



Diponegoro University
Faculty of Science and Mathematics
Undergraduate Program Of Chemistry

Module designation	Research Design (DR)
Semester(s) in which the module is taught	6
Person responsible for the module	Dr. Meiny Suzery, M.Si Dr. Bambang Cahyono
Language	Indonesian
Relation to curriculum	Compulsory/ elective /specialisation
Teaching methods	Lecture
Workload (incl. contact hours, self-study hours)	Face to face : 1 x (1 x 50 min); Structured study: 1 x (1 x 60 min); Self study: 1 x (1 x 60 min)
Credit points	1
Required and recommended prerequisites for joining the module	No requirement
Module objectives/intended learning outcomes	(S9) Demonstrate a responsible attitude towards work in their field of expertise independently (PP2) Mastering complete operational knowledge of functions, operating standard chemical instruments, and analyzing data and information from these instruments (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 (KU2) Able to demonstrate independent, quality, and measurable performance

Content	<ol style="list-style-type: none"> 1. Introduction Why does research need to be designed? (Part-1): Definition and scope of the course, General rules in research, Why do you need a design?, Knowledge, Science and Philosophy, Fundamentals and sources of research 2. Introduction Why research needs to be designed? (Part-2): Research Type is based on user target, This type of research is based on Design and methodology, General rules in research 3. Research Ethics Characteristics of scientific research, Types and Variety of Research: Ethics in research, The importance of Originality in research, Plagiarism, what is it?, Turnitin practice in similarity analysis 4. Critical Review of literature: The importance of critical literature review, Research literature sources, Mendeley quick introduction and endnote, Guidance for preparing a library review, Students are able to practice table review from international journals 5. From Idea to Problem Formulation: Formulation of the problem?, Good Problem Characteristics, Identification, selection and formulation of research problems, Hypothesis?, Hypothesis features, Various hypotheses, Hypothesis formulation 6. Roadmap, theoretical framework and conceptual framework: Theoretical Framework Vs Conceptual Framework, Example of theoretical framework and conceptual framework of a research, Roadmap, theoretical framework and conceptual framework 7. Good introduction 8. Frequently used terminology, reasons for sample selection, sample characteristics, sampling technique, sample design. 9. Validity and reliability of research instruments 10. Instrument specifications, instrument testing, analysis of test results, determination of instrument end devices. 11. Types of data (quantitative, qualitative), secondary data, primary data, and statistical data processing (Part-1) 12. Types of data (quantitative, qualitative), secondary data, primary data, and statistical data processing (Part-2) 13. Systematic accuracy of the proposal (Part-1): Accuracy of proposal writing, Consistency in writing proposals, Neatness of proposal presentation, Presentation effectiveness, Mastery of proposal material, The complexity of thinking 14. Systematic accuracy of the proposal (Part-2): Sample proposal, Some common weaknesses in research design
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	-