



RAMAIAH
College of Arts, Science
& Commerce

**M.S.RAMAIAH COLLEGE OF ARTS, SCIENCE AND COMMERCE,
BENGALURU**

**DBT STAR COLLEGE SCHEME
ANNUAL PROGRESS REPORT 2022-2023**

Submitted to



सत्यमेव जयते
Department of Biotechnology
Ministry of Science & Technology

**DEPARTMENT OF BIOTECHNOLOGY,
MINISTRY OF SCIENCE AND TECHNOLOGY,
GOVERNMENT OF INDIA**



(91-80) – 23600966



www.msrmcasc.edu.in



Department of Biotechnology

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

01	Name of the College	M.S. Ramaiah College of Arts, Science and Commerce, Bengaluru
02	Name of the Coordinator, designation, Address and Phone Number	Dr. Pushpa. H Professor and Vice Principal, M.S. Ramaiah College of Arts, Science and Commerce, Bengaluru-52 Email: pushpa_microbio@msrcasc.edu.in Mobile: 9446789510 College: 08023600966
03	Assessment Duration	1-04-2022 to 31-03-2023
	Duration in years	1 year

4. Details of the Department supported:

Sl No.	Name of the Department	Courses offered	Regular Faculty Members	
			Total: 48	
			With PhD	Without PhD
01	Biotechnology	BSc and MSc	15	01
02	Chemistry	BSc and MSc	11	03
03	Electronics	BSc	01	03
04	Microbiology	BSc and MSc	13	01

05. Number of Date of Advisory Committee meeting:

Sl No.	Date
01	16 th June 2022

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

1. **Skilled based education through hands on exposure through additional experiments, training, Value added/add on courses:**

In line with the objective of the scheme lots of emphasis were given to the hands-on exposure to the students, in this regard additional experiments were incorporated with the existing syllabus, SOPs were made for those additional experiments, experiments which were studied as demonstrations or in the form of charts were brought in as the hands on experiments to each of the



students, in addition value added program/ workshops/training program were conducted as per the requirement for their further research/placement/entrepreneurship by each of the department to make the students confident in their domine subject.

2. Strengthening infrastructure of the laboratory:

The Equipment, chemicals, glass wares and other consumables required for conduction additional practical, hands-on training and for minor research projects were procured through the scheme and multiple instruments were available so that each of the student could access and perform the experiment individually not in groups or not in the form of demonstrations.

3. Library Facilities:

The multiple copies of the books in the library were made available for the students through the scheme.

4. Participative learning through participating in outreach activities:

Conducting Outreach Activities

Students under the guidance of the respective department and faculty members to part in awareness and sensitization programs for rural communities about Swatchtha Mission, Health and Hygiene, Tuberculosis, Aids and Cancer etc. apart from awareness program students and faculty members also conducted few experiments in unprivileged schools in rural and urban area. through this activity students learned to connect to people and apply their theoretical knowledge practically for the benefit of society.

Exhibitions, Competitions:

To make the students understand the subject and apply them in day today life and research many fests, club activities, symposium, working model presentation, Poster Presentation.

5. Minor Research Project:

All the V semester students were assigned with the research guide by the end of IV semester to execute the minor research project about 26 different minor projects were executed through the scheme and many of our students attended



the national and international conferences, presented their research findings, and won best paper presentation awards. The research experience was not only restricted to final year students interested first- and second-year undergraduate students were also encouraged to participate to get the research experience.

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

To inspire the students towards higher education and research, lots of emphasis were given towards hands-on training by introducing additional experiments, organizing training, value added courses, additionally a series of guest lectures, seminars, symposiums were organized, to give an exposure toward experiential learning and application of their knowledge industrial visits and outreach activities were organized. Finally, the students were given an exposure towards minor research projects so that students get an idea about problem finding, analyze the problem, collect relevant information, build strategy/methodology to solve the problem, Evaluate, conclude, apply and build future plans. The outcome of this is 45% of the students opted for higher education some of the students joined for integrated PhD in Indian Institute of Science.

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

1. Opening Zero Balance Account was the main issue- due to this we were in confusion that money must be utilized or not. However, the account was opened and money was refunded and to receive money took long time.
2. The main lesson learnt was to prepare the Calander of activities and executing in the prescribed time without deviation.



9. Key Points indicators:

Sl No.	Indicator	Pre support 2021-2022								During/after support (2022-2023)								Remarks
01	No. of Students admitted	M= 74				F= 177				M= 65				F= 138				
		SC	ST	OBC	G	SC	ST	OBC	G	SC	ST	OBC	G	SC	ST	OBC	G	
		3	0	33	35	12	01	84	80	7	1	24	34	12	3	35	87	
2	No. of students passing out (%) Students Admitted/passing out (pass %)	No. of Students admitted: 256 No. of Students took final sem exam: 244 No. of students passed out: 232 Pass % = 95.02 (Data 2018-2022 batch)								No. of Students admitted: 250 No. of Students took final sem exam: 243 No. of students passed out: 230 Pass % = 94.65 (Data 2019-2023 batch)								
3	Drop-out rates	4.7%								2.8%								
4	No. of students opting for MSc	97 (41%)								104								
5	Average marks	8.1 (SGPA)								8.3 (SGPA)								
6	No. of hands-on experiments being conducted	MB-72 BT- 72 Chemistry- 89 Electronics- 66								MB- 91 BT- 76 Chemistry-94 Electronics-77								Planning for many more additional Experiments for the academic year 2023-24
7	No. of new experiments introduced	MB-0 BT-0 Chemistry-0 Electronics-0								MB- 19 BT-04 Chemistry-05 Electronics-11								
8	Publications (Scopus indexed) /patents, if any.	45								42								Many of the papers publication are in process.
9	Training received by Faculty	63								NPTEL- 15 FDPs- 80								
10	Exhibitions/seminars /Training courses conducted									Add-on/training/Workshops/FDPs- 29 Exhibitions/competitions/activities- 18 Industrial visits- 10								
11	Books/journals subscribed from Grants	-								Microbiology- 16 Biotechnology- 20 Chemistry- 17 Electronics- 10								
12	Outreach activities (Popular lectures)	04								11								
13	Colleges mentored to apply for DBT Star College grants	-																



