

DBT STAR COLLEGE SCHEME
COMPLETION REPORT (29.02.2020 to 28.02.2023)
(Participating Departments: Botany, Chemistry,
Mathematics, Physics and Zoology)

BT/ HRD/ 11/ 021/ 2020 dated 29th February 2020

Submitted to



DEPARTMENT OF BIOTECHNOLOGY
Ministry of Science and Technology
New Delhi – 110 003

2020 - 2023

Submitted by



JAMAL MOHAMED COLLEGE (*Autonomous*)
College with Potential for Excellence
Accredited (3rd Cycle) with 'A' Grade by NAAC
(Affiliated to Bharathidasan University)
Tiruchirappalli-620 020
Tamil Nadu.

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Department of Biotechnology.
Proforma for submission of Completion Report for College supported under
Star College Scheme

Part: A

- 1. Name of the College** : Jamal Mohamed College (Autonomous)
- 2. Name of the Coordinator & Designation** : Dr. A. Shajahan
 Associate Professor of Botany
- Address** : Jamal Mohamed College (Autonomous)
 Tiruchirappalli - 620 020, Tamil Nadu,
 Email: shajahan.jmc@gmail.com
- Phone No.** : +91-94438 74731 & +91-8637672433.
- 3. Assessment duration** : 29/02/2020 to 28/02/2023 Duration: 3 years

4. Details of Departments Supported:

S. No.	Name of the Department	Courses offered (B.Sc., M.Sc., PG Diploma certificate)	Regular Faculty members	
			Total=68	
			With Ph.D.	Without Ph.D.
1.	Botany	B.Sc., M.Sc., M.Phil., Ph.D., and Diploma in Horticulture (Under UGC - NSQF Scheme)	11	-
2.	Chemistry	B.Sc., M.Sc., M.Phil., Ph.D.,	17	-
3.	Mathematics	B.Sc., M.Sc., M.Phil., Ph.D., and Diploma in Insurance and Actuarial Science (Under UGC - NSQF Scheme)	11	1
4.	Physics	B.Sc., M.Sc., M.Phil., Ph.D.,	12	3
5.	Zoology	B.Sc., M.Sc., M.Phil., Ph.D., CMLT, DMLT and Diploma in Aqua Culture (Under UGC - NSQF Scheme)	11	2


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5. Number & Date of Advisory Committee Meeting:

a) External Advisory Committee Meetings

S. No.	Nature	Date	Participants
1.	First External Advisory Committee Meeting	09/12/2020	DBT Unit Head, Programme officer, External Experts, Principal, Coordinators, HODs and Faculty members of the participating departments.
2.	Second External Advisory Committee Meeting	26/09/2022	DBT Unit Head, Programme officer, External Experts, External Mentors, Principal, Coordinators, HODs and Faculty members of the participating departments.



b) Internal Advisory Committee Meetings


S. No.	Nature	Date	Participants
1.	First Internal Advisory Committee Meeting	07/10/2020	External Experts, Principal, HODs, Coordinators and Faculty members from the participating departments.
2.	Second Internal Advisory Committee Meeting	10/09/2022	External Experts, Principal, HODs, Coordinators and Faculty members from participating departments.



c) Mentor Meetings

DBT Star College Mentorship Programme	
9-2-22	DBT Star College mentorship programme (online) Organized by DBT, Government of India. Participated by the students and faculty members of Botany, Chemistry, Mathematics, Physics and Zoology departments.





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Department of Botany	
26-05-22	Dr. N. Thajuddin, Professor of Microbiology, Bharathidasan University Tiruchirappalli and faculty members of the department.
14-03-22, 11-01-23 & 25-02-23	Dr. Catharin Sara, HOD of Botany, Holy Cross, College, Tiruchirappalli and faculty members of the department.
Department of Chemistry	
15-12-21	Dr. D. Nalini, HOD of Chemistry, PSGR Krishnammal College for Women, Coimbatore and faculty members of the department.
18-12-21	Dr. Violet Dhayabaran, Associate Professor of Chemistry and Dean of Science, Bishop Heber College, Tiruchirappalli and faculty members of the department.
25-03-22	Dr. Muthulakshmi Andal, Assistant Professor of Chemistry, PSGRK College for Women, Coimbatore and faculty members of the department.
Department of Mathematics	
11-10-21 & 21-11-22	Dr. N. Rajeswari, Principal & Associate Professor of Mathematics, Sri GVG Visalakshi College for Women (online),
11-10-21, 16-12-21 & 21-11-22	Dr. R. Uthayakumar, Professor of Mathematics, Ghandhigram Rural Institute and faculty members of the department.
Department of Physics	
06-10-21, 11-03-22 & 02-02-23	Dr. C. Ravidhas, HOD of Physics, Bishop Heber College, Tiruchirappalli and faculty members of the department.
11-03-22	Dr. S. Kumaresan, Assistant professor of Physics, National College, Tiruchirappalli and faculty members of the department.
12-03-22	Dr. S. Beer Mohamed, Dean- School of Technology, Central University of Tamil Nadu and faculty members of the department.
Department of Zoology	
23-11-21, 05-03-22, 07-11-22 & 25-02-23	Dr. Horne Iona Averal, Associate professor & Head of Zoology, Holy Cross College, Tiruchirappalli and faculty members of the department.




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6. Qualitative improvements due to DBT support. Please highlight 5 salient points (within 1000 words).

The financial support under DBT-Star College Scheme facilitated the following qualitative improvements in the College. Due to the newly inculcated activities of DBT Star College Scheme, the college was able to advance from 79th Rank to **56th Rank** NIRF during the year 2023. The existing curriculum has been enriched with the introduction of new experiments, entrepreneurship based hands-on training programmes and exposure through industrial trainings and field visits.



a) Enrichment of Practical Courses

- i The UG programmes were strengthened due to purchase of new equipments which imparted independent learning in practical courses. Three of the DBT-Star College Departments have established stand-alone laboratories while two others have added new equipments for augmenting the teaching aids.
- ii All the practical manuals and SOPs have been published online to make available to students.
- iii The undergraduate students were offered inter-disciplinary learning through hands-on trainings, guest lectures, group projects, field visits and internships.




b) Technical and Entrepreneurial skill development


The knowledge gathered from the seminars, guest lectures and hands on training programmes organized led to accumulation of knowledge. The regular activities of novel learning strategy lead to establishment of Facilities for sustaining the activities imparted in DBT-Star College Scheme. This help the students to translate their subject knowledge into entrepreneurial / technical skills.

c) Socially relevant group projects

The knowledge gathered from various newly introduced activities led to assimilation of knowledge about various ways of transforming them into socially relevant scientific


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activities. The group projects of classical and inter-disciplinary nature helped the students to realise their skills in respective subjects. The group project reports carried out during three years (2020-2023) have been brought in the form of Compendium in the Journal JARJ with ISSN 0973-0303.

- The UG students were exposed to various modern aspects of science and their applications in real life. Such exposure paved way to execution of group projects in UG level. Some of the socially relevant topics were as follows: Production of eco-friendly cleaning liquids from fruit peel wastes, recycling agri-wastes by cultivation of edible mushroom, review of phytochemical constituents of herbs, survey of medicinally important weeds of paddy field, fermented plant wastes as fertilizers, metrics for studying 'carbon-banking' potential for college campus trees, preparation of oyster mushroom cookies as a post-harvest process, developing value addition for capillary water from banana stem etc.
- Mentored by renowned experts, some of these group projects resulted in the following outcomes. Cultivation units have been set up for *Azolla* biomass production and for edible mushroom. Based on the data collected on campus trees, an app has been developed by a team of students using open source platform. It is designed to access taxonomical and ecological information for general public by reading the QR code labels on trees.
- The UG students of Chemistry were given exposure to socially relevant and modern topics such as soil nutrients, separation techniques, training on Avadro, Chemdraw software, various analytical instruments (Chromatography, UV-Vis and IR Spectroscopy). The group projects carried out by chemistry students were analysis of milk samples, detection of chemical additives in packaged food, foaming capacity of soaps, detection of pesticides in locally sold vegetables & greens, and tolerance levels of various chemical drugs. Two of the group project results were presented in National Conferences and published in respective proceedings.





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- The undergraduates of Mathematics department were given exposure in the following aspects: Basics of mathematics was taught as interdisciplinary training to non-maths students. Hands-on training was given in modern software such as R, SPSS, Maple, Mathematica, MatLab, and SageMath. With this exposure, the students chose topics such as, 'application of Gauss elimination in solving chemical reactions', application of matrices in Red Blood Cells (RBC) production, contribution of eigen vectors in Google search engines, mathematical modelling of COVID-19 infections in Trichy, study of mental well-being and education related challenges during lockdown. By understanding the seriousness of science communication to non-biology students and general public, the students of mathematics organized various awareness programmes about COVID-19, demonstrated standard operating procedures, distributed pamphlets to the general public. This outreach was highly appreciated by the administrative authorities of Trichy.
- The UG students of Physics were given exposure to topics such as origami and wealth from waste, remote sensing and GIS analysis, trouble shooting of electronic gadgets and home appliances, application of classical concept of NMR in batter research, liquid crystals, simulations, disaster forecasting, image processing, awareness programme on oncology, training programme on asteroid identifications, outreach programme on HAM Radio for disaster management, PCB making etc. The group projects focused mainly on solar energy and solar home appliances. The UG students were given hands-on training on construction of HAM radio transmitters and the same was demonstrated to non-physics students also. The students have identified asteroid like structures using open source software and received certifications for the same.
- The Dept of Zoology students were given exposure to both basic and modern concepts of zoology such as microtechniques and histochemistry, electrophoresis, poultry farm management, biostatistics, inventory methods for conservation biology, Birdwatching & photography, study of planktons, water quality analysis, preservation of zoological specimens, and ornamental aquaculture. The group projects chosen by the students included biofertilizer production from fish wastes from market, vermicomposting, observation of radiation in aquatic biota, mosquito larvicidal activity of herbal extracts, impact of pollution on aquatic microflora, heavy metal toxicity, etc.


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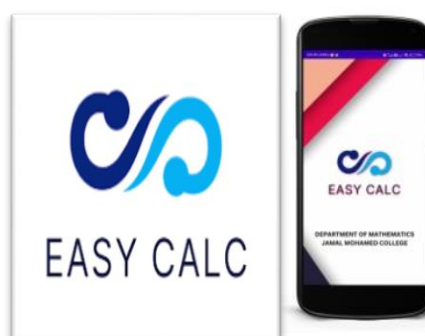
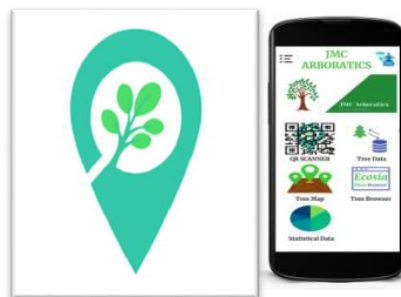



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d) Outcome and impact of any 5 minor projects (among 3 years)

The participation of our students in workshops and training organized under DBT Star College Scheme has led to the development of following innovations:

(i) *JMC Arboratics* is an app for accessing smart labeling of avenue trees- in our college premises developed by our student team. This innovation has been registered with the Jamal Innovation & Incubation Centre (JIIC) for startup support and establishment. This start-up has also carried out a small consultancy project in AIMAN College of Arts and Sciences for Women involving DBT-Star College scheme group project students. Implementation of smart labeling at a neighboring college where there is no Botany course is offered is very much useful in the dissemination of scientific facts about the campus trees to the non biology students. Similarly, the students of Mathematics have developed an app called Easy Calc: The students of mathematics also have developed a calculation app called ‘Easy Calc’ and also assisted developing app for the start-up ‘Mini-basket’



(ii) *Aquaponics*: This innovative idea developed by our students has been applauded widely for recycling grey water from college hostel and was selected for the National Science Day 2022 program. Further the members of this team were granted entry into the Smart India Hackathon 2022 for the problem statement of xerophytic hydrogel for soil less cultivation.


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(iii) Publications of students group projects:


i. Department of Botany

Group projects under the DBT Star College Scheme helped us to create a research culture among our UG students of the participating departments. Best DBT Star College Scheme students' performer award was introduced to create a healthy competition among the students. One of our UG students, **Mr.A.Nizar Ahamed** received this award and he has published his findings of group project in South African Journal of Botany (Elsevier Publication) with **Impact Factor of 3.1**.


Outcome of the Group project entitled **“Spatial Distribution of Tree Species Urban Landscape of Tiruchirappalli City Corporation”** published as feature article during World Environment Day June 5 in Hindu Tamil Newspaper as awareness to the public in Tiruchirappalli.

Some of the group project outcomes were presented in conferences/seminars

1. Karthick, K., P. Sathivel. Study on Phytochemical Properties of medicinal plants used as immune modulatory activities. National Conference on Emerging Trends in Plant Science and Sustainable Development organized by Department of Botany, School of Biological Sciences Bharathidasan University, Tiruchirappalli on 30th March, 202
2. Jeranald Shine R, Jagatheesh M, Divakar J, Jen Antony R, presented paper entitled Isolation and identification of fungi from waste vegetables collected from Gandhi market, Tiruchirappalli, Tamil Nadu, India International Conference on “Future Challenges of Microbes in Environment(ICFCME-2023)” organized by PG and Research Department of Microbiology, Jamal Mohamed College(Autonomous), Tiruchirappalli –620020 in collaboration with Microbiologist Society of India


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Review

Phytochemical and pharmacological potential of the genus *Plectranthus*—
 A review

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 N. Anahid Shiri^a

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ABSTRACT

Plectranthus is the third largest genus of the family Lamiaceae with long history in traditional medicine. It has been used for the treatment of diverse diseases around the world. The phytochemical studies of this genus show that they are rich in secondary metabolites such as diterpenes, monoterpene, sesquiterpenes, flavonoids, phenolic compounds, quinone and long-chain allylcathecol. The reports of the various researchers on the phytochemical and pharmaceutical activities shows that it possesses profuse number of biological activities such as antibacterial, antifungal, antioxidant, anti-inflammatory, antidiabetic, antiurothiatic, antelmintic, analgesic, anticancer and larvicidal properties. In order to bridge the insufficient knowledge about

The methanolic extract obtained from the *P. amboinicus* whole plant shows antiurothiatic activity in Wistar albino rats at a dosage of 2 mL/kg when compared to aqueous extract of cystone (Sreedharren 2019). In addition, histopathological characterization on the kidney of urolithiasis induced rats reveals that there is a reduced in crystals number and decreased in dilation of tubules after the dosage of *P. amboinicus* (Sreedharren 2019)

14. Larvicidal

Acknowledgment

The authors express their heartfelt thanks to Secretary and Correspondent, Principal, Head of the Department of Botany of Jamal Mohamed College (Autonomous), Affiliated to Bharathidasan University, Tiruchirappalli, Tamil Nadu, India for their encouragement and providing all the necessary facilities. Further, the authors are thankful to DST-FST and DBT Star College Scheme (Government of India) for providing infrastructure facilities.



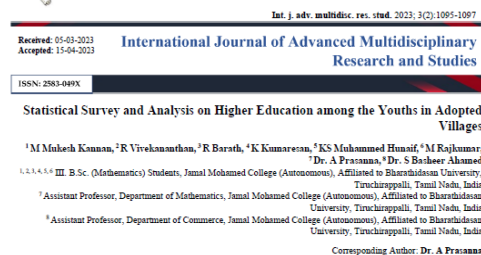
- Najubudeen A., and M. Mohamed Majit, 2023. Applications of table salt and vinegar on green gram and cowpea sprouts growth in National Seminar on Technological Influences on Phyto-biotic stress Management joint organized by department of crop improvement and Department of Crop projection Roever Agricultural College, Perambalur on 11th March 2023.
- Leslie Jones A and A. Shjahan, 2023 Influence of fermented plant products on growth rate of an ornamental plant, Philodendron (*Philodendron erubescens*) under hydroponic condition, received 1st prize in Student Conclave organized by Department of Mathematics and Department of Chemistry on 26/02/2023 for celebration of National Science Day 2023.
- Sathish, M., S. Perumal, M. Hariharan and R. Radhakrishnan, 2023. Formulation and assessment of organic fertilizer for fenugreek seedling growth in National Conference on Chemical, Biological and Medicinal Sciences organized by PG and Research Department of Biochemistry, Thanthai Periyar Government Arts and Science College, Tiruchirappalli on 7th March 2023.

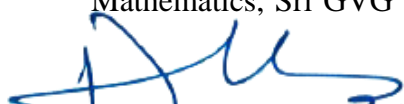
ii. Department of Chemistry

- Study of presence of insecticides and pesticides in various fruits, vegetables and beverages group projected was presented in National conference on Innovations in Nano research (NCINR 2022) at Karur on 21-09-2022 and Published in Conference Proceedings (ISBN 978-93-92537-23-3).
- A group project entitled Study of corrosion resistance of zinc metal by using *Annona squamosa* plant leaves was presented in International conference on Recent Innovations in Material Science organized by PG and Research Department of Physics, Jamal Mohamed College in association with Indian Spectrophysics Association (ISPA), Chennai on 10-01-2023. (ISBN: 978-93-5780-175-1).

iii. Department of Mathematics

- One of the group projects got published as research article (M Mukesh Kannan, R Vivekananthan, R Barath, K Kumaresan, KS Muhammed Hunaif, M Rajkumar and Dr. A Prasanna. "Statistical Survey and Analysis on Higher Education among the Youths in Adopted Villages" International Journal of Advanced Multidisciplinary Research and Studies 2023; 3(2):1095-1097)
- Students of Mathematics presented their findings of 11 group projects as papers in the DBT Funded State Level Paper Presentation Competition held on the title "Recent Advances in Mathematics" to Commemorate National Mathematics Day at the Department of Mathematics, Sri GVG Visalakshi College for




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Women, Udumalpet in association with Shiksha Sanskrit Uttan Niyas, Tamil Nadu Vedic Mathematics Team. First, Second and Third prizes are won by our students- Mr. N. Asrar Ahamed, Mr. K. Sanjai, Mr.M.Vignesh.

(iv) Department of Physics

1. The group project entitled “Real Time Ac Signal And Audio Signal Denoising Using Analog And Digital Filters” was presented in a conference by the mentor, Dr. S. Shek Dhavud, Assistant Professor of Physics, and students T. Nithish, Z. Thoufeeq Ahamed, B. Usman, M. Vignesh Kumar

(v) Department of Zoology

1. The Group Projects were presented as a paper in the Department of Atomic Energy, Department of Biotechnology sponsored National Seminars and Conferences.
2. Based on the project “Effect of Vermicompost on soil quality and plant growth” an Vermiculture unit was established in the hostel premises in order to convert the kitchen waste from hostel into vermicompost.
3. On the basis of the project “Predictive distribution of Insects and Birds in Cauvery river bank using Mathematical modeling” one of the faculty member has applied and got seed money grant from the JMC Management for further research.

e) Enrichment of outcomes from faculty


The DBT Grant has helped us to connect with prestigious institutions and enabled us to organize many Interdisciplinary Online Faculty Development Programmes. Other faculty enrichment Programmes are

- i **Eight Patents** have been filed and **one Patent got granted** for DBT Star College Scheme departments.
- ii **192 articles** were published in Web of science, Scopus and UGC Care list journals.
- iii Five Lab manuals and 317 e-content modules (Botany – 27, Chemistry – 85, Mathematics – 93, Physics – 72 & Zoology - 40) were prepared.
- iv Extra mural Research projects supported by DST-SERB and DST-NIF
- v Twenty College sponsored ongoing Seed Money research projects.
- vi **Dr. R. Radhakrishnan, Assistant Professor of Botany, was ranked as the “Top 2%, Most Influential Scientists for the Year 2020”, by the Stanford University.**

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

a) Establishment of DBT Star College Scheme laboratories and other facilities:

The departments of Botany, Chemistry and Mathematics have established **stand-alone special laboratories** purely from the financial aid under the “DBT Star College Scheme”. In addition to the newly introduced UG practical experiments, Group Projects and


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Hand-on training programmes. Apart from this the college has established following facilities to sustain the activities inculcated during the DBT-Star College Scheme (2020-23). **Azolla cultivation facility and Edible mushroom cultivation facility**, have been established for Department of Botany. In Department of Physics, **a new astronomy lab for space telescoping and HAM Radio station** in which a long wire antenna made during the hands-on training has been permanently installed. A separate PCB making laboratory also established. In Department of Zoology, facility for **Ornamental fish culture** has been established.

b) Introduction of few best practices

- For improvement of the students communication and writing skills **Environmental Newsletter** Entitled **Uyir Eluthu** (Tamil version) was released under Botany Student Journaling activity during March 2022 (Quarterly Newsletter)
- On 10.09.2022, **Mathmation** (A Compendium of DBT Star College Scheme Activities) Volume -1 (2020-22) was released by Dr.R.Rajendran, External Expert Committee Member in the DBT Star College Scheme Internal Advisory Committee Meeting.
- **“Best DBT-Star College Student award”** has been introduced in all five Departments to recognize the participation of students with full involvement and who bring visible outcomes from his DBT-Star College activity.
- The Students of the Department of Physics have **donated 3 telescopes which were made during hands-on training programmes of DBT-Star College scheme to rural schools.**



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c) Motivating neighboring colleges to apply for DBT Star College Scheme and guidance:

Taking cognizance of the priorities of the DBT and conscious of the need for improving the undergraduate education in the colleges in our vicinity, we organized an awareness program on the application procedures for the DBT Star College Scheme status and its effective implementation, in collaboration with PSGR Krishnammal College for Women, Coimbatore.


We are proud to state that we mentored and guided the following institutions to apply for DBT-Star college scheme. Of which three colleges have been selected.

- i. Vivekanda College, Thiruvudagam, Madurai,
- ii. G.T.N. College, Dindigul
- iii. Marudhar Kesari Jain College for Women, Vaniyambadi, Tirupattur.
- iv. A.V.V.M Sri Pushpam College, Poondi, Thanjavur.
- v. The New College, Rayapettai, Chennai.



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

1. The covid-19 pandemic grossly restricted the activities of the whole college in general and the activities of DBT Star College Scheme in particular. However, it was actually a boon for us in a way that, in compliance with the directions of the state and central governments, we were able to organize many seminars, conferences in the online mode through Zoom/Google meet/ Microsoft Team platforms by inviting best experts in various fields within the available financial outlay sanctioned under the scheme. Thus the college was privileged to have great scientists namely, Dr. M. Lakshmanan, Prof. of Eminence & DST-SERB National Science Chair, (Bhatnagar Awardee), Padma Shri Dr. Myilswamy Annadurai, Former Director of ISRO, Dr. Felix Bast, Central University of Punjab, Prof. K. Praveen Karanth, Centre for Ecological Sciences, IISc, Bangalore, Dr. T V Venkateswaran Scientist F, Vigyan Prasar, DST (Govt. of India) etc., as resource persons in Seminars, Conferences, Invited lectures etc.,
2. The lockdowns due to the pandemic led to difficulties in the admission process also. This was overcome by the conversion of the entire admission process right from submission of application, intimation of selection to the remittance of fees in the online mode. However, this has led to a marginal reduction in intake, which we have overcome


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in the subsequent years. Perusal of views expressed by student applicants and parents reveal that there is expectation of employment immediately after UG degree which is currently believed to be possible with UG Computer Science & Commerce degrees.

3. In addition to the existing skill development components, measures can be taken to strengthen the curriculum by incorporating job oriented contents in classical science programmes as per the need of the hour. The effective implementation of DBT-Star College Scheme is a major mile-stone in this direction.



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9. Key Performance indicators:

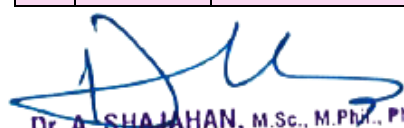
SL#	Indicator	Pre-Support (2019-20)	After support (2020-21)	After support (2021-22)	After support (2022-23)												
1.	No. of Students Admitted	Department of Botany															
		Total=44				Total=44				Total=27				Total= 38			
		M=44				M=44				M=27				M= 38			
		SC	ST	OBC	G	SC	ST	OBC	G	SC	ST	OBC	G	SC	ST	OBC	G
		9	-	-	35	9	-	-	35	2	0	19	6	7	-	25	6
		Department of Chemistry															
		Total=110				Total=111				Total=107				Total= 110			
		M=110				M=111				M=107				M= 110			
		SC	ST	OBC	G	SC	ST	OBC	G	SC	ST	OBC	G	SC	ST	OBC	G
		8	-	102	14	14	-	-	97	7	0	85	15	15	-	77	18
		Department of Mathematics															
		Total=73				Total=73				Total=59				Total= 61			
		M=73				M=73				M=59				M= 61			
		SC	ST	OBC	G	SC	ST	OBC	G	SC	ST	OBC	G	SC	ST	OBC	G
		7	-	-	66	9	-	-	64	8	2	40	9	6	1	45	9
		Department of Physics															
		Total=57				Total=58				Total=47				Total= 55			
		M=57				M=58				M=47				M= 55			
		SC	ST	OBC	G	SC	ST	OBC	G	SC	ST	OBC	G	SC	ST	OBC	G
		1	-	-	56	4	-	-	54	4	1	35	7	9	1	38	7
Department of Zoology																	
Total=43				Total=43				Total=29				Total= 45					
M=43				M=43				M=29				M= 45					
SC	ST	OBC	G	SC	ST	OBC	G	SC	ST	OBC	G	SC	ST	OBC	G		
3	3	-	37	11	-	-	32	3	2	18	6	10	-	30	7		
2.	Admission cut-off %	Botany	56%	57%	73%	58%											
		Chemistry	65%	63%	79%	63%											
		Mathematics	66%	66%	74%	63%											
		Physics	65%	65%	77%	65%											
		Zoology	61%	60%	61%	56%											
3.	No. of students passing out (%)	Botany	96.4%	100%	100%	100%											
		Chemistry	98.9%	100%	86%	98.9%											
		Mathematics	98.3%	100%	98%	95%											
		Physics	100%	100%	73%	86%											
		Zoology	97%	100%	94%	94.3%											

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SL#	Indicator	Pre-Support (2019-20)		After support (2020-21)	After support (2021-22)	After support (2022-23)
4.	Drop-out rates	Botany	11%	14%	11%	5%
		Chemistry	5%	14%	13%	5%
		Mathematics	27%	0%	11%	2%
		Physics	16%	8%	10%	4%
		Zoology	7%	9%	10%	4%
5.	No. of students Opting for M.Sc.,	Botany	19	12	16	24
		Chemistry	46	51	66	82
		Mathematics	17	20	29	30
		Physics	19	17	18	20
		Zoology	12	11	22	17
6.	Average marks (out of 600)	Botany	336	342	436	349
		Chemistry	390	378	474	378
		Mathematics	396	396	444	380
		Physics	390	390	462	390
		Zoology	366	360	366	341
7.	No. of Hands-on Experiment being conducted	Botany	4	6	8	8
		Chemistry	5	8	7	8
		Mathematics	-	5	8	8
		Physics	-	3	3	4
		Zoology	-	5	11	11
8.	No. of New Experiments introduced	Botany	-	10	10	10
		Chemistry	-	8	8	8
		Mathematics	-	16	16	16
		Physics	-	7	7	7
		Zoology	-	13	13	13
9.	Publications (Scopus indexed)/ patents, if any.	Botany	4	5	12	12
		Chemistry	5	8	23	25
		Mathematics	11	11	12	18
		Physics	6	6	8	16
		Zoology	10	11	10	12
10.	Training received by faculty	Botany	2	65	45	31
		Chemistry	6	6	50	52
		Mathematics	14	6	31	31
		Physics	0	5	61	31
		Zoology	1	8	30	30


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SL#	Indicator	Pre-Support (2019-20)		After support (2020-21)	After support (2021-22)	After support (2022-23)
11.	Exhibitions/Seminars/training courses conducted	Botany	1	4	7	7
		Chemistry	1	5	7	6
		Mathematics	3	10	12	13
		Physics	1	8	11	12
		Zoology	2	3	8	10
12.	Books/ Journals subscribed from grants	Botany	-	9	5	
		Chemistry	-	16	--	
		Mathematics	-	98	--	
		Physics	-	16	17	
		Zoology	-	25	20	
13.	Outreach activities (Popular lectures)	Botany	-	4	4	4
		Chemistry	-	2	6	4
		Mathematics	-	4	10	10
		Physics	-	4	8	9
		Zoology	-	4	8	7
14.	College mentored to apply for DBT Star College grants	i. Vivekanda College, Thiruvudagam, Madurai. ii. G.T.N. College, Dindigul. Marudhar Kesari Jain College for Women, Vaniyambadi, Tirupattur. iii. A.V.V.M Sri Pushpam College, Poondi, Thanjavur. iv. The New College, Rayapettai, Chennai.				
15.	Invited lectures	Botany	7	12	11	12
		Chemistry	2	3	5	6
		Mathematics	3	7	12	12
		Physics	5	8	11	14
		Zoology	4	5	8	8


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10. Details of colleges / schools mentored during the Star Scheme Tenure (Name of college / school; class / standard; No. of students benefited; whether any mentored college applied under Star College Scheme, if yes what was the outcome.)


a) Details of school's mentored

S. No.	Department	No. of schools benefited	No. of Beneficiary
1.	Botany	4	110
2.	Chemistry	4	135
3.	Mathematics	6	756
4.	Physics	3	44
5.	Zoology	3	256
	Total	20	1301




Department of Botany				
S. No.	Name of the school's mentored	Class	No. of students / teachers benefited	Outcome
1.	Government School, Amoor Village, Salem	IX & X	25	Hands on Training on Herbarium preparation, Seed Ball Preparation, Lab visit and Awareness programme on Tree Plantation, Greening and Hygiene activities & traditional Knowledge
2.	Ayesha Girls Matriculation Hr. Sec. School, Tiruchirappalli	XI & XII	20	
3.	Panchayat Union Middle School, Nagamangalam, Tiruchirappalli	VI & VII	40	
4.	Government Adi Diravidar Girls Higher Secondary School, Kattur, Tiruchirappalli	XI & XII	25	

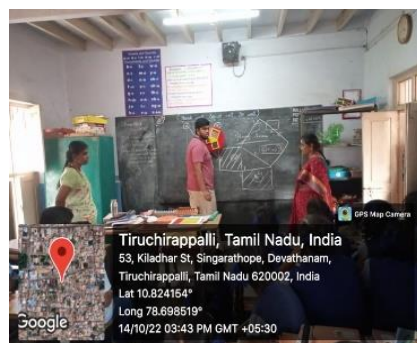



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Department of Chemistry				
1.	Raja Govt. School, Mannachanallur, Tiruchirappalli.	IX & X	35	Training Programme on preparation of domestic products such as soap, perfume, detergents and phenyl preparation, Chemdraw software and micro analytical techniques. Awareness programme on chemical pollution and water quality.
2.	Govt. Higher Sec. School, KK Nagar, Tiruchirappalli.	XI & XII	25	
3.	Govt. High School, Olaiyur, Tiruchirappalli.	IX & X	30	
4.	Govt. Higher Sec. School, Main Guard Gate, Tiruchirappalli.	XI & XII	45	
Department of Mathematics				
1.	Corporation Middle School, Subramaniapuram, Tiruchirappalli	IV to VII	139	Created a Math Lab, Under the outreach activity PROJECT MAHOUT, mathematical teaching aids were used to educate school students to learn Mathematics in an experimental way and develop scientific aptitude.
2.	Panchayath Union Middle School, Gandhinagar, Tiruchirappalli	V	30	
3.	B.H.M High School, Tiruchirappalli	VIII to X	110	
4.	Corporation Middle School, Airport, Tiruchirappalli	IV & V	65	
5.	Municipal Middle School Beema Nagar, Tiruchirappalli	VI to VII	214	
6.	Corporation High School Senthaneerpura m, Tiruchirappalli	VI to IX	198	




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Department of Physics				
1.	Bharathi Matric Higher secondary school, Tiruchirappalli	IX & X	10	Scientific awareness programmes were conducted among on superstitious beliefs by staging plays Magic or Strategy. Helped the students and lay public marvel at the fascinating universe by conducting Sky-Watch Programmes.
2.	Khajamian Higher Secondary, Tiruchirappalli	XI & XII	15	
3.	A.V.M. Public Higher Sec. School, Sivagangai	XI & XII	19	



Department of Zoology				
1.	SBIOA matric Hr. Sec. School, Tiruchirappalli	XI & XII	100	Training programme on Vermiculture techniques, Aquaculture, Organic manure, Poultry farming and Clinical waste practices. Awareness programme on Bio-entrepreneurship and Bio-incubators.
2.	Government High School, Siruvallur, Perambalur.	IX & X	100	
3.	Government High School, Nagamangalam village, Tiruchirappalli.	IX & X	56	


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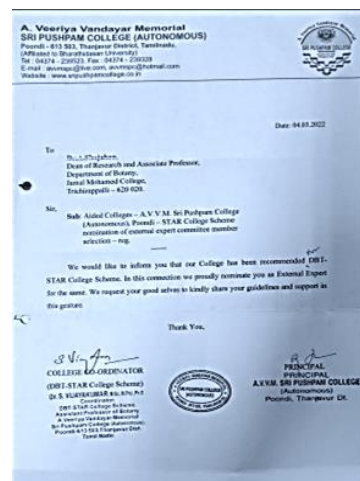
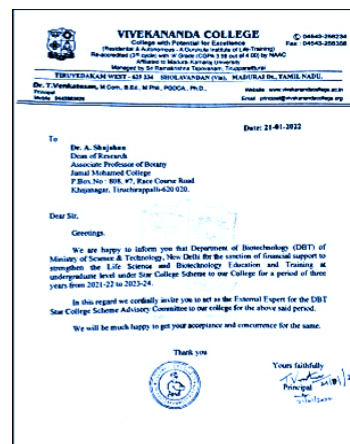



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b) Details of colleges mentored

S.No.	Department	No. of Colleges Mentored	No. of Beneficiary
1.	Botany	7	67
2.	Chemistry	3	105
3.	Mathematics	2	85
4.	Physics	2	161
5.	Zoology	2	245
	Total	16	663

Department of Botany				
S. No.	Name of the college's mentored	Class	No. of students/ Teachers benefited	Outcome
1.	Vivekanda College, Thiruvudagam, Madurai	Faculty	05	Orientation program on application procedures for the DBT Star College Scheme status and its effective implementation. The following three institutions have been selected for DBT-Star college scheme support. i. Vivekanda College, Thiruvengadam, Madurai, ii. G.T.N. College, Dindigul iii. Marudhar Kesari Jain College for Women, Tirupattur. iv. A.V.V. M Sri Pushpam College, Poondi, Thanjavur.
2.	G.T.N. College, Dindigul	Faculty	04	
3.	Marudhar Kesari Jain College for Women, Vaniyambadi, Tirupattur	Faculty	05	
4.	A.V.V. M Sri Pushpam College, Poondi, Thanjavur	Faculty	04	
5.	Nehru Memorial College, Puthanampatti.	Faculty	04	



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6.	VVV College for Women, Virudhunagar	Students	25	Spatial informatics
7.	AIMAN College of Arts & Science for women, Tiruchirappalli	Students	20	Group Project outcome has been extended for the benefit of students of AIMAN College by QR Coding the campus trees.
Department of Chemistry				
1.	Government Arts College, Tiruverumbur	UG & PG	50	Chemical structure Drawing using Chemdraw and analytical techniques, Analysis of water quality Parameters and training on Writing Quality Research proposal.
2.	Thanthai Periyar Govt. Arts & Science college, Tiruchirappalli.	UG & PG	40	
3.	GTN Arts College (Autonomous), Dindigul.	Faculty	15	
Department of Mathematics				
1.	Thanthai Periyar Govt. Arts & Science college, Tiruchirappalli.	UG & PG	40	Training programme on Latex programme, Mathematical applications and its practical approach.
2.	Vivekanda College, Thiruvengadam, Madurai	UG & PG	45	
Department of Physics				
1.	Thanthai Periyar Govt. Arts & Science college, Tiruchirappalli.	UG & PG	79	Created awareness about the importance of HAM Radio as a hobby as well as the first means of relief in terms of natural calamities.
2.	Ansar Women's College, Perumpilavur, Thrissur.	UG & PG	82	
Department of Zoology				
1.	EVR College, Tiruchirappalli.	UG & PG	225	Importance of checking water quality parameters, Entrepreneurial Development Programme on Aquaculture and preparation of project reports for funding agencies
2.	JJ College, Pudukkottai.	Faculty	20	




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11. Details of increase in the faculty generated resources viz extramural research grants from other funding agencies to strengthen the Star College Scheme efforts.

