MODULE HANDBOOK

Module Name	Quantitative Chemical Analysis
Module level	Bachelor
Abbreviation, if applicable	3074213028
Sub-heading, if applicable	-
Course included in the module, if applicable	-
Semester/term	3rd/Second Year
Module coordinator(s)	Dr. Pirim Setiarso, M.Si.
Lecturer(s)	Prof. Dr. Sri Poedjiastoeti, M.Si. Prof. Dr. Nita Kusumawati, M.Sc Dr. Pirim Setiarso, M.Si. Rusmini S.Pd., M.Si.
Language	Indonesian
Classification within the curriculum	Compulsory/ ~~Elective~~
Teaching format/class hours per week during the semester:	3 contact hours of lectures and lab activity (Indonesia credit semester or sks*)
Workload:	a. Lecture: 2 x 50 minutes lectures, 2 x 60 minutes structured activity, 2 x 60 minutes individual activity, 14 weeks per semester, 79.33 total hours per semester ~ 3.18 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 = 119 total hours per semester ~ 4.77 ECTS**
Credit points:	3 CU x 1.59 = 4.77 ECTS
Prerequisites course(s):	General Chemistry

Targeted learning outcomes:	CLO 1: Students have knowledge of the basic principles of quantitative analysis in terms of chemical structure, energetics, and chemical analysis which includes process analysis, evaluation of analysis results, chemical calculations, gravimetric and volumetric analysis (acid-base titration, precipitation titration, complexing titration, redox titration) CLO 2: Students are skilled in using tools in carrying out quantitative analysis in terms of chemical structure, energetics, and chemical analysis which include process analysis, evaluation of analysis results, chemical calculations, gravimetric and volumetric analysis (acid-base titration, precipitation titration, complexing titration, redox titration) CLO 3: Students have the ability to cooperate and have a responsible attitude in carrying out quantitative analysis in terms of chemical structure, energetics, and chemical analysis which includes process analysis, evaluation of analysis results, chemical calculations, gravimetric and volumetric analysis (acid-base titration, precipitation titration, complexing titration, redox titration) CLO 4: Students have the ability to communicate the results of quantitative analysis in terms of chemical structure, energetics, and chemical analysis which includes the analysis process, evaluation of analysis results, chemical calculations, gravimetric and volumetric analysis (acid-base titration, precipitation titration, complexing titration, redox titration)

Content:	Basics of Quantitative Analysis, Acid Base Titration, Precipitation Titration, Complexing Titration, Redox Titration
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, laboratory, textbook, practicum guide book		
Learning Methods	Lecture, individual assignment, group assignment, discussion, presentation, and laboratory activity, compiling a practicum report		
Literature:	1. Basset, J. et.al., 1991. Vogel: *Texbook of Quantitative Inorganic Analysis Including Elementary Instrumental Analysis*. London: Longman Group Limited 2. Day, Jr, R.A., dan Underwood, A.L., 2002. *Quantitativ Analysis*. Sixth Ed. (Alih bahasa: Sopyan, I.). Jakarta: Penerbit Erlangga. 3. Skoog, Douglas.A. 1982, *Fundamental of Analytical Chemistry.* Fourth Edition. Tokyo: Holt- Sounders Japan 4. Nuryanti, S., Matsjeh, S., Anwar, C., & Raharjo, T.J., (2010) Indikator Titrasi Asam-Basa dari Ekstrak Bunga Sepatu (Hibiscus rosa sinensis L), *AGRITECH*, Vol. 30, No. 3, pp:178-183 5. Huljani, M.& Rahma, N. (2018) Analisis Kadar Klorida Air Sumur Bor Sekitar Tempat Pembuangan Akhir (TPA) II Musi II Palembang dengan Metode Titrasi Argentometri, *ALKIMIA: Jurnal Ilmu Kimia dan Terapan*, Vol. 2 No. 2 pp: 5-9 6. Wardani R.K., & Handrianto, P., (2019) Analisis Kadar Kalsium Oksalat Pada Tepung Porang Setelah Perlakuan Perendaman dalam Larutan Asam (Analisis Dengan Metode Titrasi Permanganometri), *Journal of Research and Technology*, Vol.5 No.2, pp: 144-153 7. Fitriana, Y.A.N. & Fitri, A.S. (2020) Analisis Kadar Vitamin C Pada Buah Jeruk Menggunakan Metode Titrasi Iodometri, *SAINTEKS* Vol 17 No 1, pp: 27-32		
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		