14	Invited lectures	12	MB- 14 BT- 02 Chemistry-04 Electronics-05	
----	------------------	----	--	--

Self-Evaluation: Microbiology

Department	*Objective (as stated in proposal)	% achieved	Reasons for underachievement / If achieved, state in quantitative metrics
Microbiology	To enhance the quality of the learning and teaching process to stimulate original thinking through ' <i>hands-on</i> ' exposure to experimental work. (Additional experiments and hands on training)	100%	2
Microbiology	To provide better library facility to students and teachers	80%	1.75 Some more journals and manuals to be added
Microbiology	Procuring new equipment and upgrading existing facilities	90%	1.87 (one more equipment to be procured)
Microbiology	Minor research Projects- Summer school	100%	2
Microbiology	Devising standard curricula and Standard Operating Procedures (SOP's)	80%	1.75 (SOPs for additional experiments and training has been done, due to introducing NEP-2020, syllabus has been revised we are in the process of developing manual for regular experiments)
Total out of 10 marks			9.37

Self-Evaluation: Biotechnology

Department	*Objective (as stated in proposal)	% achieved	Reasons for underachievement / If achieved, state in quantitative metrics
Biotechnology	To enhance the quality of the learning and teaching process to stimulate original thinking through ' <i>hands-on</i> ' exposure to	75%	1.75



	experimental work. (Additional experiments and hands on training)			
Biotechnology	To provide better library facility to students and teachers	90%	1.87 (Some more Journals, reference books to be added)	
Biotechnology	Procuring new equipment and upgrading existing facilities	90%	1.87 (some more equipment must be procured)	
Biotechnology	Minor research Projects- Summer school.	100%	2.00	
Biotechnology	Student's Exposure to research laboratories and industries	95%	1.9	
Total			9.39	

Self-Evaluation: Chemistry

Department	*Objective (as stated in proposal)	% achieved	Reasons for underachievement / If achieved, state in quantitative metrics
Chemistry	To enhance the quality of the learning and teaching process to stimulate original thinking through ' <i>hands-on</i> ' exposure to experimental work. (Additional experiments and hands on training)	80%	1.75% (late deliver of some of the chemicals)
Chemistry	To provide better library facility to students and teachers	85%	1.85 (Some more journals, manuals, reference books to be added)
Chemistry	Procuring new equipment and upgrading existing facilities	90%	1.87 (some more equipment must be procured)
Chemistry	Minor research Projects- Summer school.	90%	1.85 (some of the students could not compete the project in time)
Chemistry	Devising standard curricula and Standard Operating Procedures (SOP's)	80%	1.75 (SOPs for additional experiments and training has been done, due to introducing NEP-2020, syllabus has been revised we are in the process of developing manual for regular experiments)
		Total	9.07



Self-Evaluation: Electronics

Department	*Objective (as stated in proposal)	% achieved	Reasons for underachievement / If achieved,1- state in quantitative metrics
Electronics	To enhance the quality of the learning and teaching process to stimulate original thinking through ' <i>hands-on</i> ' exposure to experimental work. (Additional experiments and hands on training)	90	1.87
Electronics	To provide better library facility to students and teachers	80	1.75
Electronics	Procuring new equipment and upgrading existing facilities	95	1.9
Electronics	Minor research Projects- Summer school.	95	1.9
Electronics	Devising standard curricula and Standard Operating Procedures (SOP's)	95	1.9
		Total	9.32



DBT-STAR COLLEGE SCHEME

Annual Progress Report 2022-2023

Proof for Key Performance Indicators

I. List of New experiments/Additional experiments introduced:

(Response to key performance indication 6 and 7)

<https://drive.google.com/file/d/122gyyvrAONUVRnuiLOwiQunFYmJAnL8x/view?usp=sharing>

Sl No.	Department	Additional Experiment conducted
1	Electronics	Diode OR Gate and DTL NOR Gate
2	Electronics	Diode AND Gate and DTL NAND Gate
3	Electronics	Construction of logic circuit for the given Boolean Expression
4	Electronics	Transistor as a Switch.
5	Electronics	Darlington Emitter follower
6	Electronics	Write a C program to store Information and Display it Using Structure
7	Electronics	Write a C program to add two distances in the inch-feet system
8	Electronics	Write a C program to swap two numbers without using the 3rd variable with pointers
9	Electronics	Write a Verilog program for 4 bit comparator
10	Electronics	Write a Verilog program for SR Flip Flop
11	Electronics	Write a Verilog program for 4-BIT parallel adder
12	Biotechnology	DNA amplification using polymerase chain reaction
13	Biotechnology	Gel Electrophoresis
14	Biotechnology	Fermentation Process-Wine Preparation
15	Biotechnology	Differential staining of Blood cells
16	Chemistry	Hands on training on handling UV-Visible Spectrophotometer, distillation unit, Hot air oven etc.,
17	Chemistry	Determination of Viscosity using Digital Viscometer
18	Chemistry	Extraction of Curcumin
19	Microbiology	Agarose Gel Electrophoresis
20	Microbiology	Plasmid DNA isolation
21	Microbiology	Restriction Digestion of substrate DNA
22	BSc-Microbiology	In Vitro DNA Ligation
23	Microbiology	Agricultural Microbiology- Production of Rhizobium
24	Microbiology	Detection of Food Pathogens



25	Microbiology	Preparation of Tomato Ketchup
26	Microbiology	Preparation of Different Types of Microbiological Media
27	Microbiology	Isolation of Microorganisms Streak Plate Method
28	Microbiology	Isolation of Microorganisms Pour Plate Method
29	Microbiology	Wrapping and cotton plug of glassware
30	Microbiology	Aseptic transfer techniques
31	Microbiology	Culture Media preparation
32	Microbiology	Spread plate Technique for isolation of microorganisms
33	Microbiology	Determination of Amylase activity from Bacterial, Fungal and Plant sources
34	Microbiology	Baird Parker Media preparation and Isolation of Staphylococcus sp. from skin flora
35	Microbiology	Acid fast staining and study of acid-fast bacteria
36	Microbiology	Chemostat, Turbidostat, ATP structure, and Saponification reaction.
37	Microbiology	Isolation and screening of acetic acid producing bacteria

III. Training received by faculty

(Response to the Key performance indicator- 09)

