiliated to Shivaji University Kolhapur



ANNUAL PROGRESS REPORT 2020-2021  
SUPPORTED UNDER  
DBT STAR COLLEGE SCHEME



DEPARTMENT OF BIOTECHNOLOGY  
MINISTRY OF SCIENCE AND TECHNOLOGY  
CGO COMPLEX, LODI ROAD  
NEW DELHI – 110 003

2020-21

## CONTENTS

Sr. No.	Particulars	Page No.
1.	Annual Progress Report 2020-2021	2-12
2.	Annexure I Minor Projects	13-16
3.	Annexure II Activities Carried out	17-19
4.	Annexure III List of Book Purchased	20-20
5.	Annexure IV Field visit and Study Tour Report	21-22
6.	Annexure V List of Equipments Purchased	23

**DEPARTMENT OF BIOTECHNOLOGY**  
**PROFORMA FOR SUBMISSION OF ANNUAL PROGRESS REPORT SUPPORTED**  
**UNDER STAR COLLEGE SCHEME**

1. Name of the College: ARTS, COMMERCE AND SCIENCE COLLEGE  
 PALUS

2. Name of Coordinator, designation, Address, Phone No. Dr. Suresh M. Kumbar  
 Associate Professor,  
 Department of Zoology  
 Arts, Commerce and Science College Palus  
 Mobile: 9420675426  
 E-mail: [smkumbar@rediffmail.com](mailto:smkumbar@rediffmail.com)

3. Assessment Duration : 01/04/2020 to 31/03/2021 Duration in Years: One  
 Year

4. Details of Departments Supported:

Sr. No.	Name of Department	Courses (B.Sc./M.Sc./PG Diploma, Certificate etc) offered	Regular Faculty Members	
			Total	
			With Ph.D.	Without Ph.D.
1.	Zoology	B.Sc. M.Sc. Certificate	1. Dr. S. S. Patil 2. Dr. S. M. Kumbar	1. Mr. A. B. Ghadage
2.	Physics	B.Sc. Certificate	1. Dr. S. D. Pawar	1. Mrs. S. S. Patil 2. Mr. M.V. Kamble

5. Number and Date of Advisory committee meeting: **02**: 19/10/2020 and 28/01/2021

Designation	Committee	Name	Signature
<b>Chairman</b>	Principal	Dr. R. S. Salunkhe	
<b>Adviser, HRD, DBT</b>	DBT Adviser	Dr. Anamika Gambhir, Sc-F	
	Program Officer	Dr. Garima Gupta, Sc "E"	
<b>External Experts</b>	Physics	Dr. R. T. Sapkal	
	Zoology	Dr. S. R. Yankanchi	
<b>Members</b>	Physics Department	Dr. S. D. Pawar (HOD)	
		Mrs. S. S. Patil	
		Mr. M. V. Kamble	
	Zoology Department	Dr. S. S. Patil (HOD)	
		Mr. A. B. Ghadage	
<b>Coordinator</b>	Member Secretary	Dr. S. M. Kumbar	
<b>Joint-Coordinator</b>		Dr. S. S. Lendave	
<b>Office Staff</b>	Office Superintendent	Mr. N. K. Shinde	
	Accountant	Mr. A. D. Patil	

**DBT Star College Scheme**  
**Advisory Committee Meeting With External Experts**  
**Minutes of the Advisory committee meeting of DBT Star College Scheme conducted on**  
**19/10/2020**

A meeting of the DBT Star College Committee members with the Advisory Committee members (External subject experts) was conducted on 19/10/2020 in the Principal Chamber, before the start of the program. The following committee members were present in the meeting,

Principal, Dr. R. S. Salunkhe welcomed to the Dr. R. S. Sapkal, Department of Physics, T.C. College, Baramati, he was appointment as Physics External Subject Expert in DBT Star College scheme Advisory committee member and also welcomed to Prof. Dr. S. R. Yankanchi, Post Graduate Department of Zoology, Shivaji University, Kolhapur: Zoology External Subject Expert

- Dr. R. S. Sapkal gave a short PPT presentation on how to go about the program highlighting the Do's & Don't.
- He emphasized the need to document all the activities.
- To judiciously utilize the funds giving examples of his experiences.
- To conduct all the extra practical's, project work as mentioned in the proposal.
- He emphasized the need to purchase all the instruments on time
- To lay more focus on interdisciplinary activities.

Both department staff members had queries related to the amount to be utilized by the different departments for activities such as study tour, field trips. Dr. R. S. Sapkal answered all the quarries.

The meeting ended with vote of thanks by the DBT Star College Scheme Co-ordinator.  
Dr. Suresh M. Kumbar, Associate Professor, Department of Zoology



Estd.  
21 August 1992

Palus Shikshan Prasarak Mandal's  
**ARTS, COMMERCE AND SCIENCE COLLEGE PALUS**  
Tal: Palus, Dist: Sangli, Pin- 416 310 ☎: (02346) 226226, 228383  
(Affiliated to Shivaji University, Kolhapur)  
Web: [www.acscollegepalus.org](http://www.acscollegepalus.org) Email: [acscollegepalus@gmail.com](mailto:acscollegepalus@gmail.com)  
\*NAAC Accredited -B+ (2.67 CGPA)\*

B.A.  
B.Com.  
B.Sc.  
B.B.A.  
B.C.A.  
B.C.S.  
P.G.D.C.A.  
M.A.  
M.Sc.

I/c Principal: Dr. R. S. Salunkhe, M.Com. M.Phil. Ph.D. SET  
Mob.No.9860196990

Outward No. Mahavi / 179 /DBT- Appointment File /2020-21  
Date : 19/10/2020

**Minutes of the DBT Star College Scheme**  
**Advisory Committee Meeting**

**Date:** 19<sup>th</sup> October 2020

**Time:** 11:30 am

**Venue:** Principal Chamber, Arts, Commerce and Science College, Palus – 416310

An Advisory Committee Meeting for the Star College Scheme of Department of Biotechnology (DBT), Government of India was held on 19<sup>th</sup> October 2020 at Arts, Commerce and Science College, Palus, Sangli to discuss various points i.e. discussion on purchase of new equipments, preparation of annual calendar, chemicals and stationary items for Physics and Zoology departments under the DBT Star College scheme.


