

GTN ARTS COLLEGE (AUTONOMOUS)

DEPARTMENT OF CHEMISTRY

DBT REPORT

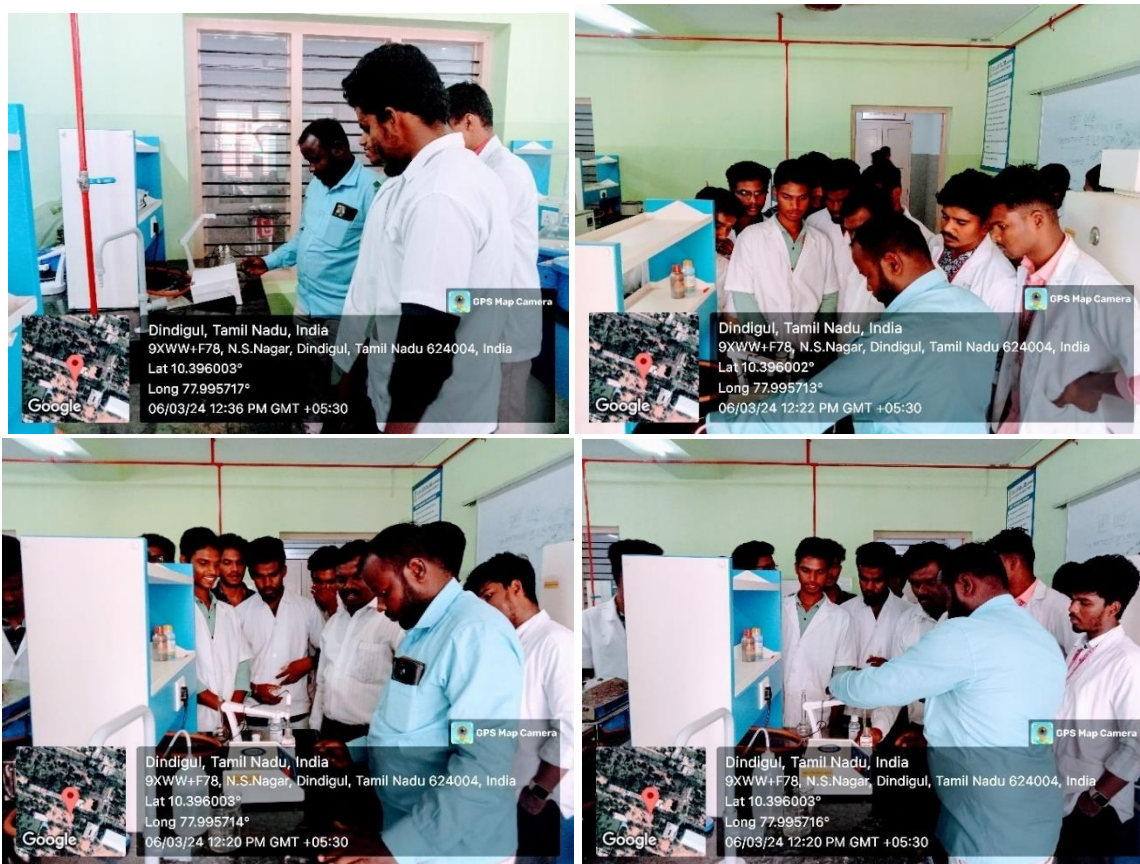
(2023 – 2024)

Department of Chemistry Activities for AY 2023 – 2024

S. No.	Programme Type	Programme Title	No. of Programme	Date
1	Faculty Development Programme	IPR Awareness towards Patient Rights	1	17.02.2024
2	Guest Lecture	Career Opportunities for Chemistry Graduates in Central and State Government Jobs	1	21.09.2023
3	Hands on Training	Hands on Training on Electro Chemical Experiments	7	06.03.2024
	Hands on Training	One day Hands-on-Training Programme on Preparation of Chemical Solutions		08.02.2024
	Hands on Training	Detection of Adulteration by Rapid Test		08.3.2024
	Hands on Training	Laboratory Techniques in Gravimetric Analysis		16.02.2024
	Hands on Training	Thin Layer Chromatography		19.03.2024
	Hands on Training	Intercollegiate Hands-on Training for the Plant Extraction and Phytochemical Analysis		23.01.2024
	Hands on Training	Operating Procedure for Basic Essential Instruments		30.01.2024
4	Intercollegiate Seminar	Recent Advances in Chemical Sciences (RACS) Recent Developments of Metal – Organic Frame Works (MOF) in Water Treatment	1	18.03.2024
5	Outreach activity	Govt. Hr. Sec. School, Nallamanayakanpatti, Dindigul.	3	20.03.2024
	Outreach activity	Crafting Phenyl and Soap oil for Entrepreneurial Skill Development		22.03.2024
	Outreach Activity	Outreach Activities for School Students and School Teachers		23.03.2024

6	Seminar	Food Chemistry	4	19.03.2024
	Seminar	Leather Technology		21.02.2024
	Seminar	Symmetry elements and Symmetry Operations		22.03.2024
	Seminar	Water Treatment and Pollution		29.02.2024
7	Special Awareness Lecture	A Special Awareness Lecture on IIT-JAM 2024 Examinations	1	20.03.2023
8	Summer Training	Entrepreneurship Cum Skill Development Programme for Home Care Products	4	20.03.2024
	Summer Training	Preparation of Homecare Products		21.03.2024
	Summer Training	Chemistry in Everyday Life		21.03.2024
	Summer Training	BIS Water Quality Elemental Analysis by AAS		22.03.2024
9	Workshop	One Day Workshop on Innovation and Intellectual property Rights	6	07.03.2024
	Workshop	Workshop on preparation of chemical Solutions		08.02.2024
	Workshop	Workshop on Dairy Chemistry		12.02.2024
	Workshop	Pharmacological Activity of Metal – Nano Particles		20.03.2024
	Workshop	Drawing Chemical Structure using ChemDraw Software		20.10.2023
	Workshop	One Day Workshop on Experiential learning of Science Using Innovative Working Models		26.02.2024

Hands-on training programme on “Electrochemical Experiments” was organized on 06.03.2024



A hands-on training programme on “**Electrochemical Experiments**” was organized on 06.03.2024 to provide students with practical exposure to electrochemical techniques and experimental procedures. The training was conducted by **Mr. S. Periyasamy**, Lab Technician, Easwar Scientific and Co., Trichy, who provided valuable demonstrations and practical guidance on various electrochemical experiments. The programme enabled the students to gain a better understanding of electrochemical principles, instrumentation, experimental procedures, and data interpretation. A total of 42 students actively participated in the training programme and benefited from the practical learning experience.