III a. List of faculty members completed NPTEL certificate course:

Sl No.	Department	Date and Duration	Name of the Faculty	Title
1	Microbiology	Jan to Apr 2022	Mrs. Soumya S Shanbhag	Essentials of Biomolecules: Nucleic acids and peptides
2	Microbiology	Jan to Apr 2022	Dr. Ramesha A	Essentials of Biomolecules: Nucleic acids and peptides
3	Microbiology	Jan to Apr 2022	Dr. Nirmala Devi D	Essentials of Biomolecules: Nucleic acids and peptides
4	Microbiology	August to Nov 2022	Dr. Bhanupriya Ch.	Experimental Biotechnology
5	Microbiology	Jan to Apr 2023	Mrs. Soumya S Shanbhag	Enzyme Science and Technology
6	Microbiology	Jan to Apr 2023	Dr. Bhanupriya Ch.	Enzyme Science and Technology
7	Electronics	24/01/22,8 weeks	Rithu R	Robotics and Control : Theory and Practice
8	Electronics	JAN to April 2022	AshaRani R	Biomedical signal processing
9	Electronics	23/01/23,8 weeks	Rithu R	Machine Learning



10	Chemistry	8 weeks	Smrithi S.P.	Nanotechnology, Science and Applications
11	Chemistry	8 weeks	Ms. Tanisha Rathore	Cell Biology: Cellular Organization, Division and Processes
12	Chemistry	8 weeks	Smrithi S.P.	Introduction to Research
13	Chemistry	8 weeks	Bharath K Devendra	Introduction to Research
14	Biotechnology	Jan- March, 2022	Dr Savitha G	Cell Biology: Cellular Organization, Division and Process
15	Biotechnology	Jan- March, 2022	Dr Pavithra Kumari H.G	Cell Biology: Cellular Organization, Division and Process

III b. List of faculty members completed FDPs:

<https://drive.google.com/drive/folders/1Uz4VRs8naoIVQD4zfrRmlCd9e1Sr-Bwt?usp=sharing>

Sl No.	Name of teacher who attended	Title of the program	Duration (from – to) (DD-MM-YYYY)
1	Tanisha Rathore	Academic Writing For Research	15/02/2023–21/02/2023
2	Tanisha Rathore	Cell Biology: Cellular organization, division and processes	23/01/2023-12/03/2023
3	Dr. Hareesh Kumar P	Taking Research to Next Level	29-09-22 to 30-09-22
4	Dr. Hareesh Kumar P	Workshop & Hands on training on Multidisciplinary application of electrochemical techniques	10th and 11th March 2023
5	Dr. Smrithi S.P.	Recent Trends in Chemistry	19-06-2023 to 23-06-2023
6	Dr. Smrithi S.P.	Introduction to Research	8 weeks-Feb April 2023-NPTEL
7	Dr. Smrithi S.P.	Advances in Green Technology and Future Opportunities	7-08-2023 to 11-08-2023
8	Dr. Smrithi S.P.	Advanced Functional Material as for Science and Engineering	15-05.2023 to 19-05-2023
9	Dr. Bharath K. Devendra	Recent Trends in Chemistry	19-06-2023 to 23-06-2023
10	Dr. Bharath K. Devendra	Introduction to Research	8 weeks-Feb April 2023-NPTEL
11	Dr. Bharath K. Devendra	Advances in Green Technology and Future Opportunities	7-08-2023 to 11-08-2023



12	Dr. Bharath K. Devendra	Advanced Functional Materilas for Science and Engineering	15-05.2023 to 19-05-2023
13	Dr. Lakshmikanth R. N.	Next generation sequencing from genomics to medicine	25-07-2022 to 28-07-2022
14	Dr. Lakshmikanth R. N.	Emerging innovative paradigms in health care and life sciences	17-08-2022 to 23-08-2022
15	Dr Vemula Vani	FDP on Program Outcomes course outcomes (PO-CO) mapping and attainment	29.04.2023
16	Dr Vemula Vani	Faculty development Program on "Application of Statistical techniques in research and writing research proposal"	06.10.2022
17	Dr Vemula Vani	FDP on Emotional Intelligence	20.10.2022
18	Dr. Pushpa.H	FDP on Program Outcomes course outcomes (PO-CO) mapping and attainment	29.04.2023
19	Dr. Pushpa. H	Faculty development Program on "Application of Statistical techniques in research and writing research proposal"	06.10.2022
20	Dr. Pushpa.H	FDP on Emotional Intelligence	20.10.2022
21	Dr. Snehalatha V	FDP on Program Outcomes course outcomes (PO-CO) mapping and attainment	29.04.2023
22	Dr. Snehalatha V	Faculty development Program on "Application of Statistical techniques in research and writing research proposal"	06.10.2022
23	Dr. Snehalatha V	FDP on Emotional Intelligence	20.10.2022
24	Dr.Prasanna Srinivas R	FDP on Program Outcomes course outcomes (PO-CO) mapping and attainment	29.04.2023
25	Dr.Prasanna Srinivas R	Faculty development Program on "Application of Statistical techniques in research and writing research proposal"	06.10.2022
26	Dr.Prasanna Srinivas R	FDP on Emotional Intelligence	20.10.2022
27	Dr.Ramesha A	FDP on Program Outcomes course outcomes (PO-CO) mapping and attainment	29.04.2023
28	Dr Akshata G Athreya	Intellectual Property Rights	23-29 January,2023
29	Dr Akshata G Athreya	Refresher Course in "LIFE SCIENCES"	17 March-01 April, 2023
30	Dr Akshata G Athreya	PO-CO mapping and attainment	29-Apr-23
31	Dr Akshata G Athreya	E content development	19-25 April, 2023



