



HINDU COLLEGE OF PHARMACY

Amaravathi Road, Guntur-522 002 (A.P.)
(Affiliated to Acharya Nagarjuna University and Recognized by AICTE, PCI)
Certified by ISO-9001-2008, Estd: 1999

Certificate course details

1. **Programme title: Green Chemistry and Basic structure drawing**

2. **Year of introduction:** 2013-14

3. **About the certificate course:** Green Chemistry is the synthesis of substance in such a way that it is proper, non polluting and protected and which requires lowest amounts of resources and energy but generating slight or no waste material

ChemDraw is a simple-to-use program that allows drawing intuitively and efficiently the simple two dimensional representations different types of structural representations of organic molecules.

4. **Contents of the programme:**

a.Introduction of Green Chemistry: Aim, practical approach to Green chemistry, principle

b.Microwave Methods Principle and Significance: Heating mechanism, Dipolar polarization, Interfacial Polarization

c.Green Solvents: Effects of solvents, Solvent selection guide for membrane fabrication
Practical on Some Organic Reaction: Bromination reactions, Nitration reactions, Benzoin Condensation, Base catalyzed aldol condensation

Basic Structure drawing

Chem-draw

d.Bonds: Double bonds, Double ether bonds, Triple bonds, Quadruple bonds, Dative bonds, Wedged bonds, Fixed bonds

e.Atoms: Periodic table, Formatting, Coloring text

f.Captions: Caption width, Character map, Hotkeys, Nicknames, Annotations

g.Drawing Rings: Spiro and Sprout rings, Cyclohexane chair rings, Atomic Structures

h.Chains: Changing chain direction, Adding chain to structures

i.Objects: Arrows, Arc arrows, Hollow arrows, Connecting arrows, Curved arrows, Colored arrows

Clean Up Structure

Checking Structures

Chemical Warnings

5. **Programme outcome:** students were trained to obtain the following knowledge and skills

I. The basic idea of green chemistry is the protection of the environment from pollution, the students will feel it is their responsibility to reduce the damage of the environment by man-made materials and the processes used to produce them.

II. It gives knowledge about new approach to the synthesis, processing and application of chemical substances in such a manner as to reduce threats to health and environment.

III. It also includes how to reduce waste and even about disposing of waste in the correct manner. All chemical wastes should be disposed of in the best possible manner without causing any damage to the environment and living beings.

IV. Students will also get the idea about UV-energy, Microwave irradiation and ultrasound waves which are used as the source of energy in green chemistry.

V. The drawing of chemical formulae and reaction schemes is a repetitive task for chemists on all levels of their education

VI. Students will be able to draw intuitively and efficiently simple two dimensional representations of organic molecules and they also know Some hints, however, might be helpful for efficient drawing. It is applicable for

- Chemical name to structure conversion
- NMR spectrum simulation (¹H and ¹³C)
- Mass spectrum simulation
- Structure cleanup.

6. **schedule of the programme**

Certificate course on “Green chemistry and Basic structure drawing”

Dept. of Pharmaceutical Chemistry, Hindu College of Pharmacy,

Amaravathi road, Guntur-522002.

(21st March to 25th March 2013)

Day-1 21st March-2013(Thursday)

10:00am -11.00am	Registration
11.00am -11.15am	Welcome address by Dr.R.GovindaRajan, HOD (Pharmaceutical Chemistry)
11.15am-11:30am	Session1:Dr. Konda Ravi kumar Introduction to the Modern synthetic methods
11.30am-11.45am	Tea Break
11.45am-01.00pm	Session-2:Mrs.N.Vijayalakshmi Green chemistry – Principle & Applications
01.00pm-02.00pm	Lunch Break
02.00 pm -03.30 pm	Session-3: Dr.R.GovindaRajan, Lecture on Microwave methods and solvent free synthesis
03.30 pm -03.45 pm	Tea Break
03.45 pm - 5.00 pm	Lecture on Microwave methods and solvent free synthesis

Day-2: 22nd March- 2013 (Friday)

10.00am -11.45am	Session1:Dr. Konda Ravi kumar Lecture on Microwave methods
11.15 am -11.30 am	Tea Break
11.30 am -1.00pm	Session-2:Mrs.N.Vijayalakshmi Microwave technology in Process optimization
1.00 pm -2.00 pm	Lunch Break
02.00 pm - 03.30 pm	Session-3:Dr.R.Govindarajan Applications of Microwave assisted synthesis in organic reactions and Heterocyclic synthesis
03.30 pm -03.45 pm	Tea Break
03.45 pm -05.00 pm	Session-4:Mr.K.Ramalingeswara rao Effects of solvents in microwave assisted synthesis

Day-3 23rd March-2013 (saturday)

10:00am -11:30 am	Session-1: Dr.R.GovindaRajan, Introduction to Ultra sound assisted reactions
11.30 am -11.45 am	Tea Break
11.45 am -01.00pm	Session-2: Dr.R.GovindaRajan, Liquid-liquid and liquid- solid reactions and synthetic applications in sonochemistry
01.00 pm -02.00 pm	Lunch Break
02.00 pm -03.30 pm	Session-3: Dr.K.Ravi Kumar, Demonstration about the practicals on organic reactions in green chemistry
03.30 pm -03.45 pm	Tea Break
03.45 pm - 5.00 pm	Session-4: Dr.K.Ravi Kumar, A lab visit of students to know about the microwave oven working

Day-4 24rd March-2013 (sunday)

10:00am -11:30 am	Session-1:Mrs.N.Vijayalakshmi Practicals on some organic reactions
11.30 am -11.45 am	Tea Break
11.45 am -01.00pm	Session-2: Mrs.N.Vijayalakshmi Practicals on some organic reactions
01.00 pm -02.00 pm	Lunch Break
02.00 pm -03.30 pm	Session-3: Mr.K.Ramalingeswara rao Introduction to Basic structure drawing by using ChemDraw software
03.30 pm -03.45 pm	Tea Break
03.45 pm - 5.00 pm	Session-4: Mr.K.Ramalingeswara rao Hands on training by using chemdraw software

Day-5 25rd March-2013 (Monday)

10:00am -11:30 am	Session-1:Mrs.N.Vijayalakshmi Hands on training by using chemdraw software
11.30 am -11.45 am	Tea Break
11.45 am -01.00pm	Session-2: Mrs.N.Vijayalakshmi Hands on training by using chemdraw software
01.00 pm -02.00 pm	Lunch Break
02.00 pm -02.30 pm	Feedback/interactive session
02.30 pm -03.00 pm	Evaluation of the participants through question paper
03.00 pm - 3.30 pm	Certificate distribution
3.30 pm -4.00 pm	Vote of thanks
4.00 pm -5.00 pm	Awarding certificates to the students

7. Certificate Programme Code: VACCH 01**8. Person In-charge : Dr.R.Govindarajan****professor & HOD,Hindu College Of Pharmacy****E mail: hcopdpc@gmail.com****Ph no: 9052129300**