S. No.	Name of the faculty	Type of project* & duration	Funding agency	Sanctioned Amount (Rs)
(i) Department of Botany				
1.	Dr. A. Shajahan & Dr.B.Balaguru	MRP (2020-22)	DST-NIF, Govt of India	4,73,400
2.	Dr. R. Radhakrishnan	MRP (2021-24)	DST-SERB, Govt of India	8,64,087
(iii) Department of Mathematics				
3.	Dr. A. Prasanna	SP (2022-23)	TNSCST, Govt. of Tamilnadu,	7,500
(v) Department of Zoology				
4.	Dr. M. Meeramaideen	SP (2021-22)	TNSCST, Govt. of Tamilnadu.	7,500
5.	Mr. P.A. Ashique	SP (2022-23)	TNSCST, Govt. of Tamilnadu.	7,500


*MRP – Major Research Project, SP – Students project.




12. SOPs developed, lab manuals created and uploaded on website or submitted to DBT

S. No.	Department	Total number of practicals/experiments covered in SOP/Lab manual	Download link
	Department of Botany	10	  https://jmc.edu/dbt/volume1_Botany.pdf
	Department of Chemistry	13	  https://jmc.edu/dbt/volume2_Chemistry.pdf


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Department of Mathematics	29 (Covering three software)		 https://jmc.edu/dbt/volume3_Mathematics.pdf
Department of Physics	08		 https://jmc.edu/dbt/volume4_physics.pdf
Department of Zoology	11		 https://jmc.edu/dbt/volume5_zoology.pdf

List of practicals covered in DBT-Star College Scheme Practical Protocol Manuals

Volume – I: Botany

1. Study of polyploidy in onion root tips with colchicine treatment.
2. Isolation of genomic DNA from plant cell by using CTAB method.
3. Quantification of DNA by using spectrophotometer.
4. Separation of DNA by using Agarose Gel Electrophoresis.
5. Preparation of buffer solutions at different molarities and to check their pH using a pH meter.
6. Quantitative estimation of plant pigments by using spectrophotometer.
7. Estimation and separation of protein by SDS page.
8. Growth curve of bacteria.
9. Isolation and characterization of microbes.
10. Organogenesis of medicinal plants.

Volume – II: Chemistry

1. Estimation of oxalic acid by KMnO_4 using a standard oxalic acid.
2. Estimation of ferrous sulphate
3. Estimation of oxalic acid
4. Estimation of magnesium
5. Estimation of potassium dichromate
6. Estimation of commercial aspirin
7. Estimation of trace chromium content in food sample
8. Estimation of iron content in food items


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9. Copper(II) – EDTA complex
10. Cobalt – hydrazido complex
11. Zinc – EDTA complex
12. Chloro – cuprate complex
13. Determination of molecular weight by Ostwald viscometer

Volume – III: Mathematics

Introduction to R Programming

1. Develop a programme in R to create vectors.
2. Develop a programme in R to create matrices.
3. Develop a programme in R using control statements.
4. Develop a programme in R to import spread sheet data.
5. Develop a programme in R to calculate mean and median.
6. Develop a programme in R to calculate standard deviation.
7. Develop a programme in R to present the data in tabulation and graphical representation.
8. Develop a programme in R using chi-square test.
9. Develop a programme in R using student's t test.
10. Develop a programme in R to calculate one way ANOVA.

Mathematica

1. Introduction of Mathematica
2. Solving higher degree equations.
3. Solving system of equations by matrix method and find the eigen values and eigen vectors of a matrix of order 4 by 4 or higher order.
4. Solving system of non-linear equations.
5. Finding the differentiation of different functions of second and third derivatives.
6. Finding the Integration of different functions with limits.
7. Evaluation of double integrals and triple integrals.
8. Solving ordinary differential equations with initial condition.
9. Solving system of ordinary differential equations.
10. Creating and plotting 2-D and 3-D graphs.
11. Solving Linear programming problems.

MAPLE

1. Introduction to Maple
2. Simple programs using Mathematical constants
3. Programs using complex functions
4. Numerical solutions of nonlinear equations and systems
5. Solving system of linear equations using Jacobi method
6. Program using Trigonometric and Hyperbolic Expressions
7. Finding Eigen values and Eigen vectors of a matrix
8. Plotting Points in the Plane and Space
9. Analyse data using Central Tendency and Measures of dispersion and distributions
10. Find the Laplace integral transforms for different functions
11. Solving the differential equations

Volume – IV: Physics

1. Measurement of dielectric constant of solids and liquids using LCR meter
2. Measurement of the charge of an electron by Millikan's oil drop method
3. Measurement of specific charge of an electron by Thomson's method


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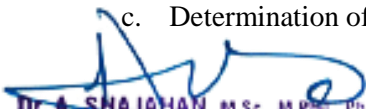



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4. Determination of magnetoresistance of semiconductors
5. Measurement of wavelength of monochromatic light using Fresnel's biprism
6. Measurement of wavelength of monochromatic light using Michelson interferometer
7. Determination of the specific rotator power of solution using polarimeter.
8. Determination of Rydberg's constant using a grating

Volume – V: Zoology

1. Isolation of insect gut associated microbes
2. Quantitative estimation of fresh water plankton
3. Screening of naturally occurring radionuclide Plonium – 210 in water samples.
4. Preparation of herbal extract and studies on its antimicrobial activities
5. Squash preparation of salivary gland of *Drosophila* larvae for polytene chromosome
6. Isolation of DNA from blood samples
7. Separation of DNA using agarose gel electrophoresis
8. Effect of pH on enzyme activity of acid phosphatase
9. Effect of temperature on enzyme activity of acid phosphatase
10. Paper chromatography
11. Analysis of water quality parameters in aquaculture pond
 - a. Estimation of calcium
 - b. Estimation of dissolved oxygen
 - c. Determination of salinity


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13. Self-evaluation

Department	Objective(as stated in proposal)	% achieved	Reason for underachievement/ If achieved, state in Quantitative metrics
Botany	To strengthen the existing curriculum, practical courses are enriched by introducing new application oriented practical's in the respective discipline.	100	2
	To enhance the interdisciplinary skills that provides reservoirs of knowledge with maximum connectivity between the subjects.	100	2
	To implement an interdisciplinary based learning experience in order to understand the application of science and Technology and to select various carrier options in different scientific fields.	100	2
	To improve the faculty through virtual learning process for efficient, effective and integrated interdisciplinary and applied aspects of respective subjects.	100	2
	To improve technical support of laboratory staff for active participation in solving the problems in the related field and to improve laboratory conditions with the correct functioning of a management system in laboratory	100	2
Chemistry	To strengthen the existing curriculum, practical courses are enriched by introducing new application oriented practicals in the respective discipline.	100	2
	To enhance the interdisciplinary skills that provides reservoirs of knowledge with maximum connectivity between the subjects.	100	2
	To implement an interdisciplinary based learning experience in order to understand the application of science and Technology and to select various carrier options in different scientific fields.	100	2
	To improve the faculty through virtual learning process for efficient, effective and integrated interdisciplinary and applied aspects of respective subjects.	100	2


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Department	Objective(as stated in proposal)	% achieved	Reason for underachievement/ If achieved, state in Quantitative metrics
	To improve technical support of laboratory staff for active participation in solving the problems in the related field and to improve laboratory conditions with the correct functioning of a management system in laboratory	100	2
Mathematics	To strengthen the existing curriculum, practical courses are enriched by introducing new application oriented practicals in the respective discipline.	100	2
	To enhance the interdisciplinary skills that provides reservoirs of knowledge with maximum connectivity between the subjects.	100	2
	To implement an interdisciplinary based learning experience in order to understand the application of science and Technology and to select various carrier options in different scientific fields.	100	2
	To improve the faculty through virtual learning process for efficient, effective and integrated interdisciplinary and applied aspects of respective subjects.	100	2
	To improve technical support of laboratory staff for active participation in solving the problems in the related field and to improve laboratory conditions with the correct functioning of a management system in laboratory	100	2
Physics	To strengthen the existing curriculum, practical courses are enriched by introducing new application oriented practical's in the respective discipline.	100	2
	To enhance the interdisciplinary skills that provides reservoirs of knowledge with maximum connectivity between the subjects.	100	2
	To implement an interdisciplinary based learning experience in order to understand the application of science and Technology and to select various carrier options in different scientific fields.	100	2


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Department	Objective(as stated in proposal)	% achieved	Reason for underachievement/ If achieved, state in Quantitative metrics
	To improve the faculty through virtual learning process for efficient, effective and integrated interdisciplinary and applied aspects of respective subjects.	100	2
	To improve technical support of laboratory staff for active participation in solving the problems in the related field and to improve laboratory conditions with the correct functioning of a management system in laboratory	100	2
Zoology	To strengthen the existing curriculum, practical courses are enriched by introducing new application oriented practicals in the respective discipline	100	2
	To enhance the interdisciplinary skills that provides reservoirs of knowledge with maximum connectivity between the subjects	100	2
	To implement an interdisciplinary based learning experience in order to understand the application of science and Technology and to select various carrier options in different scientific fields.	100	2
	To improve the faculty through virtual learning process for efficient, effective and integrated interdisciplinary and applied aspects of respective subjects.	100	2
	To improve technical support of laboratory staff for active participation in solving the problems in the related field and to improve laboratory conditions with the correct functioning of a management system in laboratory	100	2


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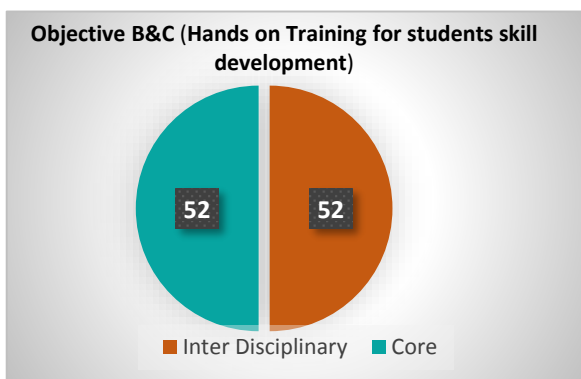
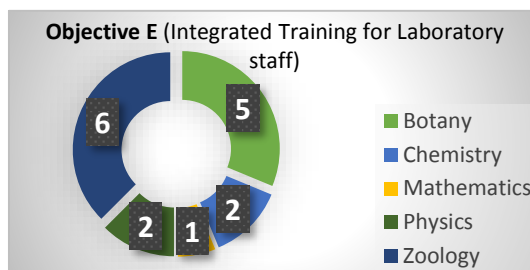
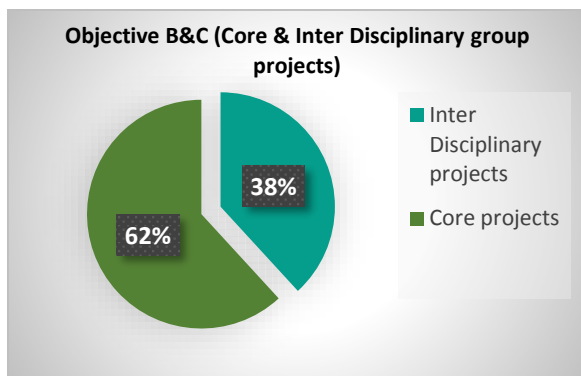
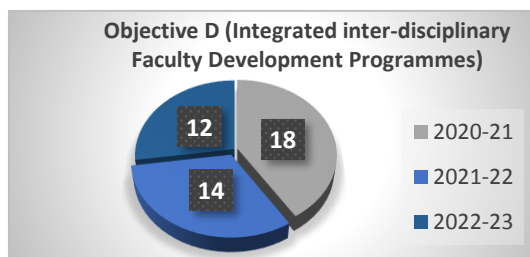
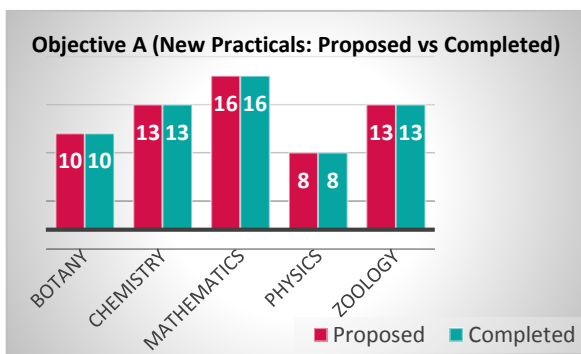

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PART-B:

Enclosure-1: Self-evaluation parameters for 2020-2023

Objectives Stated DBT Star College Scheme Proposal

- A. To strengthen the existing curriculum, practical courses are enriched by introducing new application oriented practical's in the respective discipline.
- B. To enhance the interdisciplinary skills that provides reservoirs of knowledge with maximum connectivity between the subjects
- C. To implement an interdisciplinary based learning experience in order to understand the application of science and Technology and to select various carrier options in different scientific fields.
- D. To improve the faculty through virtual learning process for efficient, effective and integrated interdisciplinary and applied aspects of respective subjects
- E. To improve technical support of laboratory staff for active participation in solving the problems in the related field and to improve laboratory conditions with the correct functioning of a management system in laboratory.



2. Specific objectives (not more than one page)

- ❖ To strengthen the existing curriculum, practical courses are enriched by introducing new application oriented practicals in the respective discipline.
- ❖ To enhance the interdisciplinary skills that provides reservoirs of knowledge with maximum connectivity between the subjects.
- ❖ To implementation of an interdisciplinary based learning experience in order to understand the application of Science and Technology and to select various carrier options in different scientific fields.
- ❖ To improve the faculty through Virtual learning process for efficient, effective and integrated interdisciplinary and applied aspects of respective subjects.
- ❖ To improve technical support of laboratory staff for active participation in solving the problems in the related field and to improve laboratory conditions with the correct functioning of a management system in laboratory.
- ❖ To impart advanced knowledge to the teachers of Government schools of rural area in their discipline to manage the academic and societal issues for the betterment of the region.

3. Measures to be adopted to enhance bench skills of students, project work, summer training & industrial training (department wise); No. of beneficiaries in each.

Group Projects
5th Semester of UG programme, students will be grouped (4-5 students) and given a project on applied aspects of respective UG discipline. Through these project students are encouraged to become active and developing team work, communication and decision making and generated novel issues with pertaining to their project work. The project work will be coordinated by a faculty member and report will be analysed and submitted by group members.

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Enclosure-2: Summary of proofs for key Performance Indicators S.No. 07-15

S. No	KPI	Name of the Activity	Number of activities
1	07	Hands on experiments being conducted	104
2	08	New Experiment Introduced	73
3	09	A (1) Publications by Faculty	
		<i>i. Patents granted</i>	01
		<i>ii. Patents filed</i>	08
		<i>iii. Publications in Scopus indexed Journals</i>	180
		A (2) Publications by students	
		<i>i. Publications in Journals</i>	04
		<i>ii. Compendium in Journal</i>	118
		<i>iii. Paper Presentation</i>	29
		(A) (1) Training Received by Teaching Faculty	482
		(A) (2) Training Received by Non-Teaching Faculty	14
		(B) Training Received by Students	
		<i>a. Summer/ Winter schools and internship programmes</i>	38
		<i>b. In situ training through field and industrial visits:</i>	58
<i>c. Group projects (No. of Projects/ Students)</i>	165/ 903		
<i>d. No. of Science Setu programmes attended</i>	18		
5	11	Exhibition/Seminar/Training Courses Conducted	125
6	12	Books purchased	206
7	13	Outreach activities	89
8	15	Invited Lectures	135


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Enclosure -3: Proofs for key Performance Indicator

9.7. Hands on experiments being conducted

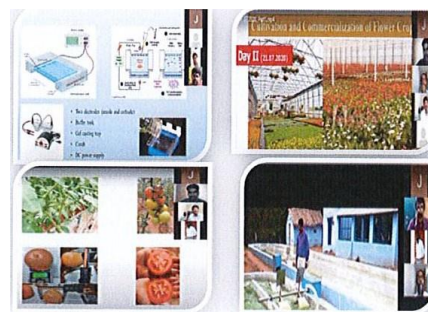
***S:** Number of Students, **ID:** Inter Departmental Programme.

	Botany	Chemistry	Mathematics	Physics	Zoology	Total
ID	10	07	16	08	11	52
Core	12	17	05	02	16	52
					Total	104

(i) Department of Botany

2020-2021

- 1. Plant Genomic DNA Isolation, PCR Amplification and Agarose Gel Electrophoresis, (Online Mode) – Dr. N. Ahamed Sheriff, Assistant Professor of Botany, Jamal Mohamed College, Tiruchirappalli, on 08-06-2020 & 09-06-2020(Two Days), S: 48 (ID- Botany and Zoology)**
- 2. Methods of Field Sample Collection Using Mobile GPS, (Online Mode) – Dr. B. Balaguru, Assistant Professor of Botany, Jamal Mohamed College Tiruchirappalli, 23-06-2020, S: 26 (ID- Botany, Chemistry, Physics and Zoology).**
- 3. Microalgal Biodiversity, Biomass Productions and Applications (Online Mode) – Conducted by Dr. N. Thajuddin, Professor of Microbiology, Bharathidasan University, Tiruchirappalli, on 24-07-2020 to 25-07-2020 (Two Days), S: 35.**
- 4. Plants Collection, Processing and Herbarium Preparation, (Online Mode) – Dr. B. Balaguru, Assistant Professor of Botany, Jamal Mohamed College Tiruchirappalli, on 27-08-2020, S:33.**
- 5. Agarose Gel Electrophoresis Techniques (Online Mode) – Dr. K. Mohamed Rafi, Assistant Professor of Botany, Jamal Mohamed College, Tiruchirappalli, Training on Agarose gel electrophoresis, on 25-08-2020, S: 30 (ID- Botany and Zoology).**



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6. **Fundamental of R Software in Data Analysis** (Online Mode) – Dr. B. Balaguru, Assistant Professor of Botany, Jamal Mohamed College, Tiruchirappalli, on 27-10-2020, S:19. (ID- Botany, Chemistry, Mathematics and Zoology)


2021-2022

1. **Plant Collection, Processing and Herbarium preparation** – Dr. B. Balaguru, Asst. Professor of Botany, Jamal Mohamed College on 30-09-2021. S:34 (ID-Botany, Chemistry and Zoology)
2. **Mushroom Cultivation and Post-Harvest Technology** – Dr. Cathrine Sara, Head of Botany, Holy Cross College, Tiruchirappalli on 18-11-2021. S: 75 (ID-Botany, Chemistry and Zoology)
3. **Herbal Product Preparation** – Dr. M. Arumugam, Head of Botany, JJ College of Arts and Science, Pudukkottai on 20-11-2021. S: 34 (ID-Botany, Chemistry and Zoology)
4. **Analytical Techniques for Biology** – Dr. D. Saravanan, Coordinator, NCIF, National College, Tiruchirappalli, 10-12-2021. S: 21 (ID-Botany, Chemistry, Physics and Zoology)
5. **Phylogenetic techniques** – Dr. P. Chellapandi, Professor and Head of Bioinformatics, Bharathidasan University, Tiruchirappalli on 15-12-2021. S: 43 (ID-Botany, Mathematics and Zoology)
6. **Horticulture technique and cultivation of fruit varieties (Field training)** – Dr. M. Satham Hussain, Agriculture officer, Tamil Nadu Horticulture Research Institute, Kudimiyamalai, Pudukkottai on 15-02-2022. S: 25
7. **Terrace gardening and Bonsai techniques (Field training)** Shri. Lakshmanasamy, Bodhi Bonsai Nursery Garden, Tiruchirappalli on 18-02-2022 S:18
8. **Field Survey, Herbarium preparation and Plant identification (Field training)** from 29th to 31st March 2022 (3 days) at Shola and Evergreen Vegetation in Mudumalai and Udhagamandalam. S: 34




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2022-2023

1. **Bonsai Methods and Indoor Gardening** under the DBT STAR College scheme on 19-11-2022 **B:15**
2. **Role of Botanical Garden for Conservation** (Field), Tropical Botanical Research Insitutute, Palode, Tiruvandrum on 28-9-2022 **B: 35**
3. **Scientific Report Preparation & Presentation** – Dr.B. Balaguru. Assistant Professor of Botany, Jamal Mohamed College, Tiruchirappalli, on 21-11-2022, **B:20 (ID-Botany, Chemistry, Mathematics, Physics and Zoology)**
4. **Seed Testing Techniques** – D. Manonmani, Seed Testing Officer, Department of Seed Certification & Organic Certification, Seed Testing Laboratory, Tiruchirappalli, on 27-12-2022. **S:20**
5. **Herbal Processing Practices for Entrepreneurship** – Dr. M. Arumugam, Assistant Professor and Head of Botany, JJ College of Arts and Science, Pudukkottai, on 28/01/2023. **S:45**
6. **Designing Bonsai plants** Shri. Lakshmanasamy, Bodhi Bonsai Nursery Garden, Bodhi Bonsai Nursery Garden 15-02-2023 **B: 5**
7. **Mapping Urban Ecology** Dr. B. Balaguru, Asst. Professor of Botany, Jamal Mohamed College on 30-09-2022. **B:11**
8. **Value addition through Baking Skills** – Ms. D. Bhuvaneshwari, Assistant Professor of Nutrition and Dietetics, Jamal Mohamed College, Tiruchirappalli – 620 020, on 22-12-2022. **B:20**

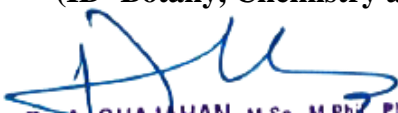


(ii) Department of Chemistry


2020-2021

1. **Methods of Expressing Concentration** (Online Mode), Dr.M. Syed Ali Padusha, Associate Professor of Chemistry, Jamal Mohamed College, Tiruchirappalli-20, on 15-05-2020, **S:56 (ID-Botany, Chemistry and Zoology)**.
2. **Analytical Separation Techniques** (Online Mode) –Dr. V. M. Biju, Associate Professor Chemistry, National Institute of Technology, Tiruchirappalli, on 28-05-2020, **S: 512, (ID- Botany, Chemistry and Zoology)**

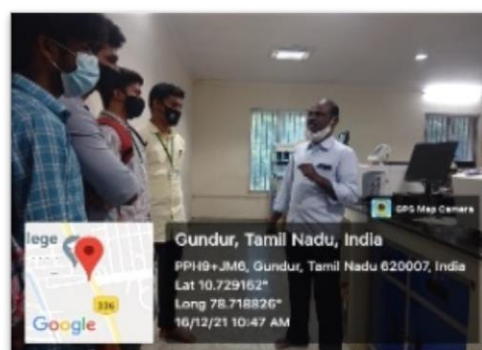



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3. **Live Session on Soil nutrients – Its need and Importance** (Online Mode) – Mr. C. Elangovan, Regional Sales Manager, Cropex Private limited, Bangalore, on 22-06-2020, **S: 35 (ID-Botany and Chemistry)**
4. **Principle and Instrumentation of IR spectroscopy** (Online Mode) – Dr. P.Kalimuthu, Assistant Professor of Chemistry, Gandhigram Rural Institute-Deemed to be University, Dindigul, on 24-06-2020 to 26-06-2020 (3 Days), **S:74 (ID-Botany, Chemistry, Physics and Zoology).**
5. **Applications of Avagadro software** (Online Mode) –Dr. M. Arunachalam, Assistant Professor Chemistry, Gandhigram Rural Institute- Deemed to be University, Dindigul. **S:62.**
6. **Applications of Chemdraw software** (Online Mode) – Dr. M. Seenivasa Perumal, Assistant Professor of Chemistry, Gandhigram Rural Institute- Deemed to be University, Dindigul. **S:68**
7. **Principle and Instrumentation of UV Visible spectroscopy** (Online Mode), conducted by Dr. P. Kalimuthu, Assistant Professor, Department of Chemistry, Gandhigram Rural Institute- Deemed to be University, Dindigul. **S:72.**
8. **Training Programme on Water Treatment Using Polymer Based Materials** (Online Mode), conducted by Dr. N. Viswanathan, Assistant Professor, Department of Chemistry, University College of Engineering, Anna University, Dindigul on 25-07-2020, **S: 39**




2021-2022

1. **Drawing chemical structure using Chemdraw** – Dr. S. S. Syed Abuthahir & Dr. R. Abdul Vahith, Assistant Professor of Chemistry, Jamal Mohamed College, Tiruchirappalli 09-10-2021 **S:52 (ID-Botany, Chemistry, Physics and Zoology)**
2. **An overview of UV-Visible Spectroscopy: Applications in Day to Day Life**-Dr. D. Suresh, Assistant Professor, School of Chemical and Biotechnology, SASTRA Deemed University, Thanjavur on 04-12-2021. **S:78. (ID-Botany, Chemistry, Physics and Zoology)**




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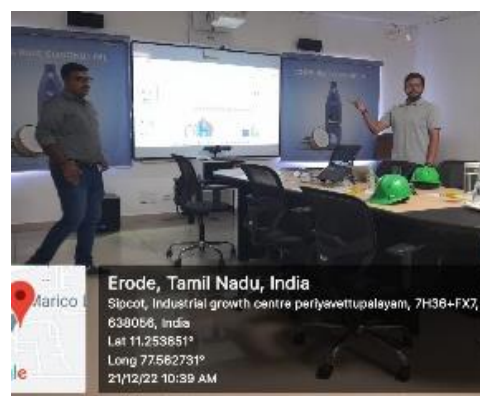

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3. **Analytical techniques for separation of molecules** –Dr. M. Rajan, Assistant Professor, Dept. of Natural Products Chemistry, Madurai Kamaraj University, Madurai on 17-12-2021. **S: 42 (ID-Botany, Chemistry and Zoology)**
4. **Chromatographic Techniques** – Dr. R. Imran Khan, Assistant Professor of Chemistry, Sadakathullah Appa College, Thirunelveli 8&9 March 2022, **S: 72**
5. **Preparation of Solutions** – Dr. G. Rajkumar, Assistant Professor of Chemistry, Vivekanandha College, Madurai on 21 & 22 March 2022, **S: 52**
6. **Instrumentation of UV-Visible & IR Spectroscopy** – Dr. A. Kosiha & Dr. M. Devenderan, Assistant Professor of Chemistry & Scientific Officer, VELS Institute of Science and Technology, Chennai on 23rd & 24th March 2022, **S:73**
7. **Significance of Water : Quality and Pollution Abatement**-Dr. Muthulakshmi Andal, Assistant Professor of Chemistry, PSGKR College for Women, Coimbatore, 25th & 26th March 2022 **S: 49.**



2022-2023

1. **House hold products and their quality checking** – Mr. S. Murugesan, Chief Chemists, Research and Development Head, Gandhigram Khadi and Village Industry Trust, Gandhigram, Dindigul on 14-02-2023. **S:90.**
2. **Sample collection and testing of different samples** – Mrs. S. N. Anitha, Senior Agricultural Officer, Soil Testing Laboratory, Mannarpuram, on 21-11-2022. **S:45.**
3. **Analysis of soil** – Mrs. S. N. Anitha, Senior Agricultural Officer, Soil Testing Laboratory, Mannarpuram, on 22-11-2022. **S: 45.**
4. **Green synthesis of carbon nanoparticles and their biosensor applications:** Dr. N. Vasimalai, Assistant Professor, Department of Chemistry, B.S. AbdurRahman Crescent University, Chennai, on 15-12-2022. **S:49.**
5. **Manufacturing of pure coconut oil and its quality parameters:** Mr. Vignesh, HR, Marico Limited, Perundurai, Tamilnadu on 21-12-2022. **S: 46.**




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6. **Processing of Tea**- Dr. Sivakumar, Faculty of UPASI, Conoor, on 16-12-2022. S:23.
7. **Analysis for ensuring the quality of tea**, Dr. Suresh, Research Scientist of the Soil Research Division, UPASI, Conoor, on 16-12-2022. S:23.
8. **Milk Processing and preparation of various products**. Mr. Gohul, Plant Officer, Milk processing unit, Tiruchirappalli on 27-12-2022. S:45.

