

SREE NARAYANA COLLEGE

CHERTHALA

[Established in 1964]

RE- ACCREDITED BY NAAC WITH "A" GRADE
(Affiliated to The University of Kerala)

S. N. PURAM P.O.
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Dr. P. N. Shaji, M Com., PhD.
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Ref. No. DBT-STAR/ 323 / 2022-23

Date 22.06.2022

Dr. Garima Gupta
Scientist E
Department of Biotechnology
Ministry of Science and Technology
Room No. 510. Block 3, CGO Complex
Lodhi Road. New Delhi 1100033

Dear Madam,

Sub: Submission of Annual Progress Report of Star College Scheme- reg.

Ref: Order No. 11011/14/2020-HRD-DBT dated 24/08/2020

I am herewith forwarding the Annual Progress Report of the Star College Scheme implemented in our college for the academic year 2021-2022.

Thanking you,

Yours faithfully

PRINCIPAL





SREE NARAYANA COLLEGE

(Affiliated to University of Kerala
Accredited with 'A' Grade by NAAC)
S.N PURAM P. O, CHERTHALA
KERALA STATE, INDIA
PIN – 688582

ANNUAL PROGRESS REPORT SUPPORTED UNDER STAR COLLEGE SCHEME



सत्यमेव जयते

SUBMITTED TO
DEPARTMENT OF BIOTECHNOLOGY
MINISTRY OF SCIENCE AND TECHNOLOGY
GOVERNMENT OF INDIA
NEW DELHI

Department of Biotechnology

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

1. Name of the College : SREE NARAYANA COLLEGE, CHERTHALA
2. Name of Coordinator, designation, : Dr. Dhanya Sethunayanan, Assistant Professor, Dept. of Zoology
Address, Phone Nos. Sree Narayana College, S.N Puram P. O, Cherthala,
Alappuzha District, Kerala, Pin. 688 582. Ph. 09746621924
3. Assessment duration : 01.04.2021 to 31.03.2022 Duration in years : One
4. Details of Departments Supported

Sl. No	Name of Department	Courses (B.Sc./M.Sc./PG Diploma, certificate etc) offered	Regular Faculty members	
			Total = 38	
			With Ph.D.	Without Ph.D.
1.	Botany	<ul style="list-style-type: none">• B.Sc• M.Sc.with specialization in Biotechnology	4	2
2.	Chemistry	<ul style="list-style-type: none">• B.Sc Chemistrty• M.Sc Chemistry with specialization in Drug design and development	3	6
3.	Computer Science	<ul style="list-style-type: none">• B.Sc Computer Science• M.Sc Computer Science	1	8
4.	Physics	<ul style="list-style-type: none">• B.Sc Physics• M.Sc Physics with specialization in Electronics	6	1
5.	Zoology	<ul style="list-style-type: none">• B.Sc Zoology• M.Sc Zoology with specialization in Fish Biology and Fisheries• Ph.D in Zoology	5	2

5. Number & Date of Advisory committee meeting: Yet to convene. However, internal meetings held at the beginning of the academic year
6. Qualitative improvements due to DBT support. Please highlight 5 salient points (within 500 words).
 - **Strengthening of the science laboratories** through the procurement of new instruments was made possible through the programme. Computing facility was improved to support new programming environments. Accessibility of instruments to students improved substantially through the purchase of basic instruments in multiple numbers.
 - **Drastic shift in the paedagogy** from physical classrooms to online platforms was inevitable during the pandemic period. To adapt with the circumstances, knowledge sharing was accomplished mainly through online webinars, workshops etc.
 - **Purchase of consumables** such as chemicals, glasswares and components facilitated the conduct of student centered activities viz. additional practicals, trainings and project work and thus improved the skill and interest for the subject. Few dissertations conducted during the period are as follows:

- **Synthesis and characterisation of cerium dioxide nano particles:** Sonochemical synthesis of CeO₂ nanoparticles was carried out by mixing cerium nitrate solution with oxalic acid solution and sonicating the mixture for 1 hr. The synthesised nanoparticles were characterised using UV-Vis spectroscopy.
 - **Observing the Photoluminescence Emission of Carbon Nanodots:** Final year students prepared luminescent carbon nanodots in a simple way using citric acid as the starting material as part of their academic project. They observed luminescence emission and tried to understand the origin of luminescence in these materials. The study helped them to familiarize with one of the advanced nanomaterials and its significant applications.
 - **Effect of Imidacloprid on earthworms:** Imidacloprid is used to control insect pests, termites, soil insects and fleas. In this study earthworms were used as model organisms for detecting the effects of imidacloprid on soil and soil organisms. Earthworms were collected from treated and untreated areas in Cherthala. Ecological parameters like soil temperature, soil pH, moisture content was also analysed. Soil toxicity studies showed decrease in number earthworms correlating with the application of the chemical in vegetable cultivating areas.
 - **Epidermal and Morphological studies in selected species of Asteraceae (Compositae):** Foliar epidermal studies were carried out on the fifteen plants, following the methodology standardized by Ahmed (1964). The epidermal characters studied include shape of epidermal cell, nature of epidermal cell wall, distribution of stomata, type of stomata, number of subsidiary cells, size of stomatal complex (length and breadth in μm), stomatal frequency, stomatal Index, stomatal abnormalities and types of trichome.
 - **Legal Advisor** – an AI based web application to connect public with the lawyers. The details of lawyers , their rating, fees charged, details of cases, appointment details were included.
 - Purchase of recent editions of subject books and subscription to electronic and print journals have enriched our existing library and enabled faculty and students to gather upto date information related to their discipline.
 - Institute and industrial visits introduced students to eminent researchers, research and production environments, advanced instruments, processes and research outputs.
7. Any Novel aspect introduced or planning to introduce during the Scheme duration.

We plan to implement more research-oriented teaching to attract young minds to the field of science. Students will be encouraged to undergo internship programmes and participate in seminars and training programmes organised by other institutes. Seminars/Webinars will be conducted based on advanced topics related to the syllabus. Laboratory experiments and training classes based on emerging trends in IT is also planned for the future. Underachieved objectives of the first year will be continued in the current year.

