

INTRODUCING

## CERTIFICATE COURSE

on

# GREEN CHEMISTRY

Shaping our  
Sustainable Future

Course Duration: 40 Hours

Commencement of Course:  
February 27, 2025

### Eligibility

Anyone interested in understanding the key concepts of Green Chemistry and its applications

[Click here to Register](#)

Limited Seats Available

**[Click here for registration](#)**

[https://docs.google.com/forms/d/e/1FAIpQLSeXxgp4-tVKxZj0zuYHF0BG6ShWwQ\\_BTnklpejcLH0PlImV1w/viewform](https://docs.google.com/forms/d/e/1FAIpQLSeXxgp4-tVKxZj0zuYHF0BG6ShWwQ_BTnklpejcLH0PlImV1w/viewform)

### COURSE FEATURES

- Opportunity to work with industry experts and external collaborators
- Lectures by the pioneers of Green Chemistry
- Internships & Projects
- Hands on Training for Skill Development

Would be conducted in the hybrid mode



**Free GCNC Membership for registered participants**



Green Chemistry  
Network Centre

Hindu College, Sudhir Bose Marg, University Enclave, Delhi-110007



# BACKGROUND

Chemistry plays a significant role in everyday life and will continue to do so as the demand for chemicals continues to increase worldwide for the well-being of society. From batteries to pain killers to agricultural chemicals, these innovations have shaped our modern world and lives. However, chemistry has also led to a toxic world, giving rise to problems of pollution and waste, jeopardizing the lives of all species on Planet Earth. The rising concerns of depleting resources, and the cost of waste disposal have raised serious questions:- (1) How can we strengthen the economy, protect the environment and ensure a high quality of life? (2) How can we educate succeeding generations of chemists such that they will have the skills and knowledge to practice chemistry in ways that are benign to human health and environment? It is here that green chemistry comes into picture.

With just a few days left in accomplishing the Sustainable Development Goals which will define our future into this century and beyond, large scale innovations and solutions are required to transform our commitments into action. Training the next generation of chemists on green chemistry practices is therefore needed more than ever before. There is a huge need to teach chemistry from the perspective of contributing towards sustainable development, which would enable students to design and development environmentally benign products and processes.

All students need to be well versed in environmental problems and potential solutions, and green chemistry provides them a unique opportunity to become scientists equipped in the right way to secure a healthy planet for future generations.

In India, Green chemistry educational initiatives began 20 years ago. With the aim of popularizing Green Chemistry, the Green Chemistry Network Centre was established in India in 2003 under the recommendation of a panel of world leaders of Green Chemistry. Since then, GCNC has been organizing several workshops, conferences, symposia, seminars, student activities, teacher training programmes etc., as well as networking for exchange of expertise, discussion and knowledge between industrialists and academicians and between chemists and engineers with interests and expertise relevant to Green Chemistry. The centre has also come up with significant educational materials focusing on Green Chemistry: Green Chemistry for Beginners (Jenny Stanford Publishing), which was written for undergraduate and post-graduate students, and experimental monographs (A Monograph on Green Chemistry Experiments has acquired immense popularity, being followed by all the institutes that offer GC to the undergraduate/post-graduate students all over India). GCNC has also carved its niche in the area of research and developed sustainable solutions for various environmental problems such as a large-scale reactor for the removal of heavy metals from industrial wastes.

The centre has been instrumental in introducing green chemistry courses in the syllabi of many Indian Universities including University of Delhi as Discipline Specific Elective, Skill Enhancement and Generic Elective courses. However, currently as per the UGCF-NEP syllabi, Green Chemistry has become an optional paper now and is only taught in the second year of B.Sc. (Hons) Chemistry as a DSE course.

# ABOUT THE COURSE:

The course is designed for all participants who share an interest in creating a more sustainable chemical enterprise and does not require an extensive background in chemistry.

## Empowering Lecture Sessions

Detailed lectures from renowned industry and academic experts delving deeper into the world of Green Chemistry.



## Projects and Internships

Undertaking of research projects and internships under the guidance of the experts.

## Hands on Sessions

Interactive practical sessions focussing on syntheses and extractions using green methods.

## Industry Visits

Visits to factories of industry partners to learn about the application of green processes on a large scale.

# BENEFITS/WHY UNDERTAKE THE COURSE?

- This Certificate Program/course on Green Chemistry is committed to teaching Green Chemistry principles and applications to address global challenges and will include fundamental knowledge of the drivers, barriers and opportunities to implement safer chemical processes.
- This course aims to provide a solid base to the participants in the vast field of Green Chemistry, which is slowly becoming one of the most important parts of chemical sciences with the increase in environmental issues and global challenges. Participants will be able to use the teachings and learnings acquired from this course as a stepping stone for future research, innovation and advancements in the field.





