USK UNIVERSITAS SYIAH KUALA

FACULTY OF AGRICULTURE

DEPARTMENT OF SOIL SCIENCE

UNDERGRADUATE PROGRAM **MODULE HANDBOOK**

Module designation	Soil and Water Pollution (SSOL3049)
Semester(s) in which the module is taught	5th Semester
Person responsible for the module	Ir. T. Alvisyahrin, M.Sc, Ph.D
Language	Indonesian, English
Relation to curriculum	Compulsory module for Soil Science Department
Teaching methods	Lecture, small group discussion, interactive discussion
Workload (incl. contact hours, self-study hours)	✔ 100 minutes lecture and discussion per week ✔ 120 minutes structured tasks per week ✔ 120 minutes learn to be independent per week
Credit points	2 SKS = 3.2 ECTS
Required and recommended prerequisites for joining the module	SSOL1002
Module objectives/intended learning outcomes	✔ Students can understand, explain and describe the general meaning of pollution, types of pollution and its impacts. ✔ Students can understand, explain and describe cases of land and water pollution and their relationship to air pollution. ✔ Students can understand, explain and describe the process of soil and water pollution, its assessment and prevention. ✔ Students can understand, explain the concept of R3 (Reduce, Reuse, Recycle) and apply waste management strategies on a household scale ✔ Students can understand, explain and apply remediation techniques for contaminated land for soil and environmental health
Content	1. Definition of pollution 2. Forms and processes of pollution, and their consequences (general) 3. Cases of land and environmental pollution in Indonesia 4. Water pollution and its control, assessment, and measurement techniques 5. Air pollution, processes, consequences, assessment, and prevention techniques 6. Waste management techniques using the 4R method (reduce, reuse, recycle, and reutilize) 7. Bioremediation and phytoremediation 8. Factory visit: Solid and liquid waste management techniques at the factory/industrial scale 9. Presentation of field trip results.
Exams and assessment formats	Quiz, Paper assignment, Midterm exam, Final exam

Study and examination requirements	✔ Quiz: 12% ✔ Paper Assignment: 38% ✔ Midterm exam: 5% ✔ Final exam: 10%
Reading list	1. Supriatna, S., Siahaan, S., & Restiaty, I. (2021). Pencemaran tanah oleh pestisida di perkebunan sayur Kelurahan Eka Jaya Kecamatan Jambi Selatan Kota Jambi (Studi keberadaan jamur makroza dan cacing tanah). *Jurnal Ilmiah Universitas Batanghari Jambi*, *21*(1), 460-466. 2. Simon Pascucci. 2016. Soil Contamination. Italian National Research Council. Italia. 3. Lal, R. et al. 2020 Methods for Assessment of Soil Degradation. CRS Press, Washington DC. 4. Kristanto, M. 2007. Ekologi Industri. Andi Ofset Jakarta. 5. European Commission. 2018. Soil Contamination: Impact on Human Health. 6. FAO. 2018. Soil Pollution. FAO. Rome