Members Present for the meeting were as follows:

Designation	Committee	Name	Signature
Chairman	Principal	Dr. R. S. Salunkhe	
Adviser, HRD, DBT	DBT Adviser	Dr. Meenakshi Munshi	
	Program Officer	Dr Garima Gupta, Sc "E"	
External Experts	Physics	Dr. R. T. Sapkal	
	Zoology	Dr. S. R. Yankanchi	
Members	Physics Department	Dr. S. D. Pawar (HOD)	
		Mrs. S. S. Patil	
		Mr. M. V. Kamble	
	Zoology Department	Dr. S. S. Patil (HOD)	
		Mr. A. B. Ghadage	
Coordinator	Member Secretary	Dr. S. M. Kumbar	
Joint-Coordinator		Dr. S. S. Lendave	
Office Staff	Office Superintendent	Mr. N. K. Shinde	
	Accountant	Mr. A. D. Patil	



Acting Principal  
Arts, Commerce & Science College  
Palus, Dist. Sangli



 <p>Estd. 21 August 1992</p>	<p>Palus Shikshan Prasarak Mandal's <b>ARTS, COMMERCE AND SCIENCE COLLEGE PALUS</b> Tal: Palus, Dist: Sangli, Pin- 416 310 ☎: (02346) 226226, 228383 (Affiliated to Shivaji University, Kolhapur) Web: <a href="http://www.acscollegepalus.org">www.acscollegepalus.org</a> Email: <a href="mailto:acscollegepalus@gmail.com">acscollegepalus@gmail.com</a> *NAAC Accredited -B+ (2.67 CGPA)*</p>	<p>B.A. B.Com. B.Sc. B.B.A. B.C.A. B.C.S. P.G.D.C.A. M.A. M.Sc.</p>
	<p>I/c Principal: Dr. R. S. Salunkhe, M.Com. M.Phil. Ph.D. SET      Outward No. Mahavi /      /DBT- Appointment File /2020-21 Mob.No.9860196990      Date : 28/01/2021</p>	

**DBT Star College Scheme Purchase Committee Meeting**

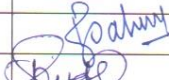
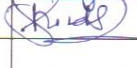
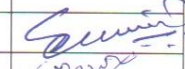
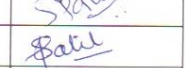
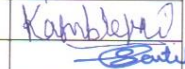
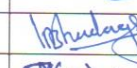
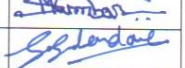
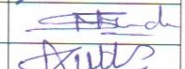
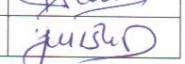





**Date:** 28<sup>th</sup> January 2021

**Time:** 10:30 am

**Venue:** Principal Chamber, Arts, Commerce and Science College, Palus – 416310

An purchase Committee Meeting for the Star College Scheme of Department of Biotechnology (DBT), Government of India is scheduled on Thursday, 28<sup>th</sup> January 2021 at the Principal Chamber in Arts, Commerce and Science College, Palus, Sangli for negotiation meeting with quotation received from agencies of equipments to be purchased to the Physics and Zoology departments under the DBT Star College scheme.

Members Present for the meeting were as follows:

Designation	Committee	Name	Signature
Chairman	Principal	Dr. R. S. Salunkhe	
Sansta Member	Secretary	Mr. Dhondiram Shinde	
External Experts	Physics	Dr. R. T. Sapkal	
	Zoology	Dr. S. R. Yankanchi	
Members	Physics Department	Dr. S. D. Pawar (HOD)	
		Mrs. S. S. Patil	
		Mr. M. V. Kamble	
	Zoology Department	Dr. S. S. Patil (HOD)	
Mr. A. B. Ghadage			
Coordinator	Member Secretary	Dr. S. M. Kumbhar	
Joint-Coordinator		Dr. S. S. Lendave	
Office Staff	Office Superintendent	Mr. N. K. Shinde	
	Accountant	Mr. A. D. Patil	
	Lab. Assistant	Mrs. Pooja Desai	



  
**Acting Principal**  
 Arts, Commerce & Science College  
 Palus, Dist. Sangli

## 6. Qualitative improvements due to DBT support. Department wise: Zoology

The Star College Scheme of Department of Biotechnology, New Delhi has enabled the departments to procure new equipment and improved the infrastructure facilities in multiple numbers and simultaneously performances, as a result of which the students are able to handle the instruments individually, and subsequently it has increased their confidence level. The DBT star college scheme has enabled the departments to purchase books and enrich the departmental library to which the students have an easy access. It was possible to organize Science day, National voter's day celebration and workshop on Handling of glassware and chemicals in laboratory in an interdisciplinary manner in our college. With the help of DBT funds which has enabled undergraduate students of our college to participate in the various events and present their research work in the form of oral and poster presentations and also provided an opportunity to expose their hidden talents. The Star College Scheme has enabled the departments to upgrade the existing teaching resources which have in turn improved the 'hands on' experimental exposure of the students, in-turn reflecting the enhanced quality of learning and teaching of the students and teachers respectively. Due to star college scheme we were able to create health awareness, computer literacy and information technology and its applications among the students in the college campus. Excursions and field visits conducted to various agriculture related farms and research institutes under this scheme has enabled deserving students from economically backward sections also to attend such field trips and get academic and industrial exposure. Thanks to DBT.