32	Dr Akshata G Athreya	Advanced Functional materials for Science and Engineering	15-19 May 2023
33	Dr Akshata G Athreya	Advances in Green Technology and Future Opportunities	7-11 August 2023
34	Dr.Yogesh D	PO-CO mapping and attainment	29-Apr-23
35	Dr.Yogesh D	Faculty development Program on "Application of Statistical techniques in research and writing research proposal"	06.10.2022
36	Dr.Yogesh D	FDP on Emotional Intelligence	20.10.2022
37	Juliya Rani Francis	PO-CO mapping and attainment	29-04-2023
38	Juliya Rani Francis	FDP on " Application of Statistical techniques in research and writing research proposal"	06-10-2022
39	Juliya Rani Francis	FDP on Emotional Intelligence	20-10-2022
40	Dr. Bhanupriya Ch	Faculty development Program on "Application of Statistical techniques in research and writing research proposal"	06.10.2022
41	Dr. Bhanupriya Ch	FDP on Emotional Intelligence	20.10.2022
42	Dr. Bhanupriya Ch	FDP on enzyme Science and technology	Jan-Apr-2023
43	Dr. Bhanupriya Ch	FDP on Program Outcomes course outcomes (PO-CO) mapping and attainment	29.04.2023
44	Dr. Nimita Venugopal C	Faculty development Program on "Application of Statistical techniques in research and writing research proposal"	06.10.2022
45	Dr. Nimita Venugopal C	FDP on Emotional Intelligence	20.10.2022
46	Dr. Nimita Venugopal C	International Expert Lecture on 'Electron Microscopy: A Marvel in the Study of Cells and Its Organelles'	23.11.2022
47	Dr. Nimita Venugopal C	FDP on Program Outcomes course outcomes (PO-CO) mapping and attainment	29.04.2023
48	Dr. Vinutha M	FDP on Program Outcomes course outcomes (PO-CO) mapping and attainment	29.04.2023
49	Dr. Mukhta H	FDP on Emotional Intelligence	20.10.2022
50	Dr. Pramod Prakash Desai	FDP on " Application of Statistical techniques in research and writing research proposal"	06-10-2022
51	Dr. Savitha G	FDP on " Application of Statistical techniques in research and writing research proposal"	06-10-2022

52	Dr. Jayashree BR	National level FDP onmaking classes and lessons more interactive	09-10-2022
53	Dr. Radha Dayanidi	FDP on Emotional Intelligence	20.10.2022
54	Dr. Geetika Pant	FDP on Emotional Intelligence	20.10.2022
55	Dr. Prasannakumar S.G.	FDP on Program Outcomes course outcomes (PO-CO) mapping and attainment	29.04.2023
56	Dr. Hareesh Kumar P	FDP on Program Outcomes course outcomes (PO-CO) mapping and attainment	29.04.2023
57	Dr.Ashley PC	FDP on Program Outcomes course outcomes (PO-CO) mapping and attainment	29.04.2023
58	Dr. Surendra S	FDP on Program Outcomes course outcomes (PO-CO) mapping and attainment	29.04.2023
59	Dr. Vasanth Kumar Baskara	FDP on Program Outcomes course outcomes (PO-CO) mapping and attainment	29.04.2023
60	Mrs. Malini MR	FDP on Program Outcomes course outcomes (PO-CO) mapping and attainment	29.04.2023
61	Mrs. Ramay kumari BS	FDP on Program Outcomes course outcomes (PO-CO) mapping and attainment	29.04.2023
62	Ms. Tanisha Rathode	FDP on Program Outcomes course outcomes (PO-CO) mapping and attainment	29.04.2023
63	Dr. Shasidhar Bharadwaj	FDP on Program Outcomes course outcomes (PO-CO) mapping and attainment	29.04.2023
64	Dr. Smrithi S.P.	FDP on Program Outcomes course outcomes (PO-CO) mapping and attainment	29.04.2023
65	Dr. Bharath K. Devendra	FDP on Program Outcomes course outcomes (PO-CO) mapping and attainment	29.04.2023



IV. Exhibitions/seminars/Training courses conducted
(Response to key performance indicator 10)

IV a. List of Training program/workshops/Value added programmes/FDPs organized:

https://drive.google.com/file/d/1tW5_SmCh4ChAeu6emK9velRmOY9FA-x9/view?usp=sharing

https://drive.google.com/file/d/1kRKUr_G61nUAvrQ4sNVT-j8Lpt_AP0sv/view?usp=sharing

Sl No.	Department	Course	Title	Date and Duration	Total No. of Beneficiaries
1	Electronics	Value Added Course	Digital Fundamentals	16.10.2021 to 12.02.2022, 30 days	21
2	Electronics	Hands on Training Course	Circuit Designing Active Learning Module CDALM-Phase-I 2022	02.02.2022 to 06.04.2022, 5 days	22
3	Electronics	Value added Programme	Electronic Components Assembly	22.01.2022 to 01.04.2022, 30 days	22
4	Electronics	Value Added Course	Robotics and its Applications'	8.04.2022 to 20.05.2022, 30 days	47
5	Electronics	Hands on Training Course	SIGNAL PROCESSING USING MAT LAB"	24.05.2022 to 25.05.2022, 2 days	27
6	Electronics	Hands on Training Course	Module design using ARDUINO	7.7.2022 to 12.7.2022, 5 days	37
7	Electronics	Skill development program	Build resume – ready to present yourself	01.12.2022	38
8	Electronics	Value Added Course	SENSORS AND TRANSDUCERS	05.12.2022 to 13.01.2023.	20
9	Electronics	Hands on Training Course	MATLAB onramp	27.12.2022	21
10	Electronics	Training Programme	LABORATORY STAFF TRAINING	21.01.2023	10
11	Electronics	Hands on Training Course	IMAGE PROCESSING onramp	07.02.2023	21
12	Electronics	Hands on Training Course	FPGA using Xilinx kit	17.02.2023	21



13	Microbiology	Value Added Program	Basic Tools in Bioinformatics	18th July 2022 to 1st August 2022	29
14	Microbiology	Value Added Program	Biofertilizers Production Technology	9th July to 19th August 2023	29
15	Microbiology	Value Added Program	Good Manufacturing Practices	13th July to 13th August	26
16	Microbiology	Value Added Program	Techniques in Mol Bio & RDT	18th to 21st July 2023	32
17	Microbiology	Hands on Workshop in association with MEDIOMIX DIAGNOSIS AND BIORESEARCH PRIVATE LIMITED	Workshop on "Starting your RNA- seq Journey- Differential gene expression (DGE) analysis"	20TH March 2023	90
18	Chemistry	Value added course	Hands-On Training on Instrumental Methods on Chemical Analysis	9th – 10th June 2022, 2 days	100
19	Chemistry	Value added course	Learning chemistry through simple experiments	17 December 2022	300
20	Chemistry	Value added course	Exploring the chemistry of nanomaterials	9th - 31st June 2022	50
21	Chemistry	Value added course	Chemistry for the Remediation of Pollution	19th Sept- 19th Dec 2022	28
22	Chemistry	Value added course	Titrimetric Analysis: From Basics to Industrial Applications	3rd Feb-19th April 2023	41
23	Biotechnology	Workshop	Workshop on Molecular biology techniques and Instrumentation,	28.11.2022 to 02.12.2022. 5 days	105
24	Biotechnology	Value Added course	Study of basic techniques in Animal cell culture	14 th to 19 th November 2022 (6 days)	205
25	Biotechnology	Value Added course	Conventional Technique of Wine Production	17/08/2022 to 17/09/2022	80



