

Module Handbook

Module Name	Physical Chemistry I
Module Level	Bachelor
Abbreviation, if applicable:	KIF202
Sub-heading, if applicable:	-
Courses included in the module, if applicable:	-
Semester/term:	3 rd / second year
Module coordinator(s):	Dr. Abdulloh, M.Si
Lecturer(s):	Mohammad ZakkiFahmi, Ph.D, Drs. HandokoDarmoekoesoemoe, DEA; Dr. FaidurRochman, MS
Language:	BahasaIndonesia
Classification within the curriculum	Compulsory course
Teaching format / class hours per week during semester:	3 hours lectures (50 min / hour)
Workload:	3 hours lecture, 3 hours structured activities and 3 hours individual activities, 13weeks a semester, and total 117hours a semester ~3.9 ECTS *
Credit Points:	3
Requirements:	General chemistry II
Learning goals/competencies:	<p>General competence (Knowledge) : Students are expected to be able to solve the issues related to chemical physical properties of gases and liquids as well as to reduce and describe general equations of thermodynamics and phase equilibrium, which in turn can be applied especially in the field of chemical industry.</p> <p>Specific competence</p> <ol style="list-style-type: none"> 1. Ability to resolve problems related to the ideal gas law, non-ideal gas and the kinetic theory of gases 2. Being able to calculate pressure, volume, temperature and mole fraction of gas 3. Ability to resolve issues related to the law of thermodynamics I, II, and III 4. Be able to calculate the work (w), heat (q), the change in enthalpy (ΔH), entropy (ΔS), energy (ΔU) and Gibbs energy (ΔG) 5. Ability to resolve problems related to the Joule-Thomson effect and the Carnot cycle 6. Ability to resolve problems related to phase and phase diagram system
Content:	Material This course discusses the main points of discussion, the following: the physical properties of gases and liquids, the first law of thermodynamics which include: work, heat, energy changes in (ΔU), system enthalpy, heat capacity, Joule-Thomson effect, engine heat (engine karnot), thermochemical, and the laws of thermodynamics to two to three, which include: entropy pure substances and mixtures and the entropy in

	chemical reactions, free energy changes Gibbs (ΔG), the system phase and the phase diagram.
Attribut soft skill	Discipline and team-work
Study/exam achievements:	<ol style="list-style-type: none"> 1. Get score ≥ 55 2. Score Presentation : assignment 1 :10% assignment 2 : 10% UTS (mid exam) : 40% UAS (final exam) : 40 % 3. Score Grade 75,00 - 100 A 70,00 - 74,99 AB 65,00 – 69,99 B 60,00 – 64,99 BC 55,00 – 59,99 C 40,00 – 54,99 D 0,00 – 39,99 E
Forms of Media:	Tutorial, lectures, and discussion
Learning Methods	LCD projectors and Whiteboard
Literature:	<ol style="list-style-type: none"> 1. Atkins, P and Paula de J., 2010, Physical Chemistry, 9th ed., Oxford University Press, New York. 2. Ira. N. Levine., 2009., Physical Chemistry, 6th ed., McGraw-Hill International Editions, New York
Notes:	*Total ECTS = $\{(total\ hours\ workload \times 50\ min) / 60\ min\} / 25\ hours$ Each ECTS is equals with 25 hours