(ii) Department of Mathematics

2020-2021


1. **SPSS** – Dr. M. Balasubramanian, Assistant Professor of Statistics, Periyar E.V.R College, Tiruchirappalli, on 17th & 18th February 2021. S: 44. **(ID-Mathematics, Physics and Zoology)**
2. **Basic Mathematics** – Dr. A. Prasanna, Assistant Professor of Mathematics, Jamal Mohamed College (Autonomous), Tiruchirappalli, from 2nd to 11th February 2021 (10 Days). S:23. **(ID-Botany, Chemistry, Physics and Zoology)**
3. **Data Science with R (Online Mode)** – Dr. B. Balaguru, Assistant Professor of Botany, Jamal Mohamed College, Tiruchirappalli, from 11th & 12th July 2020 (2 Days). S:65, **(ID-Botany, Chemistry, Mathematics and Zoology)**
4. **Maple Software** – Mr. Mohamed Aslam Ameer Hamja, Data Science Enthusiast, Mindcube, Bangalore on 11-01-2021. S:42. **(ID-Botany, Chemistry, Mathematics and Zoology)**
5. **Mathematica Software** – Mr. Mohamed Aslam Ameer Hamja, Data Science Enthusiast, Mindcube, Bangalore on 12-01-2021. S:42. **(ID-Botany, Chemistry, Mathematics, Physics and Zoology)**



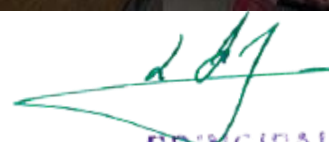
2021-2022

1. **Mathematica Software** – Dr. D. Dhamodharan, Asst. Professor of Mathematics, Jamal Mohamed College, Tiruchirappalli from 6th to 9th Sep. 2021. S: 60. **(ID-Botany, Chemistry, Mathematics, Physics and Zoology)**
2. **Maple Software** – Dr. D. Dhamodharan Asst. Professor of Mathematics, Jamal Mohamed College, Tiruchirappalli on 11-09-2021. S: 60. **(ID-Botany, Chemistry, Mathematics and Zoology)**




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3. **R Programming** – Dr. G. Arockia Sahaya Sheela, Asst. Professor & Head, Dept. of Data Science, Holy Cross College, Tiruchirappalli from 26th to 28th Oct.2021 **S:54. (ID-Botany, Chemistry, Mathematics and Zoology)**
4. **Matlab and its Applications: Differentiation** – Dr. J. Sengamalaselvi, Asst. Professor of Mathematics, Sri Chandrasekharendra Saraswathi Viswa Mahavidyalaya University, Kanchipuram on 1st to 3rd Nov.2021. **S: 63. (ID-Botany, Chemistry, Mathematics, Physics and Zoology)**
5. **Matlab and its applications: Integration** – Dr. A. Dhanalakshmi, Asst. Professor of Mathematics, Sri Chandrasekharendra Saraswathi Viswa Mahavidyalaya University, Kanchipuram on 1st to 3rd Nov, 2021. **S: 63 (ID-Botany, Chemistry, Mathematics, Physics and Zoology)**
6. **SPSS** – Dr. M. Balasubramanian, Assistant Professor of Statistics, Periyar EVR College, Tiruchirappalli from 1st to 3rd Nov.2021 **S: 60 (ID-Mathematics, Physics and Zoology)**
7. **Matlab and its applications: Ordinary differential equation** – Dr. T. N. Kavitha, Asst. Professor of Mathematics, Sri Chandrasekharendra Saraswathi Viswa Mahavidyalaya University, Kanchipuram on 03-11-2021. **S: 63. (ID-Botany, Chemistry, Physics and Zoology)**
8. **Sage Math Software** – Dr. P. S. Srinivasan Associate Professor Mathematics, Bharathidasan University, Tiruchirappalli on 22nd & 23rd Nov. 2021. **S:60 (ID-Botany, Chemistry, Mathematics, Physics and Zoology)**




2022-2023

1. **Mathematica Software** – Dr. D. Dhamodharan, Asst. Professor of Mathematics, Jamal Mohamed College, Tiruchirappalli 12-08-2022. **S: 51 (ID-Botany, Chemistry, Mathematics, Physics and Zoology).**
2. **Latex** - Dr. D. Dhamodharan, Asst. Professor of Mathematics, Jamal Mohamed College, Tiruchirappalli 03-09-2022. **S: 44 (ID-Mathematics and Physics).**
3. **SPSS** - Dr. M. Balasubramanian, Assistant Professor of Statistics, Periyar EVR College, Tiruchirappalli 19th & 20th Dec.2022 **S: 48.**
4. **Data Science with R** – Mr. C.Surendar, Technical Head, Aakkam, Coimbatore 04th & 05th Jan.2023. **S: 48.**
5. **Sage Math** - Dr. P. S. Srinivasan, Associate Professor of Mathematics, Bharathidasan University, Tiruchirappalli 06th & 07th Jan.2023. **S: 47.**




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6. **Hands on Training Python-** Ms. P. Sopiya, Assistant Professor, Bannari Amman Institute of Technology, Erode 22-02-2023. **S: 11 (ID-Botany, Chemistry, Mathematics, Physics and Zoology).**
7. **Hands on Training on App Development** – Ms. N. Janani, Assistant Professor, Bannari Amman Institute of Technology, Erode 23-02-2023. **S: 11.**
8. **Hands on Training on Mathematics Lab** – Dr. R. Bharani Kumar, Head, Skill Development & CSR, Bannari Amman Institute of Technology, Erode 24-02-2023. **S:11.**

(iv) Department of Physics

2020-2021


1. **Origami and Wealth from Waste** (Offline Mode) – Ms. T. Santhi, State Coordinator, Arogya Iyyakkam, on 04-03-2020, **S:33. (ID- Botany, Chemistry, Physics and Zoology)**
2. **Remote Sensing and GIS Data Analysis** (Online Mode) – Dr. B. Balaguru, Assistant Professor of Botany, Jamal Mohamed College, Tiruchirappalli, on 20th to 24th July 2020 (Five Days), **S:224. (ID – Botany, Chemistry, Physics and Zoology).**
3. **Servicing of Electronic Gadgets and Home Appliances** (Offline Mode) – Mr. T. Ramachandran, Guest Lecturer, Department of Physics, Periyar E.V.R College, Tiruchirappalli, on 06th to 08th January 2021(Three Days). **S:52 (ID-Botany, Chemistry, Physics and Zoology)**




2021-2022

1. **Servicing of Electronic Gadgets and Home Appliances** by Mr. T. Ramachandran, Dept. of Physics, Periyar EVR College Tiruchirappalli from 9th to 11th Nov.2021 **S:52 (ID-Botany, Chemistry and Physics)**
2. **Applications of Geospatial Technology in Resource Management** by Dr. B. Balaguru, Asst. Professor of Botany Jamal Mohamed College Tiruchirappalli from 25th to 30th Nov.2021. **S:22 (ID-Chemistry, Mathematics, Physics and Zoology)**




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3. **Assembling of HAM Radio Transmitters and Weak Signal Propagation Reporting System** by Mr. Sunil Aruldas (VU3ZAN) HAM Radio Operator MK 90 Active HAMS Group Tiruchirappalli on 04-03-2022. **S: 25 (ID-Botany, Mathematics and Physics)**

2022-2023

1. **Construction of Newtonian Reflector Telescopes** by Mr. Surender Ponnalagar, Project Director, Chiguru Colab, Bengaluru, National Point of Contact – India, Space Generation Advisory Council, Mr. Bharathkumar Velusamy, Product Manager, Chiguru Colab, Bengaluru, from 2nd and 3rd Sep. 2022 **S: 29**
2. **Spatial Informatics for Natural Resource Management** by Dr. B. Balaguru, Asst. Professor of Botany, Jamal Mohamed College (Autonomous), Tiruchirappalli from 27th to 29th Dec.2022 **S: 22 (ID-Botany, Mathematics and Physics)**
3. **Servicing of Electronic Gadgets and Home Appliances** by Mr. R. Muhammed Raiyan Fazil, Proprietor, Om Mobile Institute, Tiruchirappalli on 01-02-2023. **S: 60 (ID- Mathematics, Physics and Zoology)**
4. **Simulation of Analog and Digital circuits using Multisim** by Dr. R. Senthilkumar, Asst. Professor, Dept. of Electronics and Communication Engineering, Govt. College of Engineering, Erode on 22-02-2023. **S:20.**




(v) Department of Zoology

2020-2021

1. **Microtome sample preparation for Histological studies** (Online Mode) – Dr. A. Sadiq Bukhari, Assistant Professor of Zoology, Jamal Mohamed College, Tiruchirappalli, 8th to 11th July 2020(4 Days), **S:55. (ID-Botany and Zoology)**
2. **Electrophoresis** – Dr. S. Mohamed Hussain, Assistant Professor of Zoology, Jamal Mohamed College (Autonomous), Tiruchirappalli, 09-07-2020, **S:56. (ID-Botany, Chemistry and Zoology)**
3. **Projects writing skills in Life Sciences** - Dr. L. Rajasekaran, Assistant Professor of Physics, Arignar Anna Government Arts College, Cheyyar on 23-08-2020, **S:44 (ID-Botany and Zoology).**




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4. **Poultry Farm Management** – Dr. P. Sekar, Assistant Professor, Dept. of Zoology, Hans Rover College, Perambalur, on 29-10-2020, **S:41**.
5. **Biostatistical application in Biological Science** – Dr. A. Balasundaram, Assistant Professor, Department of Zoology, Periyar E.V.R College (Autonomous), Tiruchirappalli, on 27-11-2020, **S:35**.

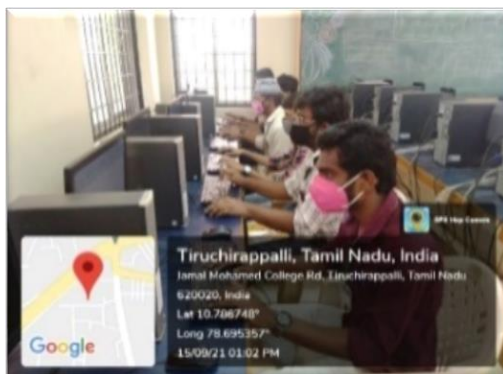
2021-2022

1. **Inventory methods in conservation biology** –Dr. M. Salahudeen, Assistant Professor, Dept. of Zoology, Jamal Mohamed College on 06.09.2021. **S: 36**
2. **Biostatistics in MS Excel and SPSS**-Prof. S. N. Sheik Umar Sahith, Professor, Dept. of Zoology, Jamal Mohamed College on 15.09.2021. **S: 35 (ID-Botany, Mathematics and Zoology)**



3. **Bird watching and Photography**-P. A. Ashique, Assistant Professor, Dept. of Zoology, Jamal Mohamed College on 18.09.2021. **S: 35**

4. **Phytochemical extraction Techniques** – Mr.Naveen, Precision scientific, Tiruchirappalli on 21-10-2021. **S: 18**



5. **Bird watching and Surveying**-P. A. Ashique, Asst. Professor of Zoology, Jamal Mohamed College on 23-10-21. **S: 35**


6. **Plankton sampling and Identification**-Dr. R. Krishnamoorthy, Assistant professor, Dept. of Zoology, Jamal Mohamed College on 23-10-21. **S: 35 (ID-Botany and Zoology)**.

7. **Ecological aspects of water Quality**-Dr. Hussain Syed Bava, Associate Professor of Zoology, Jamal Mohamed College on 23-10-21. **S: 35 (ID-Botany, Chemistry and Zoology)**


8. **Analytical Instruments**-Mr. R. Gopinathan, Technical Officer, Remi groups of instruments, Chennai on 23-11-21. **S: 30**.



9. **Writing Skills for Publications**-Dr. A. Abdul Hassan Librarian, Jamal Mohamed College on 11-01-2021. **S:21 (ID-Botany, Chemistry, Mathematics, Physics and Zoology)**.


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10. **Analysis of Water Quality Parameters**-Dr. R. Abdul Vahith, Asst. Professor of Chemistry, Jamal Mohamed College on 08-03-2022. **S: 50.**
11. **Preservation of Zoological specimens**- Mr.Pakirisami and Mr.Sivakumar, Curators, Govt. Museum, Tiruchirappalli & Pudukottai from 23rd to 28th March 2022. **S:34.**

2022-2023

1. **Heavy metal analysis by Atomic Absorption Spectroscopy (AAS)** – Mr.C.V. Sudharsan, Lead Customer Care Engineer, Thermo Fischer Scientific Company, Chennai. 03.11.2022. **S:15 (ID- Chemistry and Zoology)**
2. **Propagation of fish** – Mr.V. Suresh, Aquarium consultant, Thennur, Trichy on 11.01.2023, **S:36**
3. **Taxidermy** – Mr.C. Sivakumar, Museum Curator and Mr. Ayyasami, Taxidermist of District Museum Trichy. 19-01-23 to 21-01-23, **S:35**
4. **Designing and selecting of primers for PCR** – Dr.M. Ram mohan, Head, Cherammal College of Pharmacy, Coimbatore,03.02.2023, **S:47 (ID-Botany and Zoology)**
5. **Radiation analysis using environmental samples** – Dr.R. Rajaram, Associate professor, Department of Marine Science, Bharathidasan university, Tiruchirappalli on 21.02.2023. **S:43 (ID- Chemistry, Physics and Zoology)**
6. **Fossil collection at Mining site Ariyalur** – Mr. Sivakumar, Curator, Govt. Museum, Tiruchirappalli 20-2-2023. **S: 32.**
7. **Prawn Hatchery Techniques** – Dr. Gajendran, Senior Manager Sholong Hatchery, Chennai, 07.01.2023. **S:23.**
8. **Dairy Farming Techniques** – Dr. Suresh, Dhanalakshmi Sreenivasan Agricultural College and Poultry Farm, Alampadi, 17-01-2023. **S: 25.**
9. **Live feed Culture**- Dr. Vinoth, Krishi Vigyan Kendra (ICAR), Perambalur, 17-01-2023. **S:25.**
10. **Sericulture Culture techniques** – Dr. Narayansaamy, Former vice principal, Thanthai hans rover college, Perambalur, 17-01-2023. **S:25 (ID-Botany and Zoology).**
11. **Poultry farm techniques**, Dr. P. Sekar, BOSS Integrated Farm, Alampadi on 17-01-2023. **S:25.**


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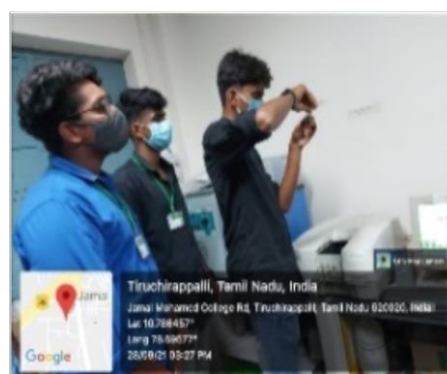
Enclosure -4: Proofs for key Performance Indicator


9.8. New Experiment Introduced

Botany	Chemistry	Mathematics	Physics	Zoology	Total
10	08	16	7	13	54


(i) Department of Botany

S. No.	Year	Semester	Title of the practical	Number of Beneficiary
1.	II Year	III Semester	Study of polyploidy in onion root tips with colchicine treatment.	27
2.	II Year	IV Semester	Isolation of genomic DNA from plant cell by using CTAB method. (Group practical)	27
3.	II Year	IV Semester	Quantification of DNA by using spectrophotometer. (Group practical)	27
4.	II Year	IV Semester	Separation of DNA by using Agarose Gel Electrophoresis. (Group practical)	27
5.	III year	V Semester	Preparation of buffer solutions at different molarities and to check their pH using a pH meter.	38
6.	III year	V Semester	Quantitative estimation of plant pigments by using spectrophotometer.	38
7.	III year	V Semester	Estimation and separation of protein by SDS page.	38
8.	III year	VI Semester	Growth curve of bacteria.	38
9.	III year	VI Semester	Isolation and characterization of microbes.	38
10.	III year	VI Semester	Organogenesis of medicinal plants. (Group practical)	38




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(ii) Department of Chemistry

S. No	Year	Semester	Title of the practical	Number of Beneficiary
1.	I year	I Semester	Quantitative Analysis by photometric method Estimation of oxalic acid by $Kmno_4$ using a standard oxalic acid.	111
	I year	I Semester	Estimation of ferrous sulphate	111
	II year	III Semester	Estimation of magnesium	107
	II year	III Semester	Estimation of potassium dichromate	107
	I year	I Semester	Estimation of oxalic acid	111
2.	II year	III Semester	Estimation of commercial aspirin	107
3.	II year	III Semester	Estimation of trace chromium content in food sample	107
4.	II year	III Semester	Estimation of iron content in food items	107
5.	III year	V Semester	Synthesis of metal complexes and to study the geometry of the Copper(II) – EDTA complex	110
	III year	V Semester	Chloro – cuprate complex	110
6.	III year	V Semester	Coblat – hydrazido complex	110
7.	III year	V Semester	Zinc – EDTA complex	110
8.	III year	VI Semester	Determination of molecular weight by Ostwald viscometer	110



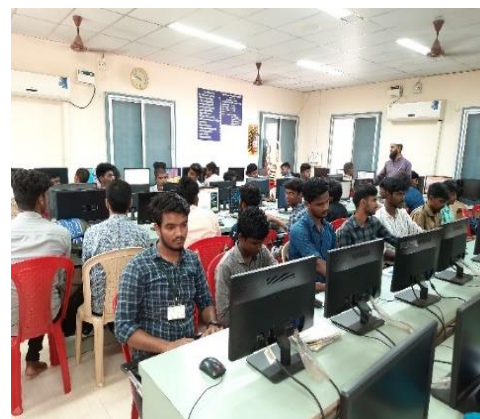
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(iii) Department of Mathematics

S.No	Year	Semester	Title of the practical	Number of Beneficiary
			Introduction to R Programming	
1.	I Year	II Semester	Develop a programme in R to create vectors.	73
2.	I Year	II Semester	Develop a programme in R to create matrices.	73
3.	I Year	II Semester	Develop a programme in R using control statements.	73
4.	I Year	II Semester	Develop a programme in R to import spread sheet data.	73
5.	I Year	II Semester	Develop a programme in R to calculate mean and median.	73
6.	I Year	II Semester	Develop a programme in R to calculate standard deviation.	73
7.	I Year	II Semester	Develop a programme in R to present the data in tabulation and graphical representation.	73
8.	I Year	II Semester	Develop a programme in R using chi-square test.	73
9.	I Year	II Semester	Develop a programme in R using student's t test.	73
10.	I Year	II Semester	Develop a programme in R to calculate one way ANOVA	73
			Mathematica & Maple	
11.	II Year	III Semester	Introduction of Mathematica	59
	III year	V Semester	Introduction to Maple	61
12.	II Year	III Semester	Solving higher degree equations.	59
	III year	V Semester	Simple programs using Mathematical constants	61
	II year	III Semester	Programs using complex functions	61
13.	II Year	III Semester	Solving system of equations by matrix method and find the eigen values and eigen vectors of a matrix of order	59

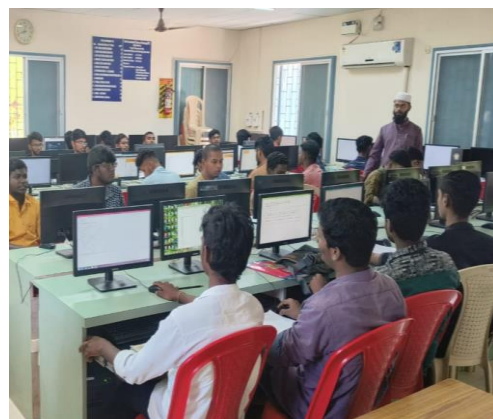



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			4 by 4 or higher order.	
	III year	V Semester	Numerical solutions of nonlinear equations and systems	61
	II Year	III Semester	Solving system of non-linear equations.	59
	III year	V Semester	Solving system of linear equations using Jacobi method	61
	II Year	IV Semester	Solving Linear programming problems.	59
14.	II Year	III Semester	Finding the differentiation of different functions of second and third derivatives.	59
	III year	V Semester	Program using Trigonometric and Hyperbolic Expressions	61
	III year	VI Semester	Finding Eigen values and Eigen vectors of a matrix	61
15.	II Year	III Semester	Solving ordinary differential equations with initial condition.	59
	II Year	IV Semester	Solving system of ordinary differential equations.	59
16.	II Year	IV Semester	Creating and plotting 2-D and 3-D graphs.	59
	II Year	IV Semester	Solving ordinary differential equations with initial condition.	59
	II Year	IV Semester	Solving system of ordinary differential equations.	59
	III year	VI Semester	Plotting Points in the Plane and Space	61
	III year	VI Semester	Analyze data using Central Tendency and Measures of dispersion and distributions	61
	III year	VI Semester	Find the Laplace integral transforms for different functions	61
	III year	VI Semester	Solving the differential equations	61




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(iv) Department of Physics

S.No	Year	Semester	Title of the practical	Number of Beneficiary
1.	I Year	II Semester	Measurement of dielectric constant of solids and liquids using LCR meter	58
2.	II Year	III Semester	Measurement of the charge of an electron by Millikan's oil drop method	47
3.	II Year	III Semester	Measurement of specific charge of an electron by Thomson's method	47
4.	II Year	IV Semester	Determination of magnetoresistance of semiconductors	47
5.	II Year	IV Semester	(a) Measurement of wavelength of monochromatic light using Fresnel's biprism	47
	II Year	IV Semester	(b) Measurement of wavelength of monochromatic light using Michelson interferometer	47
6.	III year	V Semester	Determination of the specific rotator power of solution using polarimeter.	55
7.	III year	V Semester	Determination of Rydberg's constant using a grating	55



(v) Department of Zoology

S.No	Year	Semester	Title of the practical	Number of Beneficiary
1.	I Year	I Semester	Collection and Identification of mosquitos; Isolation of insect gut associated microbes (Group practical)	43
2.	I Year	I Semester	Culture of fresh water plankton and Quantitative estimation (Group practical)	43
3.	II Year	III Semester	Screening of naturally occurring radionuclide Polonium – 210 in water samples.	29




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4.	II Year	III Semester	Preparation of herbal extract and studies on its antimicrobial activities	29
5.	II Year	IV Semester	Squash preparation of salivary gland of <i>Drosophila</i> larvae for polytene chromosome	29
6.	II Year	IV Semester	Isolation of DNA from blood samples (Group practical)	29
7.	II Year	IV Semester	Separation of DNA using agarose gel electrophoresis (Group practical)	29
8.	II Year	IV Semester	Fractionation and characterization of human salivary proteins by column chromatography – Demo	29
9.	III Year	V Semester	Effect of pH on enzyme activity of acid phosphatase	45
10.	III Year	V Semester	Effect of temperature on enzyme activity of acid phosphatase	45
11.	III Year	VI Semester	Paper chromatography	45
12.	III Year	VI Semester	Rocky shore, Muddy shore and sandy shore field visit and tacking	45
13.	III Year	VI Semester	Analysis of water quality parameters in aquaculture pond Estimation of calcium Estimation of dissolved oxygen Determination of salinity	45




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Enclosure -5: Proofs for key Performance Indicator

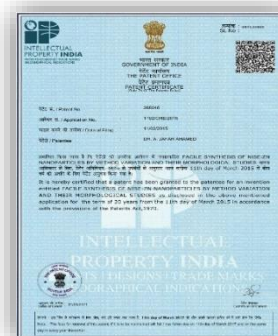
9.9. (A-i) Publications by Faculty (Scopus indexed)/ Patents, if any

	Botany	Chemistry	Mathematics	Physics	Zoology	Total
Scopus indexed Journals	29	52	40	29	31	180


Number of Patents granted – 01, Number of Patents filed – 08.

Add Link: <https://tinyurl.com/5b2htwjr>


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S. No	I. Patents granted.
1.	Dr. A. Jafar Ahamed, “Facile synthesis of NiSe:Zn nanoparticles by method variation and their morphological studies”. Patent granted No. 368046, Dated: 31-05-2021
	II. Patents filed.
1.	Dr. S. Mohamed Rabeek & Dr. A. Samsath Begum, “Design and Biological study on new Anti-inflammatory hybrid derivatives”. Application No. 202241006304; Publication date: 11-02-2022
2.	Dr. S. Farook Basha & Dr. R. Arulnangai, “Nanomaterial Based Thermal Indicator”. Application No. 202211010905; Publication date: 11-03-2022.
3.	Dr. A. Mushira Banu, “Novel carbon dots derived Beta vulgaris as potential anti-cancer and antioxidant agents”. Application No. 202241030127; Publication date: 03-06-2022.
4.	Dr.F.M. Mashood Ahamed, “Novel Methyl A-D-Rhamnopyranoside Analogues Against Anthrax: Molecular Dynamics Simulations, Molecular Docking, Density Functional Theory, And Admet studies”. Application No. 202211025776; Publication date: 06-05-2022.
5.	A. Prasanna, “Machine learning analytics for specialized stock trading”. Application No.202211002430A, pp: 4341
6.	Mohamed Saleem, “An Efficient Method for the Synthesis of Nanospheric ZnGa ₂ O ₄ Crystallites and Developing its assembled three dimensional structure”. Application Number: 202041037974A; Published Date: 04/03/2022.
7.	S.N. Sheik Umar Sahith, “Square Scale, Rectangle Scale and Straight Rulers”. Application No. 202241001278; Publication Date: 28-01-2022.
8.	Dr. Meeramaideen, “Production of Bio compound from fowl egg shell”. Application No. 202241020134; Publication Date: 04-04-2022.


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Enclosure -5: Proofs for key Performance Indicator

9.9. (A-ii) Publications, Paper presentation and Participation in Seminars and Conferences by Students

Botany	Chemistry	Mathematics	Physics	Zoology	Total
14	2	11	2	2	34

(i) Department of Botany

a. Publications in Journal:

1. Nizar Ahamed A (2023). Phytochemical and pharmacological potential of the genus *Plectranthus*. South African Journal of Botany (Elsevier Publication-Thomsan Reuters Impact Factor – 3.111), 154: 159 – 189. <https://doi.org/10.1016/j.sajb.2023.01.026>



b. Compendium of DBT Star College Scheme Group Projects:

Link: <https://tinyurl.com/5bebde2y>


QR Code:




c. Paper Presentations:

1. Sakthivel and Karthi of III UG students presented group projects entitled “Study on phytochemical properties of medicinal plants used as immunomodulatory activities” in National Seminar organized by Department of Botany, Bharathidasan University, Tiruchirappalli on 30th March 2022.
2. Jeranald Shine R, Jagatheesh M, Divakar J, Jen Antony R, presented paper entitled Isolation and identification of fungi from waste vegetables collected from Gandhi market, Tiruchirappalli, Tamil Nadu, India International Conference on “Future Challenges of Microbes in Environment(ICFCME-2023)” organized by PG and Research Department of Microbiology, Jamal Mohamed College(Autonomous), Tiruchirappalli – 620020 in collaboration with Microbiologist Society of India on 23rd February 2023.




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- Jagatheeswaran, N., S. Mohamed Jamal, 2022. Protection of Indian Traditional Knowledge System from Biopiracy, Bioprospecting of Medicinal Plants and Registration of Plant Varieties under Intellectual Property Rights – Indian Scenario in two days National Conference on Phytomedicine, Nanomaterials and Plant Sciences organized by Holy Cross College, Tiruchirappalli from 15th to 16th December 2022. **(Received Best Poster Presentation Award)**
- Jegatheeswaran and M, Benny Yogannan Bio-mimicry - Basis for Innovation Science. Presented paper in National level student Conclave on Innovation and Novel ideas organized by Department of Mathematics and Department of Chemistry under DBT Star College Scheme on 27th February 2023
- Mohamed Yahiya and Imran. Ecofriendly Biological Innovations Presented paper in National level student Conclave on Innovation and Novel ideas organized by Department of Mathematics and Department of Chemistry under DBT Star College Scheme on 27th February 2023
- Najubudeen A and Mohammed majith M are presented a paper in National seminar on “Technological influences on Phyto-biotic stress management” conducted by TRIARD Roever Agricultural College, Perambalur on 11th March 2023.



(ii) Department of Chemistry

a. Publications in Journal:

- S.S Syed Abuthahir, K. Mohamed Rasee, M. Mohamed Riaz Published a Research Abstract entitled “Study of Presence of Insecticides and Pesticides in Various Fruits, Vegetables and Beverages” in the National conference on Innovation in Nanoresearch (NCINR 2022) Jointly Organized by the PG and Research Department of Physics and PG Department of Chemistry, Jairams Arts and Science College, Karur, Tamilnadu on 21.09.2022. ISBN 978-93-92537-23-3
- J. Mohamed Mafathel , M. Mohamed Bathushal , M. Mohamed Faizal1 , K.A. Muhammad Ibrahim1 , S. Wasim Akram1 and A. Yokesh, S.S.Syed Abuthahir Published a Research Abstract entitled Study of corrosion resistance of zinc metal by using *Annona Squamosa* plant leaves in the International Conference on Recent Innovations in Materials Science and Spectroscopy (ICRIMS-2023), organized by Postgraduate and Research Department of Physics, Jamal Mohamed College (Autonomous), Tiruchirappalli-620020 in association with Indian Spectrophysics Association


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b. Compendium of DBT Star College Scheme Group Projects:

Link: <https://tinyurl.com/5bebde2y> QR Code:



(iii) Department of Mathematics

a. Publications in Journal:

1. M Mukesh Kannan, R Vivekananthan, R Barath, K Kumaresan, KS Muhammed Hunaif, M Rajkumar and A Prasanna (2023). Statistical Survey and Analysis on Higher Education among the Youths in Adopted Villages. International Journal of Advanced Multidisciplinary Research and Studies, 3(2):1095-1097.

b. Compendium of DBT Star College Scheme Group Projects:

Link: <https://tinyurl.com/5bebde2y>

QR Code:



c. Paper Presentations:

1. 11 Group Projects are presented in the DBT Funded State Level Paper Presentation Competition in Commemoration with National Mathematics Day on “Recent Advances in Mathematics held at Department of Mathematics, Sri GVG Visalakshi College for Women, Udumalpet jointly organized by Shiksha Sanskrit Uttan Niyas, Tamil Nadu Vedic Mathematics Team on 21-12-2022. Our Students Mr. N. Asrar Ahamed, Mr. K. Sanjai, Mr.M. Vignesh have won First, Second and Third prizes respectively. DBT Funded State Level Paper Presentation Competition in Commemoration with National Mathematics Day on “Recent Advances in Mathematics held at Department of Mathematics, Sri GVG Visalakshi College for Women, Udumalpet jointly organized by Shiksha Sanskrit Uttan Niyas, Tamil Nadu Vedic Mathematics Team. (11 Group Projects are presented - Our Students Mr. N. Asrar Ahamed, Mr. K. Sanjai, Mr.M. Vignesh have won First, Second and Third prizes respectively), 21-12-2022 11 Students of III B. Sc Mathematics

(iv) Department of Physics

b. Compendium of DBT Star College Scheme Group Projects:

Link: <https://tinyurl.com/5bebde2y>

QR Code:



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c. Paper Presentations:

1. S. Sanjay, III B. Sc Physics Presented a Paper entitled on Design of Solar Panel for Home Appliances at National Level Students Conclave on Innovations and Novel ideas organized by Department of Chemistry and Mathematics, Jamal Mohamed College, Tiruchirappalli on 27-02-2023.
2. S. Afrith Ahamed, III B. Sc Physics received III Prize at a State Level Inter-Institutional Physics meet, “APEIRON 2022” organized by Bharathidasan University, Trichy on 24-03-2022 & 25-03-2022.

(v) Department of Zoology

b. Compendium of DBT Star College Scheme Group Projects:

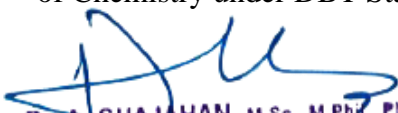
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c. Paper Presentations:

1. The Project entitled “Evaluation of radioactivity in various building materials” were presented as a paper in the DBT Star National seminar conducted at VVV College, Virudhanagar.
2. The project entitled “Analysis of physico-chemical parameters of ground water quality in and around Tiruchirappalli corporation dumped yard region” was presented as a paper at the National seminar conducted by the department of Biotechnology, Jamal Mohamed college under the auspicious of Department of Biotechnology, Government of India.
3. Mr. S. Sugavann, Terrestrial Gamma radiation and the radiological implication in Ariyalur, Tamil Nadu, India, II DAE symposium Current Trends in Analytical Chemistry (CTAC-2021), Mumbai, P.141. from 20.10.2021 to 23.10.2021
4. Mr. Arunkumar presented his DBT group project entitled “Evaluation of radioactivity in various building materials”, DBT Star National seminar conducted by VVV College, Virudhanagar, 09.03.2022 to 10.03.2022.
5. Mr. Umar Sherif presented his DBT group project entitled “Analysis of physico-chemical parameters of ground water quality in and around Tiruchirappalli corporation dumping yard region”, DBT Sponsored National Conference on ‘POST COVID-19 complications – a biotechnological approach (PCBA’22)’ conducted by Department of Biotechnology, Jamal Mohamed college Tiruchirappalli.07.09.2022 & 08.09.2022
6. Mr. M. Abuthalha presented his DBT group project in National level student Conclave on Innovation and Novel ideas organized by Department of Mathematics and Department of Chemistry under DBT Star College Scheme on 27th February 2023- Won the Prize.
7. Mr. Rahim presented his DBT group project in National level student Conclave on Innovation and Novel ideas organized by Department of Mathematics and Department of Chemistry under DBT Star College Scheme on 27th February 2023- Won the Prize.


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8. Mr. Bharath presented his DBT group project in National level student Conclave on Innovation and Novel ideas organized by Department of Mathematics and Department of Chemistry under DBT Star College Scheme on 27th February 2023.
9. Mr. Abib Khan presented his DBT group project in National level student Conclave on Innovation and Novel ideas organized by Department of Mathematics and Department of Chemistry under DBT Star College Scheme on 27th February 2023.
10. Mr. Zaheer Hussain presented his DBT group project in National level student Conclave on Innovation and Novel ideas organized by Department of Mathematics and Department of Chemistry under DBT Star College Scheme on 27th February 2023- Won Third Prize.
11. Mr. Mugesh presented his DBT group project in National level student Conclave on Innovation and Novel ideas organized by Department of Mathematics and Department of Chemistry under DBT Star College Scheme on 27th February 2023.
12. Mr. Yuvaraj presented his DBT group project in National level student Conclave on Innovation and Novel ideas organized by Department of Mathematics and Department of Chemistry under DBT Star College Scheme on 27th February 2023.
13. Mr. Mukilan presented his DBT group project in National level student Conclave on Innovation and Novel ideas organized by Department of Mathematics and Department of Chemistry under DBT Star College Scheme on 27th February 2023.
14. Mr. Bharath presented his DBT group project in 3rd International Conference on Challenges to Environment and Health (ICEH2023), Department of Zoology Jamal Mohamed College, Tiruchirappalli during 01.03.2023 to 01.03.2023- Won the Prize.
15. Mr. Abib Khan presented his DBT group project in 3rd International Conference on Challenges to Environment and Health (ICEH2023), Department of Zoology Jamal Mohamed College, Tiruchirappalli during 01.03.2023 to 01.03.2023- Won the Prize.
16. Mr. Jakeer Hussain presented his DBT group project in 3rd International Conference on Challenges to Environment and Health (ICEH2023), Department of Zoology Jamal Mohamed College, Tiruchirappalli during 01.03.2023 to 01.03.2023- Won the Prize.
17. Mr. Abuthalha presented his DBT group project in 3rd International Conference on Challenges to Environment and Health (ICEH2023), Department of Zoology Jamal Mohamed College, Tiruchirappalli during 01.03.2023 to 01.03.2023.
18. Mr. Rahim presented his DBT group project in 3rd International Conference on Challenges to Environment and Health (ICEH2023), Department of Zoology Jamal Mohamed College, Tiruchirappalli during 01.03.2023 to 01.03.2023.
19. Mr. Mugesh presented his DBT group project in 3rd International Conference on Challenges to Environment and Health (ICEH2023), Department of Zoology Jamal Mohamed College, Tiruchirappalli during 01.03.2023 to 01.03.2023- Won the Prize.
20. Mr. Yuvaraj presented his DBT group project in 3rd International Conference on Challenges to Environment and Health (ICEH2023), Department of Zoology Jamal Mohamed College, Tiruchirappalli during 01.03.2023 to 01.03.2023- Won the Prize.