### Students Minor Research Projects of Zoology Department

Sr. No.	Title of Project	Name of students	Remarks
1.	Estimation of age and longevity of Freshwater fish <i>Puntius sarana</i> inhabiting Krishna River	Ms. Harshada V. Lad Ms. Rohini R. Surywanshi	Project work is under progress
2.	Diversity of Freshwater fishes of Krishna River	Ms. Snehal S. Mali Ms. Smita S. Mali	
3.	Identification of Insect Pests in Palus Tehasil, Sangli District	Ms. Arti H. Bhosale Ms. Smita S. Mane	
4.	Human Genetic Traits	Ms. Asmita A. Shinde Ms. Pranali V. Mali	
5.	Diversity of Spider species in Sangli Dist.	Ms. Samruddhi S. Patil Ms. Vaishnavi V. Shinde	
6.	Collection and identification of Caterpillars in Palus Tehsil	Ms. Pooja A. Pawar Ms. Shweta T. Shinde	
7.	Collection and identification of Butterfly in Palus Tehsil	Ms. Namrata P. Sawant Ms. Dhanashree V. Surywanshi	
8.	Study of Dairy Farming in Sangli District	Ms. Dhanashree D. Chougule Ms. Snehal V. Thorat	
9.	Mobile radiation on human health	Ms. Priyanka R. Jadhav	

### Students Minor Research Projects of Department of Physics:

Sr. No.	Name of the project	Name of the students	No. of student	Impact	Justification
1	Preparation of silver nanoparticles by using Allium Sativum leaves	Mrs Swati S. Patil. Mr.Koushik Patil Miss.Tejswini Kate Miss.Priyanka Awati Miss.Sonali sawant	4	Students can synthesize silver nanoparticles. They can analyse uv visible spectrum	There are different methods for production of silver nanoparticles. Silver nanoparticles have number of extraordinary properties than bulk. Production of silver nanoparticles by chemical method involve use of toxic chemicals. Biosynthesis of nanoparticles is clean nontoxic and eco-friendly method.
2	To study antimicrobial activity of silver nanoparticles synthesized from allium sativum leaves	1)Mrs Swati Sahebrao Patil 2.Mr.Koushik Patil 3.Miss.Tejswini Kate 4.Miss.Priyanka Awati 5.Miss.Sonali savant	4	Students can grow bacteria and they can study antibacterial activity	Due to chemical method there is adverse and harmful effect on its application. Allium sativum is medicinal plant. So it shows better result toward antimicrobial activity.
3	Effect of physicochemical parameters on the quality of drinking water in villages of Burli, Kundal, Amnapur and palus. Dist Sangli .(MS)	1) M. V kamble 2) Amruta sanjay chavan. 3) Deepali shankar shivade. 4) Supriya Ramchandra Mali. 5) Aaishwarya Bhujang Kakekar	4	Digestive system and health of people in Burli, Kundal, Amnapur and palus.	It is always necessary to test frequently drinking Water Quality . Water quality can be improved by suggesting appropriate measures, If any adverse component is found in water analysis.
4	Calculation of Enthalpy and specific heat capacity of Rare earth doped metal oxide.	1) M. V kamble 2)Amruta sanjay chavan. 3) Deepali shankar shivade. 4)Supriya Ramchandra Mali. 5)Aaishwarya Bhujang Kakekar	4	Will learn to to synthesize calculate Enthalpy and Specific heat capacity of materials.	After learning to calculate Enthalpy and specific heat capacity Students will be familiar and will adopt research in coming future. Similarly Enthalpy and specific heat capacity can be calculated for other materials.
5	Effect of negative air ion generator on growth of wheat plant	1) Dr S.D Pawar. 2) Nilesh shinde 3)Mamata singh 4)Satvashila Nalwade	3	This is Innovative way to increase nutrition of plant.	On economy of farmers
6	Air ion and pollution Index near to road at semi urban station palus	1)Dr S.D Pawar. 2)Nilesh shinde 3) Mamata singh 4)Satvashila Nalwade	3	This is Innovative way to study air pollution	Pollution can be monitored



## 9. Key Performance Indicators

Sr. No.	Indicator	Pre-support 2019-20								During/ After Support 2020-21								Remarks	
<b>Department of Zoology</b>																			
1.	Number of students admitted	Total = 38								Total = 18									
		Male = 08				Female = 30				Male = 00				Female = 18					
		SC	ST	OBC	G	SC	ST	OBC	G	SC	ST	OBC	G	SC	ST	OBC	G		
		1	0	2	5	6	1	2	21	0	0	0	0	0	0	3	15		
<b>Department of Physics</b>																			
		Total = 18								Total = 15									
		Male = 1				Female = 17				Male = 2				Female = 13					
		SC	ST	OBC	G	SC	ST	OBC	G	SC	ST	OBC	G	SC	ST	OBC	G		
		0	0	0	1	0	1	2	14	0	0	0	2	0	1	1	11		
2.	No. of students passing out (%) students Admitted/ passing out (pass %)	Zoology	Batch 2019-2020 100%								Batch 2020-2021 Result yet to be announce								
		Physics	Batch 2019-2020 100%								Batch 2020-2021 Result yet to be announce								
3.	Drop-out rates	Zoology	00								--								
		Physics	00								--								
4.	No. of students opting for M.Sc.	Zoology	03								--								
		Physics	06								--								
5.	Average marks	Zoology	85%								--								
		Physics	80%								--								
6.	No. of hands-on-experiments being conducted	Zoology	1. Measurement of Blood Pressure								1) Microtomy 30/09/2020 Mr. ABG 2) Insect collection & Identification 31/10/2020 Dr. S. M. Kumbar 3) Spectrophotometer 31/03/2021								
		Physics	02								03								
7.	No. of New Experiments introduced	Zoology	Nil								1) Gel Electrophoresis 2) Separation of Lipids by Thin Layer Chromatography 3) Estimation of BOD 4) Polytene Chromosome 5) Identification of Arthropods 6) Chick embryo culture								
		Physics	00								23								
8.	Publications (Scopus indexed)/ Patents, if any	Zoology	02								00								
		Physics	00								00								
9.	Training received by faculty	Zoology	02								1) One day National Workshop On National Education Policy 2020-21 2) Orientation course Mr. A.B. Ghadage 3) Refresher course Mr. A. B. Ghadage 4) Revised syllabus workshop of B. Sc. III year Dr. SSP, Dr. SMK & Dr. ABG								
		Physics	03								03								
10.	Exhibitions/seminars /training courses conducted	Zoology	1) Avishkar Research Project workshop 2) Wall paper presentations 3) Seminar series offline mode								4) Book Exhibition 5) Science Exhibition for English Medium School 6) B.Sc.- III student online seminar 7) Poster Exhibition for B. Sc. Students 8) Poster Presentation Competition 9) Preparation of Honey bee Newton model								
		Physics	01								02								
11.	Books/Journals	Zoology	01								02								List of Books is given in Annexure 1