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

Improvement in the facilities of participating science departments was a major change after the implementation of the programme. Student based activities like training programmes, introduction of new practicals, webinars, institution visits, invited lectures by eminent researchers was carried out during the academic year. Faculty members also participated in online training programmes.

Covid-19 pandemic had taken away a good part of the academic year, and had delayed the process of procurement of the instruments, books and journals. Students were also denied a quality time for hands on experiments.

9. Key performance indicators

S. no	Indicator	Pre-support (2019-2020)								During /After Support								Remarks
1	No. of students admitted	Total =189								Total = 175								
		M=67				F=122				M=77				F=98				
		SC	ST	OBC	G	SC	ST	OBC	G	SC	ST	OBC	G	SC	ST	OBC	G	
		4	0	7	0	2	0	14	7	2	0	6	1	1	0	21	0	
		2	0	7	1	3	0	25	1	4	0	10	1	3	0	23	2	
		2	0	19	1	6	0	10	1	3	0	5	16	2	0	9	7	
		1	0	10	0	1	0	21	2	4	0	16	2	0	0	13	0	
1	0	5	7	3	0	12	14	0	0	6	1	5	0	11	1			
	Zoology	10	0	48	9	15	0	82	25	13	0	43	21	11	0	77	10	
	Total																	
2	No. of students passing out (%) Students Admitted/passing out (pass %)	Botany		41		Botany		35										
		Chemistry		59%		Chemistry		54%										
		Comp. Science		48.7%		Comp. Science		50%										
		Physics		60%		Physics		30%										
		Zoology		78.57		Zoology		48										
		Average		57.45%		Average		43.4%										
3	Drop-out rates	3.9%								4.5%								
4	No. of students opting for MSc	28								29								
5	Average marks	7.53								7.37								
6	No. of hands-on experiments being conducted	Botany – 25 Chemistry – 16 Computer Science – 9 Physics – 11 Zoology - 12								Botany – 30 Chemistry – 20 Computer Science – 12 Physics – 14 Zoology – 17								
7	No. of new experiments introduced	Nil								Botany – 5 Chemistry – 4 Computer Science – 3 Physics – 3 Zoology – 5 Total: 20								
8	Publications (scopus indexed) /patents, if any.	5								8								
9	Training received by faculty	3								Botany – 4 Chemistry – 6 Computer Science – 2 Physics – 3 Zoology – 6 Total :21								
10	Exhibitions/ seminars /training courses conducted	Nil								Exhibitions - 2 Seminars/Webinars – 19 Training programmes - 2								
11	Books/journals subscribed from grants	Books – 184 Journals - 9								Books – 235 Journals – 40 E-Journal subscription – 1 (Annexure II and III)								
12	Outreach activities	Nil								2								

	(Popular lectures)		
13	Colleges mentored to apply for DBT Star College grants	Nil	Sree Narayana College, Kollam Sree Narayana College, Nattika
14	Invited lectures	1	Botany – 4 Chemistry – 6 Computer Science – 2 Physics – 3 Zoology – 6 Total :21

10. Self evaluation

Department	*Objective (as stated in proposal)	% achieved	Reasons for underachievement / If achieved, state in quantitative metrics
Botany	New practicals introduced Seminars Faculty Improvement Programmes Student projects Hands on training to students	75.0	Total number of physical classes in the college was affected due to pandemic.
Chemistry	New practicals introduced Seminars Faculty Improvement Programmes Student projects Hands on training to students	73.0	
Computer Science	New practicals introduced Seminars Faculty Improvement Programmes Student projects Hands on training to students	70.0	
Physics	New practicals introduced Seminars Faculty Improvement Programmes Student projects Hands on training to students	68.0	
Zoology	New practicals introduced Seminars Faculty Improvement Programmes Student projects Hands on training to students	70.0	

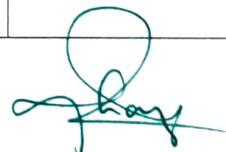


Course Coordinator

(With Seal)

Dr. DHANYA SETHUNARAYANAN
COORDINATOR
DBT STAR COLLEGE SCHEME
SREE NARAYANA COLLEGE
S.N.PURAM P.O., CHERTHALA
ALAPPUZHA, KERALA





Head of the Institution

(With Seal)

PRINCIPAL
SREE NARAYANA COLLEGE
CHERTHALA

List of hands-on experiments being conducted:

Botany

1. Non-living inclusions- cystolith, raphide, sphaeroraphide (druses), aleurone grains.
2. Starch grains (Eccentric, concentric, compound).
3. Simple permanent tissue- parenchyma, chlorenchyma, aerenchyma, collenchyma, sclerenchyma).
4. Primary structure of dicot stem- Centella, Chromolaena.
5. Primary structure of monocot stem- Grass and Asparagus.
6. Primary structure of dicot root- Pea, Limnanthemum.
7. Primary structure of monocot root- Colocasia.
8. Secondary structure of normal monocot stem- Vernonia.
9. Secondary structure of normal root- Carica.
10. Secondary structure of aerial root- Tinospora and Ficus.
11. Epidermal structures- Stomatal types.
12. Anomalous secondary thickening- Bignonia, Boerhaavia, Dracaena.
13. Study of pollen morphology.
14. Internal structure of dicot and monocot embryo.
15. Internal structure of mature anther.
16. Familiarize stains, fixatives and mounting media.
17. Microtechnique- maceration, smears and hand sectioning.
18. Measurement of specimens using micrometer.
19. Photography and camera lucida drawings.
20. Separation of plant pigments by paper chromatography/ TLC.
21. Preparation of buffers.
22. Measurement of pH.
23. Construction of absorption spectrum of any sample.
24. Demonstration of microtome sectioning.
25. Demonstration of hand sectioning.