One-Day Workshop on “Innovation and Intellectual Property Rights on 07.03.2024



A One-Day Workshop on “**Innovation and Intellectual Property Rights**” was organized on 07.03.2024 to create awareness among students about innovation, creativity, intellectual property, and the importance of protecting innovative ideas. The programme was conducted by **Dr. G. Puthilibai**, Professor of Chemistry, Sri Sairam Engineering College, Chennai, who delivered an informative and insightful session on various aspects of intellectual property rights and their relevance in academic and professional fields. The workshop helped students understand the significance of innovation, patents, copyrights, trademarks, and the procedures involved in safeguarding intellectual creations. A total of 200 students participated in the workshop and benefited from the valuable knowledge and guidance provided by the resource person.

Hands-on Training Programme on “Preparation of Chemical Solutions” on 08.02.2024



A One-Day Hands-on Training Programme on “**Preparation of Chemical Solutions**” was organized on 08.02.2024 to provide students with practical knowledge and skills in the accurate preparation and handling of chemical solutions. The training programme was conducted by **Dr. G. Rajkumar**, Assistant Professor of Chemistry, Vivekananda College, Tiruvedakam, West Madurai – 625234. The resource person provided practical demonstrations and guidance on various aspects of solution preparation, including accurate weighing, dilution, concentration calculations, and safe handling of chemicals. The programme enhanced the students’ laboratory skills, accuracy, confidence, and understanding of basic chemical laboratory procedures. A total of 95 students participated in the hands-on training programme and benefited from the practical learning experience.

Workshop on “Preparation of Chemical Solutions” on 08.02.2024



A Workshop on “**Preparation of Chemical Solutions**” was organized on 08.02.2024 to provide students with practical knowledge and hands-on experience in the preparation and handling of chemical solutions. The programme was conducted by **Dr. G. Rajkumar**, Assistant Professor of Chemistry, Vivekananda College, Tiruvedakam, West Madurai – 625234. The resource person explained the principles and procedures involved in preparing solutions of different concentrations, including accurate weighing, dilution techniques, concentration calculations, and safe handling of laboratory chemicals. The workshop enhanced the students’ practical laboratory skills, accuracy, and confidence in performing solution preparation experiments.

Hands-on Training Programme on “Detection of Adulteration by Rapid Test” was organized on 08.03.2024



A Hands-on Training Programme on “**Detection of Adulteration by Rapid Test**” was organized on 08.03.2024 to create awareness among students about food adulteration and to provide practical knowledge of rapid methods used for detecting adulterants in food products. The training was conducted by **Mr. V. Rajeshkumar**, Food Safety Officer, Tamil Nadu Administration Department, Sivagangai District. The resource person explained the common types of food adulteration, their health impacts, and the importance of food safety. Students were given practical demonstrations on rapid testing methods for identifying adulterants in commonly used food materials. The programme enhanced the students’ understanding of food quality, safety, and simple analytical techniques for adulteration detection. A total of 75 students participated in the hands-on training programme and benefited from the practical session.

Workshop on “Dairy Chemistry” was organized on 12.02.2024



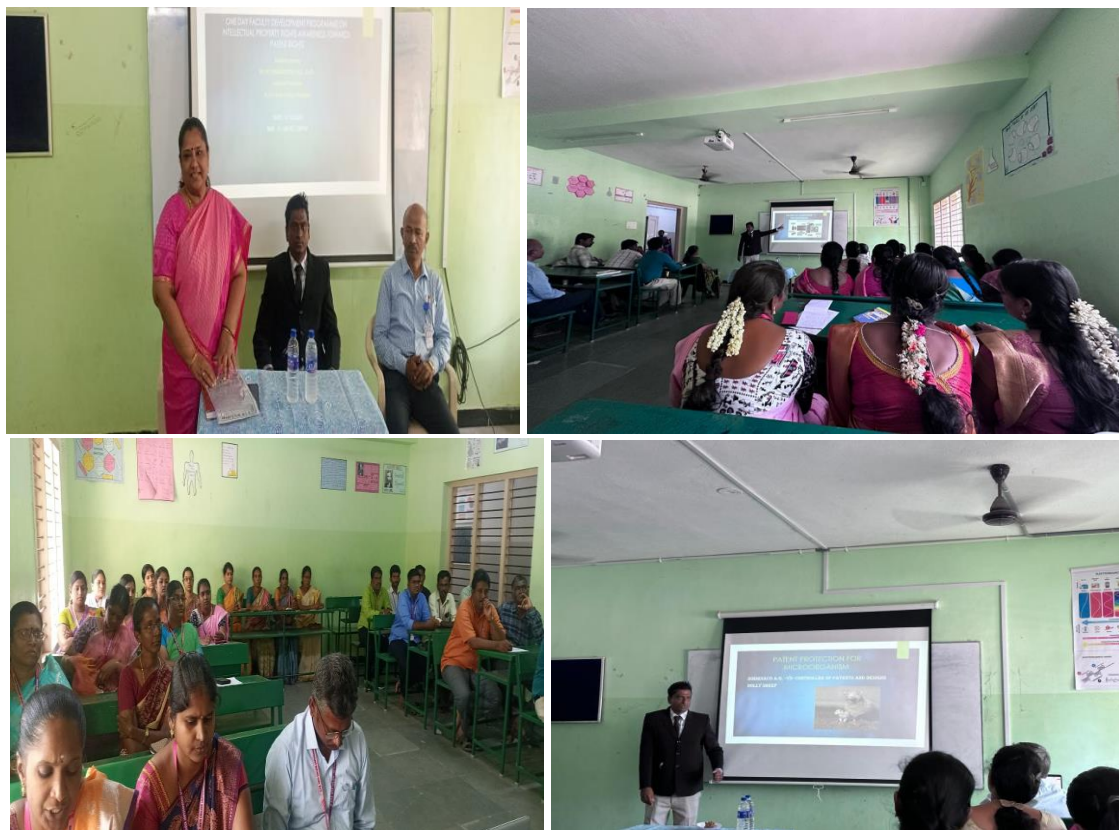
A Workshop on “Dairy Chemistry” was organized on 12.02.2024 to provide students with a comprehensive understanding of the chemical composition, properties, processing, and quality assessment of milk and dairy products. The programme was conducted by **Mrs. T. Priya**, M.Sc., B.Ed., M.Sc. (Psychology), P.G. Diploma in Dairy Technology, who provided valuable insights into the chemical and technological aspects of dairy products. The workshop covered important topics related to milk constituents, quality control, processing methods, and the detection of possible adulteration in dairy products. The programme helped students connect theoretical concepts of chemistry with practical applications in the dairy industry and enhanced their knowledge of dairy science and quality assurance. A total of 68 students participated in the workshop and benefited from the expert guidance and interactive learning experience.