	subscribed from grants		10	15 Reference Books	
		Physics	06	09	
12.	Outreach activities (Popular Lectures)	Zoology	1) Intellectual Property Rights 2) Flood relief Activities NDRF Team maintenance 3) COVID -19 Awareness campaign	1) 5 days workshop 9-13/11/2020 2) National Voter Day celebration 3) Motivational Speech 4) Tree Plantation 5) Nirbhaya Pathak Tasgaon, Sangli Police	
		Physics	00	International Women day program activities like quiz	
13.	College mentored to apply for DBT Star College grants	Zoology	Self motivation after seeing on DBT website	DABN Arts and Science College, Chikhali	
		Physics	-	-	
14.	Invited Lectures	Zoology	Mr. Sandip S. Patil, Dept. of Computer Science, ACS College Palus	1) Prof. Dr. S. R. Yankanchi 2) Prof. Dr. Nitin Kamble 3) Mr. A. M. Ghadage 4) Mrs. S. N. Potphode	
		Physics	01	1) Dr. R. S. Sapkal, T.C. College, Baramati, Satara	

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

- Students were encouraged to undertake compulsory carrier orientation courses like sericulture, maintenance of electrical equipments and home appliances, yoga and meditation, tally and maintenance of hardware and software in computer and English speaking courses.
- Introduction of new experiments and practical's had aided the students to expand their existing knowledge.
- Conduct of Awareness and Sensitization Programs to the society in the context of health (COVID-19 Pandemic awareness and blood group identification, swatch Bharat scheme).
- Faculty members enriched their knowledge by participation in orientation course, refresher courses, faculty development programmes and participation in workshops /conferences/seminars and also DBT Star College enabled student initiatives such as paper presentations or poster presentation in conferences / Seminars and student exchange programmes.
- Compulsory field visits and study tour for third year students to inculcate competitive spirit among students. These activities are an essential part of the study of life sciences. To study animals in the natural environment where all the animals live in their natural habitat is one of the most interesting and useful experience for a student of zoology.

**Department of Physics:**

- We are planning to provide water tasting facility for the residential areas of nearby villages around our college as well as rural area nearby college.
- To recommend measures to be taken before drinking water.
- Biosynthesis of nano particles from different plant extract and to study its applications
- To do preliminary study of effect of negative air ion generator on different agriculture plants.
- To develop study about nano fertilizers for farmers.
- To synthesize different nano materials and its applications.

**8. Lessons learnt/ difficulties faced / suggestions if any, in implementation of the programme and utilization of DBT grant.**

We try to implementation of individual or group projects for final year students in both physics and zoology departments. Regular encouragement to students for participate and present research papers in Conferences /Seminars / Symposia, etc. and to develop good rapport among eminent subject experts in physics and zoology departments. Promoting to our graduate students for publish their project work data in research papers in renowned Journals. Improvement of infra structure facilities in the both participatory departments. Other department faculties and students for optimal use of newly purchased equipment's and knowledge support. Promotion to research thirst and learning skills through ICT tools for both departments. Popularizing and elevating the image of the college through star college scheme activity. Initially we faced the problem in transaction of DBT amount through PFMS system due to that some delay in utilization of grants.

**Department of Physics:**


**Difficulties faced:** we were unable to purchase computers, printers, xerox machine and smart board from recurring grant please allow us to purchase in recurring grant. Due to covid 19 Pandemic we were unable to organize outreach programs. Program planned were Sky observation program, Organizing of guest lecture, training program, hands on training to students to complete these activities we need extra time. When the wave of pandemic stops actual work will start. **Suggestions:** computers, printers, xerox machine and smart board cannot be purchased through recurring. Permission must be given to purchase above items through recurring grant.


### 1) Self evaluation: Department of Zoology

Dept.	*Objective (as stated in proposal)	% achieved	Reasons for underachievement / If achieved, state in quantitative metrics
	To provide high quality education to rural area and economically backward class students in the various aspects of life sciences with diverse interests and carrier aspirations and also to acquire appropriate scientific, intellectual, technical and transferable skills to promote self directed and lifelong learning.	100% 2	We were unable to organize outreach and summer school training programs due to COVID 19 pandemic restrictions on student's presence in the college. Although, we have conducted maximum
	Field Visit and study Tour: visited to goat farm and seashore to learn the natural science as a subject, it is important to make the student a better understanding of the subject by allowing them to see and observe the natural environment. These activities are an essential part of the study of life sciences and is one of the most interesting and useful experience for a student of zoology.	100% 2	activities on online mode and physical presence of students in the College
	Promoting Research activities: inculcating the research attributes among the faculty and students in design and execution of innovative idea at UG and PG level and which will impart the innovative thinking in the field of biological sciences.	100% 2	
	Compulsory research project for students: Inculcating the research attributes among the students in design and execution of innovative idea at under graduate and post graduate level and which will impart the innovative thinking in the field of biological sciences.	100% 2	
	Computer Literacy Programme: To provide a high quality education in the various aspects of bioinformatics and computer sciences with diverse interests and carrier aspirations and also to acquire appropriate intellectual, scientific, technical and transferable skills to promote self directed and lifelong learning.	100% 2	

**Self Evaluation: Department of Physics**

Dept.	Objectives	% achieved	Reasons for under achievement/If achieved state the qualitative metrics
Physics	1.To enhance the interest of students in basic sciences	50% (1)	Due to Covid 19 students cannot attend practicals .
	2.To develop experimental skills in rural college students	50% (1)	Students did project but can not complete all practicals due to covid
	3.To make students aware of recent trends in science and technology and Physics	100% (2)	All students participated in computer skill awareness programme. Students participated in Institute visit and Laboratory visit
	4.To increase the ability of students to relate practical and theoretical and applied knowledge	100% (2)	Students completed about 6 projects .Publish research papers, Some are in progress.
	5.To make students capable of need of society through education and practical knowledge	100% (2)	Students are doing project related to water purity in nearby villages.Also the study effect of air ions on growth of plants which will useful for farmers

