



RAMAIAH
College of Arts, Science &
Commerce

ಎಮ್ ಎಸ್ ರಾಮಯ್ಯ ಕಲಾ, ವಿಜ್ಞಾನ ಮತ್ತು ವಾಣಿಜ್ಯ ಕಾಲೇಜು

M S Ramaiah College of Arts, Science and Commerce

Re-accredited 'A' by NAAC, Permanently Affiliated to Bengaluru City University.

Approved by Government of Karnataka, Approved by AICTE, New Delhi.

Recognized by UGC under 2f & 12B of UGC act 1956



(National Institutional Ranking Framework, Ministry of Education, Govt of India)

Ranked 62nd in NIRF India Ranking by MHRD, New Delhi.

DBT Star College Scheme

Ref No. MSRCASC/CHEM-BIOCHEM/2022-23/

Dated: 20/09/2022

CIRCULAR

Department of Chemistry and Biochemistry

A value-added course on the topic “**Chemistry for the Remediation of Pollution**” will be starting for B.Sc. Chemistry students from 19th September to 31st December 2022. This program is intended to create a general awareness about the current status of environmental pollution and the proposed remediation via the application of chemistry for the future chemists and scientists. Course duration is 30 hours. Interested students can enroll their name with Dr. Bharath K. Devendra / Mrs. Smrithi S.P. on or before 15/09/2022.

Course Facilitators

Dr. Bharath K. Devendra
Assistant Professor
Department of Chemistry/Biochemistry
MSRCASC

Mrs. Smrithi S. P.
Assistant Professor
Department of Chemistry/Biochemistry
MSRCASC

S. G. P. R.
HEAD OF THE DEPARTMENT
CHEMISTRY AND BIOCHEMISTRY
M S. Ramaiah College of Arts,
Science & Commerce
Bangalore - 560 054

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

Resource Persons

Industry experts and renowned Scholars from Prestigious Institutions.

Coordinators

- 1. Dr. Bharath K. Devendra**
Assistant Professor,
MSRCASC, Bengaluru.
- 2. Mrs. Smrithi S.P.**
Assistant Professor,
MSRCASC, Bengaluru.

Resource Person

- 1. Mr. Ranit Banerjee**
Prime Minister Research Fellow,
Indian Institute of Science, Bengaluru.
- 2. Mr. Pranay Kumar Maitra**
Prime Minister Research Fellow,
Indian Institute of Science, Bengaluru.

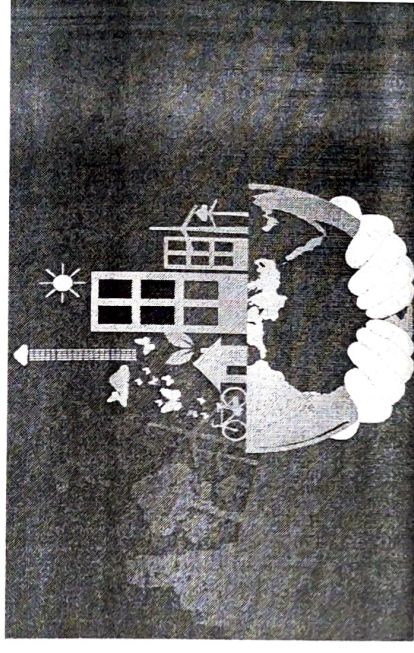
About the programme

Department of Chemistry & Biochemistry takes initiative for myriad of co-academic activities to bring students growth in all the respects. In the similar lines, department has organized an add-on course entitled “**Chemistry for the Remediation of Pollution**” for UG students of Chemistry. This program is intended to create a general awareness about the current status of environmental pollution and the proposed remediation via the application of chemistry for the future chemists and scientists. This program is designed for selected students interested in pursuing further career in the field of research and industry. This program will further inculcate research interest, zeal, enthusiasm and contemporary knowledge on the environment and its applications towards Chemistry research in the aspiring candidates.