Hands-on Training Programme on “Laboratory Techniques in Gravimetric Analysis” was organized on 16.02.2024



A Hands-on Training Programme on “**Laboratory Techniques in Gravimetric Analysis**” was organized on 16.02.2024 to provide students with practical knowledge and skills in gravimetric analytical techniques. The training programme was conducted by **Ms. R. Dharani**, Junior Executive, Anthem Bio Sciences Pvt. Ltd., Bommasandra Industrial Area, Bengaluru, Karnataka – 560099. The resource person demonstrated various laboratory procedures involved in gravimetric analysis, including accurate weighing, precipitation, filtration, washing, drying, and determination of analyte concentration. The training helped students understand the importance of accuracy, precision, and proper laboratory practices in analytical chemistry. A total of 42 students participated in the hands-on training programme and gained valuable practical experience in gravimetric analysis.

Faculty Development Programme on “IPR Awareness towards Patient Rights” was organized on 17.02.2024



A Faculty Development Programme on “**IPR Awareness towards Patient Rights**” was organized on 17.02.2024 to create awareness among faculty members about intellectual property rights and their relevance to patient rights in the healthcare sector. The programme was conducted by **Dr. M. Meikeethi**, Assistant Professor, GTN Law College, Dindigul, who provided valuable insights into the legal aspects of intellectual property, patient rights, confidentiality, informed consent, and ethical responsibilities in healthcare. The session helped participants understand the importance of protecting patients’ rights and maintaining appropriate legal and ethical standards in professional practice. A total of 47 participants attended the Faculty Development Programme and benefited from the expert guidance and informative discussion.

Intercollegiate Seminar on “Recent Advances in Chemical Sciences (RACS): Recent Developments of Metal–Organic Frameworks (MOFs) in Water Treatment” was organized on 18.03.2024



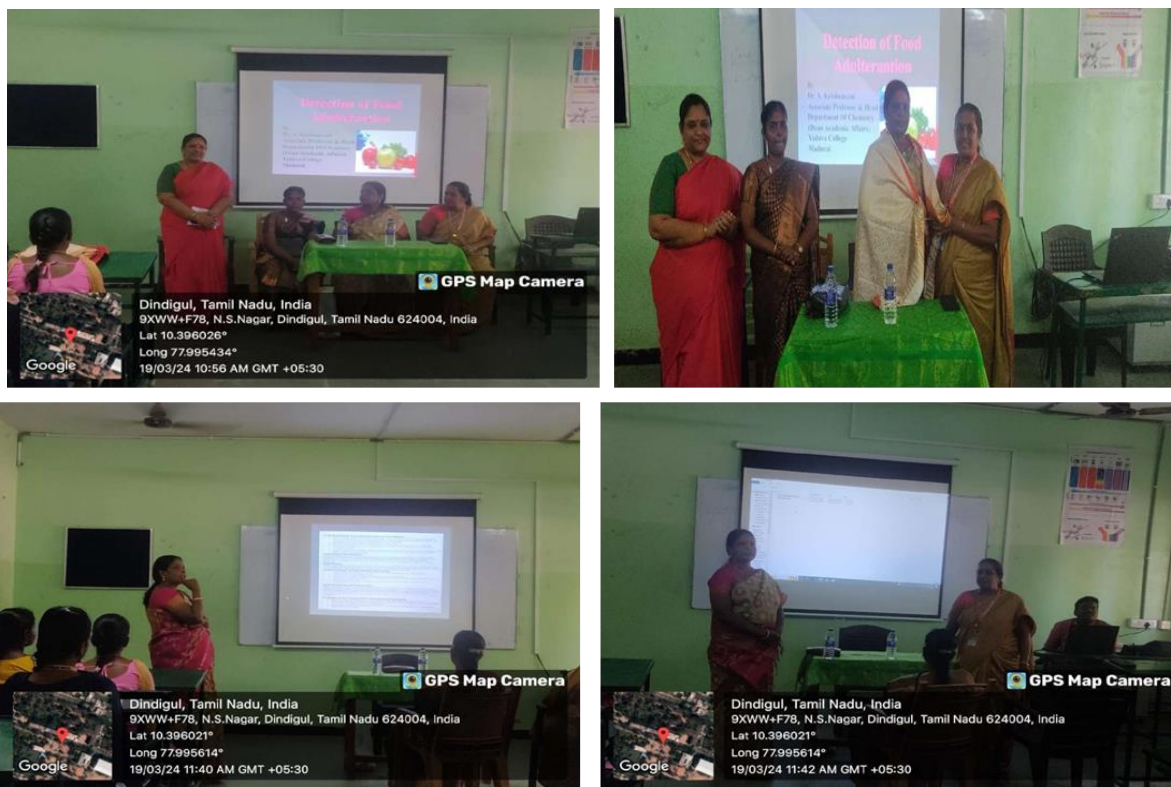
An Intercollegiate Seminar on “**Recent Advances in Chemical Sciences (RACS): Recent Developments of Metal–Organic Frameworks (MOFs) in Water Treatment**” was organized on 18.03.2024 to provide students with an understanding of recent developments in chemical sciences and the emerging applications of Metal–Organic Frameworks (MOFs) in water purification and treatment. The seminar was delivered by **Dr. N. Viswanathan**, Assistant Professor (Senior Grade), Department of Chemistry, Anna University, University College of Engineering, Dindigul. The resource person discussed the unique structural and functional properties of MOFs, their adsorption capabilities, and their potential applications in the removal of pollutants and contaminants from water. The seminar helped participants gain awareness of advanced materials and their role in addressing environmental challenges through innovative chemical technologies. A total of 350 students participated in the intercollegiate seminar and benefited from the expert presentation and discussion.