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Enclosure -6: Proofs for key Performance Indicator

9.10. (A-i) Training Received by Teaching Faculty

Botany	Chemistry	Mathematics	Physics	Zoology	Total
141	108	68	97	68	482

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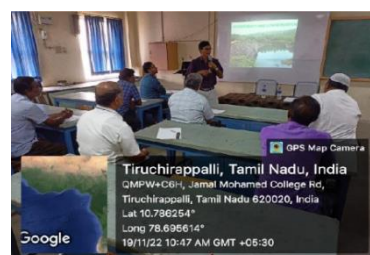
Enclosure -7: Proofs for key Performance Indicator


9.10. (A-ii) Training Received by Non-Teaching Faculty

Botany	Chemistry	Mathematics	Physics	Zoology	Total
5	2	1	2	6	13


(i) Department of Botany

- 1. Collection, Identification, Labelling and Preservation of Biological Specimens**, Dr. A. Aslam, Assistant Professor of Botany, Jamal Mohamed College, on 19.12.2020, NTS: 7
- 2. Chemical Preparations (Acids, Bases, Buffers, fixatives and reagents)**, Dr. N. Ahamed Sherif, Dr. R. Radhakrishnan & Dr. R. Sathish Kumar, Assistant Professors of Botany, Jamal Mohamed College, on 22.02.2021 NTS: 9
- 3. Sterilization and Safety disposal of microbes**, Dr. H. Syed Jahangir & Dr. R. Radhakrishnan, Assistant Professors of Botany, Jamal Mohamed College, NTS: 9
- 4. Maintenance of Biological Equipment**, Dr. H. Syed Jahangir, Dr. N. Ahamed Sherif & Dr. R. Radhakrishnan, Assistant Professors of Botany, Jamal Mohamed College, on 23.02.2021, NTS: 9
- 5. Laboratory Good Practices and Techniques** Dr. M. Abubacker, Former Head, Department of Botany & Biotechnology. National College, on 19.11.2022, NTS: 12




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(ii) Department of Chemistry

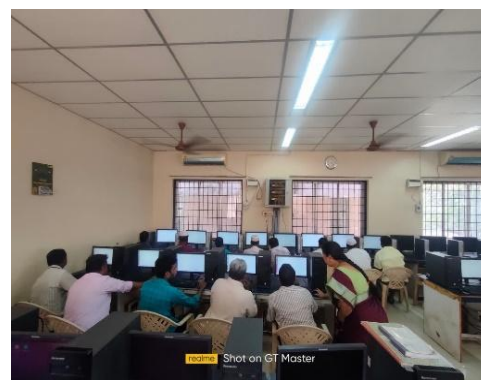
1. **Interdisciplinary Training Programme on Laboratory safety and First Aid Protocols**, Mr. S. Ambikarajan Assistant Manager – Research & Development Bunge India Private limited Edamalaipattipudur Tiruchirappalli – 620 012 on 16-12-2020, S:15.
2. **Quick Arithmetical skills**, Dr.N. Mohamed Thoiyab, Asst. Professor of Mathematics, Jamal Mohamed College, NTS: 15

(iii) Department of Mathematics

1. **Trouble Shooting in Computers**, by Mr. N. Mohamed Bayas, System Administrator, Jamal Mohamed College, NTS: 23


(iv) Department of Physics

1. **Electrical Safety and Laboratory Instruments Maintenance and Servicing**, Mr. G. Mohamed Ashif, Lecturer, Instrumentation and Control Engineering, Seshasayee Institute of Technology, Tiruchirappalli on 06-02-2023. NTS: 22 (ID.)
2. **Maintenance and Servicing of Laboratory Instruments**, Mr. G. Mohamed Ashif, Lecturer, Instrumentation and Control Engineering, Seshasayee Institute of Technology, Tiruchirappalli on 07-02-2023. NTS: 22 (ID.)



(iv) Department of Zoology

1. **Solution Preparation and Glassware Handling**, Dr A Irudaya Jothi, Assistant Professor of Chemistry, St. Joseph's College Tiruchirappalli on 29-12-20, NTS: 18
2. **Molecular biological Instruments**, Mr. Naveen, Technical Officer, The Precision Scientific, Thillainagar, Tiruchirappalli on 08-01-21 NTS: 05
3. **Plant Extraction Technique**, Mr. Naveen, Precision scientific, Tiruchirappalli on 21-10-2021, NTS :05


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4. **Training on Incubation and Incubators**, Mr. R. Gopinathan, Technical Officer, Remi groups of instruments, Chennai on 23-11-21, NTS:05
5. **Effective Planning in Library Management**, Dr. A. Abdul Hassan Librarian Jamal Mohamed College on 11-01-22, NTS:21
6. **Equipping the non – teaching staff with computer literacy**, Mrs. N. Priya, Assistant professor, Department of Computer application, National College, Tiruchirappalli on 23.02.2023 NTS:22

Enclosure -8: Proofs for key Performance Indicator

9.10. (B) Training Received by Students


a. Summer / Winter School / Internship

Activities	Botany	Chemistry	Mathematics	Physics	Zoology	Total
Summer/ Winter School/ Internship	7	12	12	4	3	38


(i) Department of Botany

1. **An overview of Poly-house, Green-house, Net house & Cultivation and Commercialization of Flower and Vegetable Crops (Online Mode)** - Mr. D. Bala Shiva Prasath, Shiva Shakthi Floristic & Exports, Hosur. on 20-07-2020 to 23-07-2020 (Four Days), S:35.
2. **Horticultural Technique's** at Tree Research, Educational, Environmental Services Trust, Crawford, Trichy – 620 012 from 22-03-2021 to 28-03-2021 B: 13
3. **Bonsai methods of cultivation** - Bodhi Bonsai Nursery Garden Tiruchirappalli on 9th and 10th August 2021, B: 34
4. **Methods in organic farming** - VAANGHAI, Sikkal, Nagapattinam 3rd and 4th September 2021 B: 34
5. **Greenhouse cultivation of vegetables and flowers** - Mr. Bala Siva Prasad, Director, National Horticulture Board from 21st to 26th Feb. 2022 at Hosur Floriculture garden, Hosur. S: 15.




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6. Training on **Seaweed Cultivation at Marine Algal Research Station**, Mandapam from 12-10-2022 to 14-10-2022, **S: 13**
7. **Internship programme on Cultivation of flowers at Sivasakthi floritec**, Hosur from 20-02-2023 to 25-02-2023, **S: 18**

(ii) Department of Chemistry

1. Internship for developing skills on various methods of processes like **Milk collection, Storage, pasteurization, testing of different dairy products of milk such as ice creams, curd, chocolate and cova**. The Salem District Cooperative Milk Producer's Union Ltd, Salem on 26.12.2022 to 30.12.2022, **B: 04**.
2. Internship for developing skills on various methods of processes like **Milk collection, storage, pasteurization, testing of different dairy products of milk such as ice creams, curd, chocolate and cova**. Tiruchirappalli District Cooperative Milk Producer's Union Ltd, Tiruchirappalli on from 09.01.2023 to 11.01.2023, **B: 06**
3. Internship for developing skills on **Laboratory Testing and good laboratory practices for Nutritional Analysis**. Asian Laboratory Services, Salem on 22.02.2023 to 25.02.2023, **B: 02**
4. Internship for developing skills on **Handling of instruments and chemicals among the students**. Sri Amman Steel and Allied Industries (P) Ltd., Nagamangalam, Tiruchirappalli on 30.03.2022 to 01.04.2022, **B: 17**
5. **Three-Months Internship on "Cancer Awareness"** by ICS and GAD-TLC, MHRD, Delhi, Internship for developing skills on quiz, survey, media, and field work activities, 01.10.2022 to 31.12.2022, **B: 01**
6. Internship for developing **Skills on Basic Petrochemical, Water and Food Analysis**, SynTheCis Institute of Chemical Industrial Training, Kozhikode, Kerala, 13-02-2023 to 20-02-2023. **B:01**
7. Internship for developing **Skills on steel industries**, Amman TRY Steel Kumbakurichi, 20-12-2021 to 24-12-2021. **B: 14**
8. Internship for developing **Skills on Storage and preservation of foods**, SPS Chilling centre Dindugal, 20-10-2021 to 27-10-2021, **B: 02**
9. Internship for developing **Skills on Steel industries**, Salem Steel Planet, 19-03-2022 to 24-12-2021, **B: 04**
10. Internship for developing **Skills on Agro products**, Bunge India, Pvt.Ltd, , 11-10-2021 to 15-10-2021. **B: 04**
11. Internship for developing **Skills on production of Cement**, Dalmia cements, Ariyalur, 06-12-2021 to 10-12-2021 & 20.12.2021 to 24.12.2021, **B:05**
12. Internship for developing skills on **Qualitative analysis of food and pharmaceutical products**, Tamilnadu Testing House Chennai, 11-10-2021 to 29-10-2021, **B: 04**

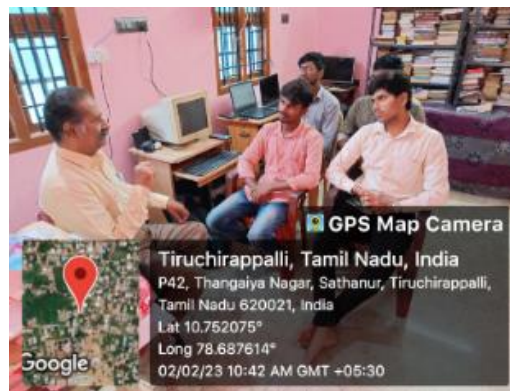

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(iii) Department of Mathematics

1. Virtual Internship programme on **SPSS**, South Indian Researchers Association, Sankarankovil, from 06.11.2020 to 12.11.2020, **S: 45** (2020-21)
2. Virtual Internship programme on **SPSS**, South Indian Researchers Association, Sankarankovil, from 18.10.2021 to 23.10.2021, **S:63** (2021-22)
3. Internship Programme on **Application knowledge in the course “C++”** at Kurinji College of Arts & Science, Trichy, from 01.09.2021 to 07.09.2021 **S:63**
4. Internship on **How to use Python in the Mathematics & Statistics Domain, Python Programming**, Department of Mathematics, Holy Cross College, Trichy, from 15.12.2021 to 22.12.2021, **S:10**
5. Internship Programme on **Mathematical Statistics” and “SPSS”** at Thanthai Periyar Government Arts & Science College, Trichy, from 08.03.2022 to 14.03.2022, **S:57**
6. Internship training in **R – Programming**, Aakkam Industrail Training & Research Institute, Coimbatore, from 07.01.2023 to 14.01.2023, **S:48**
7. Internship training on **Data Science Applications using Python**, Bannari Amman Institute of Technology, Erode, from 21.02.2023 to 24.02.2023, **S:11**
8. **Basic Mathematics** Chitkara University, Himachal Pradesh 11.06.2020 to 20.06.2020 (10 days), 3 Students of III B.Sc., Mathematics
9. **Online Foundation Course in Mathematics**, organized under the aegis of the MTTs Trust Funded by the National Board for Higher Mathematics 19-09-2021 to 11-10-2021(23 days) B. Praveen, II B.Sc., Mathematics
10. **Winter School in Mathematics**, St Berchmans College, Kerala 26-12-2021 to 02-01-2022 (8 days), B. Praveen, II B. Sc Mathematics
11. **Winter School in Mathematics**, Conducted by St Berchmans College, Kerala 26-12-2021 to 02-01-2022 (8 days), M. Mukesh Kannan, II B.Sc., Mathematics
12. **Science Academies Virtual Lecture Workshop on Mathematical Biology** Hindustan College of Arts and Science, Coimbatore 10-01-2022 to 12-01-2022 (3days) T. Nithish Kumar, II B. Sc Mathematics




(iv) Department of Physics

1. Vocational Training on **Telecom Technologies** organized by the Bharath Sanchar Nigam Limited (BSNL), Tiruchirappalli from 22nd to 26th June 2020 (5 Days).
2. Training Programme on **Python** by Mr. K. Dinesh kumar, Senior Project Engineer, Marcello Tech, Tiruchirappalli from 05-12-2022 to 09-12-2022. **S: 05**


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3. **Image Editing using Inkscape –An Open Source Scalable Vector Graphics Package** by Mr. J. Veeranathan, Trainer, Balaji Institute of Computer Graphics, Tiruchirappalli from 01-02-2023 to 06-02-2023. **S: 05**
4. **Non-Destructive Testing** by Mr. M. Riyaz, Proprietor, Trichy Technical Inspection Service, Tiruchirappalli from 20-02-2023 to 25-02-2023. **S: 09**

(v) Department of Zoology

1. Summer Training on **Radiation Studies: During the Training the students were trained to handle the Scintillometer**, Alpha, Beta and Gamma counting System Date:03.04.2023 to 12.04.2023. **S:10**
2. **Internship on Ornamental Fish culture** at Vasantham Aquarium, Thennur, Trichy. During the course the students were trained techniques like glass tank making, Aquarium keeping, Fish breeding etc. **S:15**
3. **Internship Training Programme** at Sai Guru Integrated Farm, Tiruchirappalli from 25.12.2022 to 05.01.2023. During the tuenure, students were provided training in Vermiculture, Aquaculture, Poultry and dairy farming etc. **S:8**



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b. In situ training through field and industrial visits:

Activities	Botany	Chemistry	Mathematics	Physics	Zoology	Total
Summer/ Winter Training	8	15	3	7	25	58

(i) Department of Botany			
S. No.	Place of visit and date	No. of Beneficiary	Outcome
1	Instrumentation Centre of Bharathidasan University on 30.01.2021	30	Learnt the functioning and application of advance instruments.
2	National Repository for Microalgae and Cyanobacteria (Sponsored by DBT Govt. of India, New Delhi), Bharathidasan University on 01.02.2021	30	Visited the repository and interacted with Professors and research scholars of the institute.
3	Centre for Remote Sensing, Bharathidasan University on 23.12.2021	28	Observed the working principle geographic information system
4	Gandigram Rural Deemed University on 07.03.2022	31	Visited the departments and interacted with Professors and research scholars of the university.
5	Forest Nursery centre Tiruchirappalli on 09.03.2022	25	Visited the Nursery and learnt the propagation of forest plants.
6	Horticulture station Gudimiyamalai, Pudukottai on 06.02.2022	31	Visited the polyhouses and learnt the vegetative propagation methods of cuttings, layering and grafting.
7	Tea Processing Unit, Tea factory at Nilgris on 23.03.2022	28	Learnt the tea processing methods.




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8	Mudumalai Tiger Reserve, Mudumalai and Nilgiris Biosphere reserve on 24.03.2023	28	Learnt the ecological sampling techniques and plant identification.
(ii) Department of Chemistry			
1	SASTRA'S Hub for Research & Innovation, SASTRA University, Thanjavur on 16.12.2021	56	Learnt the functioning and applications of instruments like X-ray Powder Diffraction (XRD), Fourier Transform Infrared Spectroscopy (FTIR), Chromatography Mass Spectrometry (LC-MS/MS), Nuclear Magnetic Resonance (NMR) and Spectroscopy Atomic Absorption (AAS).
2	Chemistry Department, National Institute of Technology, Trichy on 09.12.2021	45	Visited instrumentation centre. Interacted with postgraduate students of the institute. Gained knowledge on the preparation for IIT JAM and Various research funding scheme [PMRF].
3	National College Instrumentation Facility, National College, Trichy on 16.12.2021	43	Observed the working principle of instruments – SEM, EDAX, Mass spectrometry.
4	Soil Testing Laboratory, Mannarpuram, Trichy on 22.11.2021	36	Learnt the methods of sample collection and testing of different soil samples using pH meter, electrical conductivity meter, spectrophotometer, Flame photometer and atomic absorption spectrophotometer.
5	Soil Testing Laboratory, Trichy on 23.11.2021	40	Students learnt the basics of soil analysis and improvement of soil fertility.
6	Bunge India Pvt.Ltd Tiruchirappalli from 11.10.2021 to 15.10.2021	04	Trained to operate UV, IR instruments. Understand the manufacturing process of vanaspathi oils.





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7	Dalmia cements Ariyalur from 06.12.2021 to 10.12.2021	05	Gained knowledge on the various process of cement manufacturing and quality testing
8	Salem STEEL Planet, Salem from 19.03.2022 to 25.03.2022	04	Exposure over the manufacturing of steels and alloys. Understand the different composition of steels.
9	Amman TRY Steel Kumbakurichi from 20.12.2021 to 24.12.2021	34	Exposure over the manufacturing of steels and alloys. Understand the different composition of steels.
10	SPS Chilling Centre Dindigul from 20.10.2021 to 27.10.2021	02	Understand the various processing of raw milk
11	Soil Testing Laboratory, Mannarpuram, Trichy on 21.11.2022	35	Students learnt explained the methods of sample collection and testing of different soil samples using pH meter, electrical conductivity meter, spectrophotometer, Flame photometer and atomic absorption spectrophotometer.
12	Soil Testing Laboratory, Mannarpuram, Trichy on 22.11.2022	35	Students learnt the methods of sample collection and testing of different soil samples using pH meter, electrical conductivity meter, spectrophotometer, Flame photometer and atomic absorption spectrophotometer.
13	UPASI Tea Research Foundation, Regional Centre, Coonoor on 17.12.2022	18	Students got exposure on different categories of teas available in the market such as Green Tea, Black Tea, White Tea, etc.




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14	Marico Limited, SIPCOT industrial Growth Centre, Perundurai, Erode on 21.12.2022	46	Students got exposure on the various opportunities and scopes available in the field of Chemistry in Food industries.
15	Tiruchirappalli District Co-operative Milk Producers union Ltd, Tiruchirappalli on 27.12.2022	45	Students understand the various methods of processes like milk collection, Storage, pasteurization, testing of different dairy products of milk such as ice creams, curd, chocolate and cova.



(iii) Department of Mathematics

1	Visit to MASCO TEA FACTORY, Vagamon, Kerala on 30.09.2022	13	learnt the conceptual techniques of Inventory and Optimization.
2	K. Ramakrishna College of Technology, Samayapuram, Tiruchirappalli on 18.11.2022	14	Students have gained the knowledge about Robotics and are enthused to Create a Robot. Out of interest a group of students Constructed a Robot.



3	Visited IIT MADRAS regarding G20 education working group exhibition on 01.02.2023	5	It showcased digital education initiatives, enabling digital technology and skill development. And the event also showcased the latest technologies and innovations in the field of education, including virtual and augmented reality tools and Software exhibition. Companies displayed their ideas, products and services in an exhibit hall where the attendees were offered the opportunity to speak with experts and learnt about the new technology.
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[Signature]
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(iv) Department of Physics			
1	Ordnance Factory, Tiruchirappalli on 15.12.2021	30	Able to see for the first time the great strides made by our nation in self-reliance and the work carried out in our ordnance factories towards this end
2	Anna Science Centre-Planetarium Tiruchirappalli on 22.12.2021	50	Simulated night sky and benefited immensely by the programmes organized and the themes on Astronomy presented during this visit
3	ISRO, Sriharikota, Andhra Pradesh on 06.05.2022	32	Technological Exposure to the students about the advancements in Space Research
4	Visvesvaraya Industrial & Technological Museum, Bengaluru on 08.09.2022	18	Exposure of the real time applications of some of the concepts of Physics which they had learnt in earlier classes, as well as the design and manufacturing of simple devices.
5	Vikram Sarabhai Space Centre, Thiruvananthapuram on 23.02.2023	49	Vikram Sarabhai Space Centre spared a great experience to the students in getting live exposure of Space Technology which can help them in their career enhancements.
6	Alagappa University, Karaikudi on 28.02.2023	21	Exposure on the real time preparation of nanomaterials, their characterizations using sophisticated instruments and their applications in various fields like Physical Science, Chemical Science and Life Science.
7	Anna Science Centre-Planetarium Tiruchirappalli on 21.02.2023	52	Simulated night sky and benefited immensely by the programmes organized and the themes on Astronomy presented during this visit



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(v) Department of Zoology			
1	Central Marine Fisheries Research Institute. Mandapam from 15.03.2020 to 16.03.2020	30	Visited different research units such as brood stock culture, Plankton culture and Induced breeding unit, enrich the knowledge in the field of Marine Biology.
2	Indian institute of food production technology, Thanjavur on 15.03.2021	30	Food production and preservation techniques were learned from the institute.
3	Tropical butterfly conservatory, Trichy on 15.03.2021	34	Food production and preservation techniques were learned from the institute.
4	Periyar Maniyammai University, Thanjavur on 15.03.2021	26	Methods of vermi composting and biogas productions were understood.
5	Himalayan aquafarm and feed production unit, Thanjavur on 15.03.2021	27	Various aquaculture techniques were trained.
6	Gundur lake on 06.02.2021	35	Learned about the methods for analysing different water quality parameters.
7	Visit to the Ordnance factory, Trichy on 18.12.2021	31	Students became aware about various equipment used in Indian Army.
8	Chicken Layer Farm at Malayalapatti, Perumbalur on 03.03.2021	20	Various techniques followed in layer farming were familiarized by the students.
9	Country Chicken Layer farm, Arumbavur, Perumbalur on 03.03.2022	20	Various techniques followed in Country chicken layer farming were familiarized by the students.




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10	Visit to the Fossil park, Sathanur on 08.03.2022	20	Various fossils and their importance in the field of Evolutionary science were understood
11	Field Visit to Kaarai Fossil field on 08.03.2022	20	Students made a field study on fossils, their retrieval and identification.
12	Visit to Perambalur Dairy farm on 08.03.2022	20	Dr. Sharmila of the farm has delivered a lecture on the types of cows and their maintenance for effective and economic farming.
13	Visit to Ramjankudi Fort, Perumbalur on 08.03.2022	20	The monuments of cultural heritage of our nation were observed by the students.
14	Visit to Integrated farming unit in Rover College on 08.03.2022	20	Various techniques followed in organic farming in the field was acquainted by the students.
15	Visit to Sericulture Unit on 08.03.2022	20	Rearing methods of Bombyx mori was explained to the students from the farm
16	Visit to the Selvaraj Aquaculture Unit on 08.03.2022	20	Techniques followed for effective fresh water aquaculture was practiced by the students.
17	Field Visit to a Muddy Shore and Mangroove forest at Kattumavadi on 08.03.2022	22	The immense biodiversity present in a mangrove habitat were observed by the students.
18	Agri Expo 2022 Kalaingarangam, Tiruchirappalli on 17.10.2022	30	Modern practices applied in the field of agriculture were familiarized by the students.
19	Ornamental Fish Culture Unit, Tiruchirappalli on 19.12.2022	12	Hands training on various practices employed in fish culture units.

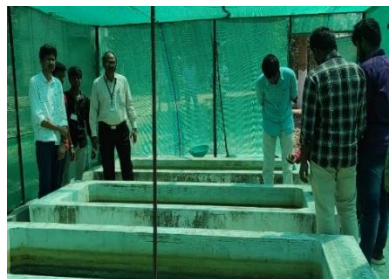




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20	Ornamental Fish farm, Nagamangalam on 21.12.2022	10	Hands training on various practices employed in fish culture units
21	Prawn Hatchery, Feed-Antibiotics Unit Athirampattinam and Muthupetai Mangrove Forest on 07.01.2023	23	Employment opportunities in the sector was understood by UG Students.
22	Dairy Farm at Dhanalakshi Sreenivasan Agricultural College and Poultry Farm at Alambadi, Perambalur on 17.01.2023	25	Most modern technologies used in all these sectors were understood.
23	Fossil Park at Sathanur, Perambalur on 17.01.2023	25	Collected various exposed fossils.
24	Fossil collection at Mining site Ariyalur 17.01.2023	32	Collected various exposed fossils and conducted exhibition at college Museum.
25	Anna Science Centre- Planetarium and Evolution Park 21.02.2023	41	Gained knowledge on stellar systems and the evolution of the universe




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c. Year wise list of group projects


Activities	Botany	Chemistry	Mathematics	Physics	Zoology	Total
Inter Disciplinary projects	12	12	12	12	15	63
Core projects	12	33	21	25	11	102
Total no of projects *	24 /111	45/301	33/239	37/ 145	26/107	165/ 903

* Projects/ Students


Department of Botany				
Year	S.No.	Mentor	Title of the Project	ID
2020-21	1.	Dr. A. Aslam	Production of eco-friendly cleaning liquids from fruit and vegetable waste using beneficial microbes.	ID (Chemistry)
	2.	Dr. K. Mohamed Rafi	Agriculture green development: Recycling of agriculture wastes through edible mushroom cultivation	
	3.	Dr. N. Ahamed Sherif	In vitro studies, phytochemical constituents and pharmaceutical activities of the genus <i>Plectranthus</i> – A review	ID (Chemistry)
	4.	Dr. B. Balaguru	Study on phytochemical properties of medicinal plants used as immunomodulatory activities	ID (Chemistry, Physics and Mathematics)
	5.	Dr. R. Radhakrishnan	Formulation and assessment of organic fertilizer for fenugreek seedling growth	ID (Chemistry)
	6.	Dr. R. Sathish Kumar	Studies on medicinal plants for prevalent pest in paddy crop	ID (Chemistry)
	7.	Dr. M. Kamaraj	Phytochemical Screening and its Silver Nanoparticle Based	ID (Chemistry)
	8.	Dr. R. Syed Moideen	Antibacterial activity of <i>Luffa cylindrica</i> Linn. Fruit Extract against Human Pathogenic Organisms	ID (Chemistry and Zoology)
2021-22	9.	Dr.A.Shajahan	Influence of fermented plant products on growth rate of an ornamental plant, <i>Philodendron (Philodendron erubescens)</i> under hydroponic condition	
	10.	Dr. A. Aslam,	Metrics for studying 'carbon banking' potential of trees in Jamal Mohamed College campus	ID (Mathematics)
	11.	Dr. K.Mohamed Rafi	Cultivation of oyster mushroom and preparation of mushroom cookies	
	12.	Dr. N.Ahmed Sherif	Isolation and Identification of fungi from waste vegetables collected from Gandhi market, Tiruchirappalli.	
	13.	Dr. B.Balaguru	Developing the value added health	


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			drink from capillary of Banana Central Core Stem for Urinary Problems (PHASE 1: Validation of traditional knowledge)	
	14.	Dr. R Radhakrishnan	Applications of Table salt and Vinegar on Green gram and Cowpea Sprout Growth	
	15.	Dr. R. Sathish Kumar	Morphological and anatomical modification of <i>Macrotyloma uniflorum</i> (Lam). under boron efficiency	
2022-23	16.	Dr. H. Syed Jahangir	Isolation and characterization of pigments synthesizing actinobacteria from rhizosphere soil of <i>Caralluma umbellata</i>	ID (Chemistry)
	17.	Dr. A. Aslam	Measurement of carbon sequestration potential using wooded area of trees in Khajamian Hostel and its environ.	ID (Mathematics)
	18.	Dr. A. Shajahan	Designing of Surface Sterilization Device for Plant Tissue Culture Explant and Analysis of Its Effect on in Vitro Culture of <i>Aerva Lanata</i> (L.)	
	19.	Dr. B. Balaguru	Spatial Analysis of Urban Clusters and Normalized Vegetation Index (NDVI) Of Tiruchirappalli City Corporation	ID (Mathematics)
	20.	Dr. R. Ravikumar	Spatial Analysis of Contribution of Tree Clusters and Enhanced Vegetation Index in Urban Landscape of Tiruchirappalli City Corporation	
	21.	Dr. K. Mohamed Rafi	Cultivation of Oyster Mushroom (<i>Pleurotus florida</i>) using Paddy Straw	
	22.	Dr. N. Ahamed Sherif	Micropropagation of <i>Centratherum Punctatum</i> Cass. an Essential oil yielding Plant	
	23.	Dr. M. Kamaraj	Spatial Distribution of Tree Species Urban Landscape of Tiruchirappalli City Corporation	ID (Mathematics)
	24.	Dr. R. Radhakrishnan	Nutraceutical Properties of Soybean Sprouts Under Salt and Vinegar Effect of Zn Nanoparticles on growth of horse gram (<i>Macrotyloma uniflorum</i> . Linn)	


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Department of Chemistry				
Year	S.No.	Mentor	Title of the Project	ID
2020-21	1.	Dr. M. Mohamed Sihabudeen	Investigation of foaming capacities of different Soap	
	2.	Dr. M. Syed Ali Padusha	Determination of different qualities of Milk samples	
	3.	Dr. A. Zahir Hussain	A comparative study of Milks	
	4.	Dr. J. Sirajudeen	Estimation of essential oil content in citrus Peel	ID (Botany)
	5.	Dr. K. Loganathan	Foaming capacity of various Soaps	
	6.	Dr. M. Anwar Sathiq	Detection of chemical additives in Packed Foods (edible sun flower oil)	
	7.	Dr. M. Purushothaman	Access the contamination levels of chemicals in easily accessible Drug Paracetamol(Acetaminophen)	
	8.	Dr. S. S. Syed Abuthahir	Study of presence of insecticides and pesticides in various fruits, Vegetables and Beverages	
	9.	Dr. M. Seeni Mubarak	Analysis and comparative study of permissible limit of chemical in the easily accessible Drugs	
	10.	Dr. A. Jafar Ahamed	Detection of food additives in packed foods: chemical composition and product quality control of turmeric powder (Curcuma longa.)	ID (Botany)
	11.	Dr. K. Riaz Ahamed	Investigation of foaming capacities of different washing Soaps available in the market	
	12.	Dr. S. K. Periyasamy	Determination of quality of different samples of Milk	ID (Zoology)
	13.	Dr. J. Muneer Ahamath	Detection of chemical additives in packaged Foods	
	14.	Dr. R. Abdul Vahith	Study on presence of pesticides in various fruits, vegetables and green leaves in and around Tiruchirappalli District, Tamil Nadu, India.	ID (Botany)
	15.	Dr. M. Yaseen Mowlana	Investigation on foaming capacity of different washing Soap	
	16.	Dr. S. Farook Basha	Detection of chemical additives in packed Foods (Food adulteration in coriander powder)	
2021-22	17.	Dr. M. Mohamed Sihabudeen	A Study of the factors affecting the foaming capacities of different detergent soap	
	18.	Dr. M. Seeni Mubarak	Analysis and comparative study of permissible of chemical in the easily accessible drugs	
	19.	Dr. A. Jafar	Transesterification reaction and	


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	Ahamed	comparative study of the fuel properties of biodiesels produced from used cooking oil		
20.	Dr. M. Syed Ali Padusha	Determination of different qualities of milk samples available in the market.	ID (Zoology)	
21.	Dr. A. Jamal Abdul Nasser	Detection of contamination level of chemicals in easily accessible drugs		
22.	Dr. A. Zahir Hussain	Assessment of various milk quality parameters	ID (Zoology)	
23.	Dr. J. Sirajudeen	Detection of food additives in packed foods; Presence of Caramel in food sample		
24.	Dr. K. Loganathan	In silico ADME properties of phenolic acids of corn silk.		
25.	Dr. M. Anwar Sathiq	Detection of chemical additives in packed commercial Gingly oil.		
26.	Dr. M. Purushothaman	Purity validation of acetaminophen in easily available drug samples		
27.	Dr. K. Riaz Ahamed	Review on investigation of foaming capacity of different washing soap		
28.	Dr. S. K. Periyasamy	Determination of quality of different Samples of milk.	ID (Zoology)	
29.	Dr. J. Muneer Ahamath	Detection of chemical additives in packed foods.		
30.	Dr. R. Abdul Vahith	Study on physico-chemical analysis of ground water quality in Tiruchirappalli city.		
31.	Dr. S. S. Syed Abuthahir	Study of corrosion resistance of zinc metal by using <i>Annona squamosa</i> plant leaves		
32.	Dr. M. Yaseen Mowlana	Detection of chemical additives in packed foods		
33.	Dr. S. Farook Basha	Detection of chemical preservatives in packed product		
2022-23	34.	Dr. M. Syed Ali Padusha	A study on the factors affecting the foaming capacities of different homemade herbal soaps synthesis.	
	35.	Dr. A. Jamal Abdul Nasser	Fluorescent carbon dots for microwave – assisted method.	ID (Physics)
	36.	Dr. A. Zahir Hussain	Analysis of quality parameters of different samples of milk.	ID (Zoology)
	37.	Dr. J. Sirajudeen	Detection of chemical additives in packed foods (milk).	ID (Zoology)
	38.	Dr. K. Loganathan	In silico adme properties of flavonoids of corn silk.	
	39.	Dr. M. Anwar Sathiq	Detection of chemical additives in packed foods (coconut oil).	



