

Mass Transfer and Transform



**MASTER PROGRAM OF ENVIRONMENTAL SCIENCE
SCHOOL OF POSTGRADUATE STUDIES
DIPONEGORO UNIVERSITY**



A Module Handbook or collection of module descriptions that is also available for students to consult should contain the following information about the individual modules:

Module design	Mass Transfer and Transform
Module level, if applicable	
Code, if applicable	CIL-2-2-726
Subtitles, if applicable	
Courses, if applicable	
Semester(s) in which the module is taught	2 nd Semester
Person responsible for the module	Prof. Dr. Ir. Purwanto, DEA
Lecturer	1. Prof. Dr. Ing. Suherman, S.T., M.T.
Language	<i>Indonesian and English</i>
Relations to curriculum	
Type of teaching, contact hours	<i>Lecture: 60 minutes Q&A: 10 minutes Discussion: 10 minutes Presentation: 10 minutes</i>
Workload	<i>(Estimated) workload, divided into contact hours (lecture, exercise, laboratory session, etc.) and private study, including examination preparation, specified in hours,¹ and in total.</i>
Credit points	2 credits
Requirements according to the examination regulations	<i>Minimum attendance of lectures 75%</i>
Recommended prerequisites	<i>eg existing competences in...</i>

¹ When calculating contact time, each contact hour is counted as a full hour because of the organization of the schedule, moving from room to room, and individual questions to lecturers after the class, all mean that about 60 minutes should be counted.

Module objectives/intended learning outcomes	• Students know the lecture contract and know the basics of the equations of Mass, Heat, and Momentum • Students know the mass transfer process and its examples • Students know molecular diffusion in gases • Students know molecular diffusion in liquids • Students know molecular diffusion in solids • Students know diffusion in two-dimensional objects • Students can answer questions related to the mass transfer process • Students know the toxicity and dynamic chemical mobility in the environment • Students know persistence, concentration, and dynamic chemical amenability • Students know the dynamic chemical transformations in the human body • Students review scientific papers on the biotransformation of heavy metals in the body • Students know bioaccumulation and biotransformation • Students know about biodegradation and bioremediation • Students review 20 scientific articles (international journals) related to mass transport and transformation.
Content	Mass Transfer and Transformation course discusses the basic equations of Mass, Heat, Momentum, and mass transfer processes.
Study and examination requirements and forms of examination	• <i>Open book and close book</i> • <i>Multiple choice, case study, interview, practice</i>
Media employed	<i>Powerpoint, youtube, website</i>

Reading list	1. Hadi, S., Statistik, Pustaka Pelajar, Yogyakarta, 2015. 2. Harinaldi, Prinsip-prinsip Statistik untuk Teknik dan Sains, Erlangga, Jakarta, 2005 3. Rohmad, dan Supriyanto, Pengantar Statistika, Kalimedia, Yogyakarta, 2015 4. Spiegel M.R., Statistics, Schaum Outline Series, Mc-Graw-Hill, New York, 1982. 5. Supranto J., Statistik Teori dan Aplikasi Jilid 1, Erlangga, Jakarta, 2009. 6. Supranto J., Statistik Teori dan Aplikasi Jilid 2, Erlangga, Jakarta, 2009. 7. Usman, H., dan Akbar, P. S., Pengantar Statistika, Bumi Aksara, Jakarta, 2015.
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