Chemistry

1. Reactions of the following radicals with a view to their identification and confirmation: Pb^{2+} , Cu^{2+} , Bi^{2+} , Cd^{2+} , Sn^{2+} , Sb^{2+} , Fe^{2+} , Fe^{3+} , Al^{3+} , Cr^{3+} , Zn^{2+} , Mn^{2+} , Co^{2+} , Ni^{2+} , Ca^{2+} , Sr^{2+} , Ba^{2+} , Mg^{2+} , K^+ , NH_4^+ , CO_3^{2-} , S^{2-} , NO_2^- , NO_3^- , F^- , Cl^- , Br^- , I^- , BO_3^- , acetate, oxalate, CrO_4^{2-} , PO_4^{3-} and SO_4^{2-} .
2. Systematic qualitative analysis by microscale methods of a mixture containing two acidic and two basic radicals (not more than one interfering radical).
3. Titrations using (1) Strong acid – strong base (2) Strong base – weak acid (3) Strong acid – weak base, determination of Na_2CO_3 and NaHCO_3 in a mixture by indicator method
4. Permanganometry determinations using standard permanganate solution (1) Ferrous iron (2) Oxalic acid (3) Hydrogen peroxide (4) Calcium (5) Nitric and (6) MnO_2 in pyrolusite.
5. Dichrometry- Determination of Ferrous iron using internal indicator and Ferric iron after reduction with SnCl_2
6. Iodometry -Standardisation of thiosulphate using KIO_3 , electrolytic copper and potassium dichromate. Determination of a copper salt.
7. Gravimetric estimation (1) Ba as BaSO_4 (2) Sulphate as BaSO_4

Computer Science:

C Programming: Basic program to demonstrate a. Data types, operators and control structures b. Program on arrays c. 2D Arrays d. Pointers e. Array of structures f. Functions

Digital Electronics: Diode characteristics, Verification of truth table using logic gates. Full wave Rectifier

Physics:

1. Spring mass system-spring constant.
2. Fly Wheel- Moment of Inertia.
3. Evaluation of errors in simple experiments.
4. Compound Bar Pendulum –Symmetric.
5. Compound Bar Pendulum–Asymmetric.
6. Uniform Bending-Y-Pin and Microscope.
7. Uniform bending-Y- optic lever method .
8. Non-uniform bending-Y-Optic lever & telescope.

9. Rigidity modulus- Static torsion.
10. Torsion pendulum-Rigidity modulus.
11. Kater's pendulum-Acceleration due to gravity

Zoology

- a. Minor Practicals- Nereis parapodium, Earthworm body setae, Scales of Butterfly Wing, Cockroach mouth parts, Prawn appendages, Placoid scales of *Scoliodon* and cycloid and ctenoid scales of fishes.
- b. Major Practical: Cockroach nervous system, Prawn nervous system
- c. Taxonomy: Identification, Classification up to class and brief note of the specimens belonging Invertebrate and Vertebrate Phyla
- d. Osteology: Dentition- Carnivore, Herbivore; Pectoral girdle and synsacrum of bird; Limb bones, girdles and vertebrae of Frog. Carapace and plastron of turtle.
- e. Feathers of Pigeon

7. No of new experiments introduced 2021-22:

Botany:

1. Pollen viability test (in vivo and in vitro)
2. Acetolysis method for pollen morphology.
3. Preparation of Permanent slides.
4. Separation of amino acids by paper chromatography.
5. Separation of plant pigments by Column chromatography and TLC

Chemistry

1. Comparison of pH of different samples of natural and synthetic fruit juices.
2. Determination of iron content in different leafy vegetables.
3. Precipitation titration using conductometry
4. Determination of adulterants in different food samples.

Computer Science

1. Implementing tree using Linked list
2. Arithmetic expression evaluation using stack (Linked list implementation)
3. BST implementation

Physics:

1. Compressibility of liquid using ultrasonic waves
2. Displacement measurement using LVDT trainer
3. Monitoring different astronomical objects using Astronomical Telescope

Zoology:

1. Identification of common mosquito species
2. Measurement of blood pressure using sphygmomanometer
3. Fecundity and GSI of teleost fish
4. Demonstration of human pulse rate
5. Setting of ornamental fish aquarium

8. Publications if any (2021-22).

1. Aleena, J. and **Sreeja, K.** 2021 *In silico* Study on Alpha-Amylase And Alpha-Glucosidase Inhibitory Activity of Compounds from *Sargassum Wightii* Grivelli Ex J. Agardh. *Journal of Advances in Biological Science*. Vol. 8 (1): 55-58.
2. Aiswarya, T.N and **Sreeja, K.**, 2021. Molecular Docking of 4HRM HER2 Protein with Compounds of *Ulva Lactuca* Linn. showing Anticancer Property. *Indian Hydrobiology* Vol 20 (2) 269-272.
3. Hareeshma, P.S., **Sreeja, K.** and Suveena, S. 2021. A Computational Approach for Predicting the Interaction of Compounds from *Ulva lactuca* L. with Low Density Lipoprotein. *Journal of Advances in Biological Science*. Vol. 8 (2) 1-4.
4. Achutha, A. S., VL Pushpa, KB Manoj Comparative molecular docking studies of phytochemicals as Jak2 inhibitors using Autodock and ArgusLab, *Materials Today: Proceedings* Volume 41, Part 3, 2021, Pages 711-716.
5. Mario González-Jiménez, **Gopakumar Ramakrishnan**, Nikita V. Tukachev, Hans M. Senn, and Klaas Wynne. 2021. Low-frequency vibrational modes in G-quadruplexes reveal the mechanical properties of nucleic acids, *Phys. Chem. Chem. Phys.*, 23, 13250-13260 (21).
6. **E. Sreeja**, S. Gopi, T. Krishnapriya, NV Unnikrishnan, Cyriac Joseph, P.R Biju. 2022. Photoluminescent enhancement by the incorporation of Bi³⁺ in Ba₂CaWO₆ Eu³⁺ phosphors, *Journal of material science: Materials in Electronics*, 33(4), 1851-1863.
7. Adon Jose, T. Krishnapriya, **E.Sreeja**, Jeena Rose Jose, Cyriac Joseph, P.R Biju. 2022. Role of energy transfer on the luminescent performance of UV light driven Er³⁺/Dy³⁺ co-activated fluoroborosilicate glasses, *vacuum* 199 (2022) 110927.