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	40.	Dr. M. Purushothaman	Determination of saponification and acid value for commercial coconut oil samples: a comparative study.	
	41.	Dr. K. Riaz Ahamed	Review on investigation of foaming capacity of different washing soap.	
	42.	Dr. S. K. Periyasamy	Investigation of foaming capacities of different washing powder available in the market.	
	43.	Dr. J. Muneer Ahamath	Detection of chemical additives in packed foods.	
	44.	Dr. R. Abdul Vahith	Analysis of different samples of milks.	ID (Zoology)
	45.	Dr. S. S. Syed Abuthahir	Assessment of various milk quality parameters.	ID (Zoology)


Department of Mathematics				
Year		Mentor	Title of the Project	ID
2020-21	1.	Dr. A. Nagoor Gani	Use of pert network analysis in project management problems	
	2.	Dr. A. Mohamed Ismayil	Study on advantages and disadvantages of online classes	
	3.	Dr. R. Jahir Hussain	Statistical survey and analysis on higher education (Using SPSS)	
	4.	Dr. M. Mohammed Jabarulla	A study on the contribution of eigen values and eigen vectors in google search engine and some real time applications	
	5.	Dr. S. Mohamed Yusuff Ansari	A study on covid-19 infections in Trichy using mathematical modelling	
	6.	Mr. N. Mohamed Thoiyab	Balancing chemical equations using linear Algebra	ID (Chemistry)
	7.	Dr. A. Prasanna	Application of matrices in cryptography	
	8.	Mr. S. Masoothu	Application of matrices in the analysis of red blood cell production	ID (Zoology)
	9.	Dr. P. Muruganantham	A study on statistical analysis of health and hygienic of people during Covid-19 lockdown and pandemic period	ID (Zoology)
	10.	Dr. M. Mohamed Althaf	Study on statistical analysis of students career opportunities in Tiruchirappalli	


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	11.	Dr. M. A. Rifayathali	A study on mental wellbeing and education related challenges faced by the students during Covid-19 lockdown in Tiruchirappalli	
2021-22	12.	Dr. U. Abuthahir	Analyse on reasons from arts students for choosing arts stream	
	13.	Dr. A. Prasanna	Impact of social networking sites among under graduate students during Covid 19 Pandemic	
	14.	Mr. S. Masoothu	Mental health among under graduate student's in Covid-19 Pandemic	
	15.	Mr. N. Mohamed Thoiyab	Application of number theory in cryptography network security.	
	16.	Dr. A. Mohamed Ismayil	Comparative study on electric vehicles and conventional (Fuel) vehicles	
	17.	Dr. S. Mohamed Yusuff Ansari	Covid-19 awareness among under graduate students in Tiruchirappalli region (A Questionnaire based survey using SPSS)	ID (Zoology)
	18.	Dr. A. Nagoor Gani	An Intelligent Irrigation System Based on Fuzzy Logic Control	
	19.	Dr. M.A Rifathali	Statistical analysis of butterfly distribution in Jamal Mohamed college and awareness on butterfly conservation in Samad School Using R Software.	ID (Zoology)
	20.	Dr. M. Mohamed Jabarulla	Real Time application of fibonacci series using Maple	
	21.	Dr. R. Jahir Hussain	A statistical analysis of online shopping versus offline shopping during Covid-19 using R	
	22.	Dr. P. Muruganantham	Application of trigonometry in Real Life	
2022-23	23.	Dr. U. Abuthahir	Applications of number theory in Network security	ID (Physics)
	24.	Dr. A. Prasanna	Application of Differential Equations in Chemical Sciences	ID (Chemistry)
	25.	Mr. S. Masoothu	A Study of different types of Matrices and their applications in Graph Theory	
	26.	Mr. N. Mohamed Thoiyab	Statistical analysis of life style pattern and disease like diabetes & Thyroidism using R programming.	ID (Zoology)



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27.	Dr. A. Mohamed Ismayil	Applications of Linear Algebra	ID (Zoology)
28.	Dr. S. Mohamed Yusuff Ansari	Application of Differential Equations in Biological Sciences	
29.	Dr. A. Nagoor Gani	Statistical Survey and Analysis on Health and Hygiene of the students of the college using SPSS	ID (Zoology)
30.	Dr. M.A Rifathali	Applications of Differential Equations in Physical Sciences	
31.	Dr. M. Mohamed Jabarulla	Applications of Linear Algebra	ID (Physics)
32.	Dr. R. Jahir Hussain	Statistical Survey and Analysis on higher education among the youths in adopted villages of the college using SPSS	
33.	Dr. P. Muruganantham	A study on Statistical Analysis of Students Technical Competency and their Career Opportunities in Tiruchirappalli	


Department of Physics				
Year		Mentor	Title of the Project	ID
2020-21	1.	Dr. A. Ishaq Ahamed	Determination of Refractive Index of Different Liquids Using Hollow Prism.	
	2.	Dr. N. Peer Mohamed Sathik	Design and Development of Home Appliances– Solar Water Heater	ID (Chemistry)
	3.	Dr. R. Radhakrishnan	Design and Development of Home Appliances– Solar Cooker	ID (Chemistry)
	4.	Capt. F.S. Muzammil	Design and Development of Home Appliances– Solar Distillation	ID (Chemistry)
	5.	Dr. R. Raj Muhamed	Determination of Dielectric Constant for Solids	
	6.	Mr. J. Umar Malik	Determination of Dielectric Constant for Liquids	ID (Chemistry)
	7.	Dr. J. Ebenezar	Design and Development of Home Appliances – Solar Pumping	
	8.	Mr. A. Abbas Manthiri	Design and Development of Home Appliances – Solar Dryer	
	9.	Dr.A.S. Haja Hameed	Design and Development of Home Appliances – Solar Photovoltaic Cell	ID (Chemistry)
	10.	Dr. S. Abbas	Assembling of HAM Radio	


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		Manthiri	Transmitter	
	11.	Dr. S. Shek Dhavud	Design and Development of Home appliances–Solar Inverter	
	12.	Mr. S. Mohamed Ibrahim Sulaiman Sait	Assembling of HAM Radio Receivers	
	13.	Dr. C. Hariharan	Assembling of HAM Radio Receivers	
2021-22	14.	Dr. A. Ishaq Ahamed	Determination of molar refraction and confirmation of Structure of certain liquids	
	15.	Dr. N. Peer Mohamed Sathik	Basic concept of solar energy – Solar Power Bank	ID (Chemistry)
	16.	Dr. R. Radhakrishnan	Design and development of home appliances - an overview of hybrid solar cooker	ID (Chemistry)
	17.	Capt. F.S. Muzammil	Determination of refractive index of different liquids using hollow prism	
	18.	Dr. R. Raj Muhamed	Analysis of the Role of Molar Mass, molecular polarizability and refractive Index “n” for some Amines and ether groups	
	19.	Mr. J. Umar Malik	Determination of dielectric constant for certain liquids	
	20.	Dr. J. Ebenezar	Comprehensive review on Solar Cookers	
	21.	Dr. A. Abbas Manthiri	Solar Electric Power Generation	
	22.	Dr. A.S. Haja Hameed	Variation of dielectric constant with frequency for pure and doped triglycine sulphate crystals	
	23.	Dr. S. Abbas Manthiri	Determination of refractive index of different liquids using hollow prism	
	24.	Dr. S. Shek Dhavud	A Study on Ultrasonic Pest Repeller	ID (Zoology)
	25.	Mr. S. Mohamed Ibrahim Sulaiman Sait	Design and Development of Solar Still	
	26.	Dr. C. Hariharan	Modeling of Solar Cells	
2022-23	27.	Dr. N. Peer Mohamed Sathik	Applications of number theory in Network security	ID (Computer Science)
	28.	Dr. R. Radhakrishnan	Application of Differential Equations in Chemical Sciences	
	29.	Capt. F.S. Muzammil	A Study of different types of Matrices and their applications in Graph Theory	



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30.	Dr. R. Raj Muhamed	Statistical analysis of life style pattern and disease like diabetes & Thyroidism using R programming.	ID (Zoology)
31.	Mr. J. Umar Malik	Applications of Linear Algebra	ID (Zoology)
32.	Dr. J. Ebenezar	Application of Differential Equations in Biological Sciences	
33.	Dr. A. Abbas Manthiri	Statistical Survey and Analysis on Health and Hygiene of the students of the college using SPSS	
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35.	Dr. S. Abbas Manthiri	Applications of Linear Algebra	ID (Physics)
36.	Dr. S. Shek Dhavud	Statistical Survey and Analysis on higher education among the youths in adopted villages of the college using SPSS	
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Department of Zoology				
Year		Mentor	Title of the Project	ID
2020-21	1.	Dr. R. Krishnamoorthy	Evaluation of radioactivity in various building materials.	ID (Physics)
	2.	Dr. M. Meeramoideen	Production of bio fertilizers from fish wastes available from fish market at Tiruchirappalli.	ID (Botany)
	3.	Dr. P. Rajasekar	Evaluation of anti-mosquito larvicidal activity of plant extracts	ID (Botany)
	4.	Dr. K. Prabakar	Impact of polluted water (tributaries of river Cauvery) on macrofaunal diversity	ID (Chemistry)
	5.	Dr. A. Sadiq Bukhari	Impact of polluted water (tributaries of river Cauvery) on microfaunal diversity	ID (Chemistry)
	6.	Dr. S. Mohamed Hussain	Vermicompost preparation using kitchen waste collected from Khajamian hostel	
	7.	Dr. M. Salahudeen	Predictive distribution of Insects and Birds in Cauvery river bank using Mathematical modeling	ID (Mathematics)


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2021-22	8.	Dr. Hussain Syed Bava	Studies on the ground water quality of Hanifa colony N.M.K Colony, Race Course Road and TVS Tolgate Area Tiruchirappalli, Tamil Nadu	ID (Chemistry)
	9.	Dr. K. Prabakar	Influence of Different types of Feeds on the growth performance of Carassius auratus (Gold Fish)	
	10.	Dr. H.E Syed Mohamed	Digitalization of Zoological specimens available at Jamal Mohamed College museum	
	11.	Dr. M. Meeramaideen	Assessment of milk adulteration in Tiruchirappalli city	
	12.	Dr. S. Mohamed Hussain	Screening of in vitro antioxidant potential and biochemical characterization of Calotropis gigantean through FTIR spectral analysis	ID (Botany and Chemistry)
	13.	Dr. M. Salahudeen	Study on diversity and distribution of soil mites (Acari: Oribatidae) in Jamal Mohamed College, Tiruchirappalli	
	14.	Dr. R. Krishnamoorthy	Terrestrial gamma and gross alpha radioactivity level in Ariyalur, Tamil Nadu, India	ID (Physics)
	15.	Dr. P.A. Ashique	A baseline study to detect the presence of microplastics in Oreochromis mossambicus (Tilapia fish) of selected water bodies in Tamil Nadu	
2022-23	16.	Dr. Hussain Syed Bava	Studies on The Levels of Terrestrial Gamma Radiation in The Rocks of Khajamalai, Tiruchirappalli, Tamil Nadu	ID (Physics)
	17.	Dr. K. Prabakar	Assessment of Plant Based Protein Product as Artificial Diet for Mosquitoes.	ID (Botany)
	18.	Dr. H.E Syed Mohamed	Review on the Occurrence, Spatial Distribution and Ecological Impact of Heavy Metals in Cauvery River Tiruchirappalli, Tamil Nadu	
	19.	Dr. M. Meeramaideen	Oviposition Response of Selected Three Mosquitoes to IGR Compounds in Treated Water of Selected Water Bodies in Tamilnadu	


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20.	Dr. S. Mohamed Hussain	Predictive Distribution of Insects and Birds in Cauvery River Bank Using Mathematical Modelling	
21.	Dr. M. Salahudeen	Health Risk Assessment of Fresh Fruit Juices	ID (Botany)
22.	Dr. R. Krishnamoorthy	In-Vitro Antioxidant Potential of Marine Ascidian Didemnum Psammathode (Sluiter 1895)	
23.	Dr. P.A. Ashique	Digitalization of Dissections and Stuffings	
24.	Dr. R. Krishnamoorthy	A Study on the Gross Alpha Activity in Some Fossil Samples of Ariyalur	ID (Physics)
25.	Dr. A. Sadiq Bukhari	Analysis of Heavy Metals in Ground water in and around Tiruchirappalli Corporation Dumped Yard Region.	ID (Chemistry)
26.	Dr. Hussain Syed Bava	Studies on the Ground water quality of Iqbal Colony, Subramaniapuram area, Tiruchirappalli	ID (Chemistry)

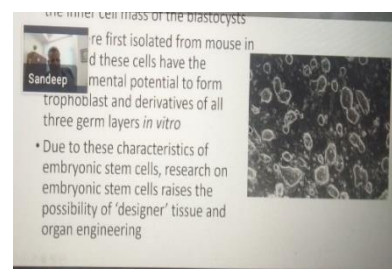
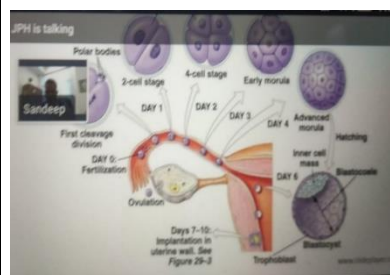
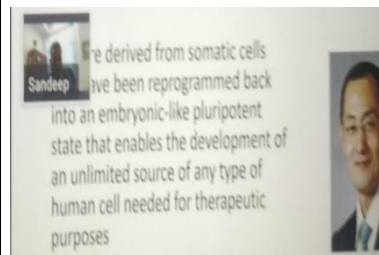

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d. Science Setu programmes attended

S. No	Details of Lecture & Beneficiaries
01	Dr. Sandeep Goel , Scientist, National institute of Animal Biotechnology, Hyderabad : Stem cell biology; 30-03-2021; 11:00 AM - 12:15 PM https://global.gotomeeting.com/join/878797677 , F:08, S:30
02	Dr. Madhuri Subbiah , v: Viruses and Pandemics; 31-03-2021; 11:00 AM - 12:15 PM https://global.gotomeeting.com/join/425533405 , F:10, S:32
03	Dr. H. B. D. Prasada Rao : Dance with Chromosomes: Kathakali to Moonwalk; 28-04-2021; 11:00 AM - 12:15 PM : Join Zoom Meeting : https://zoom.us/j/97767998006?pwd=NmZKenBFgk4ZyswMERLVWpPMHhQdz09 , F:10, S:30
04	Dr. Bappaditya Dey Scientist, National institute of Animal Biotechnology, Hyderabad: Antimicrobial Resistance: the next pandemic is on our doorstep; 29-04-2021; 11:00 AM - 12:15 PM Join Zoom Meeting https://zoom.us/j/96166473727?pwd=VDRBbzFadjNHOTBBTmRzVno3YmNpQT09 https://www.youtube.com/channel/UCGfwWgfR_tQPgSG2pE-fy_Q , F:09, S:28
05	Dr.Sandeep Kushwaha , Scientist, National institute of Animal Biotechnology, Hyderabad : Bioinformatics an Impulsive or Contemplative Science 31.05.2021 11.00am 12.15 pm Zoom Meeting, F:10, S:31
06	Dr. Nagendra R. Hegde , Scientist, National institute of Animal Biotechnology, Hyderabad : Animal in Human welfare: not just milk and meat but also maladies 13.05.2021, 11.00am – 12.15pm Zoom Meeting, F:09, S:30
07	Dr. Nirmalya Ganguli , Scientist, National institute of Animal Biotechnology, Hyderabad: Genetic manipulation for increasing productivity in farm animal 29.06.2021 11.00am – 12.15pm Zoom Meeting, F:10, S:28
08	Dr. Pankaj Suman , Scientist, National institute of Animal Biotechnology, Hyderabad: Nucleic Acis based diagnoctics 30.06.2021 11.00am – 12.15pm Zoom Meeting, F:09, S:32
09	Trickling zoonotic diseases and pandemic : need to understand animal reservoir 06.07.2021 : 10 am – 11.30 am Zoom Meeting, F:12, S:30
10	Dr. Syed M. Faisal , Scientist, National institute of Animal Biotechnology, Hyderabad : Vaccines: Ajourney

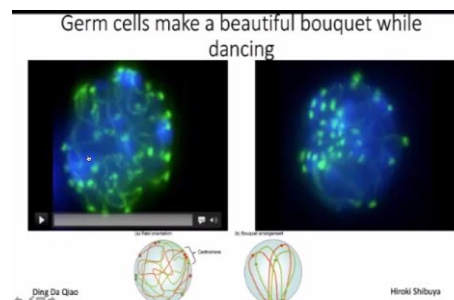
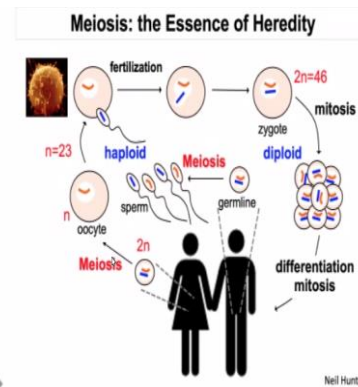



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	from Jenner to genes : 27.07.2021 11.00am -12.15pm Zoom Meeting, F:10, S:25
11	Dr. Souvik Sen Sharma , Scientist, National institute of Animal Biotechnology, Hyderabad: Infertility in livestock 28.07.2021 11.00am – 12.15pm Zoom Meeting, F:09, S:27
12.	Dr. Sanjay kumar singh , Scientist, National institute of Animal Biotechnology, Hyderabad; Nanobiotechnology: introduction and applications 31.08.2021 3.00pm-4.00pm Zoom meeting, F:10, S:30
13.	Dr. Sonu Gandhi , Scientist, National institute of Animal Biotechnology, Hyderabad: Nanomaterials as a diagnostic and therapeutics tools, 17.09.2021 11.00am – 12.15pm Zoom Meeting, F:11, S:26
14	Dr. Paresh Sharma , Scientist, National institute of Animal Biotechnology, Hyderabad: Mosquito and their love for human blood: can we win this war: 26.10.2021 10.450am – 12.15pm Zoom Meeting, F:08, S:30
15	Dr. Grish Radhakrishnan : Microbiome, Scientist, National institute of Animal Biotechnology, Hyderabad : the hidder world inside us; 29.10.2021 11.00am – 12.15pm Zoom Meeting F:10, S:27
16	Dr.Anana Srivastava , Scientist, National institute of Animal Biotechnology, Hyderabad; Ticks and tick borne diseases; 29.11.2021 11.00am – 12.15pm Zoom Meeting
17	National Science day 2022 , date: 28.02.2022, time: 10am, Zoom Meeting, F:10, S:32
18	Dr. Aneesh kumar , Professor, National Webinar on National institute of immunology, New Delhi at a glance National institute of immunology, New Delhi 09.09.2021 @ 3.00 pm Google meet, F:09, S:28




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Enclosure -9: Proofs for key Performance Indicator

9.11. Exhibition/Seminar/Training Courses Conducted

***S: Number of Students, F: Faculty, B: Beneficiaries, SS: School Students, ST: School Teachers, ID: Inter Departmental Programme, IC: Intercollegiate**

Botany	Chemistry	Mathematics	Physics	Zoology	Total
18	19	35	31	21	125

(i) Department of Botany

2020-2021


- National Level Workshop on Bio Python Collaborated with Spoken Tutorial Bombay on 29th and 30th May 2020 (2 days). F:324 (IC)**
- International Webinar Lecture Series on Biological Sciences from 06.07.2020 to 08.07.2020 (3 days) B:337 (IC)**
- National Webinar Lecture Series on Biosciences from 13.07.2020 to 15.07.2020 (3 days). B:110 (IC)**
- Academic & Research Development — Role of DBT, Government of India - the P.G. & Research Department of Botany, Jamal Mohamed College on 17.02.2021 (from Botany, Biotechnology, Chemistry and Microbiology students), B:45**



2021-2022

- International Webinar on Biological Innovations for Resource Management and Sustainable Development** organized by Department of Botany Resource persons: Dr. Asmah Binti Awal, Dr. Asmah Binti Awal and, Dr. Alawi Bin Hj Sulaiman Universiti Teknologi MARA, Malaysia, Dr. G. Rajaseger, Officer, A*STAR COVID-19 Diagnostic Lab, Singapore & Ex- Senior Scientist, DMERI @ DSO National Laboratories, Singapore, Dr. Nazeerullah Rahamathullah Gulf Medical University, Ajman U.A.E and Dr. Kasthuriengan Sampath, Joil (S) Pte Ltd, Singapore from 24.08.2021 to 26.08.2021. **F:71.**
- Training Programme on spatial informatics** by Dr. B. Balaguru, Assistant Professor, Department of Botany, Jamal Mohamed College from 4th to 8th Jan -2022. **S:18 (IC)**




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3. **FDP on Innovative Teaching and Research methods of Academic Excellence** on 24th to 29th Jan-2022 organized by Department of Botany. **B: 64 (ID)**
4. **Webinar on Molecular Evolution, Taxonomy and Ecology** (4 sessions):
5. (a) Phylogentic and diversification studies in the endemic *Hemedactylus geckos* of India reveals an adaptive radiation by Prof. K. Praveen Karanth, Chair, Centre for Ecological Sciences, Bangalore, Karnataka on 16.02.2022. **B:84**
(b) **Biodiversity of Western Ghats** - Dr. R. Ramasubbu, Assistant Professor, Department of Biology, Gandhigram Rural University, Tamil Nadu on 16.02.2022. **B:84**
(c) **Molecular phylogeny of Zingiberaceae of North East India** - Professor Latha Rangan, Department of Bioscience and Bioengineering(BSBE), Applied Biodiversity Laboratory (ABL) Indian Institute of Technical Guwahati, Assam on 17.02.2022. **B:84**
(d) **Application of molecular data in Angiosperm systematics** - Dr. S. Soosairaj, Assistant Professor, Department of Botany, St. Joseph's College, Tiruchirappalli, Tamil Nadu on 17.02.2022. **B:84**
6. **Plant Expo 2022** - Exhibition on Bonsai Nursery Cultivation techniques, Medicinal plants, Plant products, Native Trees and Traditional Rice Varieties on 02-03-2022 at Department of Botany. **B: 112.**
7. **Intercollegiate programme on Effective implementation of DBT Star College Scheme** on 12.03.2022 organized by Department of Botany. **F:31 (IC)**
8. **Seminar on Innovative research approaches in Biological sciences** by Dr. M. Krishnan, Vice Chancellor, Central University of Tamil Nadu and Dr.N.N. Thajuddin Professor, Department of Microbiology, Bharathidasan University addressed the valediction, from 25.05.2022 to 26.05.2022 **B: 150.**

2022-2023

1. **Identification process of Spirulina and Chlorella species with help of Light Microscope** R. Ramakrishnan, Assistant Manager, EID – PARRY. Pudukottai 07-01-2023 **B: 25**
2. **Geoinformatics applications in in mapping of Nutrition and Health information** to Department of Nutrition and Dietetics from 9-12 & 18-21 January 2023 **B: 46**
3. Winterschool workshop on **Tissue Culture Techniques** Dr. S.P. Anand, Assistant Professor, Department of Botany, National College (Autonomous), Tiruchirappalli. 31-01-2023 **B:37**
4. Winterschool workshop on **Histochemical Techniques** Dr. V. Nandhagopalan, Associate professor, 7 Department of Botany, National College (Autonomous), Tiruchirappalli. 01-02-2023 **B: 37**
5. Winterschool workshop on **Molecular Techniques** Dr. M. Manickavasagam Assistant professor, Department of Biotechnology, Bharathidasan University, Tiruchirappalli. 02-02-2023 **B: 37**
6. Winterschool workshop on **Microbiological Techniques** Dr.D. Dhanasekeran, Assistant professor, Department of Microbiology, Bharathidasan University. 03-02-2023 **B:37**
7. Winterschool workshop on **Ecoinformatics** Dr. S. Soosairaj, Assistant professor, Department of Botany, St. Joseph's College (Autonomous), Tiruchirappalli. 6-02-2023 **B:37**


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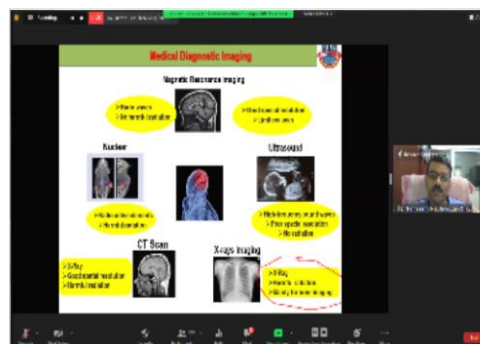



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(ii) Department of Chemistry

2020-2021

1. **Online Training Programme on Digital class room**, Mr. M. Mohamed Zamam Nazar, Assistant Professor of Computer Science, Jamal Mohamed College (Autonomous), Tiruchirappalli - 20 on 23-06-2020, **F:33**.



2. **Chemistry in Our Day-to-day Life National Level Online Course** by Dr. N. Mujafarkani, Dr. Hema Sinjuda, Dr. B. Arifa Farjana, Dr. Mushira Banu and Dr. F.M. Masood Ahamed, Assistant Professors of Chemistry, Jamal Mohamed College to 08th June 2020, **F: 420**.

Chemistry, Jamal Mohamed College to 08th June 2020, **F: 420**.

3. **State level Webinar on Strategies to identify medicinally potent compounds from plants**, Dr. VS Pragadheesh, Scientist - Analytical Chemistry, CSIR - Central Institute of Medicinal and Aromatic Plants, Bangaluru on 17-06-2020, **S: 53**.



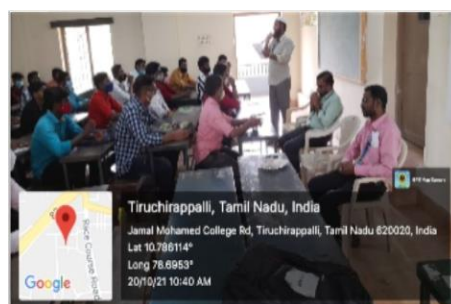
4. **Online Training Programme on Water Treatment Using Polymer Based Materials** by Dr.N.Viswanathan, Assistant Professor, Department of Chemistry, Anna University, University College of Engineering, Dindigul on 25-07-2020, **S:35**.

on 25-07-2020, **S:35**.


5. **International Conference on Chemical and Environmental Research (ICER — 2020)**, Dr. V. Thiruselvam, Research Associate, Health Science Centre, University of Texas, USA, Dr. Srinivasan Anandan, Scientist – E, Centre for Nanomaterials, ARCI Hyderabad, Telangana and Dr. R. Ramarathnam, Chairman, Basil Energetics Pvt Ltd., Chennai on 12-11-2020, **F:400**.

2021-2022


1. **Online seminar on Drug Delivery** by Dr.V.Raj, Professor and Head, Department of Chemistry, Periyar University, Salem on 06-07-2021. **S:145(IC)**



2. **Intercollegiate Online seminar on Iron Based MRI Contrast Agents-Dr. R. Mayil**


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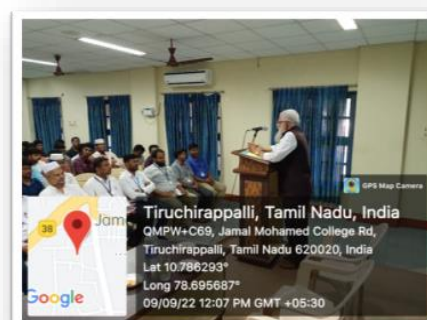
Murgan, Assistant Professor, School of Chemistry, Madurai Kamaraj University, Madurai on 17-07-2021. **S:130. (IC)**

- 3. Online seminar on Emerging Materials for Solar Hydrogen Production**-Dr. A. Pandi kumar, Scientist-Materials Electrochemistry, Division, CSIR-CECRI, Karaikudi on 27-07-2021. **S: 140. (IC)**



- 4. Online seminar on Nano-Big miracles with small Particles**-Dr. Pasupuleti Visweswara Rao, Associate Professor & Research Coordinator, Head of Unit, Non-communicable Diseases Research Niche Areas, Department of Biomedical Sciences and Therapeutics, University of Malaysia, Malaysia on 13-08-2021 **S: 99 (IC)**

- 5. Awareness on DBT programmes for pursuing higher education and research**-Dr. M.Syed Ali Padusha, Associate Professor of Chemistry, Jamal Mohamed College from 20th & 21st Oct 2021, **S:45. (ID.)**




- 6. Role of Ionic Liquids** - Dr. A. Ilangovan, Professor of Chemistry, Dean, Faculty of Science Engineering and Technology Bharathidasan University, Tiruchirappalli, 04-03-2022. **F: 30. (ID.)**

- 7. International conference on Innovations in chemical and environmental research** - Keynote address by Dr. Mohammed Sakhawat Hussain DL, Principal, College of Science and Engineering and Management, London, UK on 25-05-2022. **B: 400 (IC)**


2022-2023

- 1. Role of Science in Nation Building**, Dr. M.S. Mazhar Nazeem Khan, Co-ordinator, Centre for Civil Services Examination and former Professor, Department of Chemistry, Jamal Mohamed College (Autonomous), Tiruchirappalli – 20, on 09-09-2022, **S: 50.**
- 2. Magnetic Resonance Research - From Bench to Bedside**, Dr. Khan Hekmatyar, Assistant Director & Senior Scientist, Advanced Translational Imaging Center, Georgia State University, Atlanta, Georgia, USA, on 20-12-2022, **S:60.**
- 3. Fundamental and applications of nanotechnology**, Dr. D. Kesavan, Assistant Professor (Chemistry) & Head i/c, Department of Basic Sciences, College of Fisheries Engineering, Tamilnadu, Dr. J. Jayalalithaa Fisheries University, Vettar River View Campus, Nagapattinam, on 21-03-2023, **S: 60.**

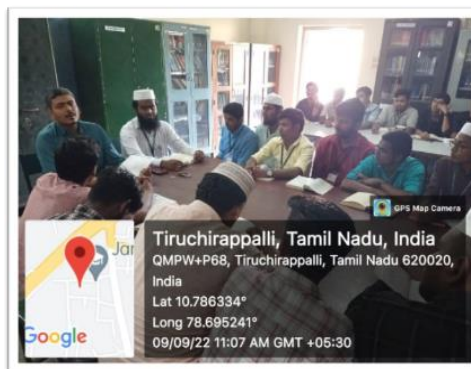



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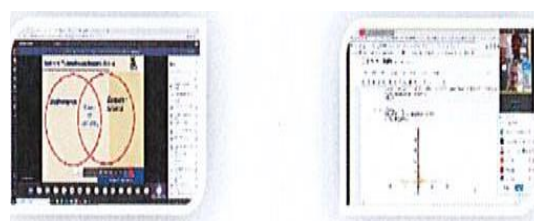
4. **Electronic Spectra of Coordination Compounds**, Dr. J. Karthikeyan, Professor and Head, Department of Chemistry, Sathyabama Institute of Science and Technology, Chennai on 23-01-2023, **S:45**.
5. **An exposure to placement Opportunities in Chemistry** Mr. Jawahar Mohamed Jamal, Biocon Pharma Ltd, Senior scientist Electronic city phase 1, Bengaluru-560099, on 03-02-2023, **S: 40**.
6. **Awareness training programme on adulteration**, Mr.K. Abdul Asik, Assistant Manager, Product-Softline-Chemicals, TUV-SUD, South Asia Pvt. Ltd., Tirupur on 29-12-2022, **S:70**.