## Industrial Chemists

Chemists involved in research and development apply their academic knowledge to real-world problems. They develop products that meet a specific need.

## Sustainability Consultant and Advisor

Sustainability consultants use their expertise and knowledge to advise and guide businesses to become socially and environmentally responsible.

## Green Chemistry Toxicologist

Combines the principles of green chemistry with toxicological expertise to design safer, more sustainable chemical products and processes.

## Biofuel Plant Engineers

They design and optimize the processes and technologies used for biomass conversion into biofuels, while improving their efficiency and sustainability.

## Recycling specialists

They assess waste streams, identify recyclable materials, establish collection systems for each material stream and develop strategies for efficient recycling.

## Academic Chemists

Shares the knowledge and understanding of Green Chemistry to budding undergraduate and postgraduate students.

## Policy Makers

Policymakers can support green chemistry initiatives by establishing standards and guidelines, providing incentives for research and development, promoting education and public awareness, and fostering collaboration.

# CAREER PROSPECTS: BROAD AREAS



# SALIENT FEATURES

Interactive lecture sessions by leading Green Chemistry Experts across the world. Thus, there is inherently a great learning opportunity for the students.

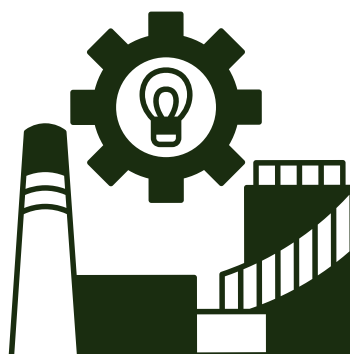


Exclusive hands-on sessions on vital Green Chemistry experiments which will help students understand the implementation of green chemistry principles.

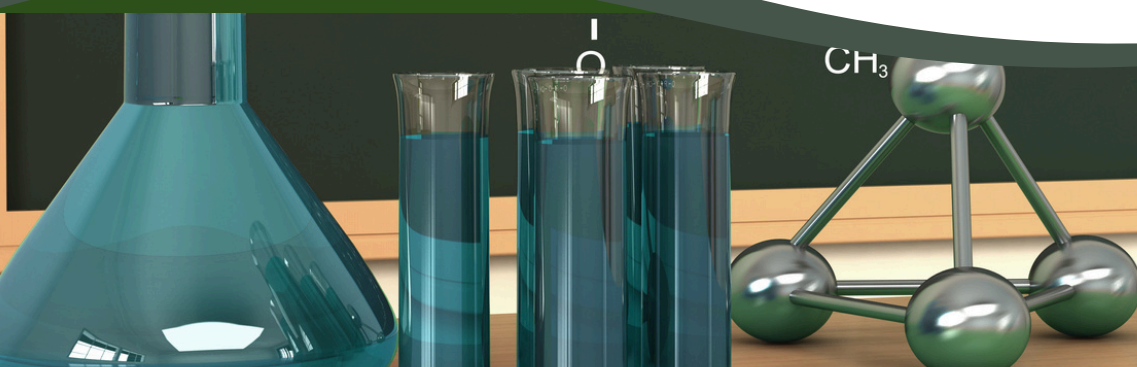
The course will develop and enhance transferable skills as well as those skills required for careers in a range of industries.



**Certification:**  
On course completion earn a certificate displaying affiliation of the prestigious Green Chemistry Network Centre



The course would open opportunities in three main career pathways: higher education, industry and government. Ultimately, the learners will expand a world-wide professional network and develop the skills to become leaders in the chemical enterprise.



# OBJECTIVES

1



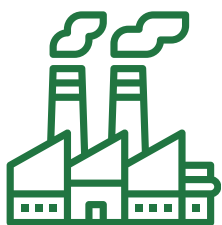
Help students discover how green chemistry can help in meeting the increased demand for sustainable products and processes.

2



Familiarize students with the new emerging green technologies (new catalysts, solvents and energy sources) that would help them gain new insights on how sustainable design of chemical products and processes can be accomplished.

3



Enable students to learn about the green trends being practiced by industries as well as academicians through demonstration of some real-world case studies.

4



Inculcate the idea of circular economy, greener sustainable technologies for combatting the issues facing the planet, and real-world practices being adopted at the academic as well as industrial levels.

5



Foster strong understanding of SDGs and practices being adopted on a global scale to meet the current environmental challenges, while simultaneously catering to the societal needs.