  
**Course Coordinator**  
**Dr. Suresh M. Kumbhar**  
 Coordinator,  
 DBT, Star College Scheme  
 Arts, Commerce & Science College, Palus  
 Tal. Palus, Dist. Sangli - 416 310

  
 Head of the Institution  
**Acting Principal**  
**Arts, Commerce & Science College**  
 Palus, Dist. Sangli



## FIVE MINOR PROJECTS AND THEIR IMPACT OUTCOME

### 5. Minor projects and their impact or similar activities and their outcome: Zoology

#### 1. Estimation of age and longevity of Freshwater fish *Puntius sarana* inhabiting Krishna River

Age and longevity of freshwater fish *Puntius sarana* inhabiting the Krishna River, Sangli district was estimated by using length weight relationship and enumerating number of growth layers in lateral line scales and otoliths. In the present study lateral line scales and otolith growth marks are considered for estimating and longevity in freshwater fish *Puntius sarana*. One to six growth layers were observed in scales and otoliths of 135 individuals measuring their body size from  $11 \pm 0.0$  to  $23.04 \pm 0.75$  cm. Among these 1 fish with body weight 18 gm showed no LAG, 24 fishes with body weight  $33.25 \pm 4.5$  gm possessed 1 LAG, 52 individuals with body weight  $55.5 \pm 8.44$  cm showed 2 LAGs, 47 fishes weighing  $91.76 \pm 12.63$  gm possessed 3 LAGs, four fish weighing  $131.7 \pm 9.25$  gm showed 4 LAGs and seven fishes with body weight  $167.7 \pm 51.34$  gm showed 5 LAGs in their scales and otoliths respectively. The high degree of positive correlation ( $r = 0.91$ ) between body weight and length was shown in this fish populations. Although there was a positive correlation ( $r = 0.81$ ) between body size and number of Lines of arrested growth (LAGs) layers. Result reveals that fish *Puntius sarana* population may live more than six years in the nature.

#### 2. Diversity of Freshwater fishes of the Krishna River

The freshwater fish fauna of Krishna River, Sangli district was studied from 2020 to 2021. All 16 species of freshwater fish belonging to 4 order, 10 family from the Krishna river. In which 7 species are found in order Cypriniformes. 5 species are found in order Siluriformes. 1 species are found in order Cichliformes. 3 species are found in order Perciformes. The fish fauna of the river is threatened due to alien species and several anthropogenic activities such as accumulation of industrial, agricultural effluents, domestic organic wastes and non-degradable plastic materials owing to tourism activities. Since, this small study area hosts few endemic and threatened species, therefore, Krishna River will be the most suitable habitat for conservation of endemic and threatened species.

#### 3. Study of crop pest in Palus Thesil, Sangli district

Pest refers to any agent insects, microbes, plants, animals that cause damage to our crops. They are generally a nuisance, diseases and detriment to crops damaging property or make lives difficult to humans. Survey and collection of general insect pests were made during year

2020-2021 from agriculture area of Yelavi, Tahsil-Tasgaon. The study region consists of a variety of agriculture crops and vegetable and huge variety of insect diversity. In the present study 14 species of insect pests were collected from agricultural area of Sangli district. They belongs to order Coleoptera, Hemiptera, Orthoptera, Blattodea, Lepidoptera.

#### **4. Human Genetic Traits of Palus and Kundal Villages Population**

Genetics is the study of genes and tries to explain what they are and how they work. Genes are how living organism inherit features or traits from their ancestors. The present study showed that recessive traits are higher than the dominant traits. The survey method was chosen for data collection. A total of 132 individuals were observed for morphogenetic traits – hair type, tongue roll, hand clap, widow strip, little finger, ear lobe from the random population. The results show the clear cut view of the expression of traits in each individual in the population. A graph were plotted for dominant and recessive traits classified based on their expression. Out of 132 individuals, 31 individuals are having curly hair and 101 are having straight hair, 80 individuals were capable to roll their tongue and others were not able to rolling their tongue, About 34 individuals of the population have left thumb and 98 subjects have straight thumb, 42 individuals are having widow strip and 90 individuals are not having widow strip, 26 individuals are having bent little finger and 106 individuals having straight little finger. The pattern of ear lobe were also surveyed here result showed that 37 individuals having ear lobe attached and 95 individuals having ear lobe non- attached.

#### **6. Minor projects and their impact or similar activities and their outcome: Physics**

##### **1. Effect of negative air ion generator on growth of wheat plant**

Due to these pollutions creates various viruses and diseases. It badly affects on living organisms and human beings. This pollution issues also affects on agricultural areas such as growth of crops, soil, etc. Peoples thinking to reduce this farming issues and for increase of rate of production yield they can spray different chemicals fertilizers and pesticides on crops which is harmful. Negative ions acts as an antibacterial as well as antibiotic which help to kill bacteria or viruses present in plant and soil and increase growth of plant and nutrient level. This research helpful to all farmers those are using chemical fertilizers and pesticides which cause different disease. The negative ions positively effects on human being and organisms. It is observed that due to use of negative air ion generator nutrition level of plant is improved. Also plants under treatment healthy improvement as compared to un treated plants. This resurch is very helpful to all human being. Due this research, we can produce high wheat



production without using any fertilizers or pesticides. This preliminary study will improve economy of wheat production without using any pesticides.

## **2. Air ion and Pollution index variation near to road at semi-urban station Palus (17.09° N, 74.44° E)**

Pollution is increasing all over the world. Due to fire in the forest like Amazon, Oxygen cycle is changing. Therefore all the people of world facing pandemic like covid-19. The numbers of peoples are dying in even semi-urban place and rural area in India dur covid-19 second wave in India. Therefore, we have to more concentrate research on pollution index. In this research project we are measuring air ion near karad-Tasegaon high-way at semi-urban area like Palus. Observatory which is situated at 100 away from highway. To measure Gerdien type air ion counter is used. Air is sucked in the cylinder by using fan. Positive potential is given to outer cylinder and central electrode is connected to high again ADJH-549 operational amplifier. The data from amplifier in the form of voltage is stored in the data logger. The samples are collected with time interval of 30 seconds.