(iii) Department of Mathematics

2020-2021

1. **Online Course on Quantitative Aptitude** from 24.07.2020 to 02.08.2020 (9 days), **S:20**
2. **Data Science using R Programming and GEO GEBRA** in association with Spoken Tutorial, 11T Bombay from 11th to 14th May 2020 (4 day), **F:90 S:45**
3. **Indian Science: COVID 19 Scenario** (National Level Webinar) on 29-05-2020.
4. **Pure and Applied Mathematics** (International Online Programme) from 11.06.2020 to 17.06.2020 (7 days), **F:24**
5. **Advances in Linear Algebra and Differential Equations** (Online Faculty Improvement Programme) from 09.07.2020 to 10.07.2020 (2 days), **F:24**
6. **Basic Concepts in Real Analysis** (Training Programme) on 06.01.2021 to 07.01.2021 (2 Days), **S:72**
7. **Algebra and its applications** (Training Programme) on 08.01.2021 to 09.01.2021 (2 Days), **S:72**
8. **Online Aptitude test** in view of National Mathematics Day on 22-01-2021. **S:110**
9. **Algebra and Analysis** (Faculty Development Programme) from 09.01.2021 to 11.01.2021 (3 days), **F:60**



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10. **Virtual Short Term Training Program on Data Science and Statistical Applications in Association with Department of Statistics, Bharathiar University, Coimbatore** from 15.01.2021 to 22.01.2021 (8 days), **F:12 S:70**

2021-2022

1. **Workshop on Astronomy** - Dr. S. Ruban Raj, Principal, Ikas College of Arts & Science, Trichy on 31-08-2021. **F: 27**
2. **Workshop on Vedic Mathematics** - Mr. Ashwani Jain, Asst. Professor of Mathematics, Khalsa College for Women, Sidhwan Khurd, Ludhiana District, Punjab from 26.10.2021 to 30.10.2021 (5 Days). **S: 87** (Interdisciplinary- Mathematics-52, Chemistry-28, Physics-7).
3. **Seminar on General Application of Mathematics**-Dr. B. Mohamed Harif, Asst. Professor in Mathematics, Rajah Serfoji Government College, Thanjavur on 10-12-2021 **S:46**
4. **Seminar on Group Theory** - Dr. B. Mohamed Harif, Asst. Professor in Mathematics, Rajah Serfoji Government College, Thanjavur on 11-12-2021. **S:39**
5. **Seminar on Present Trends in Mathematics**-Dr. R. S. Elancheeran, PMRF Fellow, Department of Mathematics, IIT Madras, Chennai on 13-12-2021. **S:176**
6. **Seminar on Applied Mathematics** -Dr. R.S. Elancheeran, PMRF Fellow, Department of Mathematics, IIT Madras, Chennai on 15-12-2021. **S:61**
7. **Seminar on Fractal Analysis and its Applications**-Dr. R. Uthayakumar, Professor of Mathematics, The Gandhigram Rural Institute Gandhigram, Dindigul on 16-12-2021. **S: 47.**
8. **Training Programme on Trouble Shooting in Computers** Mr. N. Mohamed Bayas, System Administrator, Jamal Mohamed College, Tiruchirappalli on 20-12-2021. No. of. B: 23. **(ID)**
9. **Virtual Workshop on Differential Equations and its Application** organized by Department of Mathematics from 21.12.2021 to 22.12.2021 **F:13.**
10. **FDP on ICT Tools for E-content Development** organized by Department of Mathematics from 24.01.2022 to 29.01.2022 **F:13**




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11. **Online interdisciplinary workshop on data analysis & mathematical software tools** in association with PMMMNMTT Teaching Learning Centre, Ramanujan College University of Delhi from 26.02.2022 to 03.03.2022 **F: 160.**
12. **Online Quiz programme Smart Hacks 2021-22** in association with Electronics & ICT Academy, IIT Kanpur. **S: 184 (ID)**

2022-2023


1. **Three-day workshop on Fundamentals of Probability Theory and Detection Estimation Theory** jointly with Dr. E. G. Rajan, Chairman, Pentagram Group of Companies (India, UK, USA & Canada) from 06.10.2022 to 09.10.2022 **F: 32 & S: 22**
2. **Pre-Congress Symposium on Advances in Arts, Social Sciences & Sciences: Swaraj India Perspective** as a part of the XLVI Indian Social Science Congress Prof. M. Selvam Vice-Chancellor, Bharathidasan University, Trichy on 31-10-2022 **F: 31 & S: 419**
3. **Faculty Development Programme on Exordium to MOOCS & SWAYAM:** Dr. T. Asir Associate Professor of Mathematics, Pondicherry University, Pondicherry on 16-12-2022 **F: 69**
4. **Training Programme on Application of Linear Algebra in Cryptography:** Dr. C. Durairajan, Associate Professor, Department of Mathematics, Bharathidasan University, Tiruchirappalli from 17.12.2022 to 19.12.2022 **S: 50**
5. **Workshop on Vedic Mathematics:** Sri.M.Nagaraj, Assistant Professor, of Mathematics, Vivekananda College, Madurai from 19.12.2022 to 20.12.2022 **S: 57**
6. **Seven days Aptitude training for final year UG students** Mr. A. Pratheepan, Founder of Campuscrew Training Solutions, Trichy from 19.12.2022 to 27.12.2022 **S: 149**
7. **Seminar on Systems and Control Theory** Dr. Jitraj Saha, Assistant Professor of Mathematics, National Institute of Technology, Tiruchirappalli on 16-12-2022 **S: 37**




Faculty development programme held at Jamal Mohamed College

Pg & research department of mathematics and internal quality assurance cell of Jamal Mohamed College, Trichy, organized a faculty development programme on exordium to




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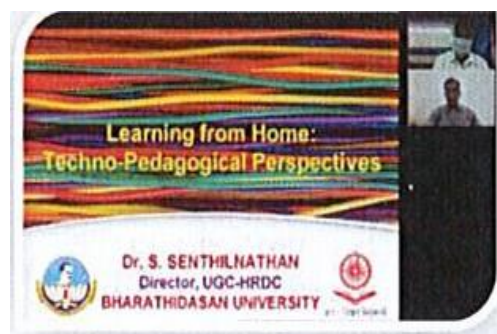
8. **Training Programme on Applying Biological Concepts on Differential Equations** Dr.P. Kandaswamy, F.N.A.Sc., Professor & Head (Rtd.), Bharathiar University, Coimbatore on 07-01-2023 **F: 1 S: 43**
9. **Seminar on Application of Mathematics** Dr. Satyajit Roy, F.N.A.Sc, Professor Department of Mathematics, Indian Institute of Technology Madras, Chennai on 07-01-2023 **F: 1 S: 43**
10. **Seminar on Research proposal Writing and Patent Drafting** Dr. G. Arthanareeswaran, Department of Chemical Engineering National Institute of Technology, Tiruchirappalli on 07-01-2023 **F: 114**
11. **Virtual Workshop on Python Programming for Biologists (in association with Nano Science and Technology** Manoj Kumar Vilas, Associate Scientific Manager, Innoplexus, Pune, Maharashtra from 11.02.2023 to 14.02.2023, **F:40 S:110 (IC)**
12. **Winter School on Mathematical Biology - Statistical Applications in Data Science (in association with Bharathiar University, Coimbatore and International Statistical Institute)** Dr. Sudeep Tanwar, Advisor, CoE, Government of Gujarat, (Senior Member, IEEE) Nirma University, India and Visiting Professor Jan Wzykowski University, Poland & University of Pitesti, Romania from 21.02.2023 to 23.02.2023 **F: 2 S: 45**
13. **National Level Students Conclave on Innovations and Ideas (In commemoration of National Science Day -2023)** on 27-02-2023 **S: 55**



(iv) Department of Physics

2020-2021

1. **Online Faculty Development Programme on C and C++** in association with Spoken Tutorial, 11T Bombay from 27.05.2020 to 30.05.2020 (4 days), **F:34**
2. **Summer Online Training Programme on LATEX** organized by the PG & Research Department of Physics, Jamal Mohamed College (Autonomous), Tiruchirappalli from 15.06.2020 to 19.06.2020 (5 days), **F:24**
3. **Online Programme on Skill Development using Learning Assistance Tools** organized by the PG & Research Department of Physics, Jamal Mohamed College (Autonomous), Tiruchirappalli from 13.06.2020 to 17.06.2020 (5 days), **S:118**





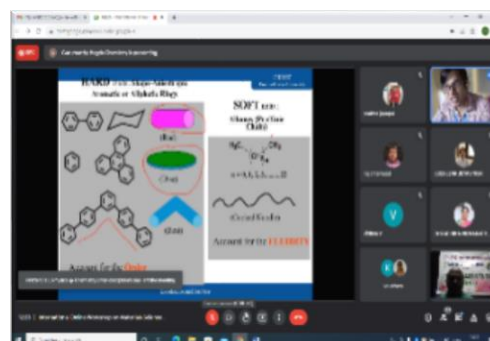
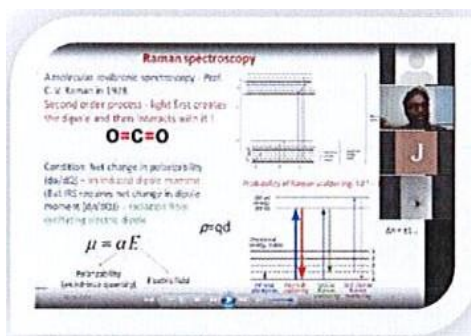
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4. **Online Faculty Development Programme on Spectroscopic Techniques** organized by the PG & Research Department of Physics, Jamal Mohamed College (Autonomous), Tiruchirappalli from 03.06.2020 to 05.06.2020 (3 days). **F:30.**
5. **Online Faculty Development Programme on Teaching, Learning and Evaluation in the Digital Era** organized by the PG & Research Department of Physics, Jamal Mohamed College (Autonomous), Tiruchirappalli from 17.08.2020 to 19.08.2020 (3 days). **F:45**
6. **Online Faculty Development Programme on Condensed Matter Physics** organized by the PG & Research Department of Physics, Jamal Mohamed College (Autonomous), Tiruchirappalli from 19.10.2020 to 21.10.2020 (3 days). **F:45**
7. **Online Faculty Development Programme on Astrophysics** organized by the PG & Research Department of Physics, Jamal Mohamed College (Autonomous), Tiruchirappalli from 11.11.2020 to 12.11.2020 (2 days). **F:38.**
8. **Training Programme on Electrical Safety and Laboratory Instruments Maintenance and Servicing** organized by the PG & Research Department of Physics, Jamal Mohamed College (Autonomous), Tiruchirappalli, on 09-02-2021.



2021-2022

1. a) **Online Workshop on Materials Science: A See-saw of Science and Engineering**-Prof. Mangalaraja Ramalinga Viswanathan, Department of Materials Engineering, Faculty of Engineering, University of Concepcion, CHILE, Latin America on 15-02-2022. **S:146. (IC)**


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b) Online Workshop on Applications of NMR in Battery Research-Dr. Dorai Arunkuma, Asst. Professor of Physics, Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, Japan on 15-02-2022. **S: 146. (IC)**

c) Online Workshop on Liquid Crystals – An Overview-Dr. Gurumurthy Hegde, Director, Centre for Advanced Research & Development (CARD), Professor of Materials Science, Department of Chemistry, Christ (Deemed to University), Bengaluru, Karnataka on 15-02-2022. **S: 146. (IC)**

d) Online Workshop on Birefringence study of NLO crystals by channeled spectrum Method-Dr. P. Hemalatha, Asst. Professor of Physics, Government Arts College Coimbatore on 16-02-2022. **S:146. (IC)**

e) Online Workshop on Materials Modeling-Dr. Basherrudin Mahmud Ahmed, Asst. Professor of Physics, School of Physics, Madurai Kamaraj University, Madurai, on 16-02-2022. **S: 146. (IC)**


f) Online Workshop on “Simulating and visualizing the physical world” Dr. K. A. Z. Syed Abuthahir, Asst. Professor of Physics, Dr. Zakir Husain College, Ilayangudi, on 16-02-2022. **S: 146. (IC)**

2. **Online Training Programme on Image Editing using Inkscape – An Open Source Scalable Vector Graphics Package**-Mr. J. Veeranathan Balaji Institute of Computer Graphics, Coimbatore on 20th to 22nd October 2021 **S: 39 (IC)**

3. **Training Programme on Role of Physics in Disaster Forecasting**-Dr. S. Selvaraj Assistant Professor, Department of Geology, National College (Autonomous) Tiruchirappalli on 17-11-2021. **S: 39 (ID)**

4. **Training Programme on Role of Physics in Soil Testing** by N.S. Anitha, Senior Agricultural Officer Soil Testing Laboratory Tiruchirappalli on 18-11-2021. **S: 40 (ID)**

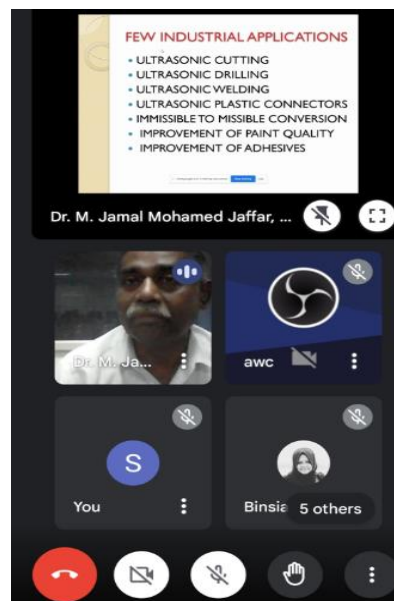




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5. **Training Programme on Oncology – Diagnostics and Therapy-** Mr. S. Karthik Chief Medical Physicist & Radiological Safety Officer, Sri Kauvery Health Care, Tiruchirappalli on 19-11-2021. **S: 39 (ID)**
6. **Laboratory skills** - K.B. Syed Ishack, Department of Physics, Jamal Mohamed College (Autonomous), Tiruchirappalli on 10-01-2022. **B: 22. (ID)**
7. a) **Seminar on Identification of Asteroid Families-** Mr. Surender Ponnalagar, Project Director, Chiguru Colab, Bangalore, National Point of Contact – India, Space Generation Advisory Council on 28-02-2022. **S: 42 (ID)**
 b) **Seminar on HAM Radio Communications-**Mr. S. Sivakumar, District Teacher Education & Training Institute, Kanchipuram on 28-02-2022. **S: 42 (ID)**
 c) **Seminar on Radiation Safety-**Mr. S. L. Ansar Ali, Head, Health Physics Laboratory, Bhabha Atomic Research Centre, Kalpakkam on 28-02-2022. **S: 42. (ID)**
8. a) **Seminar on Sir CV Raman – A Light Legendary and His Invention-**Dr. S. Gunasekaran, TANSA Awardee, Dean, Research & Development, St. Peter’s Institute of Higher Education & Research, Chennai on 03-03-2022. **S: 48. (ID)**
 b) **Seminar on Contribution of CV Raman to Science Research-**Dr. M. Selvapandiyan, Associate Professor & Head i/c Department of Physics Periyar University PG Extension Centre, Dharmapuri 03-03-2022. **S: 48. (ID)**
9. **National Webinar on Origin and Utilization of Pyramid Energy-**Dr. M. Jamal Mohamed Jaffar, Associate Professor & Head, Department of Physics, Jamal Mohamed College (Autonomous), Tiruchirappalli on 26-02-2022. **B: 100 (IC)**
10. **Workshop on PCB Making-**Mr. A. R. Kasturi, Proprietor, AK Tronics, Tiruchirappalli on 08-03-2022. **S:48**
11. **Webinar on Asteroid Search-**Mr. Surender Ponnalagar, Project Director, Chiguru Colab, Bangalore, National Point of Contact – India, Space Generation Advisory Council on 29-03-2022. **S:33 (ID)**



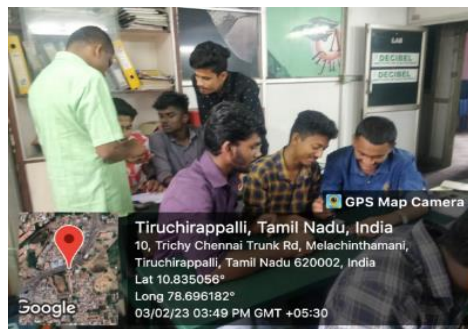

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2022-2023

1. **Training Programme on Telescope Handling (Celestron Astromaster 130 EQ)** by Mr. S. Jaya Paul, Scientific Assistant (Retd), Anna Science Centre – Planetarium, Tiruchirappalli on 05-01-2023. **S: 85 (ID.)**
2. **Telescope Handling (Celestron Astromaster 130 EQ)** by Mr. S. Jaya Paul, Scientific Assistant (Retd), Anna Science Centre – Planetarium, Tiruchirappalli on 05-01-2023. **S: 85 (ID.)**
3. **Overview of Astrometrica- Image Analysis Software (Online)** by Mr. Surender Ponnalagar, Resident Astronomer, Al Sadeem Observatory, Abu Dhabi, UAE on 01-02-2023. **S: 65 (ID.)**
4. **Smart Phone Servicing and Troubleshooting** by Mr. R. Muhammed Raiyan Fazil, Proprietor, OM Mobile Institute, Tiruchirappalli on 02-02-2023. **S: 60**
5. **Training Programme on Mobile Phone Servicing** by Er.S.Parimala Prabhu, Chairman, Decibel Institute of Electronics, Tiruchirappalli from 02.02.2023 to 08.02.2023. **S: 09**
6. **Training Programme for Non-Teaching Staff members on Maintenance and Servicing of Laboratory Instruments** by Mr. G. Mohamed Ashif, Lecturer, Instrumentation and Control Engineering, Seshasayee Institute of Technology, Tiruchirappalli on 07-02-2023. **S: 22 (ID.)**
7. **Seminar on Future of Energy Storage** by Dr. M. Ramesh Prabhu, Assistant Professor of Physics, Alagappa University, Karaikudi on 08-02-2023, **B: 114 (ID.)**
8. **Training Programme on Circuit Simulations using PSpice** by Dr. P. Megavarna Ezhilarasu, Asst. Professor of Physics, Bishop Heber College (Autonomous), Tiruchirappalli from 09.02.2023 to 10.02.2023. **S: 48.**
9. **Workshop on PCB Making** by Mr. K. Dinesh kumar, Senior Project Engineer, Marcello Tech, Tiruchirappalli from 14.02.2023 to 15.02.2023. **S: 48.**
10. **Seminar on Innovations and Challenges in Physics** by Mr. P. Dhanapal, Postgraduate Physics Teacher, Govt. Model Hr. Sec. School, Karur on 18-02-2023, **B: 70**
11. **Training Programme on Non-Destructive Testing** by Mr. M. Riyaz, Proprietor, Trichy Technical Inspection Service, Tiruchirappalli from 20.02.2023 to 25.02.2023. **S: 09**
12. **National Webinar on Ultrasonics** by Dr. M. Jamal Mohamed Jaffar, Associate Professor & Head, Department of Physics, Jamal Mohamed College (Autonomous), Tiruchirappalli on 27-02-2023. **B: 47 (ID.)**




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(v) Department of Zoology

2020-2021


1. **Online Summer Training Course on Advances in Life Sciences** from 29.3.2020 to 18.4.2020 (21 days). **S:110**
2. **International Conference on Challenges to Environment and Health** from 18.11.2020 to 19.11.2020 (2 days). **S:102**
3. **Solution Preparation and Glassware Handling- PG & Research Department of Zoology, Jamal Mohamed College (Autonomous), Tiruchirappalli, on 29.12.2020. S:45 (ID)**




2021-2022

1. **Seminar on Commercial importance of Zooplanktons**-Dr. A. Janakiraman, Assistant Professor, Department of Zoology, National College, Tiruchirappalli on 16-11-21. **S: 35**
2. **Seminar on Micro Plastics and their impacts on marine Environment**-D. Gayathri, Assistant Professor, National College, Tiruchirappalli on 23-11-2021. **S: 35**
3. **Webinar on Food and Water Safety**-Dr. Naresh Devarajan, Research Scientist, Food and Water Safety, WFCB, University of California, Davis, USA on 13.08.2021 **S: 35.**
4. **Short term training on Preservation of Zoological Specimens**-Mr. T. Pakirisami Curator Government Museum Pudukkottai on 23.03.2022 to 28.03.2022. **S: 35.**
5. **Philately Exhibition** Mr.N. Raveendran Founder President Iragukal Amritha Nature Trust Madurai on 08-12-21. **S:240. (ID)**
6. **Entrepreneurial Development Programme on Aquaculture** by Mr. V. Suresh Aquarium Consultant Vasantham Aquarium Tiruchirappalli on 04-12-21. **S: 35(ID)**
7. **Entrepreneurial Development Program (EDP): Opportunities in Mariculture** by a) Dr. R. Jayakumar Principal Scientist & Head in Charge b) Dr. B. Johnson Senior Scientist, c) Dr. K.K. Anikuttan, Scientist Central Marine Fisheries Research Institute Indian Council of Agricultural Research Mandapam from 28.09.2022 to 29.09.2022, **S: (ID)**




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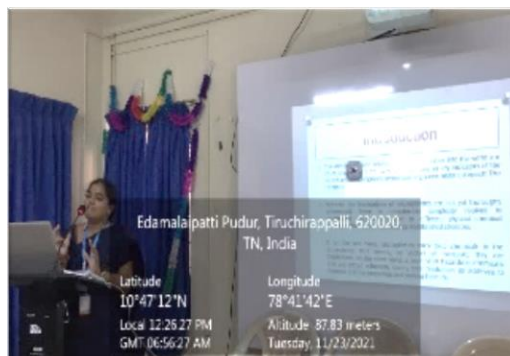



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8. **Indian Patent and Patenting-** Dr.S.N.Sheik Umar Sahith, Associate Professor of Zoology, Jamal Mohamed College, Tiruchirappalli on 17-02-22. **S:20 (ID)**

2022-2023

1. **Exhibition of Museum Specimens,** Students and teachers of 07 neighbouring Schools of Jamal Mohamed College. **ST:20, SS:110**

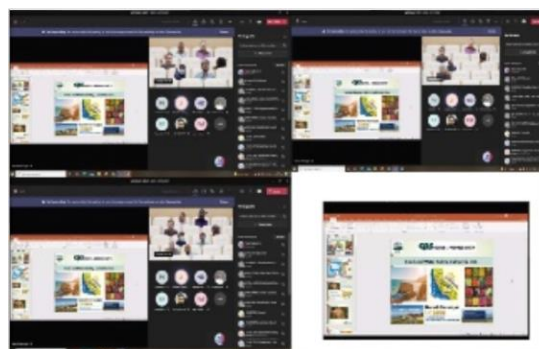


2. **Exhibition of Taxidermy Specimen preparations** for College teachers and students on 21.01.2023. **F:6, S:65**

3. **Exhibition on Fossils.** Students and teachers from Arts and Science Departments. Specimens collected by students were exhibited on 23-02-23, **F:12, S:90**

4. **Seminar on Pest of tea and its management** Dr. T.P. Rapeesh, Technical Officer, Head and Entomologist, Division of Entomology, UPASI, Valpparai. 18-10-2022 **ST:12 and S:71**

5. **Seminar on Ideas for profitable business through animal husbandry,** Mr.D.Sridhar. B.E, Integrated farm developer, Sai Guru Enterprises, Tanjore on 09-01-2023 **ST:13 and S:43**




6. **Seminar on Job opportunities for biologists through aquaculture,** Dr.M. Gajendran, Assistant manager, Technical sheng Long Biotech, Thiruvallur, 23-02-2023, **ST:13 and S:52**

7. **One day career Guidance programme** Dr.M. Aneez Mohamed, Dr.A. Sadique Bukhari, Dr.M. Meeramaideen, Mr.P.A.Ashique and Dr.R.Krishnamoorthy of the Department of Zoology. 20-12-2022, **ST:13 and S:78**

8. **Lecture Workshop on Basic cell culture techniques and its application,** Dr.S. Muhil VAnnan, Managing director, PAR Life Science and research PVT Ltd, Trichy, 29-10-2022 **ST: 12 and S:42**

9. **Seminar on Health of present youth – The wealth of future world Pvt.** Dr.A. Radha, Assistant Professor of zoology, Kunthavai Naachiyarar Govt Arts college, Thanjavur, 22-02-2023 **ST: 13 and S:54**

10. **Seminar on Importance of Lab Technician in Medical Field** Mr. Thirugnanam UP, Technical Manager, Magnum imaging and Diagnosis, Trichy, 27-10-2022 **ST:12 and S:35.** Members


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Enclosure -10: Proofs for key Performance Indicator

9.12. Books/Journal Purchased from Grants

	Botany	Chemistry	Mathematics	Physics	Zoology	Total
No. of Titles	14	10	54	14	25	117
No. of Copies	14	16	98	33	45	206

(i) Department of Botany

2020-2021


1. Research Methodology for Biological Sciences, 2006, Gurumani, N
2. Principles and Practice of floriculture, 2019, Nag, Khiromani
3. Flowers for Trade, 2021, Sheela, V.L
4. Postharvest Technology of Horticultural Crops, 2021, Sudheer, K.P
5. Textbook of Seed Science and Technology, 2021, Padmavathi, S
6. Laboratory Manual of Biochemistry, 2018, Khan, N.A
7. Introduction to Horticulture, 2010, Kumar, N
8. Objective Genetics, 2015, Thirugnana Kumar, S
9. Objective Horticulture, 2018, Verma, Anil Kumar

2021-2022

1. Research methodology for biological sciences- N. Gurumani
2. Principles and practice of floriculture Nair K. Kumar M.
3. Post-harvest methodology of horticulture crops Vol. 07 Horticulture sciences series, Sudheer K.P
4. A text book of seed sciene and Technology S.Padmavathi
5. Laboratory manual of Biochemistry, Khan

(ii) Department of Chemistry

1. Advanced Food Chemistry, 2011, Iqbal, Syed Aftab
2. Applied Chemistry: Research methodology and Areas, 2015, Chandrashekhar, J
3. Food Safety and Peservation, 2016, Kuamr, Rajeev,
4. Physico Chemical Analysis of River Water, 2007, Kislaya, Shardendu
5. Textbook of Dairy Chemistry, 2010, Shukla, A.N
6. Textbook of Forensic Chemistry, 2011, Iqbal, Syed Aftab
7. Textbook of Photochemistry, 2011, Mishra, Shubhrata R,


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8. Textbook of Soil Chemistry, 2010, Bhattacharya, L
9. Textbook of Sugar Chemistry, 2011, Arora, Amit
10. Textbook of Water Chemistry, 2011, Iqbal, Syed Aftab


(iii) Department of Mathematics

2020-2021

1. Astronomy: principles and practice, 2011, Roy, A E
2. introduction to mathematica with applications, 2019, muresan, marian,
3. Modern Algebra an introduction 2005, Durbin, John.R,
4. Operations Research: Theory and Applications, 2017, Sharma, J K ,
5. Students introduction to mathematica, 1999, Torrence, bruce. F, (2 copies)
6. Calculus, 2019, Narayanan, S,(2 copies)
7. Trigonometry for B.Sc. Mathematics Major, 2019, Narayanan, S,(2 copies)
8. Analytical Geometry, 2019, Manicavachagam Pillai, T K, (5 copies)
9. Differential Equations and Its Applications, 2019, Narayanan, S ,(2copies)
10. Quantitative Aptitude for Competitive Examinations (Fully Solved),2020, Aggarwal, R.S., (2copies)
11. Object Oriented Programming With C++,2018, Balagurusamy, E ,(3 copies)
12. Methods of Real Analysis, 2019, Goldberg, Richard R
13. Complex Analysis, 2019, Arumugam, S ,(2 copies)
14. Vector Analysis, 2018, Lipschutz, Seymour,(2 copies)
15. Calculus, 2019, Narayanan, S ,(2 copies)
16. Graph Theory With Applications to Engineering and Computer Science, 2019, Deo, Narsingh, (2copies)
17. Elements of Mathematical Statistics, 2019, Gupta,S C, (2 copies)
18. Textbook of Analytical Geometry, 1983, Manicavachagam Pillay, T K ,(2 copies)
19. Algebra, 2012, Manicavachagam Pillay, T K, (4 copies)
20. Calculus, 2012, Narayanan, S,(6 copies)
21. Elementary Number Theory, 2010, Burton, David M,(2 copies)
22. Elementary Number Theory, 2010, Burton, David M
23. Introductory Methods of Numerical Analysis, 2012
24. Trigonometry, 2012, Narayanan, S,(2 copies)
25. Elementary Number Theory, 2010, Burton, David M,
26. Introductory Methods of Numerical Analysis, 2012
27. Calculus Volume – I, Manicavachagam Pillay T K
28. Calculus Volume – II, Manicavachagam Pillay T K
29. Calculus Volume – III, Manicavachagam Pillay T K
30. Trigonometry, Manicavachagam Pillay T K. Narayanan S
31. Analytical Geometry – II, 3 Dimensions Manicavachagam Pillay T K, Narayanan T
32. Object Oriented Programming with C++, Balagurusamy E
33. Algebra Volume I, Manicavachagam Pillay T K
34. Algebra Volume II, Manicavachagam Pillay T K
35. Differential Equations, Manicavachagam Pillay T K


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36. Elements of Mathematical Statistics, Gupta S C, Kapoor V K
37. Quantitative Aptitude, Aggarwal R S
38. Schaum's outline series - Vector Analysis, Murray R. Spiegel., Seymour Lipschutz, Dennis Spellman
39. Methods of Real Analysis, Richard R. Goldberg
40. Topics in Algebra, Herstein I N
41. Introductory Methods of Numerical Analysis, Sastry S S
42. Elementary Number Theory, David M. Burton
43. Graph Theory with application to Engineering and Computer Science, N. Deo
44. Modern Algebra, M.L. Santiago
45. Complex Analysis, Arumugam S, Thangapandi Issac A, Somsundaram A
46. Operations Research (Methods and Solutions), Gupta P K, Manmohan
47. Astronomy, Kumaravelu S, Susheela Kumaravelu
48. Hands-on Start to Wolfram Mathematica and Programming with the Wolfram Language, Cliff Hastings, Kelvin ischo, Michael Morrison
49. The Student's Introduction to Mathematica and the Wolfram Language, Bruce F. Torrence and Eve A. Torrence
50. Mathematica: The Student Book, Stephen Wolfram, George Beck
51. Introduction to Mathematica® with Applications Marian Mureşan
52. Understanding Maple, Ian Thompson
53. The Maple Book, Frank Garvan
54. A Beginners Guide to R Alain F. Zuur, Elena N. Ieno, Erik H.W.G. Meesters


(iv) Department of Physics

2020-2021

1. Textbook of Optics, 2012, Subrahmanyam, N, S. Chand Publication (3 copies)
2. Heat Thermodynamics and Statistical Physics, 2010, Brij Lal, S. Chand Publication (3 copies)
3. Mechanics and Mathematical Physics, 2008, Murugesan, R S. Chand Publication (2 copies)
4. Non-Conventional Energy Sources and Utilization, 2014, Rajput, R (2 copies)
5. Properties of Matter, 2012, Murugesan, R, S. Chand Publication (3 copies)
6. Waves and Oscillations, 1994, Subrahmanyam, N, S. Chand Publication (3 copies)

2021-2022

1. Atomic and Nuclear Physics, 2022, Dr. N. Subrahmanyam, S. Chand Publication (2 copies)
2. Basic Electronics, 2021, B L Theraja, S. Chand Publication (2 copies)
3. Concepts of Astrophysics, 2019, A. Mujiber Rahman, Scitech Publication (4 copies)
4. Solved Papers Physical Sciences, Pratiyota Darpan, Upkar Prakashan Publication
5. Elements of Properties of Matter, 2022 D.S. Mathur, Chand Publication (2 copies).
6. Mathematical Physics, 2018, H K Dass, S. Chand Publication (2 copies).
7. Principles of electronics, 2020, V K Metha, S. Chand Publication (2 copies).
8. Physical Science, Tomar, Upkar Prakashan Publication (2 copies).


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(v) Department of Zoology

2020-2021

1. A text book of Invertebrate N. Arumugam, S. Leelavathy, SARAS Publication, (2 copies).
2. A text book of Chordata, N. Arumugam, SARAS Publication, (2 copies).
3. Animal Physiology, N. Arumugam, SARAS Publication, (2 copies).
4. Bio Informatics, N. Arumugam, SARAS Publication, (2 copies).
5. Biochemistry, N. Arumugam, A.SARAS Publication, (2 copies).
6. Biotechnology, N. Arumugam, A.SARAS Publication, (2 copies).
7. Developmental Biology, N. Arumugam, A. SARAS Publication, (2 copies).
8. Cell and Molecular Biology, N. Arumugam SARAS Publication, (2 copies).
9. Microbiology, SARAS Publication, (2 copies).
10. Aquaculture, SARAS Publication, (2 copies).
11. Biophysics, SARAS Publication, (2 copies).
12. Biostatistics, computer application and Bioinformatics, SARAS Publication, (2 copies).
13. Organic Evolution, N. Arumugam, SARAS Publication, (2 copies).
14. Applied Zoology, N. Arumugam SARAS Publication, (2 copies).
15. Environmental Biology, N. Arumugam, A. SARAS Publication, (2 copies).

2021-2022

1. A text book of Invertebrate N. Arumugam, N.C Nair, S. Leelavathy, N. Soundara Pandian, Publication, (2 copies).
2. A text book of Chordata N. Arumugam, A. Thangamani, S. Prasanna kumar, L.M. Narayanan, SARAS Publication, (2 copies).
3. 3Animal Physiology N. Arumugam, SARAS Publication, (2 copies).
4. Developmental Biology, N. Arumugam, SARAS Publication, (2 copies).
5. Environmental Biology, N. Arumugam, A. SARAS Publication, (2 copies).
6. Biophysics, N. Arumugam, A. SARAS Publication, (2 copies).
7. Biostatistics, computer application and Bioinformatics, N. Arumugam, A. SARAS Publication, (2 copies).
8. 8A Text Book of Embryology (Developmental Zoology), N. Arumugam, SARAS Publication, (2 copies).
9. Cell and Molecular Biology, SARAS Publication, (2 copies).
10. Genetics, SARAS Publication, (2 copies).


