

MODULE HANDBOOK

Module Name	Basics of Chemical Separations
Module level	Bachelor
Abbreviation, if applicable	3074212033
Sub-heading, if applicable	-
Course included in the module, if applicable	-
Semester/term	4 th /Second Year
Module coordinator(s)	Dr. Maria Monica S. B. W., M.Si.
Lecturer(s)	1. Dr. Pirim Setiarso, M.Si; 2. Dr. Utiya Azizah, M.Pd. 3. Rusmini, S.Pd., M.Si. 4. Dr. Nita Kusumawati, M.Sc.
Language	Indonesian
Classification within the curriculum	Compulsory/ Elective
Teaching format/class hours per week during the semester:	2 contact hours of lectures and lab activity (Indonesia credit semester or sks*)
Workload:	a. Lecture: 1 x 50 minutes lectures, 1 x 60 minutes structured activity, 1 x 60 minutes individual activity, 14 weeks per semester, 39.67 total hours of lecture per semester ~ 1.59 ECTS b. Lab activity: 1x170 minutes lab activity, 14 weeks per semester 39.67 total hours of lab activity per semester ~ 1.59 ECTS Total of lecture and lab activity = 79.33 total hours per semester ~ 3.18 ECTS**
Credit points:	2 CU x 1.59 = 3.18 ECTS
Requirements:	-

Learning goals/competencies:	CLO 1 Students have knowledge of the concepts of chemical separation techniques in terms of chemical structure, energetics and chemical analysis including distillation, extraction, chromatography, electroanalysis and membrane techniques. CLO 2 Skilled students use tools in carrying out chemical separation techniques including distillation, extraction, chromatography, electroanalysis and membrane techniques. CLO 3 Students have the ability to collaborate and are responsible for carrying out chemical separation including distillation, extraction, chromatography, electroanalysis and membrane techniques. CLO 4 Students have the ability to communicate the analysis of the results of chemical separation including distillation, extraction, chromatography, electroanalysis and membrane techniques.		
Content:	Introduction to the purpose, benefits, and basics of separation in general Distillation Extraction Chromatography Electroanalysis Membrane		
Attribute Soft skill:	Active communication; Discipline; Collaboration; Responsibility; and Argumentation in class and outdoor setting		
Study / exam achievements:	The final grade (NA) is calculated based on the following ratio:		
	Assessment Components		Percentage of contribution
	Participation		20%
	Assignment		30%
	Mid-semester test		20%
	Final semester test		30%
	Grade Conversion of 0-100 scale into 0-4 scale is set as below:		
	Letter	Number	Grade interval
	A	4.00	$85 \leq A \leq 100$
	A-	3.75	$80 \leq A- < 85$
	B+	3.50	$75 \leq B+ < 80$
	B	3.00	$70 \leq B < 75$
	B-	2.75	$65 \leq B- < 70$
	C+	2.50	$60 \leq C+ < 65$
	C	2.00	$55 \leq C < 60$
D	1.00	$40 \leq D < 55$	

	E	0.00	$0 \leq E < 40$
Media:	Computer, LCD, white board & marker, textbook, latest journal and laboratory		
Learning Methods	Lecture and laboratory activity, individual assignment, compiling a practicum report, group assignment, discussion, and presentation in english		
Literature:	1. Day, Underwood, Ray 2002. <i>Kimia Analisis Kuantitatif (terjemahan)</i>, Jakarta: Erlangga 2. Harvey, D.2000. <i>Modern Analytical Chemistry</i>. Int.Ed. Singapore: Mc Graw Hill 3. Pecksok, et al. 1976. <i>Modern Methods of Analytical Chemistry</i>. 2nd New York: John Wiley and Sons 4. Soebagio, Budiasih, E, Ibnu, S, Widarti, H.R, Munzil. 2001. <i>Kimia Analitik II (Common Book)</i>, Malang: IMSTEP – JICA FMIPA Universitas Negeri Malang 5. Padmaningrum, R.T., Antuni S.M & Wiyarsi; (2012) Karakter Ekstrak Zat Warna Kayu Secang (<i>Caesalpinia Sappan L</i>) Sebagai Indikator Titrasi Asam Basa, <i>Prosiding Seminar Nasional Penelitian, Pendidikan dan Penerapan MIPA, Fakultas MIPA</i>, Universitas Negeri Yogyakarta, 2 Juni 2012, pp:1-9 6. Mukhriani (2014) Ekstraksi, Pemisahan Senyawa, dan Identifikasi Senyawa Aktif, <i>Jurnal Kesehatan</i>, Vol 7 no 2 pp: 361-367 7. Wardani, Y.K., & Kusumawati, N., (2015) Pengaruh Komposisi Larutan Cetak (PVDF/Kitosan/NMP/NH₄Cl) Dan Non Pelarut (H₂O/CH₃OH) Terhadap Kinerja Membran Polyvinylidene Flouride (PVDF)-Kitosan Dalam Pemisahan Pewarna Rhodamin-B, <i>UNESA Journal of Chemistry</i> Vol. 4, No. 1, pp: 62-68 8. Kusumawati N., Setiarso, P., & Sianita, M.M., (2017) Pengaruh Komposisi Larutan Cetak Dan Temperatur Pengadukan Terhadap Karakteristik Fisik, Mekanik Dan Permeabilitas Air Murni Membran Polyether imide, <i>Indonesian Chemistry and Application Journal</i>, Vol 1, No 1, pp: 1-8 9. N. Kusumawati, P. Setiarso, A.B. Santoso, S.C. Wibawa, S. Muslim. 2019. The Development of PVDF/PEI blended membrane: Effect of stirring time on membrane characteristics and performance. <i>RASAYAN J Chem</i>. 12(2): pp. 975-986. 10. N. Kusumawati, A.B. Santoso, S.C. Wibawa, P. Setiarso, S. Muslim. 2020. Development of a new polymer		

	membrane: Polyvinylidene fluoride/polyetherimide blend membrane. Inter J Adv Sci Eng Inform Tech. 10(6): pp. 2547-2559
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Notes:	*1 sks in learning process = three periods consist of: (a) scheduled instruction in a classroom (50 minutes); (b) structured activity (60 minutes); and (c) individual activity (60 minutes) according to the Regulation of Indonesia Ministry of Research, Technology, and Higher Education No. 44 Year 2015 jo. the Regulation of Indonesia Ministry of Research, Technology, and Higher Education No. 50 Year 2018. For lab activity: 1 sks in learning process = two periods consist of: (a) scheduled lab activity (100 minutes); (b) structured lab activity (70 minutes); **1 sks = 1.59 ECTS according to Rector Decree Of Universitas Negeri Surabaya No. 598/Un38/Hk/Ak/2019
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