8. E. Sreeja, Adon Jose, Anns George, NV Unnikrishnan, Cyriac Joseph, P.R Biju. 2022. Upon conversion photoluminescence and radiative properties of Ba₂CaWO₆ Er³⁺ phosphors for photonic applications, Infrared Physics And Technology 123 (2022) 104184

Training received by faculty (2021-22):

Department	Name of the Faculty	Title of the Training	Duration	Organizing Institution
Botany	Dr Sheeja George E	Two week Online Refresher Course in Life Sciences	01/09/2021 to 15/09/2021	Teaching Learning Centre Ramanujan College, University of Delhi under PMMMNMTT.
	Dr. Dhanya C.	Two week Online Refresher Course in Life Sciences	01/09/2021 to 15/09/2021	Teaching Learning Centre Ramanujan College, University of Delhi under PMMMNMTT.
	Dr. Dhanya C.	UGC- sponsored induction programme	04.01.2022 to 02.02.2022	UGC-HRDC, University of Kerala, Kariavattom, Trivandrum
	Bhanupriya. S	Digital Workshop on Biostatistics	09.08.2021 to 13.08.2021	Dept. of Biotechnology, CEPCI, Kollam
Computer Science	Sangeetha. S	Online FDP on "Scaffolding for Students :Role of College Teachers"	16.10.2021 to 22.10.2021	M G University, Kottayam in association with St. Albert's College, Ernakulam
	Sangeetha. S	Online One week Faculty Development Programme on "Digital Humanities"	23.12.2021 to 29.12.2021	Teaching Learning Centre Ramanujan College, University of Delhi under PMMMNMTT.
Chemistry	Dr.Jesny S	Managing Online Classes & Co- creating MOOCS 7.0 (Online)	15.08.2021 to 19.08.2021	Teaching Learning Centre Ramanujan College, University of Delhi under PMMMNMTT.
	Shaija PB	Managing Online Classes & Co- creating MOOCS 7.0 (Online)	15.08.2021 to 19.08.2021	Teaching Learning Centre Ramanujan College, University of Delhi under PMMMNMTT.
	Shaija PB	FDP Advances Pedagogical techniques	13.09.2021 to 19.09.2021	Teaching Learning Centre Ramanujan College, University of Delhi under PMMMNMTT.
	Shaija PB	Workshop on Research and Publication Ethics	01.10.2021 to 04.10.2021	PG Department of Physics and Research Centre in association with Department of Physics and Department of Nanoscience and

				Technology
	Shaija PB	FDP on Scaffolding for student's-role of College teachers (Online)	16.10.2021 to 20.10.2021	UGC-Stride Mahatma Gandhi University, Kottayam in association with St. Albert's College,Ernakulam
	Shaija PB	National Workshop on Macro to microscale chemistry	01.11.2021 to 03.11.2021	Department of Chemistry and Centre For Research St. Teresa's College (Autonomous), Ernakulam
Physics	Dr.RemyaRemanan	Short term course on Outcome-based education	14.06.2021 to 21.06.2021	Sree Narayana College Kollam in Association with Higher Education Council
	Dr. Malu Somaraj	UGC-sponsored induction programme	04.01.2022 to 02.02.2022	UGC-HRDC, University of Kerala
	Dr. Sreeja E	UGC-sponsored induction programme	8.02.2022 to 29.03.2022	UGC-HRDC, University of Kerala
Zoology	Dr. Reshmi. V	Online FDP on "Scaffolding for Students :Role of College Teachers"	16.10.2021 to 22.10.2021	M G University, Kottayam in association with St. Albert's College, Ernakulam
	Dr. Sreejamole. K. L	Short term course on Outcome-based education	14.06.2021 to 21.06.2021	Sree Narayana College Kollam in Association with Higher Education Council
	Dr. Sangeetha P M	Online refresher Course in Life Sciences	1.9.2021 to 15.9.2021	Teaching Learning Centre, Ramanujan College, University of Delhi
	Dr. Dhanya Sethunarayanan	Short term course on Outcome-based education	14.06.2021 to 21.06.2021	Sree Narayana College Kollam in Association with Higher Education Council
	Dr. Dhanya Sethunarayanan	Online Course on "Nature-based Solutions for Disaster and Climate Resilience"	Completed on 23 rd June 2021	UNEP and PEDRR with support from the European Union, in collaboration with the SDG Academy and the EdX Platform
	Dr. Bindu. O	Short term course on Outcome-based education	14.06.2021 to 21.06.2021	Sree Narayana College Kollam in Association with Higher Education Council

Exhibitions/ Seminars/ Training courses conducted:**Exhibitions:**

- **Expo Inventia '22** - Science Fair and Expo Competition by Dept. of Physics in connection with Science Day Celebrations on 04.03.2022
- **Tech Fest 2K22** was conducted by the Department of Computer Science on 9th and 10th March 2022 with the following activities – Exhibition, Gadget review, Logo Quiz, Rubix, BGMI, Treasure Hunt, Virtual Reality Gaming and Marvel Quiz

Seminars Conducted:

Department	Title of the seminar	Date	Resource person	No. of participants
Botany	Webinar on “Comprehensive discussion on Biodiversity with special reference to India”	04.06.2021	Sri. Jayakrishnan V K, IFS, District Forest Officer, Unakoti, Tripura.	120
	Mangrove Day Celebrations – Seminar on “Mangrove Restoration and Estuarine Ecosystem”	25.07.2021	G. Prasad, ACF, Social Forestry Division, Alappuzha	97
	Webinar on Intellectual Property Rights was jointly organized with National Intellectual Property Awareness Mission(NIPAM) under the banner “Azadi ka Amrith Mahotsav”	15.02.2022	Anjana Haridas, Examiner of Patents and Designs, India Patent Office, Chennai	30
Chemistry	Webinar: Environmental Pollution and Mitigation Techniques by on 25/05/2021.	25.05.2021	P K Suresh Kumar, Chief Environmental Manager, Nippon Toyota Kalamaserry,	85
	Webinar on “Its Chemistry my dear Watson : Inside the Crime Lab”	12.06.2021	Dr. P. Sachidanandan Joint Director and HoD Forensic Science Kerala Police Academy	114
	Webinar on “Ayurvedic medicinal plants in mitigation of epidemics” on 19/06/2021	19.06.2021	Dr. K. V. Radhakrishnan Senior Principal Scientist CSIR-NIIST, Thiruvananthapuram	151
Computer Science	Webinar on “Technical Writing Made Easy with LaTeX”	01.05.2021	Dr. K. Satheesh Kumar, Professor and Head, Department of Future Studies, Kariavattom Campus, University of Kerala	125
	Workshop on Python – Data Mining Applications	06.05.2021	Dr. Prem SankerChakkingel, Data Science Faculty, Kerala University	137
	State level Seminar on “Augmented Reality Industry	11.03.2022	Christy James, IT Analyst, TCS	57