6



Transfer skills to enable creative thinking in students and help them come up with logical solutions for meeting SDGs.



# COURSE ADVISORY COMMITTEE/RESOURCE PERSONS AT A GLANCE



**Prof. Paul Anastas**

Director  
Center for Green Chemistry and Green Engineering  
Yale University, USA



**Dr. John C Warner**

Co-founder, President, and CTO  
Warner Babcock Institute for Green Chemistry & Professor, Monash University, Australia



**Dr. Amy Cannon**

Co-Founder & Executive Director  
Beyond Benign, Wilmington, Massachusetts, USA



**Prof. Avtar Matharu**

Deputy Director  
Green Chemistry Centre of Excellence  
University of York  
UK



**Michael Carlos**

Chairman Emeritus, IFRA & Chairman, RIFM



**Dr. Alok Adholeya**

Founder & CEO  
Umahari LLC, USDA Philadelphia



**Prof. R. K. Sharma**

Co-ordinator, Green Chemistry Network Centre, Hindu College, University of Delhi & Honorary Secretary, RSC London North India Section



**Prof. Anju Srivastava**

Principal, Hindu College & Professor, Department of Chemistry, Hindu College, University of Delhi



**Dr. Michael Zviely**

Strategic and Technological Consultant to Flavor & Fragrance Companies Worldwide



**Prof. S. K. Mehta**

Vice Chancellor, University of Ladakh



**Dr. Rakeshwar Bandichhor**

Vice President & Head, Chemistry - API - Process R&D, Dr. Reddy's Laboratories



**Dr. Basudeb Saha**

President, Rikarbon, USA & Professor, University of Delaware  
2024 US President Green Chemistry Challenge Awardee



**Dr. G.S. Kapur**

Professor of Eminence, Akal University, Visiting Professor, University of Ladakh, Advisor (R&D) GAIL India Limited



**Prof. Anjan Roy**

Director, CSIR - Indian Institute of Petroleum



**Prof. R.K. Mahajan**

Former Vice Chancellor, DAV University, Jalandhar



**Dr. Rishikesh Narayan**

Associate Professor, Chemistry & Associate Dean (Student Affairs), IIT Goa



**Prof. Reena Jain**

Vice-Principal, Hindu College & Professor, Department of Chemistry, Hindu College, University of Delhi



**Prof. B. Rupini**

Director, School of Interdisciplinary and Transdisciplinary Sciences & Professor, Indira Gandhi National Open University (IGNOU)



**Prof. Anshu Dandia**

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**Prof. Narendar Bhojak**

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**Prof. Shailendra Yadav**  
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**Dr. Bubun Banerjee**  
Professor, Akal University, Talwandi Sabo,  
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**Dr. Chinnappan Baskar**  
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**Dr. Dinesh Kumar**  
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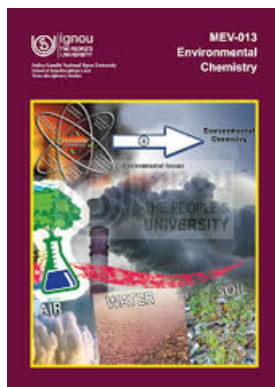
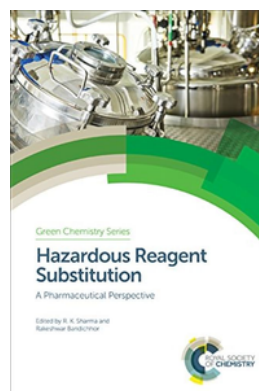
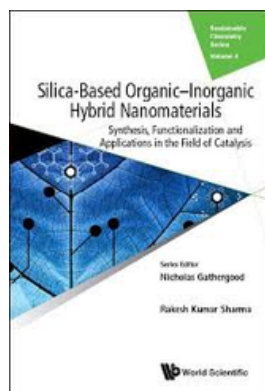
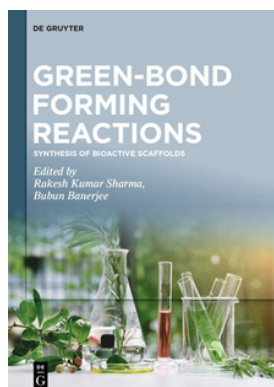
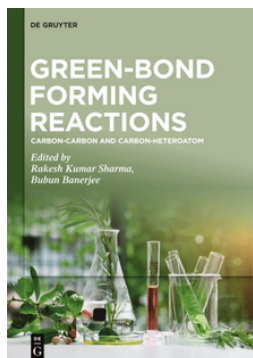
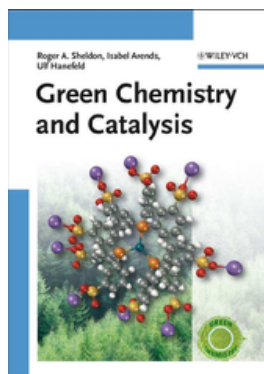
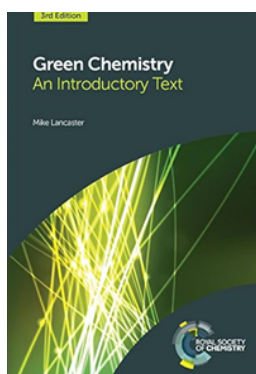
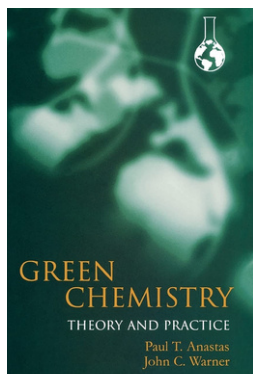