A Hands-on Training Programme on “Thin Layer Chromatography” was organized on 19.03.2024



A Hands-on Training Programme on “**Thin Layer Chromatography**” was organized on 19.03.2024 to provide students with practical knowledge and experience in the separation and identification of chemical compounds using thin layer chromatography (TLC). The training was conducted by **Dr. S. Manimekalai**, M.Sc., M.Phil., Ph.D., E.M.G. Yadava Women’s College, Madurai. The resource person explained the basic principles, experimental procedures, preparation of TLC plates, sample application, development of chromatograms, and interpretation of separated spots. The hands-on session enabled students to understand the practical applications of TLC in qualitative analysis and organic chemistry. A total of 89 students participated in the training programme and gained valuable practical experience in chromatographic techniques.

Seminar on “Food Chemistry” was organized on 19.03.2024



A Seminar on “**Food Chemistry**” was organized on 19.03.2024 to provide students with an understanding of the chemical composition, properties, processing, preservation, and quality assessment of food materials. The seminar was delivered by **Dr. A. Krishnaveni**, M.Sc., M.Phil., Ph.D., Yadava College, Madurai. The resource person discussed the role of chemistry in food science, including food constituents, chemical changes during processing and storage, food additives, nutritional aspects, and quality control. The seminar helped students understand the practical applications of chemistry in the food industry and the importance of chemical analysis in ensuring food quality and safety. A total of 68 students participated in the seminar and benefited from the expert presentation and discussion.

A Workshop on “Pharmacological Activity of Metal Nanoparticles” was organized on 20.03.2024



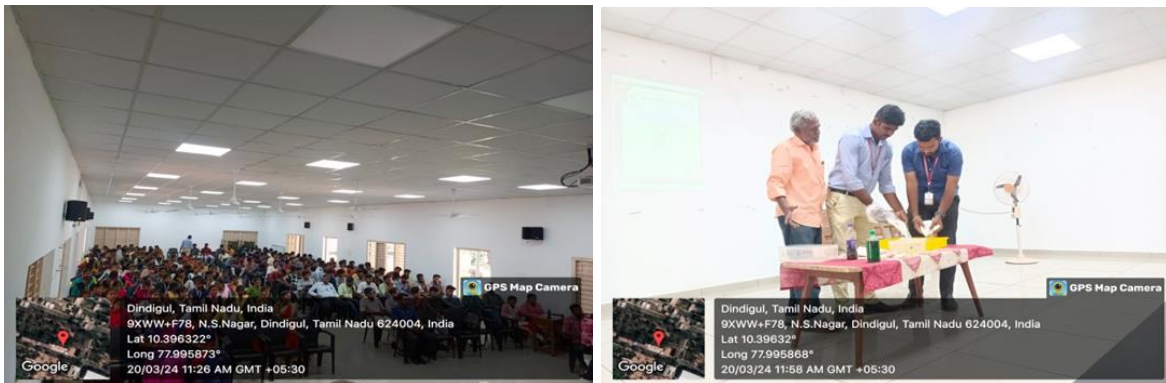
A Workshop on “**Pharmacological Activity of Metal Nanoparticles**” was organized on 20.03.2024 to provide students with an understanding of the emerging applications of metal nanoparticles in pharmacology and biomedical sciences. The workshop was conducted by **Dr. N. Muniyappan**, Assistant Professor, Department of Chemistry, Saraswathi Narayanan College, Madurai. The resource person discussed the synthesis, physicochemical properties, biological activities, and potential therapeutic applications of metal nanoparticles. The workshop also highlighted their antimicrobial, antioxidant, and other pharmacological properties, along with the importance of nanotechnology in modern healthcare. The programme helped students gain knowledge about the interdisciplinary applications of chemistry and nanoscience in pharmaceutical and biomedical fields. A total of 100 students participated in the workshop and benefited from the expert presentation and interactive learning session.

Outreach Activity for School Students and Teachers was organized at Government Higher Secondary School, Nallamanayakanpatti, Dindigul, on 20.03.2024



An **Outreach Activity** for School Students and Teachers was organized at Government Higher Secondary School, Nallamanayakanpatti, Dindigul, on 20.03.2024 to create awareness about food safety, healthy food practices, and the importance of maintaining food quality. The programme was conducted by **Dr. J. Lawrence**, Assistant Professor and former Assistant Director, Food Safety and Drug Administration Department, serving as a Food Safety Officer. The resource person provided valuable information on food adulteration, food hygiene, safe consumption practices, and the health risks associated with contaminated or adulterated food products. The programme helped school students and teachers understand the importance of food safety and encouraged them to adopt healthy and responsible food-handling practices in their daily lives. A total of 250 students and teachers participated in the outreach programme and benefited from the awareness session.