	4.0"			
	State level Webinar on “ Internet of Things – Perspective and Challenges”	12.03.2022	Mr. Saraj.S.Panicker, Technical Officer, DRDO	55
	Seminar on “Avenues of Research in Computer Science”	16.03.2022	Dr.Gladston Raj. S	134
	Webinar on “Cyber security and Cryptography”	18.03.2022	Dr.Abey Jacob, Scientist E, Centre for Development of Advanced Computing- CDAC, Ministry of Electronics and Information Technology.	73
	State level Webinar on “Research Methodology”	28.03.2022	Dr. S. Sreedevi, Principal, University Institute of Technology, Pirappancode	123
Physics	Webinar on “Vortices in Type-II Superconductors”	26.06.2021	Dr. Suresh Babu M, Assistant Professor and Head, Department of Physics, Saintgits College of Engineering, Kottayam	131
	Webinar on “Forensic Science. A career path to Physics Graduates”	07.09.2021	Dr. Subhash Gopi, Finger Print Searcher, Single Digit Finger Print Bureau, Alappuzha.	68
	Webinar on ‘Gravitational wave: A new window to the Universe’.	07.10.2021	Dr.Manesh Michael, Assistant Professor, Bharata Mata College, Thrikkakara	51
Zoology	International webinar on “Impact of climate change on Coral reefs”	16.04.2021	Dr. JaishinimolBhargavan, Research scientist, marine Environment Research Department, Ministry of Climate Change and Environment, United Arab Emirates	72
	National webinar on “A journey to the top of the globe- an Arctic expedition”.	20.04.2021	Dr. Jasmine P, Scientist D, Zoological Survey of India, Kolkotta	149
	Webinar on “Youth and Drugs- Challenges of today”	25.04.2021	Dr. P. Sachithanandan, Head, Department of Forensic Science, Kerala Police Academy, Thrissur	82

Training Programmes:

Department	Title of the seminar	Date	Resource person	No. of participants
Botany	Two-days online workshop on “Morpho-taxonomic studies in mushroom”	11.06.2021 to 12.06.2021	Dr. Manoj Kumar A, Assistant Professor, Govt. College for Women, Thiruvananthapuram	79
	Training on “Laboratory Skill Development”	07.03.2022	Smt. Shaija.P.B, Assistant Professor, Dept. of Chemistry, Sree Narayana College, Cherthala	98

Outreach Programmes:

Students from nearby schools visited the exhibitions Expo Inventia '22 and Teck Fest 2K22 organised by the Department of Physics and Computer Science on 04.03.2022 and 10.03.2022 respectively.

Invited lectures

Departments	Title of the lecture	Date	Resource person	No. of participants
Botany	Lecture on "Methods in Research"	14.03.2022	Dr. K.G Ajith Kumar, Associate Professor, Govt. College for Women, Thiruvananthapuram	75
Chemistry	Talk on "Flammable and Combustible Liquids"	25.03.2022	Dr. V. Meera, Registrar, Cochin University of Science and Technology	139
Computer Science	Talk on "Vlogging, Gadget Review"	09.03.2022	Vivek. V. S	156
Physics	Lecture on "Importance of Science day, its significance and objectives".	04.03.2022	Dr. T. Pradeep, Principal, UIT & Former Principal, S. N. Trusts Colleges	138
	Lecture on 'Scientific Temper and Sustainable Development'	04.03.2022	Shri. N. Sanu, Member of Kerala Sastra Sahitya Parishad & Associate Editor of LUCA Science Portal	138
Zoology	Talk on "Seen and Unseen Relations among Youth"	07.03.2022	Ms. Anjulekshmi, S, Institutional Counsellor, Juvenile Justice Board, Alappuzha,	116
	Talk on "Life skills for a melodious life".	14.03.2022	Dr. Rajini .G , Assistant Professor , Sahodaran Ayyappan Memorial training College, Poothotta	63

Institution Visits:

Department	Institution Visited	Date	No. of students
Botany	Virtual tour to The Royal Kew Botanical Garden, London and Govt. Botanical Garden, Ooty, Tamilnadu	17.05.2021	24
	Regional Agricultural Research Station, Kumarakom	23.03.2022	20
	Cochin University of Science and Technology	25.03.2022	17
	Kerala Forest Research Institute, Peechi	25.03.2022	17
Chemistry	Nitta Gel India, Chalakkudy	25.03.2022	35

Physics	Virtual lab tour to IIT Madras	14.05.2021	37
Zoology	Tropical Institute of Ecological Studies (TIES), Kottayam	10.03.2022	31

List of Student projects 2021-22

Botany:

1. A study on dissolved oxygen content as an indicator of water quality in ponds- Dr. Sreeja Krishnan
2. A taxonomic study on the plants from the family Leguminosae- Dr.Anitha Chandran
3. Documentation of trees in Sree Narayana College Campus, Cherthala-. Dhanya DS
4. Epidermal and Morphological studies in selected species of Asteraceae (Compositae)- Dr Dhanya. C

Chemistry:

1. Comparative study on the rate of formation of lactic acid in different samples of milk : made use of BOD incubator
2. Synthesis and characterisation of Cerium di oxide nano particle made use of ultra sound sonicator
3. Study of DO content in different water samples made use of the chemicals purchased under the Star scheme

Computer Science:

1. Online Student Grading System – allow students to submit assignments online and help the professor to remotely assess and grade them.
2. Marshal – design of GUI to communicate between the various users for music items such as music CD/cassette/ musical instruments.
3. Personal Counselling System – design that includes 3 different modules in which universities can manage their college records, student records and counselling sections
4. Infiniti Real Estate Management – developed an online property management system for selling and renting properties.
5. Smart Voting System – developed a software application that offers a smart voting system for college elections.
6. MBAPPE Football Association – a website to provide information about the footballer and the team.
7. Prison Security without camera
8. Legal Advisor – an AI based web application to connect public with the lawyers. The details of lawyers, their rating, fees charged, details of cases, appointment details were included.
9. Blind E-Mail– help visually challenged to assess their mails using fingerprints, speech synthesizers and speech recognisers.

