MODUL HANDBOOK

Module Name	Toxicology
Module level	Bachelor
Abbreviation, if applicable	-
Sub-heading, if applicable	-
Course included in the module, if applicable	-
Semester/term	7th/First Year
Module coordinator(s)	Prof. Dr. Suyono, M.Pd
Lecturer(s)	Prof. Dr. Suyono, M.Pd; Dr. Ratih Dewi Saputri, M.Si
Language	Indonesian
Classification within the curriculum	Compulsory Course
Teaching format/class hours per week during the semester	2 hours lecturers (50 min per hours)
Workload	Total workload 128 hours per semester which consists of 2 hours for lecture, 3 hours for structured activities, 3 hours for individual activities, and 16 weeks per a semester (3.18 ECTS)
Credit points	2 SCU
Prerequisites course(s)	-
Targeted learning outcomes	CLO 1 Students can use various learning resources and learning media to support mastery of Toxicology material. CLO 2 Mastering the concept of: characteristics, mechanisms, and toxic effects, various chemical species in the body, as well as ways to overcome (remediation) including the mechanism of poisoning (antidote). CLO 3 Students can solve general problems and simple scopes based on the study of Toxicology theory. CLO 4 students can solve toxic problems, especially those related to poisoning, remediation, and poisoning (antidote). CLO 5 Demonstrate a responsible attitude towards his work in Toxicology learning, independently.
Content	1. Understanding the scope of toxicology. 2. Understanding the calculation in toxicology. 3. Understanding the Biological factors that affect toxicity. 4. Understanding the chemical factors that affect toxicity 5. Distinguishing the effect of the route of administration on toxicity. 6. genetic factors that influence toxicity. 7. the influence of ecological factors on toxicity.

	8. Understanding abnormal responses to chemicals. 9. Understanding the mechanism of the toxicity reaction. 10. Mechanisms related to translocation and biotransformation factors. 11. Analyzing the basis of antidote therapy. 12. Understand toxicological testing methods. 13. Toxicity test of a substance for organisms (subchronic and chronic toxicity test, potentiation test, teratology test). 14. Determining pollutant levels.
Study/exam achievements	Students are considered to be competent and pass if at least get 55. Final score is calculated as follows: 10% participation + 20% assignment + 30% middle exam (UTS) & 40% final exam (UAS). Table index of graduation • A = 4 (85 ≤-≥ 100) • A- = 3,75 (80 ≤-< 85) • B+ = 3,5 (75 ≤- < 80) • B = 3 (70 ≤-< 75) • B- = 2,75 (65 ≤-<75) • C+ = 2,5 (60 ≤-<65) • C = 2 (55 ≤-<60) • D = 1 (40 ≤-<55) • E = 0 (0 ≤-<40)
Media	Computer, LCD, White board, presentation, and book
Learning Methods	Individual assignment, group assignment, discussion, Presentation.
Literature	1. Doull J, Bruce MC .1986. Origin and scope of toxicology. In: Klaassen CD, Amdur MO, Doull J (eds) Casarett and Doull's toxicology – the basic science of poisons, 3rd edn. Macmillan publishing company, New York, pp 3–32. 2. Eaton DL, Gilbert SG and Gallo. 2013. Principles of toxicology. In: Klaassen CD (ed) Casarett and Doull's toxicology – the basic science of poisons, 8th edn. McGraw Hill Education, New York, pp 3-11. 3. Ernest H. 2010. A Textbook Of Modern Toxicology, fourth edition. A John Wiley & Sons, Inc., Publication., New Jersey, Canada. 4. Gupta, R. P. 1997. A Review of "LOOMIS'S ESSENTIALS OF TOXICOLOGY" Edited by Ted A. Loomis and A. Wallace Hayes Academic Press, London, 1996, 282 pp. Journal of Toxicology and Environmental Health, 51(5), 515–516. 5. Klaassen, C.D., 2013. Casarett and Doull's toxicology – the basic science of poisons, 8th edn. McGraw Hill Education, New York, pp 49-122. 6. Muhammad, A. R. 2009. Calculation Of LD_{50} Values From The Method of Miller and Tainter, 1944. J Ayub Med Coll Abbottabad, 21(3), 184-185. 7. Sigmund F. Z. 2002. Environmental Toxicology, third edition. Oxford University Press., Madison Avenue, New York.

	8. Steven, G. G. 2012. A small Dose of Toxicology : The Health Effect of Common Chemicals, 2nd Edition, Healthy World Press, United States, pp 1-280. 9. Timbrell, J. 2001. Introduction to Toxicology, third edition. CRC Press, New York, 1-17.
Note	Practicum of Organic Chemistry covers the activities of theory, discussion, practicum and presentation. Total ECTS = ((total hours workload x 50 min)/60 min)/25 hours. Each ECTS is equals wits 25 hours.