26	Biotechnology	Work Shop	Fermentation Process-Wine Preparation	22/08/2022 To 22/09/2022	
27	All Departments	FDP	Faculty development Program on " Application of Statistical techniques in research and writing research proposal	6-10-2022	102
28	All Departments	FDP	Writing Effective Research Proposals for External Funds and Publications	22-06-2023	104
29	All Departments	FDP	FDP- Research Grant Proposals, Manuscript Preparation & Bridging the Industry-Academia Gap	11-07-2023	150

IV b. List of Exhibitions/participative learning/Fests/Club activities organized:

<https://drive.google.com/file/d/1xpv4WTy- alLw1iat3bnapSmepWRX0d/view?usp=sharing>

Sl No.	Date	Title	Nature of Program	No. of participans
1	21-10-2021	Innovations in Science and Technology for Sustainable Development	Talent Search poster and model, ppt and documentary	250
2	16th January 2023	Creativity in Entrepreneurship	Start Up Day	274
3	9th to 25th January 2023	Anti- microbial resistance and drug discovery	Microfest 2k23	386
4	20st & 21st August 2022	Poster Making on "Molecular Biology and RDT"	Poster Exhibition	213
5	25th November 2022	Poster Making on "Basic Microbiology"	Poster Exhibition	107
6	22nd July 2022	Bio-entrepreneurship Development workshop	Bio-entrepreneurship Development workshop	122
7	9th January 2023	Bio Rangoli	Microfest 2k23	24 teams
8	9th January 2023	JAM	Microfest 2k23	11



9	10th January 2023	Heads Up	Microfest 2k23	26 teams
10	10th January 2023	Face Painting	Microfest 2k23	13 teams
11	20th January 2023	Petri Art	Microfest 2k23	35 teams
12	21st January 2023	Model Making	Microfest 2k23	8 teams
13	23rd January 2023	Lab Hunt	Microfest 2k23	48 teams
14	23rd January 2023	Fermented Food Competition	Microfest 2k23	13 teams
15	23rd January 2023	Logo Making Competition	Microfest 2k23	9
16	21-12-2022 to 22-12-2022	GENIUS	Competitions	120
17	7th - 11th march, 2022	INSIGHTS of MOLECULAR MECHANISM AND THERAPEUTIC STRATEGIES	Seminar	70
18	13-07-2023	National symposium	poster presentation and Model Presentation of all the projects done by students.	150

IV c. List of Industrial visits:

<https://drive.google.com/file/d/1ObuTUPzXpI6WETYaugUPxeRpm30WQhTp/view?usp=sharing>

Sl No	Department organized	Industry Visited	Date	No. of Beneficiaries
1	Biotechnology/MB/Chem	Sri Bhagirathi Cashew World Pvt. Ltd.	June 6 th 2022	173
2	Biotechnology/MB/Chem	Janatha fish meal and oil products	June 7 th 2022	173
3	Biotechnology	Central Institute of Medicinal Plants & Aromatic Plants (Council of Scientific & Industrial Research_CSIR), Allalasanra, Yelahanka, Bangalore	17-03-2023	155
4	Biotechnology	Bayer's Crop Science, Manyata Tech Park, Bengaluru	08-07-2023,	155
5	Electronics	DRDO Industrial Visit	18.12.2021	37



6	Microbiology	Krishi Mela- GKVK (University of Agricultural Sciences, Bengaluru)	12th November 2021	35
7	Microbiology	ICAR-IIHR (Indian Institute of Horticultural Research, Bengaluru	4th January 2022	35
8	Microbiology	GKVK, University of Agricultural Sciences, Bengaluru	15th July 2022	35
9	Microbiology	CFTRI, Central Food Technological Research Institute, Mysuru	29th September 2022	34
10	Microbiology/BT/Chem	Sula Wines, Ramanagara and KMF, Mandya	5.7.2023	143

V. Books/Journals subscribed from the grant:

(Response to the key performance indicator 11)

<https://drive.google.com/file/d/1D29QE-zWSTwuOnSIKsN-GeOg74VYSVvM/view?usp=sharing>

VI. List of Outreach activities:

(Response for Key Performance indicator 12)

https://drive.google.com/file/d/1XujVk2p_5KSQ5JGjI86coJ3_ohxX3tbG/view?usp=sharing

Sl. No.	Date	Department	Name of the activity	Place	Beneficiaries
01	20th September 2022	Microbiology	Awareness on Microorganisms	Government Girls School & Pre- University College Bengaluru	250
02	17th September 2022	Microbiology	Awareness on Tuberculosis & General Health & Hygiene	Sri. Yogi Narayana Mutt, Kaiwara, Bengaluru	18
03	24th March 2022	Microbiology	Awareness on Tuberculosis	Mathikere, MSR Nagar, Bengaluru	70
04	28th July 2022	Microbiology	World Hepatitis day-2022	MSR Nagar, Bengaluru	200
05	24 th August 2022	Chemistry	Chemistry Practicals for High School Students	GHS, Kanasavadi, Doddaballapura	87