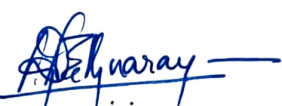
10. Virtual health lab –helps to find specialist doctors in nearby localities.

Physics:

1. Synthesis and Characterization of Erbium Doped Barium Calcium Tungstate Phosphor
2. Carbon Footprint Audit
3. Electrical Energy Consumption Data of Electrical and Electronic Devices Through an Energy Auding Process
4. Observing the Photoluminescence Emission of Carbon Nanodots
5. Determination of Planck's Constant Using Photoelectric Effect
6. A Study of the Spread of Liquids on Paper
7. Effect of Temperature on the Synthesis of Iron Oxide (Hematite) Nanoparticles

Zoology:

1. Preliminary Investigation on the diversity of beetles (Order Coleoptera).
2. Study on the diversity of Spider fauna in Pathiramanal Island, Alappuzha.
3. Assessment of Imidacloprid Toxicity on earthworms from selected sites of Cherthala.
4. Study on the diversity of fishes in fish landing centres at Arthinkal and Pollethai.
5. Study on the diversity of finfishes ar selected areas of Kuttanad Taluk.
6. A study on faunal diversity of Sree Narayana College, Cherthala.


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LIST OF BOOKS PURCHASED UNDER DBT STAR COLLEGE SCHEME

Sl. No	Author/Title	Qty
DEPARTMENT OF BOTANY		
1.	S. S. Bhojwani: The Embryology of Angiosperms, 6/Edn	2
2.	Bhattacharya Kashina: A textbook of Palynology	1
3.	B.P. Pandey. Plant Anatomy	2
4.	Padmini, E: Biochemical calculations and Biostatistics	1
5.	P. K. Srivastava: Elementary Biophysics, Second Edition	1
6.	Geoffery. M. Cooper. The Cell: A Molecular Approach 8/Edn	1
7.	Raven: Biology 9/Edn	2
8.	Edward Chee Tak Yuen: Plant Microtechniques and Protocols	2
9.	Myra L. Samuels: MStatistics for the Life Sciences, 5/Edn	1
10.	Zar. Biostatistical Analysis, 5/Edn	1
DEPARTMENT OF COMPUTER SCIENCE		
1.	Hanes. IoT Fundamentals	1
2.	Wiley. Internet of Things: Concepts and Applications	1
3.	Dr. Kumar Saurabh. Blockchain Technology: Concepts and Applications	1
4.	Mayur Ramgir. Internet of Things: Architecture, Implementation and Security	1
5.	Shriram.K.Vasudevan. Internet of Things	1
6.	Surya Durba. Internet of Things	1
7.	Bharti Motwani. Data Analytics with R	1
8.	Nina Zumel, John Mou. Practical Data Science with R	1
9.	Anurag Gupta: Python Programmong Problem Solving Packages and Libraries	1
10.	Bharti Motwani. Data Analytics using Python	1
11.	Kumar Rahul: Machine Learning Using R	1
12.	A.K. Sharma. Data Structures Using C, 2/Edn	1
13.	ITL ESL. Introduction to Information Technology 2/Edn	1
14.	Mano. Digital Logic and Computer Design	1
15.	Carpinelli. Computer Systems Organization and Architecture	1
16.	Kamthane. Programming in C, 3/Edn.	1
17.	Erach Bharucha. Textbook of Environmental Studies for Undergraduate Courses	1
18.	Thomas L. Floyd. Digital Fundamentals 11/Edn.	1
DEPARTMENT OF CHEMISTRY		
1.	MS Gopinathan: Group Theory in Chemistry	1
2.	SP Rastogi: Introduction to Chemical Thermodynamics 6/Edn	1
3.	F Albert Cotton: Chemical Applications of Group Theory, 3ed	1
4.	V.K Ahluwalia: Organic synthesis: special Techniques, Second Edition	1
5.	Gary D Christian: Analytical Chemistry, 6ed	1
6.	Y.R Sharma: Elementary Organic Spectroscopy	1
7.	B.K Sharma: Analytical chemistry	1
8.	P.S Kalsi: Organic synthesis Through Disconnection Approach 2 nd Revised edition	1
9.	Das A: An Introduction to supramolecular Chemistry (PB)	1
10.	Chatwal G.R: Analytical Chemistry	1
11.	R.K Prasad: Quantum Chemistry, 4/Edn	1
12.	V.K Ahluwalia: Organic Reaction Mechanisms, Fourth Edition	1
13.	Miessler: Inorganic Chemistry, 3e	1
14.	Robert M Silverstel: Spectrometric Identification of Organic Compounds	1
15.	F Albert Cotton: Advanced Inorganic Chemistry	1