Our resource persons of this program are faculty of Department of Chemistry, MSRCASC, Industry experts and renowned Professors from Prestigious Institution with a sound experience in Chemistry research. Topic of the program selected is also based on the research experience of the faculty that they sought. The order of the sessions is made to maintain the flow of the main topic of the add-on course. Department is thankful to the management

Value-added Course On

“Chemistry for the Remediation of Pollution”



Duration:

19th September to 31st December - 2022

Venue:

Chemistry UG Class Room No. 504/501

Organized by:

Department of Chemistry and
Biochemistry

M.S. Ramaiah College of Arts, Science and
Commerce, Bengaluru - 560054

M.S. Ramaiah College of Arts, Science and Commerce

Dr. M S Ramaiah, a visionary and philanthropist established "Gokula Education Foundation (GEF)", in the year 1962, to deliver education and healthcare for the betterment of mankind. Under the tutelage of GEF, M.S Ramaiah college of Arts, Science and Commerce (MSRCASC) was established in 1994. MSRCASC is Re-accredited with "A" Grade by NAAC, permanently affiliated to Bengaluru City University (BCU), and approved by UGC and AICTE.

The college offers seven UG courses and four PG courses in Arts, Science, and Commerce, to around 2000 students. The Department of Life Sciences conducts 2 UG and 4 PG Programs in Microbiology, Chemistry, Biotechnology and Biochemistry to about 800 students. The dedicated academic faculties from our college have extensive teaching experience and have pursued doctoral and postdoctoral work in eminent institute's in India and abroad. Ramaiah College not only educates young students to excel academically, but also strives hard to ingrain social responsibilities in them.

Department of Chemistry and Biochemistry

The Department of Chemistry and Biochemistry was established in the year 1994 and currently conducts both UG and PG courses in Chemistry and Biochemistry. The syllabus is constantly supported by current day, real life applications carrying utility value. The department has very good infrastructural facilities to carry out teaching and research activities. Highly qualified faculties are assigned with theory and practical classes and are instructed to emphasize on the 'learning' of the students. The department undertakes research projects of national importance in the field of biological chemistry and has attracted funds from various agencies. Through the sincere effort of our faculty we have obtained many University ranks, 90-100% results in both UG and PG courses consistently. Our students have been placed in various companies and many are pursuing their higher educations in India and abroad. We encourage students in doing research, present papers at National conferences, publish their findings in Journals of repute and also participate in co-curricular and extra-curricular activities.

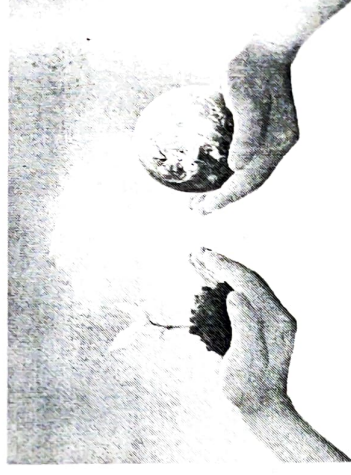
Organizing Committee Members

Dr. Vatsala G
Principal,
MSRCASC, Bengaluru.

Dr. Prasanna Kumar S. G.
Associate Professor,
HOD of Chemistry/Biochemistry
MSRCASC, Bengaluru

Dr. Bharath K. Devendra
Assistant Professor
MSRCASC, Bengaluru

Mrs. Smrithi S.P.
Assistant Professor
MSRCASC, Bengaluru



M.S. Ramaiah College of Arts, Science and Commerce

Department of Chemistry/Biochemistry

Value-added program on

“Chemistry for the Remediation of Pollution”

Students Participants List

Si No	Student name	Register number
1	Akshata Kankale	U18EV22S0247
2	B.Swetha Reddy	U18EV22S0366
3	Beesam Navadeep	U18EV22S0361
4	Chandana V R	U18EV22S0128
5	Chinmaya.Balachandran	U18EV22S0127
6	D. Abhishek	U18EV22S0227
7	Devika.A	U18EV22S0129
8	Disha H M	U18EV22S0380
9	Hema Shree S	U18EV22S0071
10	Hrishabh Gupta	U18EV22S0251
11	Jezreel john johnson	U18EV22S0122
12	Kammari Balaji	U18EV22S0070
13	Keziya G S	U18EV22S0376
14	Lakshmi. A. S	U18EV22S0367
15	Mahee Prabhu	U18EV22S0229
16	Mandara C A	U18EV22S0119
17	Megha Raj	U18EV22S0130
18	Mitali Prasad	U18EV22S0245
19	Mohammed Ismail Lamba	U18EV22S0286
20	Monisha.M	U18EV22S0350
21	N. Ajay Amirtharaju	U18EV22S0213
22	Nagalakshmi M	U18EV22S0360
23	Navya L	U18EV22S0347
24	Nikitha Ajith	U18EV22S0117
25	Nimmagadda Mohan	U18EV22S0118
26	Niveditha R	U18EV22S0121
27	P.Harshitha	U18EV22S0296
28	Prajwal A Kambar	U18EV22S0132
29	Pralayakaveri Devipriya	U18EV22S0386
30	Preetham.R	U18EV22S0377
31	Purbasa Mandal	U18EV22S0352
32	Radhakrishnan Sreedhanya	U18EV22S0345
33	Sakshi Sunil Advitote	U18EV22S0123
34	Sandeep Shivanand Hosur	U18EV22S0197