## **3. Preparation of nanoparticles from Allium Sativum Leaves**

The materials in nano dimensions (1-100nm) have remarkable different physical chemical structural properties than the same materials in bulk. Materials by changing their size from normal to nanometre range shows a great change in their physicochemical properties primarily due to their small size and large specific surface area. It is well known that use of silverware was common across the globe for drinking, eating, and storing various drinkable and eatable items due to its antimicrobial actions . The “Green” nanoparticle synthesis has been achieved using environmentally acceptable solvent systems and eco-friendly reducing and capping agents. In plants alkaloid, flavonoids and polyphenolic compounds are present .These compounds reduce the silver ions into silver nanoparticles .These compounds act as capping agent and stabilising agent. Especially allium has presence of sulphur containing compounds because of these it has distinctive smell and pungency .Allium possess antibacterial hypoglycaemic and certain other medicinal plants.

The primary requirements of green synthesis are silver metal ion solution and reducing biological agent. As the reducing agents and other constituents present in cell acts as stabilising and capping agents there is no need of adding, capping and stabilising agent outside.

#### **4. Synthesis of Silver Nanoparticles using Aqueous extract of allium sativum Fresh leaves and Analysis of antimicrobial activities**

Biosynthesis of nanomaterials has been increasingly gaining popularity due to its eco-friendly nature and cost-effectiveness. In the present study we synthesized silver nanoparticles using aqueous extract of fresh leaves of allium sativum plant as bio reducing agent. This method results in formation of silver nanoparticles .The formation of silver nanoparticles was confirmed by uv-visible spectrophotometry. The peak was observed at 421nm.The functional groups responsible for reduction of silver particles were studied by using FTIR. The visual observation showed that the colour of fresh leaves extract of allium sativum turned from golden yellow to dark brown after treatment with ag precursors .These nanoparticles were tested against gram positive ,gram negative and fungi. The result showed that the silver nanoparticles showed antibacterial and antifungal activity.

#### **5. Effect of physicochemical parameters on the quality of drinking water in Villages of Burli, Kundal, Amnapur and Palus, Dist .Sangli. (MS)**

Water is tested to find its suitable for drinking. Water samples are collected from village's viz. Burli, Kundal, Amnapur and Palus. Dist.Sangli (MS) in sterilized 1 litre bottles. Parameters like PH,Electrical conductivity, Total Alkalinity, Total hardness, Permanent hardness, Temporary hardness, calcium, Magnesium, carbonate, bicarbonate, chloride, Turbidity, colour, odour. Most probable number, Escherichia coli, Nitrate (as  $\text{NO}_3$ ), fluoride sulphate, phosphate was tested, Lab -report was obtained and some parameters were beyond the range. From the findings in report suggestions were given to the users whether the water is suitable for drinking or not. If water is not suitable for drinking, appropriate measures were suggested to the respective users.

#### **6. Calculation of Enthalpy and specific heat capacity of $\text{DyMnO}_3$ .**

Enthalpy and specific heat capacity of  $\text{DyMnO}_3$  are determined. Synthesis of  $\text{DyMnO}_3$  Material was done by Auto combustion method. Dy and  $\text{MnO}_3$  were used in nitrate forms. heating was done till the powder form is obtained. This powder sample was sent to laboratory for DSC-TGA analysis. The obtained data from laboratory was used to calculate Enthalpy and specific heat capacity.

## ACTIVITIES CARRIED OUT

**6. Number of hands on experiments being conducted**

Sr. No.	Experiments	Date	Resource Person	No. of Beneficiary
1.	Microtomy Technique	30/09/2020	Mr. A. B. Ghadage, Department of Zoology, ACS College Palus	18 students
2.	Insect collection & Identification	31/10/2020	Dr. S. M. Kumbar, Department of Zoology, ACS College Palus	18 students
3.	Spectrophotometer	31/03/2021	Mrs. S. N. Potphode, Assistant Professor, Department of Chemistry, ACS College, Palus	48 students 5 faculties

**7. Number of New Experiments introduced**

Sr. No.	New Experiments	Class	No. of Beneficiary
1.	Gel Electrophoresis	B.Sc. III	18 students
2.	Preparation of Polytene Chromosome	B. Sc. I	90 students
3.	Estimation of BOD	B. Sc. III	18 students
4.	Separation of Lipids by Thin Layer Chromatography	B. Sc. II & III	110 students
5.	Identification of Arthropods	B. Sc. II & III	110 students
6.	Chick embryo culture	B. Sc. II	70 students
7.	Human Karyotype	B. Sc. I	90 students

**9. Training Received by faculty**

Sr. No.	Training Programme	Date	Faculty	Remarks
1.	National Workshop on NEP 2020	1 <sup>st</sup> Oct. 2020 SRTMU, Nanded	Dr. S. M. Kumbar	Updating in subject knowledge
2.	Refresher Course	Research Methodology 1-15/10/2020 Ramanujan College New Delhi, HRDC, PMMMNMTT, Ministry of Education,	Mr. A. B. Ghadage	
3.	Orientation course	11 Feb. 2021 to 13 March 2021 Ramanujan College New Delhi, HRDC, PMMMNMTT, Ministry of Education,	Mr. A. B. Ghadage	
4.	B.Sc. III year Revised syllabus workshop	30/01/2021; 06/02/2021 10/03/2021; 15/02/2021	Mr. A. B. Ghadage Dr. SSP & Dr. S.M. Kumbar	

10. Exhibitions/seminars /training courses conducted: **Department of Zoology**

Sr. No.	Activity	Day and Date	Resource Person	No. of Beneficiary
1.	Book Exhibition	08/02/2021	Mr. S. D. Mane, Librarian, and Best Book Seller, Kolhapur	16
2.	Science Exhibition for English Medium School	06/03/2021	Mr. A. B. Ghadage	68
3.	Poster Exhibition for B. Sc. Students	22/12/2020	Dr. S. R. Yankanchi	18 students
4.	B.Sc.- III student online seminar	16/03/2021-27/03/2021	Dr. S. S. Patil	18 students
5.	Poster Presentation Competition	01/03/2021	Dr. S. S. Patil, Dr. S. M. Kamble Mr. S. S. Patil Mr. M. V. Kamble	48+11 students
6.	Preparation of Honey bee Newton model	27/02/2021	Mr. A. B. Ghadage	18 students

