



# ARSD College, University of Delhi

## Model Course Handout/Lesson Plan

Course Name : B.Sc. Physical Science with Chemistry						
Semester	Course Code	Course Title	Lecture (L)	Tutorial (T)	Practical (P)	Credit (C)
VI	CHEMISTRY -SEC-11	Pesticide Chemistry	2			2
Teacher/Instructor(s)		Dr. Nimalini Moirangthem				
Session		2021-22				

### Course Objective:

Pesticide plays an important role in controlling quantity as well quality of the economic crops by protecting them from the various pests. They are used for prevention of much spoilage of stored foods and also used for prevention of certain diseases, which conserves health and has saved the lives of millions of people and domestic animals. Keeping the importance of pesticides in mind this course is aimed to introduce synthesis and application of pesticides.

### Course Learning Outcomes:

Students will be able to learn about the basic role of pesticide in everyday life, various ingredients and their role in controlling the pest. Students can also educate the farmers/gardeners to choose the appropriate pesticides for their crop production.

### Lesson Plan:

Unit No.	Learning Objective	Lecture No.	Topics to be covered
1.	Introduction: (Lectures:12)	1	Introduction:
		2	Classification,
		3	synthesis,
		4	structure activity relationship (SAR),
		5	mode of action, uses and adverse effects of representative pesticides in the following classes: Organochlorines (DDT,
		6	Gammexene);
		7	Organophosphates (Malathion,

		8	Parathion);
		9	Carbamates (Carbofuran and Carbaryl);
		10	Quinones (Chloranil),
		11	Anilides (Alachlor and
		12	Butachlor
2.	Botanical insecticides : (Lectures:8)	13	Botanical insecticides [No structure elucidation or synthesis is required for the following compounds:]
		14	Alkaloids(Nicotine);
		15	Alkaloids(Nicotine);
		16	Pyrethrum (natural and synthetic pyrethroids);
		17	Pyrethrum (natural and synthetic pyrethroids);
		18	Azadirachtin;
		19	Rotenone and
		20	Limonene.
3.	Pesticide formulations: (Lectures:6)	21	Pesticide formulations: Wettable powders,
		22	Surfactants,
		23	Emulsifiable concentrates,
		24	Aerosols,
		25	Dust and Granules,
		26	Controlled Release Formulations
4.	New Tools in Biological Pest Control : (Lectures:4)	27	New Tools in Biological Pest Control: Repellants,
		28	Chemosterilants,
		29	Antifeedants,
		30	Sex attractants.

#### Evaluation Scheme:

No.	Component	Duration	Marks
1.	Internal Assessment		12
	• Quiz		
	• Class Test		
	• Attendance		
	• Assignment		
2.	End Semester Examination	2.5 hr	38

#### Details of the Course

Unit	Contents	Contact Hours
1	Introduction:Classification, synthesis, structure activity relationship (SAR), mode of action, uses and adverse effects of representative pesticides in the following classes: Organochlorines (DDT, Gammexene); Organophosphates (Malathion, Parathion); Carbamates (Carbofuran and Carbaryl); Quinones (Chloranil), Anilides (Alachlor and Butachlor).	12

2	Botanical insecticides [No structure elucidation or synthesis is required for the following compounds:]Alkaloids(Nicotine); Pyrethrum (natural and synthetic pyrethroids); Azadirachtin; Rotenone and Limonene.	8
3	Pesticide formulations: Wettable powders, Surfactants, Emulsifiable concentrates, Aerosols, Dust and Granules, Controlled Release Formulations.	6
4	New Tools in Biological Pest Control: Repellants, Chemosterilants, Antifeedants, Sex attractants.	4
	<b>Total</b>	<b>30</b>

**Suggested Books:**

Sl. No.	Name of Authors/Books/Publishers	Year of Publication/Reprint
1.	Perry, A.S.; Yamamoto, I.; Ishaaya, I.; Perry, R.Y. Insecticides in Agriculture and Environment, Springer-Verlag Berlin Heidelberg.	1998
2.	Kuhr, R.J. ; Derough, H.W, Carbamate Insecticides: Chemistry, Biochemistry and Toxicology, CRC Press,USA.	1976
3.	N.K. Roy.; Chemistry of Pesticide, CBS Publishers and Distributer Pvt Ltd.	2021
4.	Chandan S.; Bishwanath C.; Suchandra C.; Kaushik B.; Lectures on Pharmaceutical Chemistry and Pesticide Chemistry, TECHNO WORLD.	2020
<b>Mode of Evaluation:</b>		Internal Assessment / End Semester Exam