

MODULE HANDBOOK

Module Name	Basic Theory of Inorganic Chemistry
Module level	Bachelor
Abbreviation, if applicable	3074213015
Sub-heading, if applicable	-
Course included in the module, if applicable	-
Semester/term	4 th /Second Year
Module coordinator(s)	Prof. Dr. Sari Edi C, M.Si
Lecturer(s)	Prof. Sari Edi C. M.Si; Dr. Amaria, M.Si., and Dina Kartika M,M.Sc
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:	Total workload 126 hours per semester which consists of 3 hours lecture, 3 hours structured activities, 3 hours 3 hours 3 hours 3 hours individual activities, and 14 weeks per a semester (4.2 ECTS)
Credit points:	3 SCU
Prerequisites course(s):	-
Targeted learning outcomes:	<p>CLO 1 Menguasai konsep tentang struktur, dinamika dan energi, serta prinsip dasar pemisahan, analisis, sintesis dan karakterisasi senyawa mikromolekul serta terapannya.</p> <p>CLO 5 Menerapkan pemikiran logis, kritis, sistematis dan inovatif dalam konteks pengembangan atau implementasi ilmu pengetahuan dan teknologi dengan memperhatikan dan menerapkan nilai humaniora yang sesuai dengan bidang kimia dalam menyelesaikan masalah</p>
Content:	<p>Keberkayaan sifat-sifat unsur: Muatan inti efektif, <i>Shielding effect</i>, energi ionisasi, afinitas elektron, elektronegativitas, jari-jari kovalen dan ionic;</p> <p>Ikatan Kimia: Pendahuluan, <i>Ikatan ion</i>: Sifat-sifat senyawa ionik, pem-bentukan senyawa ionik, radius rasio, energi kisi, kelarutan senyawa ionik, aturan Fajan, penyimpangan struktur ionik sederhana.</p> <p><i>Ikatan kovalen</i>: Teori ikatan valensi, teori tolakan elektron kulit valensi, Teori orbital molekul, momen dipol. Gaya-gaya kimia: ikatan hydrogen, van der Waals;</p> <p>Reaksi-reaksi kimia: Prinsip dasar reaksi kimia, teori-teori asam basa, kekuatan asam, proses pelarutan, reaksi dalam pelarut air dan non air;</p> <p>Reaksi Oksidasi-reduksi: Pengertian reaksi oksidasi-reduksi, setengah reaksi, tingkat oksidasi dan bilangan</p>

	<p>oksidasi, gaya dorong reaksi kimia, potensial oksidasi, sel galvanik, potensial elektrode, aplikasi potensial elektrode standar, reaksi dalam medium air;</p> <p>Struktur padatan kristal, Padatan ionik, Garfit dan intan, struktur defect, dan teori pita.</p>
Study / exam achievements:	<p>Students are considered to be competent and pass if at least get 55</p> <p>Final score is calculated as follows: 20% participation + 30% assignment + 20% middle exam (UTS) & 30% final exam (UAS)</p> <p>Table index of graduation</p> <ul style="list-style-type: none"> • 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
Literature:	<ol style="list-style-type: none"> 1. Huheey, J.E. ; Keiter, E.A. ; Keiter, R.L., 1990, <i>Inorganic Chemistry, Principles of Structure and Reactivity</i>, Fourth Edition, Harper Collins College Publishers. 2. Madan, R.D., 1997. <i>Modern Inorganic Chemistry</i>, S. Chand and Company LTD, New Delhi. 3. Manku, G.S., 1980, <i>Theoretical Principles of Inorganic Chemistry</i>, Tata Mc Graw Hill Book Co of India. Arends, Richard I. (2004). <i>Guide to Field Experiences and Portfolio Development: to accompany ;learning to teach</i>. New York: McGraw-Hill Book Company. 4. Sugiarto, Bambang. 2012. <i>Sistem Periodik Unsur</i>. Surabaya: Unesa University Press 5. Sari Edi Cahyaningrum, 2018, <i>Teori Dasar Kimia Anorganik</i>, Unesa university Press
Note	<p>Inorganic chemistry 1 covers the activities of theory and presentation.</p> <p>Total ECTS = ((total hours workload x 50 min)/60 min)/25 hours</p> <p>Each ECTS is equals with 25 hours</p>