Exhibitions/seminars /training courses conducted: **Department of Physics**

Sr. No.	Activity	Date	Resource Person	No. of Beneficiary
1.	Online five day computer literacy program'	9/11/2020 to 13/11/2020	Mr. Sandip S. Patil, HOD Dept. of Computer Science, A. C.S. College, Palus Mr. Prakash Nikam, Dept. of English, A. C.S. College, Palus Mr. D. T. Kumbhar, Dept. of Computer Science, K.R.P. College, Islampur Mr. Sachin Jadhav Miss. D. T. Patil, Dept. of Comp. Sci. A. C.S. College, Palus	16
2.	Poster presentation	19/9/2020	Dr. S. S. Patil	11

11. Books purchased under DBT Star College Scheme: **See Annexure – III**

## 12. Outreach activities (Popular Lectures)

Sr. No.	Topic	Day and Date	Resource Person	No. of Beneficiary
1.	Fundamental Tools and Techniques of Computers in Teaching & Learning' online mode	Five Day workshop from 9/11/2020 to 13/11/2020	Mr. Sandip S. Patil, HOD Dept. of Computer Science, A. C.S. College, Palus Mr. Prakash Nikam, Dept. of English, A. C.S. College, Palus Mr. D. T. Kumbhar, Dept. of Computer Science, K.R.P. College, Islampur Mr. Sachin Jadhav Miss. D. T. Patil, Dept. of Comp. Sci. A. C.S. College, Palus	350 students 35 staff members
2.	'Motivational Speech'	23 <sup>rd</sup> Jan. 2021	Prof. Dr. Gajanan Rashinkar, Department of Chemistry Shivaji University, Kolhapur	50 faculties and 20 students
3.	'National Voters Day'	25 <sup>th</sup> Jan. 2021	Tehsildar, Mr. Nivas Dhane, Palus Nagarparishad, Palus	56
4.	'Nirbhay Pathak Tasgaon, Sangli'	23 <sup>rd</sup> Mar. 2021	Mr. Deshmuke, API, Tasgaon and Mrs. Sabale, Police, Tasgaon Police Station, Tasgaon	38 students 5 faculties

## 14. Invited Lectures

Sr. No.	Topic	Date	Resource Person	No. of Beneficiary
1.	'Health and Hygiene'	01/12/2020	Prof. Dr. Nitin B. Kamble, Department of Zoology Shivaji University, Kolhapur	40 students 5 faculties
2.	'Future Carrier Opportunities in Zoology'	22/12/2020	Prof. Dr. S. R. Yankanchi, Department of Zoology Shivaji University, Kolhapur	40 students 5 faculties
3.	'Biostatistics hands on training'	24-25/03/2021	Mr. A. M. Ghadage Assistant Professor, Department of Statistics, KRP College Islampur	40 students 5 faculties

**ANNEXURE – III**

**Books purchased under DBT Star College Scheme:**

**Department of Zoology**

Sr. No.	Title of the Book	Author	Quantity	Price in Rs.	Remarks
01.	Medical Physiology	Khurana	One	1656.00	Reference books for B.Sc., M.Sc. Students and Research Scholar.
02.	Physiology	Guyton	One	1596.00	
03.	Microbiology	Anantnarayan	One	876.00	
04.	Cell & Molecular Biology	D. Robertis	One	1080.00	
05.	Ecology	Odum and Barnett	One	600.00	
06.	Genetics	Gardner	One	679.00	
07.	Biochemistry	Stryer	One	3192.00	
08.	Cell Biology, Genetics	P.C. Verma	One	761.00	
09.	Biostatistics	J.V. Dixit	One	340.00	
10.	Practical Invertebrate Zoology	S. Chand	One	336.00	
11.	Practical Zoology Chordates	S. Chand	One	353.00	
12.	Cell biology	C. B. Powar	One	358.00	
13.	Invertebrates	Kotpal	One	725.00	
14.	Vertebrates	Kotpal	Two	1450.00	
15.	Birds of the Indian Subcontinent	Grimett	One	849.00	

**Department of Physics: List of books purchased under DBT Star College Scheme**

Sr. No.	Name of book	Name of author	publication
1.	Callister's Material Science and Engineering (second edition)	William D. Callister David G. Rethelisch	Wiley India private limited
2.	Radiation Detection and measurement	Glenn F. Knoll	Wiley India private limited
3.	A text book of practical Physics	Indu Prakash Ram Krishna A.K. Jha	Kitab mahal, 22, Alahabad
4.	Thermal Physics Kinetic theory, thermodynamic and statistical mechanics	S.C. Gerg, R.M. Bansal C.K. Ghosh	Mc Graw Hills
5.	The Physics of waves and oscillations	N.K. Bajaj	Mc Graw Hill
6.	Heat and Thermodynamics	Mark W. Zemansky Richard h. Dittman	Mc Graw Hill
7.	Concept of Modern Physics	Arthur Beiser Shibhit Mahajan	Mc Graw Hill
8.	Modern Physics	S.L. Kankani Shubhra Kankani	Viva Books New Delhi
9.	Physics for Degree students	C.L. Arora Dr. P.S. Hemane	S. Chand New Delhi

### **Field/Industrial Visits and Study Tour**

#### **Department of Zoology: Field visit and study tour information**

1. Visit to sea shores – Radhanagari Dam, Malvan, Sindhudurg fort, Vengurla, Redi Ganapathi and Shiroda beach in Konkan, Maharashtra on 8 and 9 March, 2021.

3. Visit to Sisal Goat farm, Gondilwadi, Palus to study maintenance and management of exotic breeds African Bore and Switzerland Saanen breed 5<sup>th</sup> March, 2021.