Summer Training Programme on “Entrepreneurship Cum Skill Development Programme for Home Care Products” was organized on 20.03.2024



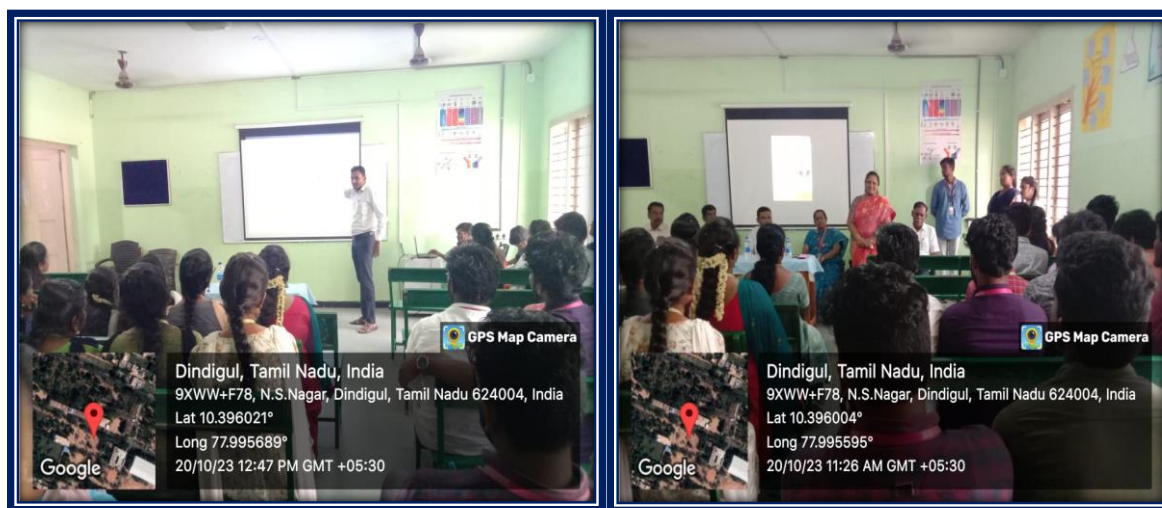
A Summer Training Programme on “**Entrepreneurship Cum Skill Development Programme for Home Care Products**” was organized on 20.03.2024 to develop practical skills and entrepreneurial awareness among students in the preparation and utilization of various home care products. The programme was conducted by **Mr. S. Murugesan**, Former Director, Natural Dye Research and Training Center, Gandhigram. The resource person provided valuable training on the preparation, handling, quality aspects, and potential commercial applications of home care products, while also highlighting opportunities for self-employment and entrepreneurship. The programme helped students develop practical skills, improve their confidence, and understand the possibilities of converting acquired technical knowledge into small-scale entrepreneurial ventures. A total of 350 students participated in the summer training programme and benefited from the practical demonstrations and expert guidance.

Special Awareness Lecture on “IIT-JAM 2024 Examinations” was organized on 20.03.2023



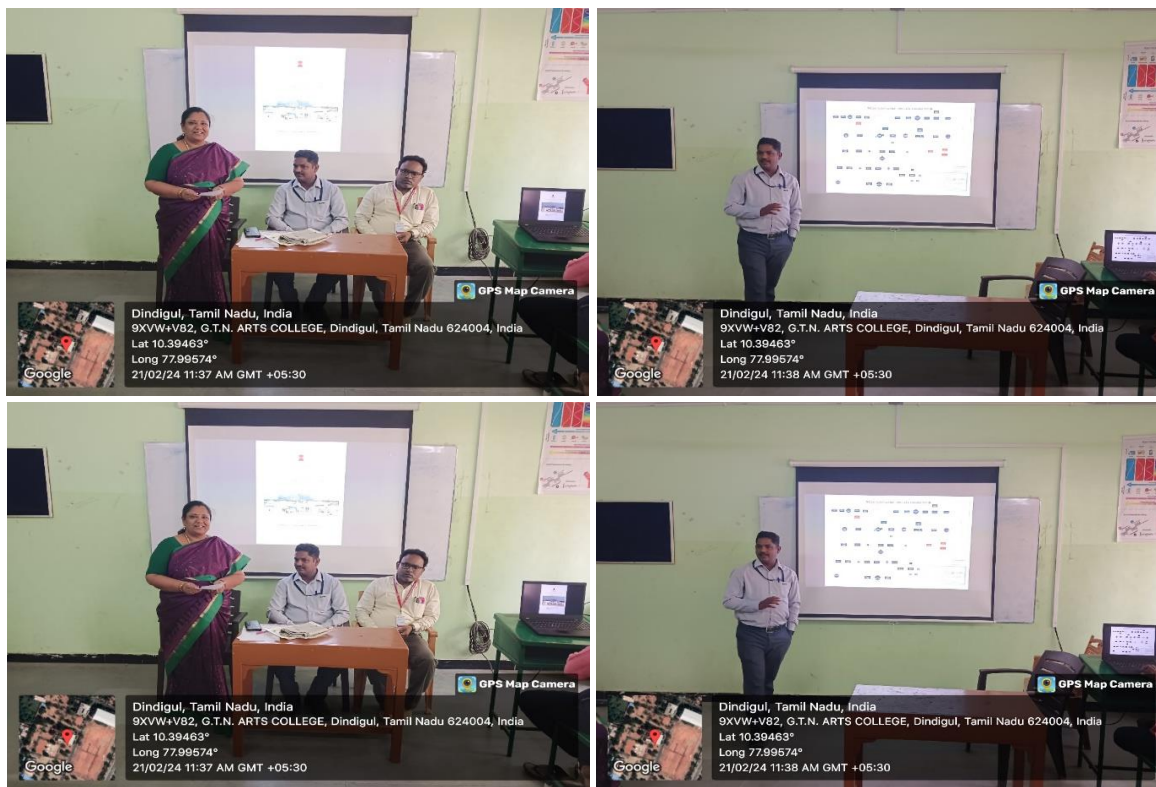
A Special Awareness Lecture on “IIT-JAM 2024 Examinations” was organized on 20.03.2023 to create awareness among students about the Joint Admission Test for Masters (IIT-JAM), its examination pattern, eligibility criteria, preparation strategies, and opportunities for higher studies in premier institutes. The lecture was delivered by Dr. V. Kesavan, Professor, Department of Biotechnology, Indian Institute of Technology, Chennai. The resource person provided valuable guidance on the importance of IIT-JAM, subject preparation, examination strategies, and the career opportunities available after qualifying for the examination. The programme motivated students to pursue higher education and encouraged them to prepare systematically for competitive examinations. A total of 200 students participated in the awareness lecture and benefited from the expert guidance and valuable insights provided by the resource person.