				Taluk, Bangalore rural district-561203	
06	4 th August 2022	Chemistry	Chemistry Practicals for High School Students	M S Ramaiah High School, MSR Nagar, Bangalore-54	96
07	14/02/2022	Biotechnology	Skill based Scientific Model Building for School and Junior college students	Blossoms School Bagalgunte Bengaluru North, Acharya Gurukula PU college, Bagalagunte, Bengaluru	75
08	4 th , 5 th , 6 th June 2022	Biotechnology	Tree Plantation Drive:	Savandurga Hill Zone	170
09	17/06/2022	Biotechnology	Save Soil Movement:	Sri Kaiwara Kshethra, Neighbourhood activity	80
10	17/06/2022	Biotechnology	Awareness Program on Tuberculosis	Sri Kaiwara Kshethra, Neighbourhood activity	80
11	19/06/2022	Biotechnology	Save Soil Movement	Sri Sadguru Visit , Bengaluru Place ground	78

VII. Invited lectures:

(Response to the Key Performance Indicator

https://drive.google.com/file/d/17FUALSvkcvWlpOyNg8rSV1IxOe9Y_8ps/view?usp=sharing

Sl. No.	Department	Date	Title	Name of the Resource person	No. of beneficiaries
1	Microbiology	16th January 2023	Creativity in Entrepreneurship	Ms. Rekha Mavinkurve & Ms. Nandini Karanje	274
2	Microbiology	22nd July 2022	Entrepreneurship ecosystem at Ramaiah Institutions	Dr. M T Arvind, Mentor, Ramaiah Evolute	122
3	Microbiology	22nd July 2022	Prerequisites for the startup and qualities for idea entrepreneur	Dr. Gopi A, Founder & CEO, Vygnik Behavioral Services Pvt. Ltd	122



4	Microbiology	22nd July 2022	Start Up Development Phases	Mr. Prakash Nimbalkar, Brand & Marketing Consultant, Startup Advisor & Mentor	122
5	Microbiology	22nd July 2022	IP to Market	Dr. J. Fathima Benazir, Co-founder & Chief Science Officer, Azooka Labs, Bengaluru	122
6	Microbiology	25th January 2023	Role of Microbiologists Society, India	Dr. Arvind Deshmukh, President, Microbiologists, society, India	386
7	Microbiology	25th January 2023	Importance of Microbiology	Dr. Srinivas C, Director, UGC-HRDC, Bangalore university	386
8	Microbiology	25th January 2023	Antibiotic resistance: Its prevalence due to negligence and ignorance	Dr. Surya Chandra Rao (Post-doctoral fellow, IISc, Bengaluru)	386
9	Microbiology	25th January 2023	AMR Mechanisms, strategies to combat & Role of medicinal plants	Dr. Latha Damle (founder and CSO, Atrimed Biotech, Bengaluru).	386
10	Microbiology	28th Feb 2023	National Science Day-2023 Global Science for Global wellbeing	Dr. HS. Prema, MD, Varenya Nutrition concepts Dr. Manjunath, Founder, Gandhi School of Natural farming	256
11	Microbiology, BT and Chem	June 30, 2023	mitigation measures to reduce human-wildlife conflict in Bannerghatta National Park.	Mr. Avinash Krishnan, from A Rocha, an NGO	154
12	Microbiology, BT and chemistry	July 7, 2023	Srinivasa GV, Founder ReVP	Renewable and non-renewable energy	165
13	Microbiology, BT and Chemistry	14 th July 2023	Savitha Hiremath, Founder Endless green	Waste Management	160
14	Biotechnology	25.01.2022	Webinar on "Prevention of Communication	Dr. N. Sreedevi, Professor of	68



			disorder in children”	Speech Sciences and Head, AIIISH, Mysuru	
15	Electronics	16 06.2022	Guest talk on the “Recent avenues and applications in Electronics”	Mr. Udoshi Basavaraj, Assistant Professor, EC Campus, PES University	31
16	Electronics	04.08.2022	Guest Lecture on “UG students towards research-orientation in Article writing practice”	Dr. E Parasuraman Assistant professor and Head, Department of Physics & Electronics	30
17	Electronics	04.02.2023	Guest Lecture on "Electronic Development Applications for current Industrial Requirement"	Mr Prateek K P, Senior Software Engineer, Cadmaxx Pvt Ltd.	60
18	Chemistry	13/07/2022	CELL CYCLE AND ITS REGULATIONS	Dr. Preethi	55
19	Chemistry	12-12-2022	3D Molecular structures on proteins and their applications	Dr. Madan Kumar Shankar	150
20	Chemistry	27-12-2022	Current Advancements in Chromatography & Spectroscopy	Mr. Venugopal Rao Karanam	150
21	Chemistry	15-07-2023	Fundamentals of UV & FT-IR & their application in Industry	Dr. Hareesh Kumar P	50
22	Biotechnology	20/01/2023	Achieving Problem-Solution Fit and Product Market Fit	Ms Priti Rao	100
23	Biotechnology	24/03/23	Opportunities for Higher Education Abroad	Ms Suganya Mr Chandrakanth Mr Pradeep	100



Research Publications in Journals listed in Scopus/WOS/UGC Care List- 2022-2023

Response to the Key Point indicator-07

SI No	Name of the Author(s)	Department of the Author(s)	Title of the Paper	Name of the Journal	Year	ISSN	Link to the notification in UGC enlistment of the Journal
1	Ramya Kumari B.S	Chemistry and Biochemistry	Comparative study on the production, purification and immobilization of alkaline protease from Bacillus species present in soil rhizosphere	Applied Biological Research	2023	0974-4517	https://www.indianjournals.com/ijor.aspx?target=ijor:abr&volume=25&issue=2&article=012
2	Tanisha rathore	Chemistry and Biochemistry	Formulation and evaluation of saponin based alcohol - free polyherbal hand sanitizer	Veterinary Integrative Sciences	2023	2629-9968	https://he02.tci-thaijo.org/index.php/vis/article/view/262911
3	P Hareesh Kumar	Chemistry and Biochemistry	Synthesis & cytotoxic activity of Bis (μ - chloro) bis (azobenzyl analogue) di-palladium complexes	Materials Today Proceedings	2023	2214-7853	https://doi.org/10.1016/j.matpr.2023.06.365
4	Smrithi S.P.	Chemistry and Biochemistry	Carbon dots decorated cadmium sulphide heterojunction-nanospheres for the enhanced visible light driven photocatalytic dye degradation and hydrogen generation	Journal of Colloid and Interface Science	2022	0021-9797	https://doi.org/10.1016/j.jcis.2022.07.100
5	Smrithi S.P.	Chemistry and Biochemistry	Esterification of levulinic acid to butyl levulinate over TiO ₂ /WO ₃ /SO ₄ ²⁻ : optimization and kinetic study	Biomass Conversion and Biorefinery	2023	2190-6815	https://doi.org/10.1007/s13399-023-04016-z
6	Bharath K. Devendra	Chemistry and Biochemistry	Visible Light Active WO ₃ /TiO ₂ Heterojunction Nanomaterials for Electrochemical Sensor, Capacitance and Photocatalytic Applications	Catalysis Letters	2023	1011-372X	https://doi.org/10.1007/s10562-023-04362-7
7	Bharath K. Devendra	Chemistry and Biochemistry	Development of Rhodium coatings by Electrodeposition for Photocatalytic Dye degradation	Vacuum	2022	0042-207X	https://doi.org/10.1016/j.vacuum.2022.111460
8	Bharath K. Devendra	Chemistry and Biochemistry	The Effect of graphene content on the corrosion and mechanical properties of an electrodeposited Ni-Graphene coating	Applied Surface Science Advances	2022	2666-5239	https://doi.org/10.1016/j.apsadv.2022.100310