**Dr. Pallavi Saxena**  
Assistant Professor  
Department of Environmental Science,  
Hindu College  
University of Delhi



**Dr. Prashant Kumar**  
Assistant Professor  
Department of Chemistry  
SRM University, Delhi-NCR, Sonipat

# GREEN CHEMISTRY EDUCATIONAL MATERIALS







## ABOUT HINDU COLLEGE

Hindu College started with a humble beginning in 1899 and has recently achieved the remarkable milestone of completing 125 years of glorious legacy. It has seen an enviable growth over the years which it makes not only one of the most distinguished co-educational institutions of our country, but also the college of first choice in Delhi. It is accredited A++ by NAAC and ranked as the best college in NIRF All India Ranking 2024. It offers undergraduate and postgraduate programs in sciences, humanities, and commerce. The college has produced many notable alumni in the fields of law, economics, science, psychology, business, philosophy, literature, media, cinema, military, sports, and politics.

It is the only college in the entire Delhi University to have come up with a dedicated research facility for the faculty and students in the form of a Research Centre.

## ABOUT GREEN CHEMISTRY NETWORK CENTRE

Since the birth of Green Chemistry in the 1990s, followed by the inception of Green Chemistry Network Centre (GCNC) in 2003 which was established under the recommendation of a panel of world leaders of Green Chemistry, the Centre has engaged itself in the mission of popularizing Green Chemistry in India by organizing several workshops, conferences, symposia, seminars, student activities, teacher training programmes etc., and networking for exchange of expertise, discussion and knowledge between industrialists and academicians and between chemists and engineers with interests and expertise relevant to Green Chemistry. The centre now operates from Hindu College and has also carved its niche in the area of research as well and developed sustainable solutions for various environmental problems such as a large-scale reactor for the removal of heavy metals from industrial wastes.

# ABOUT ROYAL SOCIETY OF CHEMISTRY

The Royal Society of Chemistry (RSC) is a UK-based professional body and learned society for chemical scientists. Its mission is to advance the chemical sciences, develop their applications, and share chemical knowledge. RSC supports and represents its members, publishes research, and provides chemical information. They also advise governments on policy, promote collaboration with industry and academia, and educate future generations of scientists.

With over 50,000 members and an international publishing and knowledge business, the Royal Society of Chemistry is the UK's professional body for chemical scientists, supporting and representing its members and bringing together chemical scientists from all over the world.

The RSC North India section organises various activities for the advancement of chemical sciences. This includes lecture series, meetings and workshops.

## Organizing Team

### PATRONS

**Prof. R. K. Sharma**      **Prof. Anju Srivastava**  
Co-ordinator                      Principal  
GCNC                                  Hindu College

### CO-PATRON

**Prof. Reena Jain**  
Vice Principal  
Hindu College

### CONVENOR

**Dr. Sriparna Dutta**      **Dr. Prashant Kumar**  
Assistant Professor                      Assistant Professor  
Department of Chemistry      Department of Chemistry  
Hindu College                      SRM University  
   Delhi-NCR Sonapat

### CO-CONVENORS

**Dr. Devanshi Magoo**      **Dr. Dinesh Kumar**  
Associate Professor                      Assistant Professor  
Department of Chemistry      Department of Chemistry  
Hindu College                      Hindu College

### TEACHER-IN CHARGE

**Dr. Geetika Bhalla**  
Associate Professor  
Department of Chemistry  
Hindu College

### STUDENT COORDINATORS

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