**Workshop on “Drawing Chemical Structures Using ChemDraw Software”
was organized on 20.10.2023**



A Workshop on “**Drawing Chemical Structures Using ChemDraw Software**” was organized on 20.10.2023 to provide students with practical knowledge of computer-aided chemical structure drawing and molecular representation. The workshop was conducted by **Dr. S. Syed Abuthakir**, Assistant Professor of Chemistry, PG and Research Department of Chemistry, Jamal Mohamed College (Autonomous), Trichy. The resource person demonstrated the various tools and features of ChemDraw software for drawing chemical structures, molecular formulas, reaction schemes, and chemical equations accurately and efficiently. The training helped students develop essential digital skills for preparing scientific reports, research articles, presentations, and academic documents involving chemical structures. A total of 48 students participated in the workshop and benefited from the practical demonstrations and hands-on learning experience.

Seminar on “Leather Technology” was organized on 21.02.2024



A Seminar on “**Leather Technology**” was organized on 21.02.2024 to provide students with an understanding of the scientific principles, processing methods, and technological applications involved in the leather industry. The seminar was delivered by **Mr. M. Vaseekaran**, Process Coordinator, Talco DINTEC CETP, Dindigul. The resource person explained various stages of leather processing, including raw hide treatment, tanning, finishing, quality control, and environmental considerations associated with leather production. The seminar helped students understand the practical application of chemistry and industrial processes in leather technology and provided valuable insights into career opportunities in the leather industry. A total of 42 students participated in the seminar and benefited from the expert presentation and interaction.

**Summer Training Programme on “Preparation of Homecare Products”
was organized on 21.03.2024**



A Summer Training Programme on “**Preparation of Homecare Products**” was organized on 21.03.2024 to provide students with practical knowledge and skills in the preparation of various homecare products. The training was conducted by **Mrs. S. Anbarasi**, Unit In-charge & Chemist, Gandhigram Khadi Village Industries – Public Charitable Trust, Gandhigram – 624 302, Dindigul. The resource person provided practical demonstrations on the preparation, handling, formulation, and quality aspects of commonly used homecare products. The training enabled students to understand the role of chemistry in the development of useful household products and encouraged them to explore skill-based and self-employment opportunities. A total of 23 students participated in the summer training programme and gained valuable practical experience.

Summer Training Programme on “Chemistry in Everyday Life” was organized on 21.03.2024



A Summer Training Programme on “**Chemistry in Everyday Life**” was organized on 21.03.2024 to help students understand the important role of chemistry in various aspects of daily life. The training programme was conducted by **Dr. M. Sangeetha**, Assistant Professor of Chemistry, E.M.G. Yadava College (Autonomous), Thiruppalai, Madurai – 625 014. The resource person explained the practical applications of chemistry in household products, food, medicines, personal care products, environmental protection, and other everyday activities. The programme enabled students to relate their theoretical knowledge of chemistry to real-life applications and enhanced their scientific awareness and practical understanding. A total of 23 students participated in the summer training programme and benefited from the expert guidance and interactive learning experience.

Guest Lecture on “Career Opportunities for Chemistry Graduates in Central and State Government Jobs” was organized on 21.09.2023



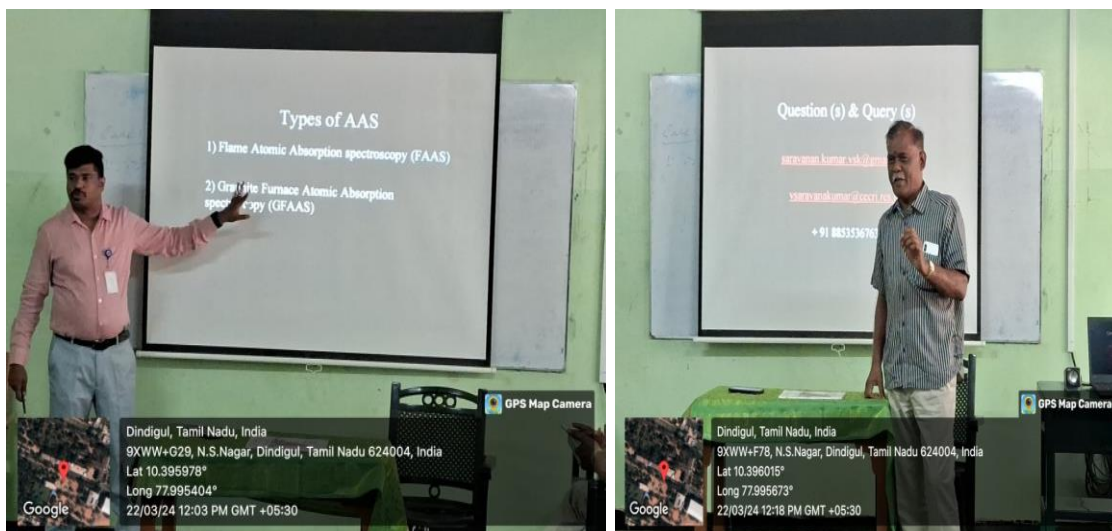
A Guest Lecture on “**Career Opportunities for Chemistry Graduates in Central and State Government Jobs**” was organized on 21.09.2023 to create awareness among students about the various career opportunities available to Chemistry graduates in Central and State Government sectors. The lecture was delivered by **Mr. R. Jegan**, Chemical and Metallurgical Superintendent, Ponmalai Workshop, Southern Railway, Trichy – 620004. The resource person explained the different government job opportunities related to chemistry, eligibility requirements, competitive examinations, recruitment procedures, and career growth prospects. The session provided valuable guidance on career planning and encouraged students to prepare systematically for government examinations and technical positions. A total of 95 students participated in the guest lecture and benefited from the expert advice and career-oriented guidance.