9	Bharath K. Devendra	Chemistry and Biochemistry	Advanced Strategies for Hydrogen Generation by Rhodium Metal Catalysts Coated by the Electrodeposition Method	Applied Surface Science Advances	2022	2666-5239	https://doi.org/10.1016/j.apsadv.2022.100320
10	Bharath K. Devendra	Chemistry and Biochemistry	The characteristics of Electrodeposited Nickel composite coatings- A Review	International Research Journal of Engineering and Technology	2022	2395-0056	https://www.irjet.net/archives/V9/19/IRJET-V9I929.pdf
11	Bharath K. Devendra	Chemistry and Biochemistry	Synthesis and Morphological Studies of Nanocellulose Fibers from Lignocellulosic Biomass in Ionic Liquid	Asian Journal of Chemistry	2023	0975-427X	https://doi.org/10.14233/ajchem.2023.23999
12	Bharath K. Devendra	Chemistry and Biochemistry	Structural, Physical, And Optical Properties Of Lead Boro-Tellurite Glasses Doped With Europium Trioxide	Rasayan Journal of Chemistry	2023	0974-1496	http://doi.org/10.31788/RJC.2023.1628300
13	Bharath K. Devendra		Synthesis of cellulose nanofibers from lignocellulosic materials and their photocatalytic dye degradation studies	International Nano Letters	2023	2228-5326	https://doi.org/10.1007/s40089-023-00402-7
14	Surendra Adagur Sudarshan	Chemistry and Biochemistry	Studies on characteristics and corrosion behaviour of chitosan/eudragit RS100 bilayer film coated Ti-6Al-4V	Indian Journal of Chemical Technology	2023	0975-0991	https://doi.org/10.56042/ijct.v30i4.69328
15	Sowbhagya R, Muktha H, Ramakrishnaiah T N	Biotechnology and Genetics	CRISPR/Cas -mediated genome editing in mice for the development of drug delivery mechanism	Molecular biology reports	2023	0301-4851 (print); 1573-4978 (web)	https://link.springer.com/article/10.1007/s11033-023-08659-z
16	Sowbhagya R	Biotechnology and Genetics	Polyphenols and their Nanoformulations: Protective effects against human diseases	Life	2022	2075-1729	https://doi.org/10.3390/life12101639
17	Ramakrishnaiah T N and Sowbhagya R	Biotechnology and Genetics	Application Of Rapd Barcodes In Establishing The Genetic Variations Of Lynx Spiders, Oxyopes Javanus Populations From The Different Parts Of Karnataka, India.	Annals of Entomology	2022	0970-3721	https://connectjournals.com/file_html_pdf/3592701H_05_AE_353937-46a.pdf



18	Dr. Nimita Venugopal C	Microbiology	Occurrence and Characterization of Genetic Determinants of Beta lactam Resistance in E. coli clinical infections	Infection, Genetics and Evolution	2022	1567-1348	https://doi.org/10.1016/j.meegid.2022.105257
19	Dr. Manikandan A	Microbiology	Apoptosis inducing metabolite from marine mangrove actinobacteria VITGAP173	Anticancer Agents in Medicinal Chemistry	2022	1871-5206	DOI: https://pubmed.ncbi.nlm.nih.gov/36839616/#:~:text=Our%20results%20provided%20evidence%20that,methicillin%20resistant%20bacteria%20in%20milk.
20	Dr. Nimita Venugopal C	Microbiology	Molecular Characterization of Methicillin Resistant Staphylococci from dairy value chain in two Indian states	Pathogens	2022	20760817	
21	Vemula Vani, Snehalatha V, Rachel Nishitha, Hima S, Arpitha B Hegde, Manikandan, Alagumuthu	Microbiology	In silico analysis of natural inhibitors against HPV E6 protein	Curr Comput Aided Drug Des	2022	1573-4099	https://www.eurkaselect.com/article/130107
22	Vemula Vani	Microbiology	Fragment-based design and MD simulations of Human Papilloma Virus-16 E6 protein inhibitors	journal of biomolecular structure and dynamics	2023		https://www.tandfonline.com/doi/abs/10.1080/07391102.2023.2203775
23	Dr. Prasanna Srinivas. R	Microbiology	Hydrothermal production, characterization, antibacterial activity and humidity sensor application of cerium oxide nanoparticles	SEYBOLD Report	2003	1533-9211	https://seyboldreport.net/pdf/171.pdf
24	Dr. Juliya Rani Francis	Microbiology	Phylogeny chitinase activity and pathogenecity of Beauveria, metarhizium and Lecanicillium sp. against Cowpea affid, aphis craccivora koch.	International Journal of tropical insect science	2023		43: pages909-918, https://doi.org/10.1007/s42690-023-01002-w