16.	Skoog: Fundamentals of Analytical Chemistry	1
17.	Vogel: Elementary Practical Organic Chemistry Vol. I	2
18.	Vogel: Elementary Practical Organic Chemistry Vol. II	2
19.	Mendham: Vogel's Quantitative Chemical Analysis, 6 Edn	
20.	K.L Kapoor. A Textbook of Physical Chemistry Vol I	5
21.	K.L Kapoor. A Textbook of Physical Chemistry Vol II 6 Edn	3
22.	K.L Kapoor. A Textbook of Physical Chemistry Vol III 6 Edn	4
23.	K.L Kapoor. A Textbook of Physical Chemistry Vol IV 6 Edn	5
24.	K.L Kapoor. A Textbook of Physical Chemistry Vol V 4 Edn	5
25.	K.L Kapoor. A Textbook of Physical Chemistry Vol VI 4 Edn	5
DEPARTMENT OF PHYSICS		
1.	Takwale :Introduction to Classical Mechanics	5
2.	Zemansky: Heat and Thermodynamics(SIE) 8/Edn	2
3.	F.V Sears : Thermodynamics, Kinetic Theory and Statistical thermodynamics	2
4.	Aruldas: Classical Mechanics	10
5.	B L Theraja : Basic Electronics(SOLID STATE) In Multicolour edition	5
6.	Laud, B.B :Electromagnetics	2
7.	D S Mathur: Elements of Properties of Matter	2
8.	Goldstein: Classical Mechanics, 3e	5
9.	R K Pathria: Statistical Mechanics, 3/edn	1
10.	Feynman: The Feynman Lectures on Physics: Mainly Mechanics, Radiation	2
11.	Jearl Walker, David : Principles of Physics, 10 Edn, ISV	1
12.	R K Pathria: Statistical Mechanics, 4/edn	2
13.	Aruldas & Rajagopal : Modern Physics	1
14.	H A Wahab : Numerical Problems on Solid State Physics , revised edition	1
15.	R Murugesan : Electricity and Magnetism 10/Edn	1
16.	David J Griffith :Introduction to Quantum Mechanics 3/E	1
17.	David J Griffith :Introduction to Electrodynamics 4/E	1
18.	K Prathapan : Mechanics And Properties of Matter	1
19.	Aruldas: Quantum Mechanics: 500 Problems with solution	1
20.	S K Sinha : introduction to Statistical Mechanics	1
21.	B Ram: Fundamentals of Microprocessors and Microcontrollers	1
22.	A W Joshi : Matrices and Tensors in Physics 4/Edn	1
23.	Sakurai: Advanced Quantum Mechanics	1
24.	Bransden: Quantum Mechanics, 2/e	1
25.	H A Wahab : Solid State Physics :Structure and Properties of Materials	1
26.	Chattopadhyay: Electricity and Magnetism	1
27.	N Subrahmaniyam: A Text Book of Optics	1
28.	Gupta Kumar: Elementary Statistical Mechanics	1
29.	R Murugesan : Modern Physics(LPSPE) 18/E	1
30.	k Thyagarajan: Lasers Fundamentals and Applications	1
31.	Thankappan V K: Quantum Mechanics 5/e	1
32.	Dr. Satyaprakash :Optics	1
33.	Donald A McQuarrie: Molecular Thermodynamics	1
34.	Timothy Pratt: Satellite Communications , 3/e	1
35.	Manna: Heat and Thermodynamics	1
36.	Bowley: Introductory Statistical Mechanics 2/ed	1
37.	Arun Kumar :Introduction to Solid State Physics 2/ed	1
38.	V.K.Mittal: Computation Physics 2/ed	1
39.	Crawford: Waves (In SI Units): Berkeley Physics course volume 3 (SIE)	1
40.	K D Abhyankar : Astrophysics of the Solar Sys	1
41.	Shivani: Concepts of Modern Physics	1

42.	Ajoy Ghatak: Introduction to Fibre Optics	1
43.	A.B Gupta: Mechanics and Properties of Matter, 5/edn	1
44.	Ajoy Ghatak: Experiments with Light	1
45.	Ajoy Ghatak: Quantum Mechanics: Theory and Application, 5/edn	1
46.	Lim Yung Kou: Problems and Solutions on Solid state Physics, Relativity	1
47.	Thomas Varghese: Nanotechnology	1
48.	Schiff Leonard & Ban: Quantum Mechanics	1
49.	N Subrahmaniyam: Waves & oscillations, 2/edn	1
50.	Ashcrost: Solid State Physics	1
51.	Zemansky: Heat and Thermodynamics (SIE) 8/Edn	1
52.	Laud, B.B: Fundamentals of Statistical Mechanics	1
53.	Cottrell, Geoff: Telescopes Vsi P	1
54.	Kiran C Gupta: Classical Mechanics of Particles & Rigid bodies 2/e	1
55.	M S Ramachandra Rao : Nanoscience & Nanotechnology: Fundamentals of F	1
56.	M S Mani : Introduction to Modern Physics	1
57.	Mathews: A Textbook of Quantum Mechanics	1
58.	S N Ghoshal: Atomic Physics (Modern Physics)	1
59.	A V Joshi: Elements of Group theory for Physicists, 3/edn	1
60.	S Salivahanan: Linear Integrated Circuits 3/ed	1
61.	Prasad K D : Electromagnetic field and waves	1
62.	Das J : Principles of Digital Communication	1
63.	Santhi A : The Nanoscope: An Introduction to Nanoscience and Nanophoto	1
64.	N Subrahmaniyam: Heat Thermodynamics & Statistical Physics	1
65.	Upadhyaya, J C : Classical Mechanics	1
66.	S O Pillai: Solid State Physics 9/ed	1
67.	Singh: Solid State Physics	1
68.	Cullity/Stock: Elements of X ray Diffraction 3/ed	1
69.	Nouredine Zettili: Quantum Mechanics: Concept & Applications 2/ed	1
70.	Albert Malvino: Electronic Principles 9/ed	1
71.	Resnick, Halliday, K: Physics, volume 2 5/ed	1
72.	Daniel E, Della -Gius : Fire safety Management Handbook	1
73.	Hawking Stephen : Brief History of Time, A	1
74.	Carl Sagan: COSMOS	1
75.	Carlo Rovelli: The order of Time	1
76.	Richard P F Eynman: The Pleasure of Finding Things out the Best short w0	1
77.	Stephan W Hawking : The theory of Everything	1
78.	A P French : Vibrations and Waves	1
DEPARTMENT OF ZOOLOGY		
1.	Wasim Ahmad Faridi. Genetics and Genomics	1
2.	S. C. Rastogi. Bioinformatics: Methods and Applications, 4/Edn	1
3.	S. Ignacimuthu. S. J. Basic Bioinformatics, 2/Edn	1
4.	N.S. Subrahmanyam. Ecology 2/Edn	1
5.	Gardner, Simmons, S.N. Principles of Genetics, 8Edn.	1
6.	Zar. Biostatistical Analysis, 5 Edn.	1
7.	Lydyard. Bios Instant Notes Immunology 3Edn	1
8.	Hodgman. Bios Instant Notes Bioinformatics 2Edn	1
9.	Hames. Bios Instant Notes Biochemistry 4Edn	1
10.	Mc Lennan. Bios Instant Notes Molecular Biology 4Edn.	1
11.	Hugh Fletcher. Bios Instant Notes Genetics 4 Edn	1
12.	Cronwell. Biomedical Instrumentation and Measurements 2Edn	1
13.	Mandeep Singh. Introduction to Biomedical Instrumentation.	1