Outreach Activity on “Crafting Phenyl and Soap Oil for Entrepreneurial Skill Development” was organized on 22.03.2024



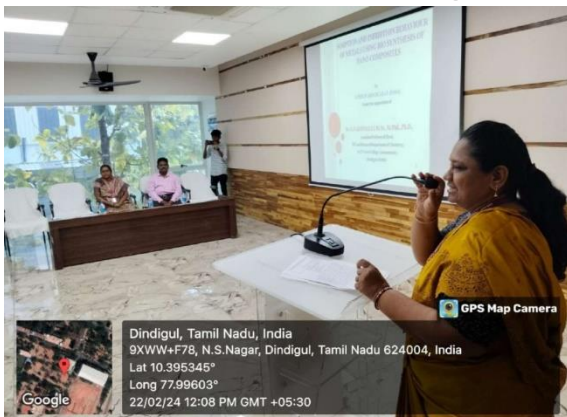
An Outreach Activity on “Crafting Phenyl and Soap Oil for Entrepreneurial Skill Development” was organized on 22.03.2024 to provide practical training and promote entrepreneurial skills among women self-help group members. The programme was conducted by **Mr. S. Murugesan**, Chief Chemist, Arasan Products, Pollachi, who provided practical demonstrations on the preparation of phenyl and soap oil, including the selection of raw materials, formulation procedures, safe handling, and basic quality considerations. The training helped the participants acquire useful technical skills that can be utilized for small-scale production and income-generating activities. It also encouraged self-employment, entrepreneurship, and economic empowerment through skill-based learning. A total of 20 women from the Self-Help Group at Seelapadi participated in the outreach activity and benefited from the practical training.

Summer Training Programme on “BIS Water Quality Elemental Analysis by AAS” was organized on 22.03.2024



A Summer Training Programme on “**BIS Water Quality Elemental Analysis by AAS**” was organized on 22.03.2024 to provide students with practical knowledge of water quality assessment and elemental analysis using Atomic Absorption Spectroscopy (AAS). The training was conducted by **Mr. V. Saravanakumar**, Senior Technical Officer (1), CSIR–Central Electrochemical Research Institute (CECRI), Karaikudi – 630003. The resource person explained the principles and applications of AAS for the qualitative and quantitative determination of metal elements in water samples according to relevant BIS water quality standards. The training provided students with valuable exposure to instrumental analysis, sample preparation, calibration, and interpretation of analytical results. It enhanced their understanding of environmental analysis and the importance of monitoring elemental contaminants in water. A total of 20 students participated in the summer training programme and benefited from the practical knowledge and expert guidance.

Seminar on “Symmetry Elements and Symmetry Operations” was organized on 22.03.2024



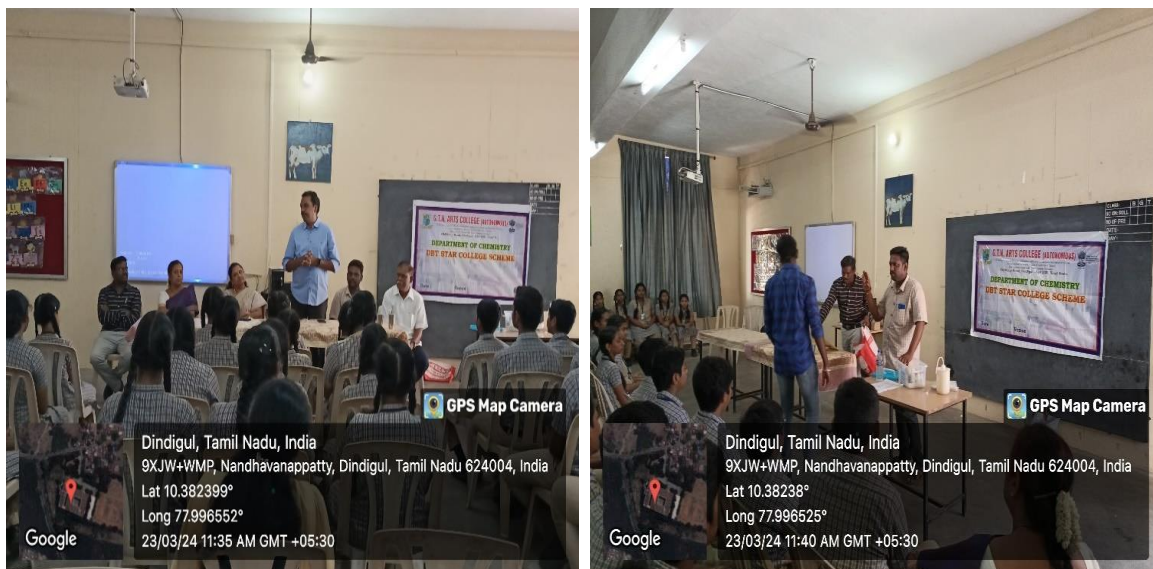
A Seminar on “Symmetry Elements and Symmetry Operations” was organized on 22.03.2024 to provide students with a clear understanding of the fundamental concepts of symmetry in chemistry and their applications in molecular structure and chemical bonding. The seminar was delivered by **Dr. A. John Amalraj**, M.Sc., M.Phil., Ph.D., Thanthai Periyar Government Arts and Science College, Trichy. The resource person explained the different types of symmetry elements, including rotation axes, planes of symmetry, centres of inversion, and improper rotation axes, along with the corresponding symmetry operations. The session helped students understand how symmetry concepts are applied in molecular classification, stereochemistry, spectroscopy, and group theory. A total of 47 students participated in the seminar and benefited from the expert presentation and academic discussion.

Intercollegiate Hands-on Training Programme on “Plant Extraction and Phytochemical Analysis” was organized on 23.01.2024



An Intercollegiate Hands-on Training Programme on “**Plant Extraction and Phytochemical Analysis**” was organized on 23.01.2024 to provide students with practical knowledge of plant extraction techniques and the qualitative analysis of phytochemicals present in plant materials. The training was conducted by **Mr. S. Murugesan**, Chief Chemist, Arasan Products, Pollachi. The resource person demonstrated various methods of plant extraction and explained the principles and procedures involved in the identification of important phytochemical constituents such as alkaloids, flavonoids, tannins, saponins, terpenoids, and phenolic compounds. The hands-on training helped students develop practical laboratory skills and understand the applications of phytochemical analysis in natural product chemistry, pharmaceuticals, and related fields. A total of 60 students participated in the intercollegiate training programme and benefited from the practical demonstrations and expert guidance.