25	Dr, Manikandan A	Microbiology	Novel imidazolidines and their inhibitory effects of SARS-CoV-2 S Omicron Spike B. 1. 1. 529 protein in silico	2023	Computers in Biology and medicine	0010-4825	
26	Dr, Manikandan A	Microbiology	Imidazolidine based aspartate inhibitors as novel anti-candida agents	2023	Chemical Biology & Drug Design	1747-0285	
27	Channarayappa	Biotechnology and Genetics	Callose a Plasmodesmata Pore-Guard Regulates Molecular Trafficking in Response to Developmental and Environmental Stresses in Plants	2023	Gradiva Review Journal		DOI:10.37897.GRJ.2022.V9I6.23.51 3188
28	Channarayappa and Lokesh K.N.	Biotechnology and Genetics	Morphological, Pharmaceutical and Protective Mechanism of Trichomes in Lycopersicon Species.	2023	International Journal of Scientific Research and Engineering Development	2581-7175	https://zenodo.org/records/6058232



List of Minor research projects:

Sl. No.	Name of the Student	Class	Name of the Guide	Title of the project
1	Dharshan Balaji Kalicharan H C K Keerthana J R	6 th Sem BSC	Dr. Radha Dayanidhi	'Phytochemical, antimicrobial and sensory determinants of behavioural influences in <i>Drosophila</i> spp. for peanut skin extract'
2	Sidharth S Shwetha P Sowmya A Shruthi Rudra Murthy Shree Gowri A	6 th Sem BSC	Proj. Jayashree D.R.	Quantitative analysis of Citric acid and enzymatic activity in sprouted <i>Lens culinaris</i>
3	AnushaRani S Charitha Prasad Archana C	6 th Sem BSC	Proj. Jayashree D.R.	Effect of Mycorrhizal fungi on growth and yield of <i>Clitoria ternatea</i>
4	Jazia J Diksha H Kankaran Lisha Bharadwaj	6 th Sem BSC	Proj. Jayashree D.R.	Dual inoculum of Am Fungi on yield of <i>Clitoria ternatea</i>
5	Revathi V, Neha Kumari, Prasanth M	6 th Sem BSC	Dr Naveen Kumar R	Driver Sleep Detection and Alarm System
6	Brunda H S	6 th Sem BSC	Dr Naveen Kumar R	LED Mood Light Control System
7	Sayantan Pal, Shradha S Vadhone, Yashwanth L	6 th Sem BSC	Mrs Rithu R	RFID Student IS using AURDINO
8	N Pavan	6 th Sem BSC	Dr Naveen Kumar R	Robotic Car controlled by NODEMCU
9	Ramyakeerthi Y, Nikhilesh B, Saipradyunna	6 th Sem BSC	Dr Naveen Kumar R	SA based Low-cost Transceiver
10	Neha S, Namratha R, Namratha Y	6 th Sem BSC	Mrs. Soumya S Shanbhag	Potential of fruit peel waste as media for growth of commonly used microorganisms
11	Geetanjali N, Harini Y, Harshita G Deepashri M	6 th Sem BSC	Dr. Akshatha G A	Antibacterial activity of nanosilver synthesized from germinating <i>Vigna radiata</i>
12	Dhanush L. Nadagouda, Nithya Shree G, Shashank H.R., Dilip Kumar S., Varshitha Raju R	6 th Sem BSC	Smrithi S.P.	Evaluation of CDs-TiO ₂ nanoassembly for visible-light-driven photocatalytic degradation of organic dye
13	Yashas V, Madan Kumar G.N., Nithin N.K., Vishwas V.	6 th Sem BSC	Bharath K. Devendra	Investigation of visible light mediated photocatalytic dye degradation of g-C ₃ N ₄ /WO ₃ nanocomposite
15	Shravya B, Sai Nand, Sakshi Ullal, Sayi Sudarshana, Samyuktha A	6 th Sem BSC	Dr. Vibha Vinayakumar Bhat	Biosynthesis of nanoceria and their biomedical applications
16	Sampriti Machhan, Samreen Taj, Dikshithaa. A, Sai Charan A, Bipasha Singh	6 th Sem BSC	Mrs. Malini M R	A study of Antimicrobial and Antioxidant properties of C-dots derived from Natural sources



17	Nischith Skanda, Parth Khanduri, Satyam Kumar, Brinda P	6 th Sem BSC	Mrs. Ramaya Kumari B S	<i>Candida auris</i> increases infertility rate in women
18	Chaithanya K, Devangi Satpathy, Koya Nayana, Nithyashree M S, Vaishnavi K R	6 th Sem BSC	Dr. Hareesh Kumar P	Synthesis of Cytidine-2',3' – o – Phenyl boronate analogues and their Biological activity such as anti-bacterial, antifungal & Cytotoxic activities
19	Vidya Shree M, Yoshitha K, Prajnaa Shatavissa, Shambhavi Tewari	6 th Sem BSC	Dr. Shashidhar Bharadwaj S	Extracts and Molecules from Medicinal plants and its Application as Anti-herpes
20	Tejaswini P	4th Sem	Dr. Manikandan	Fungal disease assessments in agriculture crops
21	Abishek S	4th Sem	Dr. Manikandan	UTI specific organisms and their anti-biofilm effects
22	Sneha S, Abhikya R,	4th Sem	Dr. Manikandan	Synthetic antimicrobial drug discovery
23	Abhikya R	4th Sem	Dr. Manikandan	Synthetic antimicrobial drug discovery
24	Md. Faizan, Shreya, Bindu	4th Sem	Dr. Manikandan	Nigella sativa extract for antimicrobial drug discovery
25	Sampriti, Nithya Shree, parth Kanthuri	6th sem	Dr. Manikandan	Novel imidazopyridazine antimicrobials
26	Madhu Shree and shrusti	2nd sem	Dr. Manikandan	Computer aided drug design for microbial kinases


Coordinator

CO-ORDINATOR
TBT-STAR COLLEGE SCHEME
M.S. Ramaiah College of Arts, Science & Commerce
MSRIT Post, MSR Nagar, Bangalore - 560 054


Principal

Principal,
M.S. Ramaiah College of Arts, Science & Commerce
MSRIT Post, MSR Nagar
Bangalore - 560 054

**M.S. RAMAIAH COLLEGE OF ARTS, SCIENCE AND COMMERCE, MSRIT POST,
MSR NAGAR, BANGALORE - 560 054,
(RE-ACCREDITED "A" BY NAAC, AFFILIATED TO BENGALURU CITY UNIVERSITY, APPROVED BY AICTE)
WWW.MSRCASC.EDU.IN**