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Enclosure -11: Proofs for key Performance Indicator

9.13. Outreach activities (Popular lectures)

***S: Number of Students, B: Beneficiaries, SS: School Students, ST: School Teachers, ID: Inter Departmental Programme, IC: Intercollegiate.**

Botany	Chemistry	Mathematics	Physics	Zoology	Total
12	13	24	21	19	89

(i) Department of Botany

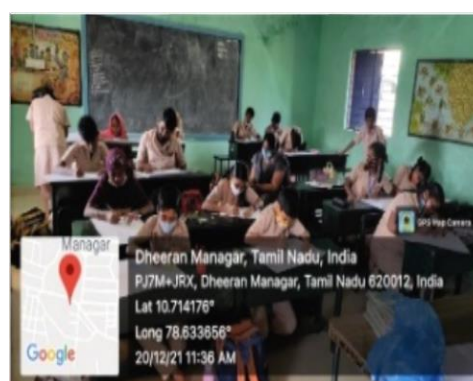
2020-2021

- Hand sanitizer prepared as per WHO standard and 40 liters handed over to Trichy Police Department on 31-03-2020**, which was appreciated by the Assistant Commissioner of Police, Trichy city. **B: 120**
- Virtual training on Herbarium Techniques for School teacher on 29-08-2020 ST:21** (School teachers from neighbouring schools of Trichy).
- Online programme on Season Watch for School teachers on 05-09-2020 ST: 25** (School teachers from neighbouring schools of Trichy).
- Awareness programme on Traditional Knowledge Documentation for School teachers on 19-12-2020, ST:34** (School teachers from neighbouring schools of Trichy).



2021-2022

- Traditional Knowledge documentation and awareness programme – School students in Amoor village near Salem on 20-04-21 SS:25**
- Seed Ball preparation & Nursery technique to school teachers and students of Ayesha Girls Matriculation Hr. Sec. School, Tiruchirappalli on 23-11-2021 ST:12; SS:20.**



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3. **Awareness on Pollution and its control** to school teachers and students of Ayesha Girls Matriculation Hr. Sec. School, Tiruchirappalli on 02-12-2021. **ST: 12; SS:40.**
4. **Botanical Techniques** - Dr. B. Balaguru, Asst. Professor of Botany, Jamal Mohamed College to school teachers and students of Panchayat Union Middle School, MGR Nagar, Nagamangalam, Tiruchirappalli on 20-12-21 **SS:40.**

2022-2023

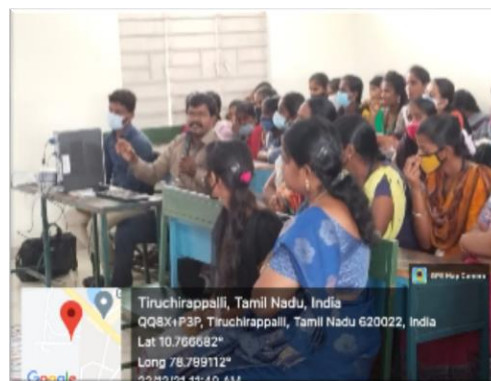
1. **International Biodiversity Day: Drawing and Elocution Competition** for school children from Karur and Tiruchirappalli Districts on 22-05-2022 **SS: 120.**
2. **National Pollution Control Day and Wildlife Conservation Day** programme for school students on 02-12-2022 **SS:96**
3. **Biology inspire programme** to school students from Government Adi Diravidar Girls Higher Secondary School, Kattur, Tiruchirappalli on 22-02-2023 **SS:25**
4. **Training on Mushroom Cultivation Techniques** to school teachers of Government Adi Diravidar Girls Higher Secondary School, Kattur, Tiruchirappalli on 24-02-2023 **SS:20**



(ii) Department of Chemistry

2020-2021

1. **Hand sanitizer prepared as per WHO standard and 40 liters** handed over to Trichy revenue Department, Dr. M. Syed Ali Padusha, Associate Professor of Chemistry, Jamal Mohamed College, Tiruchirappalli-20 on 31-03-2020, **B:200.**
2. **Two days Training Programme on Production of domestic products**, Gundur village of Tiruchirappalli, Dr. M. Syed Ali Padusha, Associate Professor of Chemistry and Dr. S. S. Syed Abuthahir, Assistant Professor of Chemistry, Jamal Mohamed College (Autonomous), Tiruchirappalli-20, Jamal Mohamed College, Tiruchirappalli-20 held from 20.2.2021 to 21.02.2021, **B: 70.**





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2021-2022


1. **Chemical structures and their interpretation using chemical software** - Dr. M. Purushothasman, Asst. Professor of Chemistry, Jamal Mohamed College & Dr. S. S. Syed Abuthahir, Asst. Professor of Chemistry, Jamal Mohamed College to Government Arts College students, Tiruverumber, Tiruchirappalli on 22-12-2021, **S:** 70.
2. **Chemical structure Drawing using Chemdraw**-Dr. S. S. Syed Abuthahir, Asst. Professor of Chemistry, Jamal Mohamed College to School Teachers on 08-01-2022, **B:** 21
3. **Water Quality Parameters Analysis**- Dr. J. Sirajudeen, Asst. Professor of Chemistry, Jamal Mohamed College to (School teachers from neighbouring schools of Trichy) on 08-01-2022, **B:**21.
4. **Identification of Water Quality Parameters**- Dr. R. Abdul Vahith, Asst. Professor of Chemistry, Jamal Mohamed College at Barma colony, Navalpattu, Tiruchirappalli on 26-12-2021, **B:**42.
5. **Domestic products preparations**-Dr. S.S.Syed Abuthahir, Asst. Professor of Chemistry, Jamal Mohamed College at Navalpattu, Tiruchirappalli on 26-12-2021, **B:**42.
6. **Identification of Water Quality Parameters**-Dr. R. Abdul Vahith, Asst. Professor of Chemistry, Jamal Mohamed College at Nagamangalam, Tiruchirappalli on 18-12-202, **B:**42.



2022-23

1. **Analysis of water quality Parameters**- Dr. R. Abdul Vahith, Assistant Professor of Chemistry, Jamal Mohamed College, Tiruchirappalli on 24-03-2022 UG students of Chemistry, Thanthai Periyar Govt. Arts & Science college, Tiruchirappalli, **B:**40.
2. **Drawing chemical structure-using Chemdraw Software**-Dr. S. S. Syed Abuthahir, Asst. Professor of Chemistry, Jamal Mohamed College, Tiruchirappalli on 24-03-2022 to UG students of Chemistry, Thanthai Periyar Govt. Arts & Science college Tiruchirappalli, **B:**40.




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3. **Skill development training**, Mr. Mohamed Ali Jinnah, Assistant Professor, Jamal Mohamed College (Autonomous), Tiruchirappalli – 20, on 11-10-2022 to UG students of Chemistry, Thanthai Periyar Govt. Arts & Science college Tiruchirappalli, **B:40**.
4. **Domestic products preparation**, Dr. M. Anwar Sathiq, Assistant Professor, Department of Chemistry, Jamal Mohamed College (Autonomous), Tiruchirappalli on 09-09-2022 to College Teachers, **B:35**.

(iii) Department of Mathematics

2020-2021


1. **COVID-19 awareness program** on 24-03-2020 (**B:** pamphlets were distributed to 1000 people).
2. **What to pursue after Twelfth? (Popularization of Science career)** - Online programme from 19.07.2020 to 21.07.2020 **SS: 800**
3. **Applications of Matrices** - Online program on 03-10-2020 to the HSS teachers **ST: 150**
4. **Science Quiz** for Higher Secondary School students on 25-02-2021 **SS: 62**



2021-2022

1. **Theory of Equations** - Dr. M. Mohamed Althaf, Assistant Professor, Department of Mathematics, Jamal Mohamed College, Tiruchirappalli to School teachers on 2 0-11-2021. **ST: 20**
2. **Math's & Magic's** - Mr. M. Manikandan, District Secretary, Tamil Nadu Science Forum, Tiruchirappalli for Corporation Middle School students of Subramaniapuram, Tiruchirappalli on 10-12-2021. **SS: 99**
3. **Activity Based Mathematics Learning** - B.Sc. Mathematics Students to Corporation Middle School students of Subramaniapuram, Tiruchirappalli on 10-12-2021. **SS: 40**.
4. **Importance of Life Skills Education** - Dr. R. Jahir Hussain, Associate Professor of




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Mathematics, Jamal Mohamed College, Tiruchirappalli to School Teachers on 11-12-2021. **ST: 15**


5. **Distribution of pamphlets** for awareness about Omission to Students & Public at TVS Tollgate, Trichy on 16.12.2021 to 18.12.2021 **B: 400**
6. **Experimental Mathematics** - B.Sc. Mathematics Students to Panchayath Union Middle School Students of Gandhinagar, Tiruchirappalli on 18-12-2021. **SS: 30.**
7. **Experimental Learning** - B.Sc., Mathematics Students to B.H.M High School Students, Tiruchirappalli, 26-02-2022. **SS: 110**
8. **Experimental Learning using Mathematic Models** - B.Sc., Mathematics Students to Corporation Middle School Students, Airport, Tiruchirappalli on 28-02-2022. **SS:65**
9. **We know Science** - Dr. D. Dhamodharan, Asst. Professor of Mathematics, Jamal Mohamed College to Corporation Middle School Students, Airport, Tiruchirappalli on 28-02-2022. **SS:42**
10. **Experimental Learning using Mathematic models** - B.Sc., Mathematics Students to Corporation High School Students, Airport, Tiruchirappalli on 28-02-2022. **SS:42**



2022-2023

1. **Environment for Health and Wellbeing** – Programme for School teachers by Dr.N.Sathiyamoorthy, Assistant Head Master E.R. Higher Secondary School, Tiruchirappalli on 14-09-2022. **ST:123**
2. **Training Programme for Higher Secondary School Mathematics Teachers** (Applications of Matrices and Determinants; Complex Numbers; Theory of Equations; Inverse Trigonometric Functions; Two Dimensional Analytical Geometry-II) - Dr K. Thirumurugan PGT- Mathematics Govt. Higher Secondary School Valuthavur, Villupuram (Dt) from 12.09.2022 to 18.09.2022, **ST:43**
3. **Training Programme for Higher Secondary School Mathematics Teachers** (Applications of Vector Algebra; Applications of Differential Calculus; Differentials and Partial Derivatives; Applications of Integration)- Dr K. Thirumurugan PGT - Mathematics Govt. Higher Secondary School Valuthavur, Villupuram from 19.09.2022 to 25.09.2022, **ST:43**




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4. **Training Programme for Higher Secondary School Mathematics Teachers** (Applications of Integration; Ordinary Differential Equations; Probability Distributions; Discrete Mathematics)- Dr K. Thirumurugan PGT- Mathematics Govt. Higher Secondary School Valuthavur, Villupuram from 26.09.2022 to 30.09.2022, **ST:43**
5. **LaTeX** - Dr. D. Dhamodharan Assistant Professor of Mathematics Jamal Mohamed College Tiruchirappalli, Training Programme on 23-09-2022. **F:1 S: 62**
6. **Dr. A.P.J. Abdul Kalam Birth Anniversary Memorial Math Lab Activities** - UG Students of Mathematics St. Mary's Thope Middle School, Trichy on 14-10-2022. **SS:65**
7. **Entrepreneurship Culture** - Programme for Capacity enhancement of school teachers by Mr. J. Ananthanarayana Prasad, Senior Branch Manager, National Hub Office, Chennai on 1-11-2022. **S:100**
8. **Activity Based Mathematics Learning** UG Students of Mathematics, Municipal Middle School, Beema Nagar, Trichy on 25-01-2023. **SS:214**
9. **Activity Based Mathematics Learning** UG Students of Mathematics Corporation High School, Senthaneer Puram, Trichy on 07-02-2023. **SS:198**
10. **Mathematics Science Festival** on the eve of National Science Day UG Students of Mathematics, 8 different Schools at Trichy on 27-02-2023. **SS:255**




(iv) Department of Physics

2020-2021

1. **Awareness About Solar Eclipse-** Programme for school teachers by Dr. M. Jamal Mohamed Jaffar, Head of Physics, Jamal Mohamed College Tiruchirappalli on 21-6-2020. **ST:321.**
2. **Role of Meteorites in the Solar System-** Programme for School teachers by Mr. J. Manohar, Secretary, Tamil Nadu Science Forum, Trichy on 30-06-2020. **ST: 118.**
3. **Constructive Use of Nuclear Power-** Programme for school teachers by Mr. B. Srinivasan, Scientific Officer, Bhabha Atomic Research Centre, Kalpakkam on 30-08-2020. **ST: 63.**
4. **The Great Conjunction of Jupiter and Saturn- An event after 397 years -** Programme for school teachers by Mr. V. Rajasekar, Scientist, ISRO, Trivandrum from 19th to 21st December 2020. **ST: 83.**




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2021-2022

1. **The Great Conjunction of Mars and Venus** – Programme for college teachers and students by Dr. T. V. Venkateshwaran, Senior Scientist, Vigyan Prachar, New Delhi on 12-07-2021, **B: 79.**



2. **World Science Space Programs** - Programme for college teachers and students by Dr. Mylswamy Annadurai, Former Director – ISRO, Bangalore on 04-10-2021. **B: 117**

3. **Role of ISRO in the Development of Science and Technology** - Programme for school teachers and students by Mr. V. Rajasekar, Scientist, ISRO, Trivandrum to School Teachers on 20-10-2021. **B: 93**

4. **Neutrino – An Elusive Particle** – Programme for School and College Teachers by Dr. Mohammad Sajjad Athar, Professor of Physics, Aligarh Muslim University, Uttar Pradesh on 16-11-2021, **B:57**




5. **Learning Made Simple** - Dr. M. Thirunavukkarasu, Research Associate Department of Educational Technology Bharathidasan University, Tiruchirappalli to School teachers at Bharathi Matric Higher Secondary School, Tiruchirappalli on 13-12-2021, **B: 10**

6. **Learning Made Simple** - Dr. M. Thirunavukkarasu, Research Associate Department of Educational Technology Bharathidasan University, Tiruchirappalli to School Teachers at Khajamian Higher Secondary, Tiruchirappalli on 21-12-2021. **B: 15**

7. **Sky-Watch Programme** - Mr. S. Jaya Paul, Scientific Assistant (Rtd.), Anna Science Centre – Planetarium, Tiruchirappalli to School Teachers at Khajamian Higher Secondary, Tiruchirappalli on 17-12-2021. **B: 74**



8. **HAM Radio as a Technical Hobby for Social Service** - Dr. A. Aslam, Assistant Professor Botany, Jamal Mohamed College, Tiruchirappalli to School students and teachers of Bharathi Matric Higher Secondary School, Tiruchirappalli on 05-02-2022. **B: 82.**


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2022-2023


1. **Zero Shadow Day** – Mr. M. Marimuthu, Young Scientist Awardee, National Children’s Science Congress to School students and teachers of Adimoolam Govt. School, Subramaniapuram, Tiruchirappalli on 17-04-2022. **S: 20**
2. **Sky-watch** - Programme for college and school students by Mr. S. Jaya Paul, Scientific Assistant (Retd), Anna Science Centre-Planetarium, Trichy on 30-05-2022, **ST: 79**
3. **Asteroid Identification** - Mr. S. Ingersol, Senior Scientist, ISRO, Bengaluru to Govt School students of Erode, Karur, Thirupathur and Pudukkottai, on 03-09-2022. **B: 25**
4. **Science Made Simple** - Dr. M. Jamal Mohamed Jaffar, Head, Department of Physics, Jamal Mohamed College, Tiruchirappalli to School students and teachers of AVM Public Hr. Sec. School, Sevoor, Sivagangai, on 17-09-2022, **B: 19**
5. **Telescope Handling** - Mr. J. Manohar, State Co-ordinator, Tamil Nadu Astronomical Science Society to Teachers and Students of Bharathi Matriculation school, Tiruchirappalli on 30-12-2022, **B: 15**
6. **Moon Festival** - Mrs. T. Santhi, Advisor, Tamil Nadu Astronomical Science Society to Students of Khajamian School, Tiruchirappalli on 04-02-2023, **B: 30**
7. **Construction of Newtonian Reflector Telescopes** - Mr. Bharathkumar Velusamy, Product Manager, Chiguru Colab, Bengaluru, to Govt School students of Erode, Karur, Thirupathur and Pudukkottai, on 24-02-2023, **B:33**
8. **Meet the Scientist** – Prof. Elangovan Rajagopalan, Former ISRO Scientist, Joint Pacific Space Programme, Bengaluru to Govt School students of Erode, Karur, Thirupathur and Pudukkottai, on 25-02-2023, **B: 22**
9. **Open Source hardware in HAM Radio for activity based learning, Research and Development** – Dr. A. Aslam, Asst. Professor of Botany, Jamal Mohamed College, Tiruchirappalli to Students and teachers of Bharathi Matriculation School, on 27-02-2023, **B: 80**




(v) Department of Zoology

2020-2021

1. **Essentials of Values and Ethics in the Post Covid Era** – Programme for school


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teachers by Dr. I. Joseph. A. Jerald, Head, Department of Zoology, Jamal Mohamed college on 25-08-2020 (B:32 ST)

2. **Virtual Classroom -Need of the hour –**

Programme for school teachers Dr.M.Aneez Mohamed Associate Professor, Department of Zoology, Jamal Mohamed college on 21-08-2020 B:21

3. **Ornamental Fish culture,** Mr.V.Suresh, Aquarium Consultant, Vasantham Aquarium, Tiruchirappalli to students of Navalur Kottapattu village, Tiruchirappalli on 13-02-2021 ST:50



4. **Vermiculture and Composting,** Programme for school teachers by Dr. M. Meeramaideen, Assistant Professor, Jamal Mohamed college on 21-02-2021 ST:21

2021-2022

1. **Museum Visit** for School Students and College Students at Department of Zoology, Jamal Mohamed College, Tiruchirappalli on 08-12-21. SS:225.

2. **Awareness for Clinical Waste Disposal-** Dr. R. Krishnamoorthy, Assistant Professor, Jamal Mohamed college at Nagamangalam village and MGR Nagar, Tiruchirappalli for the village people on 19-12-21, SS:35.




3. **Developing Scientific Temper -** Dr. R. Krishnamoorthy, Assistant Professor, Jamal Mohamed college at SBIOA matric Hr. Sec. School, Trichy on 28-02-2022. SS:100.

4. **Importance of checking water quality parameters-**UG students to school students participated in National Science day celebration on 28-02-22. S:40

5. **Aquaculture training-** Mr.V.Suresh, Aquarium Consultant to school students of Nagamangalam village and MGR Nagar, Tiruchirappalli on 04-01-21. SS:56.



6. **Philately Exhibition** for school and College students on 08-12-21. SS: 250


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7. **Training on Vermiculture and composting** for School Teachers by Dr. M. Meeramaideen, Assistant Professor, Jamal Mohamed college on 21-02-2021 **ST:21**
8. **Entrepreneurial Development** Programme on Aquaculture for College teachers of Tiruchirappalli, Mr. V. Suresh, Aquarium Consultant, Vasantham Aquarium, Tiruchirappalli on 22-02-2023, **B:56**


2022-2023

1. **Museum Visit for School Students**, Dr. R. Krishnamoorthy, Assistant Professor, Jamal Mohamed college, on 4-09-2022, **SS:85 F:5**
2. **Role of Science in National Building**. for Government High School, Siruvallur by Dr. R. Krishnamoorthy, Assistant Professor, Jamal Mohamed college, on 17.10.2022 **SS:100**
3. **Aquarium Keeping** programme for Govt Higher Sec. School, Poonampalayam, Tiruchirappalli by Mr.V. Suresh, Aquarium Consultant, Vasantham Aquarium, Tiruchirappalli on 18-10-2022 **B:80**
4. **Fresh-water fish culture and pond construction**. for Govt Higher Sec. School, Poonampalayam, Tiruchirappalli by Dr. R. Krishnamoorthy, Assistant Professor, Jamal Mohamed college on 18-10-2022 **B:80**
5. **Preparation of Science Projects**, programme for school teachers Dr. M. Salahudeen, Assistant Professor, Jamal Mohamed college on 03-09-2022 **ST:57**
6. **Fossil studies**. programme for Govt Hr Sec School, Siruvalloor, Ariyalur. by Dr. R. Krishnamoorthy, Assistant Professor, Jamal Mohamed college on 20-02-2023 **S:20**
7. **Preparation of project reports for funding agencies** – programme for college teachers of Tiruchirappalli by Dr. Deshmuk, General Secretary, The Association of Microbiologists of India on 22-02-2023 **F:20**




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Enclosure -12: Proofs for key Performance Indicator

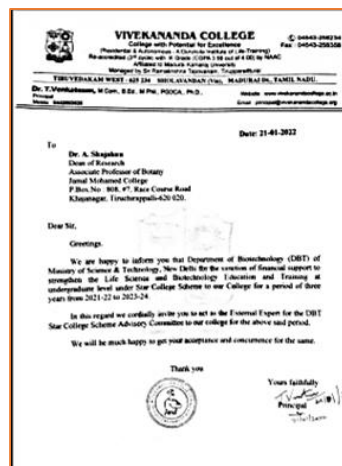
9.14. College Mentored to apply for DBT Star College Grants

Jamal Mohamed College has been mentoring the following colleges to apply DBT Star college scheme.

- i. Vivekanda College, Thiruvengadam, Madurai
- ii. G.T.N. College, Dindigul
- iii. A.V.V. M Sri Pushpam College, Poondi, Thanjavur
- iv. Marudhar Kesari Jain College for Women, Vaniyambadi, Tirupattur
- v. The New College, Chennai

Among these five colleges, Vivekanda College, Thiruvengadam, Madurai, G.T.N. College, Dindigul, A.V.V. M Sri Pushpam College, Poondi, Thanjavur have been selected for DBT Star College Scheme.

Dr. A. Shajahan, Co-Ordinator DBT Star College Scheme, Jamal Mohamed College is an External Expert of Advisory committee for DBT Star College Schemes carried out by Vivekanda College, Thiruvengadam, Madurai and A.V.V. M Sri Pushpam College, Poondi.




Enclosure -13: Proofs for key Performance Indicator


9.15. Invited Lectures

***S: Number of Students, F: Faculty, B: Beneficiaries, SS: School Students, ST: School Teachers, ID: Inter Departmental Programme, IC: Intercollegiate.**

	Botany	Chemistry	Mathematics	Physics	Zoology	Total
ID	7	9	6	4	1	34
IC	8			21	3	24
Core	20	6	25	8	17	77
					Total	135


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(i) Department of Botany

2020-2021

1. **Essentials in research and how to do student group projects** - Dr.S. Seshadri, Indigenous and Frontier technology, Research Centre, Chennai, on 12-06-2020. **B:40**
2. **Research and entrepreneurship possibilities for budding graduates** - Mr. P. Sureshkumar, Proprietor and CEO of agna inc., Coimbatore on 13-06-2020, **B:40**
3. **Mathematics in nature the golden secret of shapes and pattern** -N. Nagamurugan, Associate Professor, Department of Botany, Government Arts College, Melur, on 22-06-2020, **B:24**
4. **Plant tissue culture technology for seed industries** - Dr. Asmabhintiawal, Associate Professor, Faculty of Plantation and Agrotechnology, Universititekologi mara Malaysia, on 06-01-2020, **B:324 (IC)**
5. **Promising wealth creation initiative through borassusflabellifer plantation to uplift the livelihood of rural community** - Dr. Alawisulaiman, Associate Professor, Faculty of Plantation and Agrotechnology, Universititekologimara Malaysia, on 06-07-2020. **(IC)**
6. **Understanding the molecular mechanism of agarwood wood formation** - Dr. J. Kandakumar, Manager, Research and Development, Masai Industrial Park, Malaysia on 07-07-2020, **B:324 (IC)**
7. **Ethylene involvement in pollen grains thermo tolerance mechanisms** - Dr. J. Sridharan, Post-doctoral Fellow, School of Plant science and Food security, Tel-aviv University, Israel on 07-07-2020, **B:324 (IC)**
8. **Breast cancer and its effective diagnosis from breath** - Dr. Syed sulthan, Research fellow, School of applied sciences, RMIT University, Melbourne, Australia on 08-07-2020, **B:324 (IC)**
9. **Phytochemistry and its application** - Dr. N. Palaniyappan, Guest researcher in Material Chemistry, RIMIT University, Melbourne, Australia on 08-07-2020, **B:324 (IC)**



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10. **Vertical farming and hydroponics** - Dr. Murtaza hassan, Principal Scientist, Centre for Protected Cultivation Technology (cpct), ICAR-IARI, Pusa, New Delhi on 13-07-2020, **B:254 (IC)**
11. **Biofuel — green energy** - Dr. M. N. Abubacker, Associate Professor of Biotechnology, National college, Tiruchirappalli on 14-07-2020, **B:254 (IC)**
12. **Diversity and biotechnological potentials of mushrooms** - Dr. A. Panneerselvam, Associate Professor & Head (retd.), Department of Botany & Microbiology, A. V.V.M. Sri Pushpam College (Autonomous), Poondi on 15-07-2020, **B:254 (IC)**

2021-2022

1. **Integrated Pest Management** - Dr.B.Padmanaban, (Former) Principal Scientist, ICAR – National Research Centre for Banana, Thayanur, Tiruchirappalli, 21-10-2021. **S:35 (ID)**
2. **Pandemic disease and importance of Vaccine** - Dr. A. Vairamoorthy Administrative officer, Pasteur Institute of India, Coonor, 22-11-2021. **S:30 (ID)**
3. **Novel Biopesticides for crop Production-** Dr. K. Sahayaraj, Associate Professor of Zoology St. Xaivers College, Palayamkottai, 10-03-2022 **S: 28 (ID)**
4. **Species Recovery and Conservation** - Dr. S. Kaliamoorthy Scientist E, National Orchidarium and Experimental Garden BST, SRC, Yercaud on 10-03-2022 (FN). **S:28 (ID)**
5. **Bioprospecting of medicinal Plants** - Dr. Shanthiraj Asst. Professor of Botany, Holy cross college (Autonomous), Tiruchirappalli, 10-03-2022 (AN). **S:28 (ID)**
6. **Nutraceuticals of Traditional Rice Varieties-** Dr.S.Bakiyalakshmi, Asst. Professor of Biotechnology, Bonsecours College for Women, Thanjavur, 11-03-2022 (FN). **S:28 (ID)**
7. **Developing bioentreneur skills among the biological society** - Dr.Amzad Basha Kolar, Asst. Professor of Botany, The New College (Autonomous) Chennai on 11-03-2022 (AN). **S:28 (ID)**
8. **Plant viruses in vegetable Crops** - Dr. K. Kathiravan, Associate Professor of Biotechnology, Madras University, Chennai,14-03-2022. **S:28 (ID)**
9. **Carrier Opportunities in Biology** - Dr. N. Sisubalan, Assistant Professor, Department of Botany, Bishop Heber College Tiruchirappalli on 13-12-2021. **S:28 (ID)**




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10. **The Way forward: Technology for enabling rural Economy** - Dr. A. Sangeetha, Assistant Professor, Department of Nutrition and Dietetics, Jamal Mohamed College, Tiruchirappalli on 17-12-2021. **S:28. (ID)**
11. **Science and Technology for Sustainable Future** - Dr. Cathrine Sara, Assistant Professor & Head, Department of Botany, Holy Cross College, Tiruchirappalli, 25-02-2022. **S:150 (ID)**

2022-2023

1. **Forests Lungs of Earth** - Mr. A. Mageshwaram, Range Officer, Manaparai Range, Trichirappalli Forest Division, Tamil Nadu Forest Department, 21-03-2022. **S:34**

2. **Self-discipline qualities** - Mr. M.S.M. Vallawan, Deputy Superintendent of Police, Perambalur District on 27-07-2022

3. **Importance of the Student-Teacher relationship** - Dr. A.Asiam, Assistant Professor Department of Botany on 5-09-2022.

4. **Millets-Nutricereals for changing life styles** - Dr.B.Balaguru, Department of Botany, Jamal Mohamed College Interdepartmental awareness programme on 6.12.2022.**B: 70 (ID)**

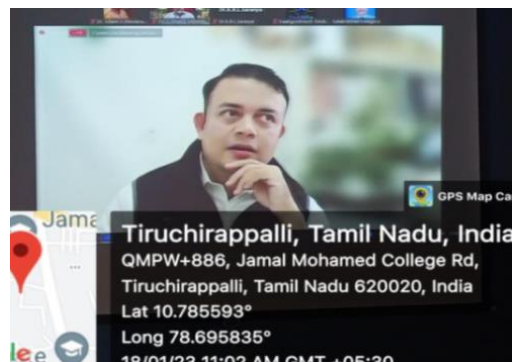
5. **Mathematical Biology Interdepartmental Satellite Symposium on Interdisciplinary Studies in Biosciences** - Dr. Felix Bast Head of the Department of Botany, Central University of Punjab on 18-01-2023 (online) **(ID)**


6. **Remote Sensing Application in Biodiversity** - Dr. K. R. L. Saranya, National Remote Sensing Centre (NRDC), ISRO, Hyderabad. on 18-01-2023 (online) **B: 145 (ID)**

7. **IPR and Biodiversity** - Dr. Sanjeeva Kumar Majumdar, Manager in Start-up Activities & Intellectual Property Division of National Research Development Corporation, New Delhi on 18-01-2023 (online) **B:145 (ID)**


8. **Implications of computer Stimulations in Design of Lead Molecules** - Dr. A. Puratchikodi Professor and Head Department of Pharmaceutical Technology BIT Campus, Bharathidasan University, Tiruchirappalli on 19-01-2023 (offline) **B: 145 (ID)**

9. **Nano biotechnology** - Dr. M. Manickavasagam Assistant Professor, Bharathidasan University, Tiruchirappalli on 19-01-2023. **B: 145 (ID)**




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10. **Fabrication of a Biosensor: Overview and methods** - Dr. V. Manickam Assistant Professor, Department of Electronics St. Joseph's College, Tiruchirappalli on 19-01-2023 (offline) **B: 145 (ID)**
11. **Green Skill Development among the Biological Students** - Dr. Amzad Basha Kolar, Assistant Professor of Botany, The New College (Autonomous) Chennai - 600 014. **B: 45**
12. **Research Projects for Social Development** - Dr. Catharin Sara, HOD of Botany, Holy Cross, College, Tiruchirappalli on 25-02-2023. **B: 45**

(ii) Department of Chemistry

2020-2021


1. **Analytical separation techniques** - Dr.V.M. Biju, Associate Professor of Chemistry, National institute of technology, Tiruchirappalli on 28-05-2020. **B: 45**
2. **Strategies to identify medicinally potent compounds from plants** - Dr. V.S. Pragadheesh, Scientist, CSIR-CIMAP, Bangalore on 17-06-2020. **B: 45**
3. **Soil nutrients** - C. Elangovan, Regional sales manager, Cropex private limited, Bangalore on 22-06-2020. **B: 55**



2021-2022

1. **Impact of pesticides on environmental and human Health** - Dr. N. Vasimalai, Asst. Professor of Chemistry, BS Abdur Rahman Crescent Institute of Science and Technology, Chennai, 27-10-2021. **S:9 (ID)**
2. **Building an innovation Ecosystems in Colleges** - Dr. S. Senthamarai, Associate professor & Head, Department of Economics and Dr. Sujatha Elangovan, Assistant Professor, Department of Zoology, Holy Cross College(A), Tiruchirappalli on 10-01-2022. **F: 107 (ID)**
3. **Citation Database** - Dr. R. Balasubramani, Associate Professor, Department of Library and Information Science, Bharathidasan University Tiruchirappalli on 24-01-2022. **F: 69 (ID)**
4. **Scholarly Information Resources** - Dr. C. Ranganathan, Associate Professor, Department of Library and Information Science, Bharathidasan University Tiruchirappalli on 25-01-2022. **F:69(ID)**

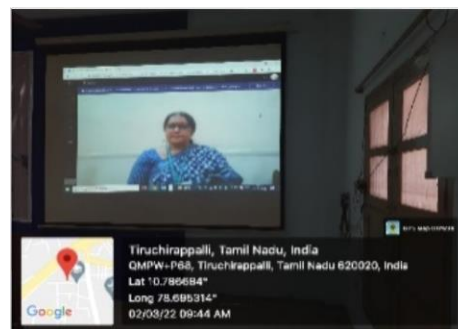



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5. **Entrepreneurship & Startups** - Dr. N. Prasanna Director i/c Bharathidasan University Entrepreneurship, Innovation and Career Hub (BECH)Bharathidasan University, Tiruchirappalli on 27-01-2022. **F: 69 (ID)**



2022-2023

1. **Preparation of Winning Research Proposals** - Dr. Kitheriyan Sahayaraj, Associate Professor, Department of Zoology, St. Xavier's College (Autonomous), Palayamkottai on 08-02-2023, **B: 59**
2. **Prevalence of fluoride and its optical detection** - Dr. K. P. Elango, Professor and Head, Department of Chemistry, Gandhigram Rural Institute (Deemed to be University), Gandhigram, Dindigul on 23-01-2023 **B: 30**
3. **Business Opportunity Identification and Market Survey** - Er. D. Ravi, Proprietor, Techny Chemy Tiruchirappalli on 27-01-2022, **F: 69 (ID)**
4. **Quality Research Writing** - Dr. S. Senthilnathan, Director (FAC) UGC - Human Resource Development Centre (HRDC) Bharathidasan University Tiruchirappalli on 28-01-2022. **F: 69(ID)**
5. **Digital learning and Teaching** - Dr. Elavazhagan Kannan Librarian & Chief Knowledge Officer Indian Institute of Management Tiruchirappalli on 29-01-2022. **F: 69 (ID)**
6. **Contribution of Nobel laureates to Science and Technology** - Dr. Iruthaiya Jothi, Assistant Professor, Department of Chemistry, St. Joseph's College (Autonomous) Tiruchirappalli on 25-02-2022. **F: 40 (ID)**




(iii) Department of Mathematics


2020-2021

1. **Indian science: covid 19 scenario** - Dr. T.V. Venkateswaran, Scientist 'F', Vigyanprasar, Department of Science and Technology, New Delhi on 29-05-2020.
2. **Small world phenomenon** - Dr. Rajesh Singh, Assistant Professor of mathematics, Ramanujan college, Delhi on 16-06-2020.
3. **Introduction to group projects** - Dr. N. Rajeswari, Associate Professor of Mathematics, Sri GVG Visalakshi college for women, Udumalpet on 25-06-2020.
4. **Applications of sagemath software** - Dr. P. S. Srinivasan, Associate Professor of Mathematics, Bharathidasan University, Trichy on 22nd & 23rd September 2020.