Outreach Activity for School Students and Teachers was organized on 23.03.2024



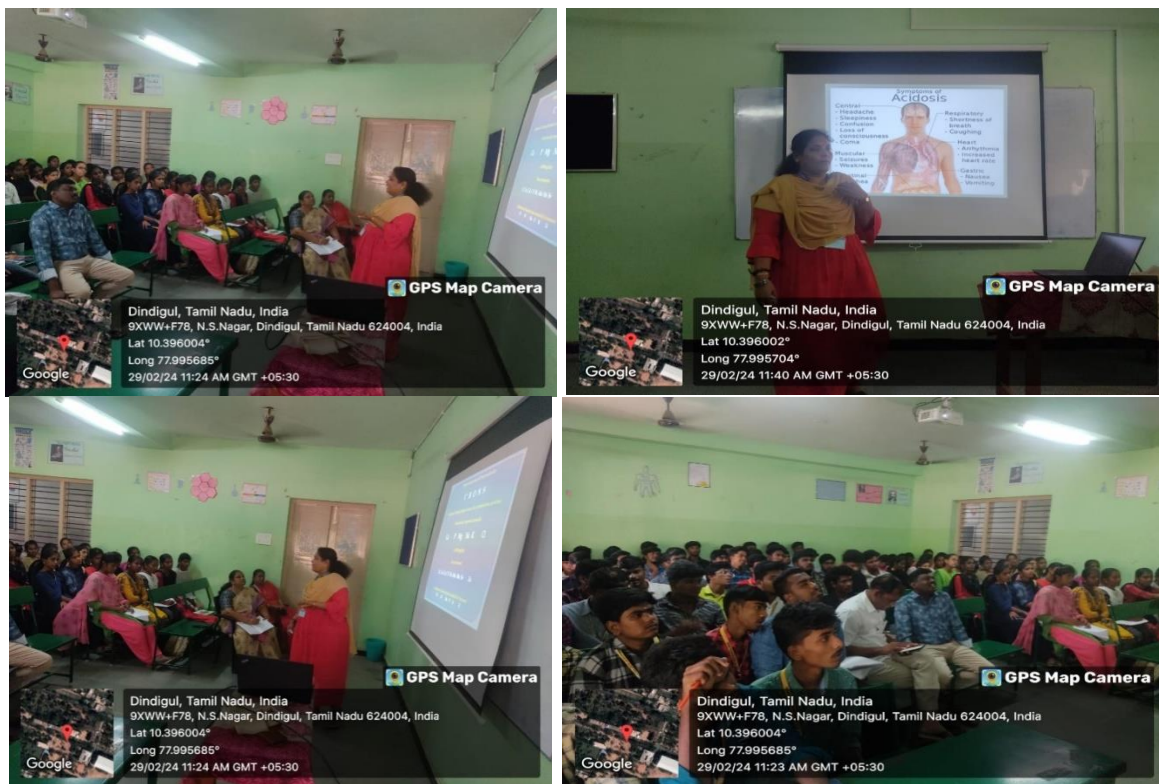
An Outreach Activity for School Students and Teachers was organized on 23.03.2024 to create awareness about water quality, water conservation, and the importance of safe and potable water. The programme was conducted by **Mr. M. Sudhakar**, Water Chemist, TWAD Board, Vaigai Dam, Theni District – 625 531. The resource person explained the basic parameters used to assess water quality, the importance of regular water testing, sources of water contamination, and simple measures for maintaining safe drinking water. The session also highlighted the significance of water conservation and responsible utilization of water resources. The programme helped students and teachers develop greater awareness of environmental protection and public health through proper water-quality management. A total of 60 students and teachers participated in the outreach activity and benefited from the informative session.

One-Day Workshop on “Experiential Learning of Science Using Innovative Working Models” was organized on 26.02.2024



A One-Day Workshop on “**Experiential Learning of Science Using Innovative Working Models**” was organized on 26.02.2024 to promote experiential and activity-based learning of scientific concepts through innovative working models. The workshop was conducted by **Dr. K. Gridharan**, Former Scientist F & Joint Director (Retired), DRDO, Ministry of Defense, Government of India, Chennai. The resource person demonstrated various innovative working models and explained how scientific principles can be effectively understood through practical experimentation, observation, and hands-on activities. The workshop encouraged students to develop scientific curiosity, creativity, problem-solving abilities, and an interest in applying theoretical knowledge to real-world situations. A total of 200 students participated in the workshop and benefited from the practical demonstrations and valuable guidance provided by the resource person.

Seminar on “Water Treatment and Pollution” was organized on 29.02.2024



A Seminar on “**Water Treatment and Pollution**” was organized on 29.02.2024 to create awareness among students about the causes, effects, prevention, and control of water pollution, along with the importance of effective water treatment methods. The seminar was delivered by **Ms. A. Shrivijayalakshmi**, Water Analyst, TWAD Board, District Water Testing Laboratory, Trichy. The resource person explained various sources of water pollution, important water quality parameters, methods of water analysis, and the principles involved in treating contaminated water. The session also highlighted the significance of monitoring water quality to protect public health and the environment. The seminar helped students understand the practical applications of chemistry in environmental protection and sustainable water management. A total of 120 students participated in the seminar and benefited from the expert presentation and interactive discussion.

Hands-on Training Programme on “Operating Procedures for Basic Essential Instruments” was organized on 30.01.2024



A Hands-on Training Programme on “**Operating Procedures for Basic Essential Instruments**” was organized on 30.01.2024 to provide students with practical knowledge of the operation, handling, and maintenance of basic laboratory instruments. The training was conducted by **Mr. P. Jeyaprakasam**, Proprietor, Super Scientific Supplier, Dindigul. The resource person demonstrated the operating procedures of essential laboratory instruments and explained the importance of proper handling, calibration, safety precautions, and routine maintenance. The training helped students develop confidence in using laboratory equipment and improved their practical skills in conducting chemical experiments accurately and safely. A total of 35 students participated in the hands-on training programme and benefited from the practical demonstrations and expert guidance.