



# Refresher Course On “Chemistry & Chemical Technology” (May 01-21, 2015)

Organized by UGC-HRDC and Department of Chemistry,  
Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.) 495 009

## Introduction:

The chemical science, often called the central science is essential for almost all science-based study. Chemical Science involves the knowledge and technique of transforming one matter to another. The chemical fraternity enjoys discovering naturally occurring chemical compounds as well as synthetic ones for making life better. The interdisciplinary nature of this subject makes it more fascinating and challenging to various researches worldwide. The practical, theoretical and technique based teaching-learning approaches are required to update the recent trends and advancements of the subject.

In the modern era with the advent of various state of the art facilities and instrumentations there is tremendous development in the realm of chemical sciences and technology. The knowledge and invention in chemistry and its allied disciplines has been progressed abruptly. Some of the thrust areas will be covered during this course.

There is a growing need for improving the updated information and knowledge to the chemistry teachers coming from various colleges/universities/academic institutes to impart quality education, creation of innovative ideas and skill developments. In this regard, UGC, New Delhi has approved a Refresher Course to Human Resource Development Centre, GGV, Bilaspur for organizing such auspicious and relevant training programme.

## Objectives:

### The Refresher Course Will Enable To:

- Provide openings for teachers in service to discuss and share the recent development in Chemical Sciences and Technology and to exchange experience with their peers.
- Provide a forum for serving teachers to keep themselves abreast of the recent advances in

frontier areas of chemical sciences and technology.

- Create the culture of learning and self-improvement among the teachers in the academic institutes
- Provide platforms to further widen their knowledge and to pursue further researches.
- Furnish an introduction to new methods and innovations in higher education and enlighten the teachers in developing their own innovative methods of instruction.

## Modules of Course:

The course will be organized under four modules as follows:

### 1. Catalysis & Green Chemistry

Homogeneous and heterogeneous catalysis, asymmetric catalysis, organo-catalysis, ionic liquids, role of water in organic reactions, reactions in neat, microwave synthesis, multi component reaction, sonochemistry.

### 2. Synthetic approaches to Biomolecules and Polymers

Organic synthesis, novel methodologies to fabricate bio molecules, pharmaceutical drugs, bio-polymers, synthetic polymers, heterocyclic compounds. hydrogels, kinetics.

### 3. Material Chemistry, Sensors and Nanotechnology

Nanomaterials, nano-catalysis, supramolecular chemistry, MOFs, dynamic coordination framework, solid state chemistry, gas storage and meso-porous materials, analytical devices, and sensors.

### 4. Theoretical/Computational Chemistry

Basic knowledge of DFT, structural understanding through electronic approaches, Ab-initio calculations, quantum chaos.

## About Human Resource Development Centre (HRDC):

UGC-Academic Staff College (ASC), presently upgraded as Human Resource Development Centre (HRDC) was initially established in Guru Ghasidas Vishwavidyalaya (A Central University) during 2009. HRDC is organising various kinds of training programmes to enhance the professional skills and knowledge of teaching and non-teaching staff. The HRDC has the state of the art ICT Laboratory equipped with high speed internet & video conferencing facilities. The facilities of Central Library of Vishwavidyalaya, equipped with more than one lakh books and journals, Science Direct and INFLIB NET, have been extended to HRDC, which make possible an easy access to books, journals and e-resources for faculties. The HRDC has developed strong linkages with reputed national and international institutes and invites eminent academicians and researchers as resource persons as per the needs of the training programmes. The highly motivated faculty, eminent resource persons, state of the art facilities and excellent logistics are the strengths of HRDC and key to the successful organisation of many quality programmes.

## About Department of Chemistry:

The Department of Chemistry was established in the year 2009 with an objective of providing quality education in the conventional areas of science to the rural and sub-urban students of Chhattisgarh state. Gradually it is growing into a center of excellence for teaching and research and trying to acquire prominent position in the academic map of India. The Department offers both UG and PG level advanced courses in Chemical Sciences along with an integrated 5 years Master programme with exit option after completing 3 years B. Sc. (Hon's). The Department is also offering a Ph. D. programme in frontier areas of Chemical Sciences. Four major specialized courses like Organic Chemistry, Inorganic Chemistry, Physical Chemistry, and Analytical Chemistry are offered in M. Sc. course. The department is also conducting the B. Tech. (IT) chemistry courses, where almost 500 students are studying. The students are monitored and evaluated by regular class tests, seminars, assignments, mid and end-semester examinations. High percentage of students qualifies UGC-CSIR NET, GATE and SLET exams. Currently, thirty research scholars are working in the Department. The department is having eleven

regular well qualified faculty members and well equipped laboratory with sophisticated instruments. The faculty members are actively engaged in various significant research projects of thrust areas in chemistry, supported by UGC, DST, DBT and CSIR etc. funding agencies.

## Eligibility and Application of Participants:

1. The teachers who belong to Chemical Sciences and its allied subjects like biochemistry, environmental chemistry, industrial chemistry, chemical engineering and chemical technology are eligible to apply for the course.
2. University/ College teachers those already attended orientation programme or Refresher Course are eligible to attend a Refresher Course after a minimum gap of one year.
3. Selection will be made as per the guidelines of the UGC-HRDC and on first come first serve basis.
4. The last date of receiving application is 20<sup>th</sup> April, 2015.
5. Limited number of accommodations are available in Guest House of HRDC.

The candidates need to apply through proper channel in prescribed application format which can be downloaded from university web site: [www.ggu.ac.in](http://www.ggu.ac.in). A Demand draft (Any Nationalized bank) of Rs. 1000/- drawn in favour of Director, UGC-HRDC, GGV, Bilaspur (C.G.) is to be attached along with the application form. Applications without DD will not be considered. **The participants will be paid TA & DA as per the norms of UGC.**

Bilaspur city of Chhattisgarh is well connected by rail and roadways. Regarding any further queries related to the course and other details, please contact the Course Coordinator and Director.

## Course Coordinator:

**Prof. G. K. Patra**  
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**Dean School of Physical Sciences**  
**Guru Ghasidas Vishwavidyalaya**  
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## Course Director:

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**Director**  
**UGC-Human Resource Development Centre**  
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