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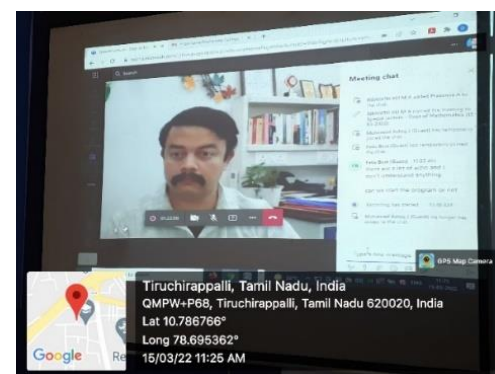
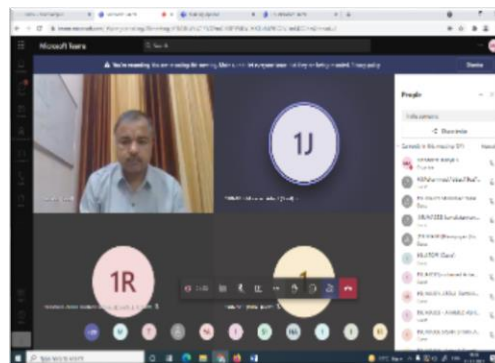



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5. **Application of Mathematics in Digital Era** - Dr. DI. George Amalarethnam, Associate Professor & Director (MCA), Department of Computer Science Jamal Mohamed College, Tiruchirappalli on 10.10.2020


6. **Use of Mathematics in detecting diseases** -Dr. M.G. Fajlul Kareem, Assistant Professor, University of Technology and Applied Sciences, AI Musanna, Oman on 18-11-2020

7. **Application of Operations Research in the real life situations** - Dr. Vikas Saxena, Associate Professor (Statistics & Operations Research), National Institute of Food Technology Entrepreneurship and Management, (Under MoFPI, Gol), Haryana on 10-03-2021



2021-2022

1. **LaTeX for Beginners** - Dr. D. Dhamodharan, Asst. Professor of Mathematics, Jamal Mohamed College, Tiruchirappalli on 13-09-2021. **S:60**
2. **Continuity and Differentiability** - Dr. M. Marudai, Honorary Professor of Mathematics, Bharathidasan University, Tiruchirappalli on 21-10-2021. **S:40.**
3. **Online lecture on Calculus** - Dr. Surinder Mohan Deep, Associate Professor & Head, Department of Mathematics, Govind National College, Narangwal District, Ludhiana on 11-11-2021. **S:44**
4. **Linearization Technique for nonlinear BVPs and Applications to Fluid Flow Problems** - Dr. Satyajit Roy, Professor, Department of Mathematics, Indian Institute of Technology Madras, Chennai on 21-12-2021. **S:125**
5. **Online Lecture on Employment Prospects for Mathematics Aspirants** - Dr. Richa Brar, Asst. Professor of Mathematics, Sri Guru Granth Sahib World University, Fatehgarh Sahib. Punjab on 15-11-2021. **S:41**
6. **Online lecture on Partial Differential Equations and their Applications** - Prof. R. Sahadevan, Former Director and Head, Former UGC Emeritus Fellow, Ramanujam Institute for Advanced Study in Mathematics, University of Madras on 21-12-2021. **S:125.**


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7. **Online programme to commemorate National Mathematics Day: Lecture on Applications of Linear Differential Equations** - Dr. P. Kandaswamy, Professor & Head (Rtd.), Bharathiar University, Coimbatore on 22-12-2021. **S:53.**
8. **Online programme to commemorate National Mathematics Day: Lecture on Applications of Linear Differential Equations** - Prof. M. Lakshmanan, Professor of Eminence & DST – SERB National Science Chair, Department of Nonlinear Dynamics, School of Physics, Bharathidasan University, Tiruchirappalli on 22-12-2021. **S:53.**
9. **Computations of Molecular Descriptors** - Dr. Sr. S. Kulandai Therese, Asst. Professor in Mathematics & Deputy Principal, St. Mary's College, Thoothukkudi on 28-02-2022. **S:33 (ID)**
10. **Challenges in Computations of Molecular Descriptors** - Dr. S. Prabhu, Associate Professor of Mathematics, Rajalakshmi Engineering College, Chennai on 28-02-2022. **S:33 (ID)**
11. **Cyber Security- the need of the hour-What is it for the common people?** - Dr. G. Padmavathi, Professor, Department of Computer Science, Dean, School of Physical Sciences & Computational Sciences, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore on 02-03-2022. **S:92 (ID)**
12. **International Day of Mathematics “PI” (π) Day: Lecture on Carnal Mantras of Data Science** - Dr. Felix Bast Professor and Head Department of Botany Central University of Punjab, on 15-03-2022. **S:61(ID)**




2022-2023

1. **Teacher’s Day (Shikshak Parv) Celebrations** - Books are Our Never Failing Friends Dr. A. Nagoor Gani, Associate Professor of Mathematics, Jamal Mohamed College, Trichy-20 on 05-09-2022. **F:8 S:129**
2. **Rajan Transform and its Applications** - Dr. E. G. Rajan Chairman, Pentagram Group of Companies (India, UK, USA & Canada) on 15-09-2022. **F:30 S:85 (ID)**

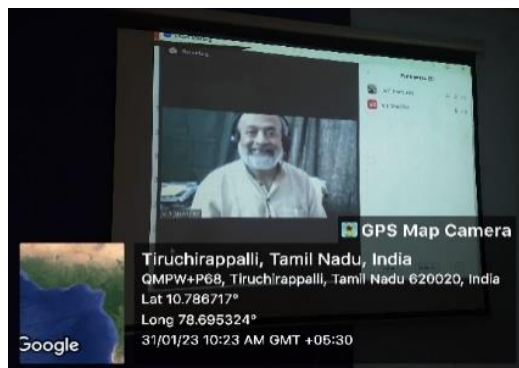



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3. **75 Years of Research and New Theories in Mathematics and Statistics** - Dr. M. Marudai Honorary Professor Department of Mathematics Bharathidasan University Tiruchirappalli on 31-10-2022. **F:13 S:157**
4. **My story – Motivational Session – Successful Start-up** - founder Mr. M. Ramprasad Founder & CEO SWOT Strategy Zone Chennai on 05-01-2023. **F:4 S:88 (ID)**
5. **Applications of Differential Equations** - Prof. G D Veerappa Gowda, F.N.A., F.N.A.Sc., F.A.Sc., TIFR Centre for Applicable Mathematics Bangalore on 06-01-2023. **F:1 S:37**
6. **Let us learn from Ramanujan** - Mr. V. Sivashankara Sastry Science/Math Communicator Karnataka on 31-01-2023. **F:2 S:79**
7. **Application of Frames** - Dr. A. Muthusamy Professor of Mathematics Periyar University Salem on 02-02-2023. **F:1 S:33**
8. **Mobile App Development using Android** - Mr. M. Mohamed Zamam Nazar Assistant Professor Department of Computer Science & IT, Jamal Mohamed College, Trichy on 07-02-2023. **F:1 S:28**
9. **A technique for Analysis of Dynamical Systems: Lyapunov Method** - Dr. R. Sakthivel Professor Department of Applied Mathematics, Bharathiar University, Coimbatore on 10-02-2023. **F:3 S:53**
10. **Statistical Methods for Data Analysis** - Dr. Irfan Ali, Assistant Professor Department of Statistics & Operations Research, Aligarh Muslim University, Uttarpradesh on 21-02-2023. **S:45**
11. **Statistical Applications: Data Science** - Dr. S. Gandhiya Vendhan, Assistant Professor, Department of Statistics, Bharathiar University, Coimbatore on 23-02-2023. **S:40**
12. **Mathematics in Medicine (National Science Day Celebrations)** - Dr. Girija Jayaraman, FNASc Professor (Rtd.) Centre for Atmospheric Sciences Indian Institute of Technology, New Delhi on 28.02.2023. **F:4 S:45**




(iv) Department of Physics

2020-2021

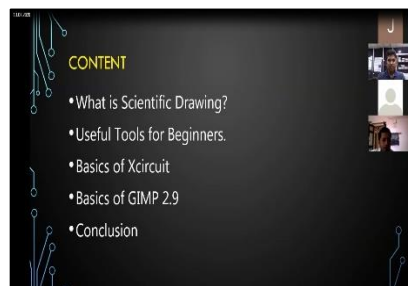
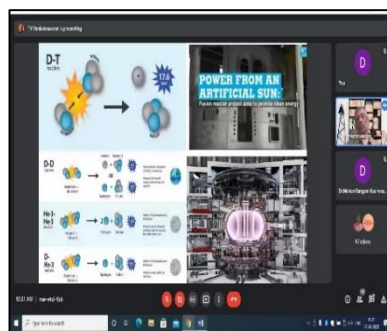
1. **Leader in yourself** - Mr. Hermon Carduz, Assistant Professor, Department of Human excellence, St. Joseph's College (Autonomous), Tiruchirappalli on 09.03.2020. **S: 85**


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2. **Our universe** - Mr. S. Jaya Paul, Scientific Assistant, Anna science centre, planetarium, Tiruchirappalli, on 09.03.2020. **S: 112 (ID)**
3. **Role of motivation in life** - Mr. M. J. Prasad, Former physics faculty, A. M. Jain college soft skills trainer Chennai on 10.03.2020. **S: 80**
4. **Scientific drawing tools** - Dr. S. Sabarathinam, Post-doctoral Fellow (Modelage), Biomedical signal interpretation and computational simulation, Aragon institute of engineering Research University of Zaragoza, Spain on 13-07-2020.
5. **Experimentation techniques** - Dr. P. A. Praveen, Post-doctoral Fellow, Department of Physics, Indian institute of science education and research, Tirupati on 14-07-2020. **B: 261 (IC)**
6. **Xcircuit and other simulation tools** - Mr. Jothimurugan, Assistant Controller of Examinations and Assistant Professor of Physics, PG department of Physics, GTN arts college (autonomous), Dindigul on 15-07-2020. **B: 261 (IC)**
7. **Open source computational packages** - Dr. D. Aravinthan, Guest faculty, Department of Physics, School of Basic & Applied sciences, Central University of Tamil Nadu, Thiruvarur on 16-07-2020. **B: 261 (IC)**
8. **Presentation and slide show tools** - Dr. Suresh kumarasamy, Dr. S. Kothari Research fellow, Department of Physics & Astrophysics, University of Delhi, New Delhi, on 17-07-2020. **B: 261 (IC)**



2021-2022

1. **Condensed Matter Physics** - Dr. S. Gunasekaran, TANSA Awardee, Dean, Research & Development, St. Peter's Institute of Higher Education & Research, Chennai on 24-01-2022. **B:244. (IC)**
2. **Conversion Nanomaterials and their Bio-Applications** - Dr. J. Senthil Selvan, Assistant Professor, Department of Nuclear Physics University of Madras, Chennai on 24-01-2022. **B:244. (IC)**
3. **Oxide Thermoelectric Materials for Energy Harvesting** - Dr. M. Arivanandhan Professor Centre for Nanoscience and Technology Anna University, Chennai on 25-01-2022. **B:244. (IC)**
4. **Two Dimensional Nanocomposites Functional Materials for Energy Storage Applications** - Prof. R. Jayavel, Director, Centre for Nanoscience and Technology, Anna University, Chennai on 25-01-2022. **B:244 (IC)**
5. **Recent Development in Astronomical Studies–Higher Education Perspective** - Dr. T. V. Venkateswaran, Scientist F, Vigyan Prasar, Department of Science and Technology Government of India on 07-02-2022. **B: 168. (IC)**


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6. **Career Pathways to Astronomy Education and Research** - Dr. Priya Hasan, Assistant Professor, Department of Physics, Maulana Azad National Urdu University, Hyderabad on 07-02-2022. **B:168 (IC)**
7. **Astronomy for Development** - Mr. Ramasamy Venugopal, Head-Operations, Office of Astronomy for Development, International Astronomical Union on 08-02-2022. **B: 168 (IC)**
8. **Astronomical Data & Technology** - Mr. Ramasehsan Head-Research & Development, Chiguru Colab on 08-02-2022. **B: 168. (IC)**
9. **Introduction to Astrolab** - Mr. Surender Ponnalagar, Project Director, Chiguru Colab, Bangalore on the topic on 08-02-2022. **B: 168. (IC)**
10. **Nuances of Patent Filing Procedure** - Dr. M.S. Mary Mangaiyarkarasi, Consultant – IPR, Bio innovation Centre, Bangalore on 09-02-2022. **B: 55 (IC)**
11. **Promoting Innovative Ideas to IPR** - Dr. A. Bakrudeen Ali Ahmed, Associate Professor, Dean, School of Life Sciences, Centre for Research and Development, PRIST Deemed University, Thanjavur on 09-02-2022. **B: 55. (IC)**




2022-2023

1. **Space Technology Applications for Humankind** - Ingersol Selladurai, Scientist-H, Former Group Director, Indian Space Research Organisation, Bengaluru on 03-09-2022, **B: 22**
2. **A Exposition on the origin of the Cosmos and its eventual end** - P. Sasikumar, Scientist, ISRO, Trivandrum delivered a lecture on the topic Aadhiyum and hamum on 28-09-2022. **B: 132 (ID)**
3. **Biography and Achievement of Missile Dr. APJ. Abdul Kalam, Former President of India** - Ayesha Era Natarasan Sahithya Academy Awardee on 28-09-2022, **B: 132 (ID)**
4. **Eye Opener on Robotics** - Sriraman Balaji, CEO and Founder, Rajan Robotics, Tiruchirappalli on the topic on 12-10-2022, **B: 42**
5. **Synthesis of Nonlinear Optical Single Crystals and Its Importance to Technology** - Prof. Jiban Podder, S. Professor, Department of Physics, BUET, Bangladesh on 10-01-2023, **B: 286 (IC)**
6. **Overview of Materials Science and Spectroscopy** - Dr. S. Gunasekaran, TANSA Awardee, Dean, Research & Development St. Peter's Institute of Higher Education & Research, Chennai on 10-01-2023, **B: 286 (IC)**




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Page 119 of 122.

7. **Overview of Solid State Spectroscopy of Rare Earths** - Prof. C. K. Jayasankar, UGC-BSR Faculty Fellow, Emeritus Professor Department of Physics, Sri Venkateswara University, Tirupati on 10-01-2023, **B: 286 (IC)**
8. **Fourier Raman Spectroscopical Analysis on Nonlinear Optical Materials for Frequency Conversion applications** - Prof. M. Selvapandiyar, Professor & Head, Department of Physics, Periyar University Centre for PG and Research Studies, Dharmapuri on 10-01-2023, **B: 286 (IC)**
9. **Role of Reflectance Spectroscopic Technique in Diagnosing the Thyroid Disorder and Efficacy of an Ayurvedic Drug in Thyroid Treatment** - Dr. P. Janani, Senior Instructional Designer (Academics), Ectian Contents Private Limited, Mumbai on 10-01-2023, **B: 286 (IC)**
10. **SERS – Based Detection of Biological Reactions** – Dr. I. Hubert Joe, Head, Department of Nanoscience and Nanotechnology University of Kerala, Thiruvananthapuram on 10-01-2023, **B: 286 (IC)**
11. **Nanomaterials and their applications** - S. Beer Mohamed, Professor and Head, School of Technology, Central University of Tamil Nadu, Thiruvavur on 13-02-2023, **B: 33**
12. **Lecture on the topic X-ray Crystallography** - Aravazhi Amalan Thiruvalluvar, Principal (Retired), Kunthavai Naacchiyaar Government Arts College for Women (Autonomous), Thanjavur on 17-02-2023. **B: 32**
13. **Observational Astronomy** - K. Balakrishnan, Principal and Correspondent, Bharathi Matric Higher Secondary School, Trichy on 20-02-2023, **B: 44**
14. **Meet the Scientist** - Elangovan Rajagopalan, Former ISRO Scientist Joint Pacific Space Programme, Bengaluru on 25.02.2023, **B: 22 (ID)**


(v) Department of Zoology

2020-2021

1. **Covid 19; break the chain** - Dr. Danial chellappa, Eminent scientist, Chennai, on 07-05-2020. **B: 43**
2. **Fermentation technology** - Dr. N. Manivannan, Assistant Professor, Department of Biology, Gandigram University, Dindigul on 20-09-2020. **B: 43**
3. **Vaccine technology** - Dr. R. Selvam, Former Dean of Science, Bishop Heber College, Tiruchirappalli on 27-09-2020. **B: 38**
4. **Entomopathogenic fungi, a potential biocontrol of insect pest of crops** - Dr. B. Padmanaban, Scientist, Agriculture Research Service of ICAR, Tiruchirappalli on 27-10-2020. **B: 36**
5. **Darwin's legacy and modern science** - Dr. V. Sukumaran, Assistant Professor of Zoology, K. N. Govt. Arts and Science College, Thanjavur on 12-02-2021. **B: 55.**



2021-2022


Dr. A. SHAJAHAN, M.Sc., M.Phil., Ph.D.
Dean of Research and Consultancy
Coordinator of DBT Star College Scheme &
Associate Professor of Botany.
Jamal Mohamed College (Autonomous).
Tiruchirappalli - 620 020.





PRINCIPAL
JAMAL MOHAMED COLLEGE
(AUTONOMOUS)
TIRUCHIRAPPALLI-620 020.

1. **Naturopathy for Health** - Dr. Suhail, Coimbatore on 21-10-2021. **S:30**
2. **Wetland birds of River Kaveri: An Overview** - N. Raveendran, Iragukal Amritha Trust, Madurai on 08-12-2021. **S:62**
3. **KDM3A: A Novel therapeutic target for pancreatic cancer** - Dr. A. Kanagaraj Palaniyandi, Asst. Professor of Biotechnology, SRM Institute of Science and Technology on 20-01-2022. **B:75(IC)**
4. **Egg albumin doped Zinc Oxide Nanoparticle; a new alternative to cancer therapy** - Dr. Bupesh Giridharan, Asst. Professor of Nagaland University on 21-01-2022. **B:60. (IC)**
5. **The History and Evolution of Radiation in Medicine** - Dr. K. Mohamathu Rafic, Chief Physicist, Govt Rajaji Hospital, Madurai on 22-01-22. **B:35. (IC)**
6. **Environmental radio activity** - Dr. Hassan Ali, Health and safety division, IGCAR on 28-02-22. **S:30 (ID)**
7. **Probiotics for Human and Animal Health** - Dr. A. Balasundaram, Asst. Professor of Zoology, Periyar EVR College, Trichy on 14-03-22. **S:82.**
8. **Opportunities for Life science students in Industries** - Dr. N. Manivannan, Consultant-Biotech Industries, Department of Biology, Gandhigramam University, Dindigul on 14-03-22. **S:82.**




2022-2023

1. **Pest of tea and its management** - Dr. Rabeesh, Head and Entomologist, UPASI on 18-10-22, **B: 83**
2. **Designing and selecting of primers for successful PCR** - Dr. M. Ram mohan, Head and Professor, Cheran Institute of Pharmacy on 03.02.2023, **B: 47**
3. **Analysis of metals using Atomic absorption spectroscopy** - Dr. R. Rajan, Department of Marine Science BDU on 21-02-2023, **B: 43**
4. **Role of microbes in Industries** – Bio Entrepreneurship - Dr. N. Manivannan, Professor, Gandigram University, Dindigul on 24-02-2023, **B: 36**
5. **Basic cell culture techniques and its application** - Dr. S. Muhil Vanan, Par Life Science, Trichy on 29-10-2022, **B: 55**



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6. **Ideas for Profitable business through animal husbandry** - Mr. Sridhar, CEO, Saiguru Enterprises, Tanjore on 09-01-2023, **B: 56**
7. **Health of present youth –The wealth of future world** - Dr. A. Radha, Kunthavai Nacchiyar Govt College, Tanjore on 22-02-2023, **B: 67**
8. **Job opportunities for biologists through aquaculture** - Dr. M. Gajendran, Sheng Long Biotech, Thiruvalluvar on 23-02-2023, **B: 65**




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FINAL SETTLEMENT OF ACCOUNTS

File No: BT/HRD/11/021/2020

Name of the Project: DBT - Star College Scheme

Date of Sanction: 29/02/2020

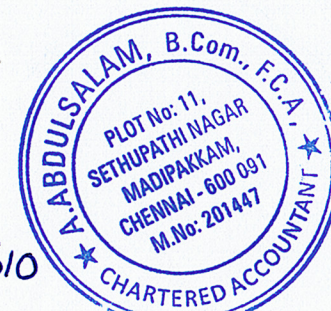
Total Sanctioned Budget : Rs.1,04,00,000/-

Duration : Three Years

ITEM / HEAD	TOTAL SANCTIONED OUTLAY	RELEASES BY DBT					EXPENDITURE AS PER LATEST SOE					BALANCE As on dt. 28.02.2023	Remarks (Committ ed Expenditure)
		From 29.02.2020 31.03.2020	FY 2020-21	FY 2021-22	FY 2022-23		From 29.02.2020 31.03.2020	FY 2020-21	FY 2021-22	FY 2022-23			
		1 st	2 nd	3 rd	4 th	TOTAL	1 st	2 nd	3 rd	4 th	TOTAL		
Non-Recurring Equipment	5000000	5000000	-	-	-	5000000	-	5000000	-	-	5000000	-	
Recurring	4500000	1500000	-	1165862	1500000	4165862	-	1165862	1498506	1445161	4109529	56333	
Travel	600000	200000	-	68840	199996	468836	-	68840	175309	195246	439395	29441	
Contingency	300000	100000	-	100000	99998	299998	-	100000	99998	94121	294119	5879	
TOTAL	10400000	6800000	-	1334702	1799994	9934696	-	6334702	1773813	1734528	9843043	91653	

Note: Balance Amount of Rs.91,653/- refunded through Bharatkosh Transaction reference number 0504230030297, dated 05th April 2023 for Rs.90,885/- & Transaction reference number 1506230004712 dated 15th June 2023 for Rs.768/-.

R.2



..2
A. A.

UDIN: 23201447BGVTCE6610

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INTEREST EARNED FINANCIAL YEAR WISE:

Financial Year	Interest Earned Amount	Bharatkosh Transaction Ref. No.
2019-2020	-	
2020-2021	201188	1904210002395
2021-2022	42102	2103220003551
2022-2023	4413	0909220004775
Total Interest Earned	247703	

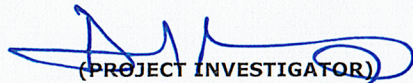
UC/SOE

	SANCTIONED COST	ACTUAL COST	BALANCE
EQUIPMENT	5000000	5130823	130823 (Excess amount was contributed by the College Management)
EQUIPMENT PROCURED WITHOUT SANCTION	ITEM	COST	AMOUNT TO BE RE-IMBR
	--	--	Nil

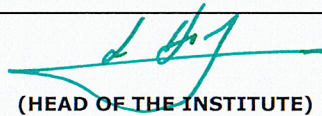
YEAR

RECD/NOT RECD

REMARKS


(PROJECT INVESTIGATOR)

Dr. A. SHAJAHAN, M.Sc., M.Phil., Ph.D.
Dean of Research and Consultancy
Coordinator of DBT Star College Scheme &
Associate Professor of Botany,
Jamal Mohamed College (Autonomous),
Tiruchirappalli - 620 020.


(HEAD OF THE INSTITUTE)

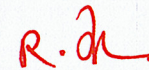
(To be countersigned by the DBT Officer-in-charge)

PRINCIPAL
JAMAL MOHAMED COLLEGE
(AUTONOMOUS)
TIRUCHIRAPPALLI-620 020.

V.M.
T.

M.D.

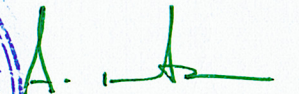
Chartered Accountant
(With Seal)



(FINANCE OFFICER)

BURSAR
JAMAL MOHAMED COLLEGE
(AUTONOMOUS)
TIRUCHIRAPPALLI-20.





UDIN: 23201447BGVTCE6610

UTILISATION CERTIFICATE
(for the period from 01.04.2022 to 28.02.2023)

(Rs. in lakhs)

1. Title of the project/scheme : DBT - Star College Scheme
2. Name of the Organisation : Jamal Mohamed College(Autonomous)
3. Principal Investigator : Dr. A. SHAJAHAN
Associate Professor of Botany
Jamal Mohamed College(Autonomous)
Tiruchirappalli 620 020, Tamil Nadu,
4. Dept. of Biotechnology sanction order No. & date of sanctioning the project : BT/HRD/11/021/2020
dated 29/02/2020
5. Amount brought forward from the previous financial year quoting DBT letter No. & date in which the authority to carry forward the said amount was given : Rs.26,187/-
(BT/HRD/11/021/2020
dated 17/09/2021)
6. Amount received from DBT during the financial year (Please give No. and dates of sanction orders showing the amounts paid) : Rs.17,99,994/-
(BT/HRD/11/021/2020
dated 31/10/2022)
7. Other receipts/interest earned, if any, on the DBT grants : Interest Earned Rs.4,413/-
8. Total amount that was available for expenditure during the financial year (Sl. nos. 5, 6 and 7) : Rs.18,30,594/-
9. Actual expenditure (excluding commitments) incurred during the financial year (SoE is enclosed) : Rs.17,34,528/-
10. Unspent balance refunded, if any (Please give details of Demand Draft No. etc.) : Rs.96,066/- (1.Bharatkosh Transaction ref. no.0909220004775, dated 09th September 2022 for Rs.4,413 /-;
2. Transaction ref. no.0504230030297, dated 05th April 2023 for Rs.90,885/- &
3.Transaction ref. no.1506230004712 dated 15th June 2023 for Rs.768/-)
11. Balance amount available at the end of the Financial year : NIL
12. Amount allowed to be carried forward to the next financial year vide letter No. & date : NIL

UDIN : 23201447BGVTCE6610




:2:


1. Certified that the amount of **Rs.17,34,528/-** mentioned against col. 9 has been utilized on the project / scheme for the purpose for which it was sanctioned and there is **NIL** balance remaining unutilized to adjust towards the grants-in-aid payable during the next year.
2. Certified that I have satisfied myself that the conditions on which the grants-in-aid was sanctioned have been duly fulfilled / are being fulfilled and that I have exercised the following checks to see that the money was actually utilized for the purpose for which it was sanctioned.
3. As per the Mail Communication from DBT dated 17th March 2023 part of the payments (Order placed before 28th February 2023) and payment completed in March and unspent balance refunded accordingly.



Kinds of checks exercised:


1. Day Book
2. Ledger
3. Bank Book
4. Bank Reconciliation Statement


Course Coordinator
(With Seal)

Dr. A. SHAJAHAN, M.Sc., M.Phil., Ph.D.
Dean of Research and Consultancy
Coordinator of DBT Star College Scheme &
Associate Professor of Botany,
Jamal Mohamed College (Autonomous),
Tiruchirappalli - 620 020.


Head of the Institution
(With Seal)

PRINCIPAL
JAMAL MOHAMED COLLEGE
(AUTONOMOUS)
TIRUCHIRAPPALLI-620 020.
 


Finance/Accounts Officer
(With Seal)

BURSAR
JAMAL MOHAMED COLLEGE
(AUTONOMOUS)
TIRUCHIRAPPALLI-20.

Chartered Accountant
(With Seal)



A. ABDULSALAM, B.Com., F.C.A.
PLOT No: 11,
SETHUPATHI NAGAR,
MADIPAKKAM,
CHENNAI - 600 091
M.No: 201447
CHARTERED ACCOUNTANT

UDIN: 23201447BGVTCE6610

**Statement of Expenditure referred to in para 9 of the
Utilisation Certificate**

Showing grants received from the Department of Biotechnology and the expenditure incurred during the period from 1st April 2022 to 28th February 2023 (Rs. in lakhs)

1. Title of the project/scheme : DBT - Star College Scheme
 2. Name of the Organisation : Jamal Mohamed College (Autonomous)
 3. Dept. of Biotechnology sanction order No. & date of sanctioning the project : BT/HRD/11/021/2020 dated 29/02/2020

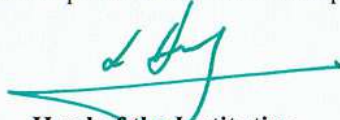
Item	Unspent balance Carried forward from previous year	Grants received from DBT during the year	Other receipts /interest earned - if any, on the DBT grants	Total of Col. (2+3+4)	Expenditure (excluding commitments) incurred during the year	Balance (5- 6)	Remark
1	2	3	4	5	6	7	8
1. Non-Recurring	-	-	-	-	-	-	
2. Recurring	1494	1500000	-	1501494	1445161	56333	Please refer Below Note
3. Travel	24691	199996	-	224687	195246	29441	
4. Contingency	2	99998	-	100000	94121	5879	
5. Interest	-	-	4413	4413	-	4413	
Total :	26187	1799994	4413	1830594	1734528	96066	

Note:

- The Interest accrued amount Rs.4,413/- has been remitted in the Government of India Bharatkosh Account vide Transaction reference number 0909220004775, dated 09th September 2022.
- Balance Amount of Rs.91,653/- refunded through Bharatkosh Transaction reference number 0504230030297, dated 05th April 2023 for Rs.90,885/- & Transaction reference number 1506230004712 dated 15th June 2023 for Rs.768/-.
- As per the Mail Communication from DBT dated 17th March 2023 part of the payments (Order placed before 28th February 2023) and payment completed in March and unspent balance refunded accordingly.


 Course Coordinator
 (With Seal)

Dr. A. SHAJAHAN, M.Sc., M.Phil., Ph.D.
 Dean of Research and Consultancy
 Coordinator of DBT Star College Scheme &
 Associate Professor of Botany,
 Jamal Mohamed College (Autonomous),
 Tiruchirappalli - 620 020.


 Head of the Institution
 (With Seal)

PRINCIPAL
JAMAL MOHAMED COLLEGE
(AUTONOMOUS)
TIRUCHIRAPPALLI-620 020.


 Finance/Accounts Officer
 (With Seal)

BURSAR
JAMAL MOHAMED COLLEGE
(AUTONOMOUS)
TIRUCHIRAPPALLI-20,

Chartered Accountant
 (With Seal)





UDIN: 23201447BGVTCE6610



bharatkosh.gov.in
Government of India Receipt Portal

RECEIPT

Transaction Ref.No. 0504230030297 Dated: Apr 5 2023 4:05PM

Received from MR. ISMAIL MOHIDEEN S with Transaction Ref.No. 0504230030297

Dated Apr 5 2023 4:05PM the sum of INR 90885 (Ninety Thousand Eight Hundred Eighty-Five Only) through Internet based Online payment in the account of

Refund of unspent Grants-in-Aids(DBT), , JAMAL MOHAMED COLLEGE - REFUND OF UNSPENT AMOUNT 2022-2023.

Disclaimer:- This is a system generated electronic receipt, hence no physical signature is required for the purpose of authentication

Printed On: 05-04-2023 04:7:48

Courtesy :- Controller General of Accounts


PRINCIPAL
JAMAL MOHAMED COLLEGE
(AUTONOMOUS)
TIRUCHIRAPPALLI-620 020.

V.V.V.

MR



bharatkosh.gov.in
Government of India Receipt Portal

RECEIPT

Transaction Ref.No. 1506230004712 Dated: Jun 15 2023 10:43AM

Received from MR. ISMAIL MOHIDEEN S with Transaction Ref.No. 1506230004712

Dated Jun 15 2023 10:43AM the sum of INR 768 (Seven Hundred Sixty-Eight Only) through Internet based Online payment in the account of

Refund of unspent Grants-in-Aids(DBT), , JAMAL MOHAMED COLLEGE - REFUND OF UNSPENT AMOUNT 2022-2023.

Disclaimer:- This is a system generated electronic receipt, hence no physical signature is required for the purpose of authentication

Printed On: 15-06-2023 10:44:50

Courtesy :- Controller General of Accounts

**PRINCIPAL
JAMAL MOHAMED COLLEGE
(AUTONOMOUS)
TIRUCHIRAPPALLI-620 020.**