Module Handbook

Module Name	Analytical Chemistry IV: Spectroscopy and Chromatography Method
Module level	Bachelor
Abbreviation, if applicable	-
Sub-heading, if applicable	-
Course included in the module, if applicable	-
Semester/term	5st/Third Year
Module coordinator(s)	Dr. Nita Kusumawati, M.Sc.
Lecturer(s)	1. Dr. Pirim Setiarso, M.Si; 2. Dr. Maria Monica Sianita, M.Si; 3. Prof. Dr. Titik Taufikurohmah, M.Si.
Language	Indonesian
Classification within the Curriculum	Compulsory Course
Teaching format/class hours per week during the semester:	3 hours lecturers (50 min per hours)
Workload:	1 CU for bachelor degree equals to 3 workhours per week or 170 minutes (50' face to face learning, 60' structured learning, and 60' independent learning). In one semester, courses are conducted in 14 weeks (excluding mid and end-term exam). Thus, 1 CU equals to 39.67 workhours per semester. One CU equals to 1.587 ECTS.
Credit points:	3 CU (4.761 ECTS)
Prerequisites course(s):	-
Targeted learning outcomes:	1. Students have knowledge of chemical analysis qualitatively and quantitatively in terms of chemical structure, energetics and analysis based on the working principles of several spectrophotometer and chromatography instruments. 2. Students have the ability to collaborate and are responsible for conducting qualitative and quantitative chemical analysis on several Spectrophotometer and Chromatography instruments. 3. Students have the skills to use the Spectrophotometer and Chromatography instruments in conducting chemical analysis qualitatively and quantitatively. 4. Students have the ability to communicate the results of chemical analysis qualitatively and quantitatively on several Spectrophotometer and Chromatography instruments.
Content:	1. Orientation of all analytical chemistry IV; 2. UV & UV-Visible Spectrometry;

	3. Atomic Absorption & Fluorescence Spectrometry 4. Infra-red Spectrometry; 5. Nuclear Magnetic Resonance (NMR) spectrometry; 6. Mass Spectrometry (MS); 7. Gas Chromatography (GC); 8. High Perfomance Liquid Chromatography (HPLC).
Study / exam achievements:	Students are considered to be competent and pass if at least get 55. Final score is calculated as follows: 20% participation + 30% assignment + 20% middle exam (UTS) & 30% final exam (UAS) Table index of graduation: • A = 4 (85 ≤-≥ 100) • A- = 3,75 (80 ≤-< 85) • B+ = 3,5 (75 ≤- < 80) • B = 3 (70 ≤-< 75) • B- = 2,75 (65 ≤-<75) • C+ = 2,5 (60 ≤-<65) • C = 2 (55 ≤-<60) • D = 1 (40 ≤-<55) • E = 0 (0 ≤-<40)
Media:	Computer, LCD, White board
Learning Methods	Individuals assignment, group assignment, discussion, presentation, and practicum
Literature:	1. Harvey,D. 2000. *Modern Analytical Chemistry*. Int. Ed. Singapore: Mc.Graw Hill 2. Sawyer, Heineman, and Beebe,1984, *Chemistry Experiments for Instrumental Methods*, New York : John Wiley & Sons 3. Ewing G.W, 1981, *Instrumental Methods Of Chemical Analysis*, International Student Edition, Tokyo: McGraw-Hill Kogakusha Ltd 4. Skoog, D.A,1980, *Principles Of Instrumental Analysis*,ed II, Tokyo: Holt- Sounders Japan
Note	Spectroscopy and Chromatography Method covers the activities of theory, practicum and presentation.