Goats are among the main meat-producing animals in India, whose meat (chevon) is one of the choicest meats and has huge domestic demand. Due to its good economic prospects, goat rearing under intensive and semi-intensive system for commercial production has been gaining momentum for the past couple of years. High demand for goat and its products with potential of good economic returns have been deriving many progressive farmers, businessmen, professionals, ex-servicemen and educated youths to take up the goat enterprise on a commercial scale. The emerging favorable market conditions and easy accessibility to improved goat technologies are also catching the attention of entrepreneurs.

#### **Poster presentation competition for B.Sc. III students on 19/9/2021**

Department of Physics organised Poster Presentation competition on 19/1/2021 for B.Sc. III students .the main purpose of this programme was to get knowledge about the project and to encourage the students to study the articles related to project. Students were divided into four groups. The students prepared four projects. The subjects were Basic concepts of nanotechnology, Synthesis methods for nanoparticles , UV visible spectroscopy, biosynthesis of nanoparticles. The function was inaugurated by Hon. Principal Dr. R. S. Salunkhe. Dr S. S. Patil Head of Department of zoology, Dr. S. M. Kumhar coordinator of DBT project were present during the competition. One number was given by examiner. Miss Pratima Sankpal M.Sc.Nanotechnology worked as examiner. The programme was very fruitful for students. That increased the confidence of students .The programme also enhanced the knowledge related to project.

Total 11 students participated in the project.



## **Industrial Visit and Study Tour of Physics Department**

**Report Visit to Krantiagrani G. D. Babu Lad, soil, water and leaf, flower testing lab, Kundal, Tal. Palus, Dist. Sangli Date :- 6/01/2021**

Arts, Commerce and Science College, Palus, department of Physics organized visit to **Krantiagrani G. D. Babu Lad, soil, water and leaf, flower testing lab, Kundal**. Dr.S.D.Pawar head of department organized this visit. Ten students and teaching staff, Mr.M.V.Kamble sir and Mrs. S.S.Patil mam also participated this visit. **Mr. Sandip Pawar (lab. in charge)**, explained the working of lab equipments. UV-Visible absorption spectrum, Atomic Absorption Spectrophotometer, Flame Photometer, P<sup>H</sup> Meter (Potential of hydrogen.), Double distilled water plant. Students got information about soil testing by using these equipments, how to check p<sup>H</sup>, EC, N, P, Ca, Na, etc. Students became familiar with distillation plant. In this plant, Students got knowledge about checking water quality also p<sup>H</sup>, EC, TDS, DI. This visit is very beneficial to students for further project study.

Ten students and 3 teachers participated in Laboratory visit.

### **Tour Report: Visit to institute Gogate Jogalekar College Ratnagiri**

Department of Physics A.C.S. College Palus organised Institutional visit and study tour to Gogate Jogalekar College Ratnagiri on Wednesday 17/3/2021. The purpose of study tour was to visit Biotechnology research laboratory, to visit Physics research laboratory and Chemistry research laboratory, which will be beneficial to students of B.Sc.II and B.Sc.III. In this study tour students got information about calorimeter, uv spectrophotometer, digital chromatometer, stereomicroscope, Centrifuge, Fourier transfer infrared spectrophotometry in Biotechnology lab. Instructor Bhave madam explained working of all instruments and explain how to use instruments. All that information was very useful to all students.

In Physics laboratory the students study the working of spray pyrolysis instrument. That is useful for students for preparation of thin film. The students got information about PE tracer instrument. That is useful to study ferroelectric properties of material. Total 28 students and three faculty members participated in the study tour.


**ANNEXURE – V**

**List of Equipments Purchased under DBT Star College Scheme**

Sr. No.	Particulars	Date	Accession No.	Quantity	Rate/Pc
1.	Digital Spectrophotometer (Equiptronics, EQ-820D)	24/02/2021	01	1 pc	48,500/-
2.	Respirometer	24/02/2021	02	1 pc	11,400/-
3.	Autoclave Vertical Model : LC-10 Labline	04/03/2021	03	1 pc	28,275/-
4.	Laboratory Oven	04/03/2021	04	1 pc	32,500/-
5.	Biomedics ECG Machine Carditech 12i	05/03/2021	05	1 pc	32,500/-
6.	Digital Photoelectric Colorimeter	08/03/2021	06	1 pc	9,680/-
7.	Gel Electrophoresis Unit with Power Supply	05/03/2021	07	1 pc	19,000/-
8.	BP Apparatus (Digital)	05/03/2021	08-09	2 pc	2,090/-
9.	Student Plankton Net	05/03/2021	10-11	2 pc	400/-
10.	Haemocytometer	05/03/2021	12-21	10 pc	1,950/-
11.	Haemoglobinometer (Superior German Marienfield)	05/03/2021	22-31	10 pc	850/-
12.	Digital Conductivity (EC) Meter (Equiptronics, EQ-660B)	05/03/2021	32	1 pc	7,830/-
13.	Precision Rotary Microtome	05/03/2021	33	1 pc	77,200/-
14.	Digital Turbidity Meter (Equiptronics, EQ-812)	05/03/2021	34	1 pc	12,600/-
15.	Peak Flow Meter (Mini-Bell Peak Flow Meter Spain)	08/03/2021	35-39	5 Pc	1,250/-
16.	Revolutionary General Purpose Laboratory Centrifuge	08/03/2021	40	1 Pc	28,800/-
17.	Titration Unit Complete Burette Stand with Fisher Clamp	08/03/2021	41-50	10 Pc	440/-
18.	Pasteur pipette (Borosilicate)	08/03/2021	51	12 Pc	14/-
19.	MAGNUS - Stereoscopic Binocular Microscope	09/03/2021	52-56	5 Pc	29,600/-
20.	MAGNUS - Monocular Laboratory Inclinable Microscope Model : HB	09/03/2021	57-66	10 Pc	13,112/-
21.	Epson X05 LCD Projector EB-X05 XGA	08/03/2021	67-68	2 pc	30932.20
22.	Yureka Tech Interactive white board 6*4	08/03/2021	69	1 pc	35169.49
23.	HP All in One PC Intel Corei3 10 <sup>th</sup> Processor 21.5" LED Screen	08/03/2021	70-71	2 pc	33050.85

  
Course Coordinator  
**Dr. Suresh M. Kumbhar**  
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**Acting Principal**  
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