35	Sanjana N	U18EV22S0390
36	Sanjana Suresh Balutagi	U18EV22S0244
37	Shorya Agrawal	U18EV22S0069
38	Sreekantham Aniruddha	U18EV22S0308
39	Tejaswini S	U18EV22S0357
40	Ujwal R	U18EV22S0134
41	Vanipenta Sravan Kumar	U18EV22S0381

Total no. of students participated: 41

Program coordinator:

1. Smrithi S.P.
2. Bharath K. Devendra

Smrithi
Bharath

S.P. *Prof*

Head of the Department
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Ranked 55th in NIRF India Ranking by MHRD, New Delhi

DBT Star College Scheme

Title: Chemistry for the remediation of pollution

Duration: 30 hours

Course Facilitators: Dr. Bharath Devendra and Mrs. Smrithi. S. P

Resource Persons: Mr. Ranit Banerjee, Mr. Pranay Kumar Maitra

(Prime Minister Research Fellows, IISc, Bengaluru)

Program Dates: 19.09.2022 to 31.12.2022 (September-December)

Department of Chemistry & Biochemistry takes initiative for a myriad of co-academic activities with an intention to develop the skills of students in all the respects. In the similar lines, department has organized an add-on course entitled “**Chemistry for the remediation of pollution**” for UG students of Chemistry. This program is intended to create a general awareness about the current status of environmental pollution and the proposed remediation via the application of chemistry for the future chemists and scientists. The first semester Chemistry students have been chosen as the beneficiaries for this program. This program will further inculcate research interest, zeal, enthusiasm and contemporary knowledge on the environment and its applications towards Chemistry research in the aspiring candidates.

The introductory lecture on biodiversity, ecology and environment was carried out by the course facilitator, Dr. Bharath K. Devendra. Mrs. Smrithi S. P. had conducted lecture sessions on Environmental pollution: an over view on ambient air and water quality criteria, Standards and Acts – WHO, EPA & Indian. The sessions also discussed about the effects and control of thermal, and radioactive pollution arising due to interaction of humans with environment. The introductory sessions ended with an interesting group discussion between the participants on the topics discussed.

The consequent sessions detailed the importance of water resources and the water quality standards. A group discussion involving student participation on the types of pollutants in the water and their effects are also discussed. Dr. Bharath K. Devendra gave a session detailing the physical and chemical characteristics of waste water, Biochemical oxygen demand (BOD), chemical oxygen demand (COD) and their determination techniques. In the

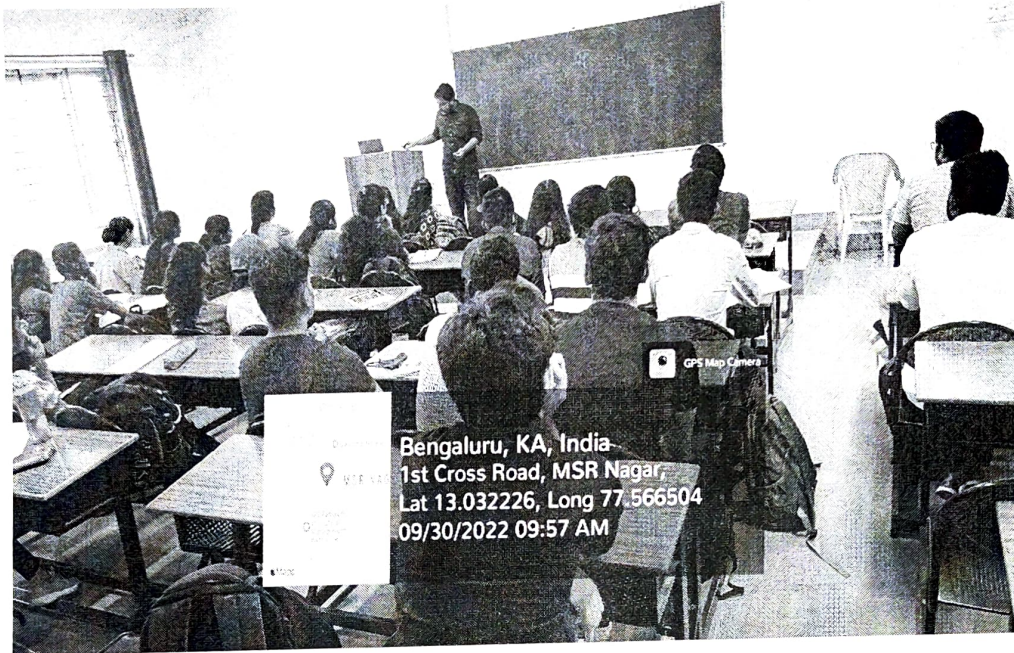
consequent days, discussion on the methods for the treatment of liquid wastes to control pollution was explained to the students. It included Physical, chemical and biological methods with an elaborate discussion on the role of microorganism, sludge treatment & disposal.



