



**Diponegoro University**  
**Faculty of Science and Mathematics**  
**Undergraduate Program Of Chemistry**

Module designation	<b>Pesticide Chemistry (KP)</b>
Semester(s) in which the module is taught	4
Person responsible for the module	Ngadiwiyana, S.Si., M.Si.
Language	Indonesian
Relation to curriculum	<del>Compulsory</del> / elective / <del>specialisation</del>
Teaching methods	Lecture
Workload (incl. contact hours, self-study hours)	Face to face : 1 x (2 x 50 min); Structured study: 1 x (2 x 60 min); Self study: 1 x (2 x 60 min)
Credit points	2
Required and recommended prerequisites for joining the module	KO1

<p>Module objectives/intended learning outcomes</p>	<p>Graduate Learning Outcome (GLO)</p> <ol style="list-style-type: none"> <li>1. S9 Demonstrates an attitude of being responsible for work in his field of expertise independently.</li> <li>2. KU1 Able to apply logical, critical, systematic, and innovative thinking in the development or implementation of science and technology that pays attention to and uses humanities values by their field of expertise.</li> <li>3. KU2 Able to demonstrate independent, quality, and measurable performance.</li> <li>4. PP1 Mastering the theoretical concepts of structure, properties, changes, kinetics, and energetics of molecules and chemical systems, identification, separation, characterization, transformation, synthesis of micromolecular chemicals, and their application.</li> </ol> <p>Course Learning Outcomes (CLO)</p> <ol style="list-style-type: none"> <li>1. M1 can explain the Role and Dynamics of Pesticides</li> <li>2. M2 can explain the classification of pesticides based on how the pesticide enters/works, based on the target organism, based on the level of toxicity</li> <li>3. M3 can explain the analysis and handling of the dangers/impacts of using pesticides</li> <li>4. M4 can describe the use and formulation of pesticides</li> <li>5. M5 is capable of exploring and designing materials for pesticides</li> <li>6. M6 can determine the qualitative and quantitative tests of pesticides</li> <li>7. M7 can design materials for pesticides with a good level of safety</li> </ol>
<p>Content</p>	<ol style="list-style-type: none"> <li>1. The role and dynamics of pesticides: (a) classification of pesticides (b) Regulation of pesticide use</li> <li>2. The dangers/impacts of pesticides and their handling solutions</li> <li>3. Pesticide residue analysis techniques</li> <li>4. Principles/rules of pesticide use, pesticide toxicity, and resistance and efficacy factors in pesticide use</li> <li>5. Determination of pesticide concentration and dosage and pesticide formulation</li> <li>6. Insecticide compounds: dynamics of natural and synthetic insecticides, their properties and reactivity to modification of insecticidal compounds</li> <li>7. Herbicide compounds: dynamics of natural and synthetic herbicides, their properties and reactivity</li> <li>8. Fungicides, bactericidal and other pesticide compounds: dynamics of natural and synthetic herbicides, their properties and reactivity</li> <li>9. Safe and environmentally friendly pesticide design/engineering</li> </ol>

Exams and assessment formats	Mid-Semester Exam and Final Exam
Study and examination requirements	Participatory Activities 20% Project Results 30% Task 10% Quiz 10% Mid-semester 15% Final exams 15%
Reading list	<ol style="list-style-type: none"> <li>1. Dileep K. Singh, 2012, Pesticide Chemistry and Toxicology, Bentham e books, University of Delhi India</li> <li>2. Leo M.L. Nollet and Hamir S. Rathore, 2015, Handbook of Pesticides: Method of pesticide residues Analysis, CRC Press</li> </ol>