MODUL HANDBOOK
SOLID AND HAZARDOUS WASTE MANAGEMENT

MASTER PROGRAM OF ENVIRONMENTAL SCIENCE
SCHOOL OF POSTGRADUATED STUDIES
DIPONEGORO UNIVERSITY

Modul Description :

Module designation	Solid and Hazardous Waste Management
Semester(s) in which the module is taught	2nd Semester
Person responsible for the module	Dr.Eng. Maryono, S.T., M.T. Prof. Dr. Ir. Purwanto, DEA Prof. Dr. Ir. Syafrudin, CES, M.T., IPM
Language	Indonesian and English
Relation to curriculum	Elective
Teaching methods	Mix Method or Blended Learning by incorporating Lecture Based-learning, Student Centred-Learning and Technological Learning • Lecture Based-Learning: teacher lead a lesson by using presentation, showing visual • Student Centred-Learning: teacher promote individual learning so that student can exploring individual idea • Technological Learning, teacher leads to use high technology in information such as by exploring, utilizing internet/searching engine and social media.
Workload (incl. contact hours, self-study hours)	• Lecture, 2 hours per week • Discussion and presentation (Q&A), 1 hours per week • Individual assignment, 3 hours per week • Total workload for semester = 100 hours
Credit points	2 credits / 4 ECTS
Required and recommended prerequisites for joining the module	No required prerequisite
Module objectives/intended learning outcomes	• Able to formulate environmental management theory for solid waste and hazardous waste management • Able to formulate and carry out scientific research to solve environmental problems cause by solid waste and hazardous waste management • Able to formulate environmental policies for solid waste and hazardous waste management • Able to formulate rules, methods through of environmental management to improve the quality of life in associated for solid waste and hazardous

	waste management
Content	The Solid and Hazardous Waste Management course aims to provide class for building the knowledge, understanding and application of various methods of treating solid and hazardous waste. Lectures discuss various types of solid waste, B3 waste, solid waste management systems, B3 waste management systems with various aspects. Learning activities include lectures with various approaches and methods that involve students, such as discussions, observation activities in the field to learn problems and solutions.
Examination forms	• Essay • Case studies, • Practicals.
Study and examination requirements	Lecture attendance of at least 75%.
Reading list	1. Khan, S., Anjum, R., Raza, S. T., Bazai, N. A., & Ihtisham, M. (2022). Technologies for municipal solid waste management: Current status, challenges, and future perspectives. Chemosphere, 288, 132403. 2. Khan, S., Anjum, R., Raza, S. T., Bazai, N. A., & Ihtisham, M. (2022). Technologies for municipal solid waste management: Current status, challenges, and future perspectives. Chemosphere, 288, 132403. 3. Herat, S. (2021). E-waste management in Asia Pacific region: review of issues, challenges and solutions. Nature Environment and Pollution Technology, 20(1), 45-53. 4. Blackman Jr, W. C. (2016). Basic hazardous waste management. CRC press. 5. Singh, J., Laurenti, R., Sinha, R., & Frostell, B. (2014). Progress and challenges to the global waste management system. Waste Management & Research, 32(9), 800-812. 6. Kinnaman, T. C., & Takeuchi, K. (Eds.). (2014). Handbook on waste management. Edward Elgar Publishing. 7. Guerrero, L. A., Maas, G., & Hogland, W. (2013).

	Solid waste management challenges for cities in developing countries. Waste management, 33(1), 220-232. 8. Hung, Y. T., Wang, L. K., & Shammas, N. K. (Eds.). (2012). Handbook of environment and waste management: air and water pollution control (Vol. 1). World Scientific. 9. LaGrega, M. D., Buckingham, P. L., & Evans, J. C. (2010). Hazardous waste management. Waveland Press. 10. Cheremisinoff, N. P. (2003). Handbook of solid waste management and waste minimization technologies. Butterworth-Heinemann. 11. Tchobanoglous, G., & Kreith, F. (2002). Handbook of solid waste management. McGraw-Hill Education.