The third module of the value added program mainly targeted to address air pollution. The session explained elaborately different types of pollutants such as natural and man-made, its classification into primary and secondary pollutants etc. Primary-particulate matter like inorganic gases SO_2 , nitric oxide, VOC, lead and secondary pollutants such as peroxy acyl nitrate, ozone, SO_3 , NO_2 were detailed. The program also covered the effect of air pollutants, air pollution laws and its standards. The session concluded with the techniques associated with different air sampling procedures, control of air pollutants, sampling and measurement of gaseous and particulate pollutants in ambient air and industrial waste gases. The whole module was handled by the resource person and the distinguished prime minister fellow (IISC), Mr. Ranit Banerjee.

The next module covered the details on the soil pollution and solid waste management. The course facilitators, Dr. Bharath K. Devendra gave a detailed discussion on the soil contamination by chemical pollutants including its sources and fate. The session also covered the remediation by plants, biomagnifications and bioremediation by microorganisms; contamination by inorganic (including heavy metals) and organic pollutants. Mrs. Smrithi S. P had delivered lecture on the characteristics and perspectives of solid waste, its problems of

collection and handling, types and sources of solid wastes, its properties of solid waste-solid waste management such as compaction, incineration, composting, landfills and biological processing.




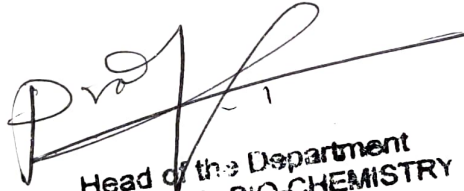
The program concluded with a detailed discussion on Industrial Pollution Control: Pollution control in important chemical industries like tannery, pulp and paper, fertilizer, food processing, pharmaceuticals, sugar, distillery, petrochemicals and electroplating were discussed elaborately by the resource person and the distinguished Prime Minister Fellow (IISc), Mr. Pranay Kumar Maitra.



The course commenced on 19.09.2022 and ended on 31.12.2022. At the end of the program, the participants gained the knowledge on the current status of environmental pollution and how to use the knowledge of chemistry in environmental pollution remediation. The students from first semester BSc (Chemistry) course had participated enthusiastically throughout the program and are benefitted.


BHAKATHI K.


SMRITHI.S.P

S-4. 
Head of the Department
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M.S. Ramaiah College of Arts,
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DEPARTMENT OF CHEMISTRY AND BIOCHEMISTRY
VALUE ADDED PROGRAMME ON
“Chemistry for the Remediation of Pollution”

Question paper

Instructions: Both Part A and Part B is compulsory.

Time: 1 hr 30 min

Maximum marks: 40

Part A

(6 x 2 = 12)

Answer any six questions

1. What are the types of pollutants in air?
2. Write few contamination by inorganic soil pollution.
3. What is Ecology?
4. Write full form WHO and EPA.
5. What are the soil contamination by chemical pollutants?
6. Write two types of pollutant.
7. What is electroplating?

Part B

(7 x 4 = 28)

Answer any four question

1. Write five differences between COD and BOD.
2. Write the effects and control of radioactive pollution arising due to interaction of humans with environment.
3. Write the characteristics and perspectives of solid waste management.
4. What are the chemical and physical characteristics of waste water?
5. Explain the primary and secondary pollutants in air pollution.
6. Write any five differences between biomagnifications and bioremediation.