14.	Ananda Natarajan. Biomedical Instrumentation and Measurements 2 Edn	1
15.	Ashok Purohit. Aquaculture Production Economics.	1
16.	Dr. Sushil Kumar. Handbook of Food Microbiology	1
17.	De Robertis. Cell and Molecular Biology 8Edn	1
18.	Khandpur. Handbook of Biomedical Instrumentation	1
19.	Satyannarayana. Biochemistry 6 Edn	1
20.	Janet Iwasa. Karp's Cell Biology (global edition)	1
21.	Arthur M. Lesk. Introduction to Bioinformatics	1
22.	Joanne Willey. Prescotts Microbiology 11 Edn	1
23.	Daniel D. Chiras. Environmental Science 9 Edn.	1
24.	Campbell. Essential Biology with Physiology 5 Edn.	1
25.	Roland Glaser. Biophysics	1
26.	Punt, Stranford, Jones. Kuby Immunology 8 Edn.	1
27.	Peter. J. Delves. Roitts Essential Immunology 13 Edn	1
28.	Myra. L. Samuels. Statistics for the Life Sciences 5 Edn	1
29.	William D. Bowman. Ecology 4 Edn.	1
30.	Abul K. Abbas. Cellular and Molecular Immunology 10Edn	1
31.	K.P.Biswas. Advancement in Fish, Fisheries and Technology	1
32.	V.G. Jhingran. Fish and Fisheries of India 3 Edn	1
33.	K.C.Jayaram. Freshwater fishes of the Indian Region. 2 Edn.	1
34.	T.V Ramakrishna Ayya. Handbook of Economics Entomology of South India.	1
35.	S.K.Gahlwat. Manual of Experimental Ichthyology	1
36.	Ian S R Munro. Marine and Freshwater Fishes of Ceylon	1
37.	J.L.Jain. Fundamentals of Biochemistry	1
38.	Donald Voet. Voets Biochemistry (Adapted Edn 2021)	1
39.	Kapoor V.C. Theory and Practice of Animal Taxonomy 8Edn	1
40.	Dr. P.S. Verma. Chordate Zoology	1
41.	Dr. P. S. Verma. Invertebrate Zoology	1
42.	P.C. Gupta. General and Applied Ichthyology	1
43.	Scott. F. Gilbert. Development Biology 12 Edn	1
44.	Mayr. Principles of Systematic Zoology 2Edn.	1
45.	Lodish, Berk, Kaiser. Molecular Cell Biology, 9 Edn.	1
46.	Pranav Kumar. Life Sciences: Fundamentals and Practice I, 7 Edn	1
47.	Pranav Kumar. Life Sciences: Fundamentals and Practices II, 7 Edn	1
48.	Oxford: Oxford Dictionary of Science	1
49.	L. Veerakumari. Bioinstrumentation	1
50.	Igor Kaltashov. Mass Spectrometry in Structural Biology and Biophysics	1

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LIST OF JOURNALS SUBSCRIBED UNDER DBT STAR COLLEGE SCHEME

E-journal


DELNET - Developing Library Network, JNU Campus, New Delhi

Printed Journals

1. International Journal of Computer Sciences and Engineering Research
2. Indian Journal of Computer Information Science and Engineering
3. Indian Journal of Computer Graphics and Visualization
4. Indian Journal of Computer Science and Engineering
5. Indian Journal of Computer Science and Technology
6. Indian Journal of Computer Science
7. Indian Journal of Computers and Applications
8. Indian Journal of Computer Information Technology and Engineering
9. Indian Journal of Computing and Information Technology
10. Indian Journal of Image Processing and Applications
11. Indian Journal of Multimedia
12. Indian Journal of Multimedia, Computer Vision and Machine Learning
13. Indian Journal of Electronics and Computers
14. Indian Journal of Robotics Applications
15. Indian Journal of Computer and Internet Security
16. Indian Journal of Information Sciences and Computer Application
17. Indian Journal of Advances in Computer Science and Technology
18. Indian Journal of Information Security and Computer
19. Indian Journal of Information and Computer Science Technology
20. Indian Journal of Wireless Networks and Communications
21. Indian Journal of Information Science in Engineering
22. Indian Journal of Image Processing and Techniques
23. Indian Journal of Computer Graphics and Techniques
24. Indian Journal of Neural Networks and Techniques
25. Indian Journal of Current Techniques in Computer Graphics
26. Indian Journal of High Speed Networks and Computing Routers
27. Indian Journal of Signal and Image Processing
28. Journal of Information, Sciences and Application
29. Indian Journal of Information & Computer Science Technology
30. Indian Journal of Information Science and Computer Application
31. Indian Journal of Information Science in Engineering
32. Indian Journal of Information Security and Computer
33. Indian Journal of Business Management and Information Technology
34. Global Journal of Engineering Research and Technology
35. Indian Journal of Engineering Research and Technology
36. International Journal of Applied Engineering Research
37. ICTACT Journal of Communication Technology
38. ICTACT Journal of Soft Computing

Magazines:

1. Sasthrakeralam
2. Sasthragathi


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