

MODULE HANDBOOK

Module Name	Nuclear Chemistry and Radiochemistry
Module level	Bachelor
Abbreviation, if applicable	3074212036
Sub-heading, if applicable	-
Course included in the module, if applicable	-
Semester/term	4 th / second year
Module coordinator(s)	Samik, S.Si., M.Si.
Lecturer(s)	Dr. Ismono, M.S.
Language	Indonesian
Classification within the curriculum	Compulsory Course
Teaching format/class hours per week during the semester:	2 hours lecturers (50 min per hours)
Workload:	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**
Credit points:	2 CU x 1.59 = 3.18 ECTS
Prerequisite course(s):	Basic Chemistry
Targeted learning outcomes:	<ol style="list-style-type: none"> 1. Utilizing learning resources and ICT to support learning related to nuclear chemistry and radiochemistry and the implementation of nuclear chemistry in everyday life, learning oriented to scientific approaches such as: problem based learning, inquiry-discussion learning and contextual learning as well as paper-based learning to achieve student competence 2. Have knowledge of nuclear chemistry and radiochemistry, and the implementation of nuclear chemistry in everyday life, the nuclear chemistry learning process is oriented towards a scientific approach such as: problem based learning, inquiry-discussion learning and contextual learning and paper-based learning. the project is based on a study of scientific journals related to the implementation of nuclear chemistry in everyday life 3. Make decisions in determining the potential and negative impact aspects of the role of radio chemistry in everyday life and being able to make decisions about nuclear chemistry learning oriented scientific approaches such as: problem-based learning, inquiry-discovery learning and contextual learning as well as paper / project-based learning that is relevant to the competence, characteristics of the subject matter, and student characteristics. 4. Have a responsible attitude by implementing ways to overcome the negative effects of using radio chemicals in everyday life
Content:	Studies on the ontology, epistemology and Axiology of

	nuclear chemistry and radiochemistry, the atomic structure, atomic nuclear, nuclear stability, nuclear reactions, half-time and ages of radioactive elements, interaction of nuclear radiation with matter, thermodynamic stability of the atomic nucleus, and the implementation of radiochemistry in everyday life such as in chemistry, medicine, agriculture, food technology and so on										
Study / exam achievements:	Students are considered to complete the course and pass if they obtain at least 40% of maximum final grade. The final grade (NA) is calculated based on the following ratio:										
	<table border="1"> <thead> <tr> <th>Assessment Components</th> <th>Percentage of contribution</th> </tr> </thead> <tbody> <tr> <td>Participation</td> <td>20%</td> </tr> <tr> <td>Assignment</td> <td>30%</td> </tr> <tr> <td>Mid-semester test</td> <td>20%</td> </tr> <tr> <td>Final semester test</td> <td>30%</td> </tr> </tbody> </table>	Assessment Components	Percentage of contribution	Participation	20%	Assignment	30%	Mid-semester test	20%	Final semester test	30%
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	Participation	20%									
	Assignment	30%									
Mid-semester test	20%										
Final semester test	30%										
Media:	Computer, LCD, White board, internet										
Learning Methods	Lectures, individuals assignment, group assignment, discussion, and presentation										
Literature:	<ol style="list-style-type: none"> 1. Jens-Volker Kratz, Karl Heinrich Lieser, 2012, <i>Nuclear and Radiochemistry: Fundamentals and Applications, 2 Volume Set</i>, Wiley VCH, Verlag GmbH, and Co KgaA, Boschstr, 12 Weinheim, Germany 2. Choppin, Liljenzin, and Rydberg, 2002, <i>Radiochemistry and Nuclear Chemistry, 3rd Edition</i>, Butterworth-Heinemann Press 3. Amiruddin, Achmad, 2009, <i>Kimia Inti dan Radiokimia</i>, Bandung: PDIN-BATAN 4. Beiser, Arthur, 2003, <i>Concepts of Modern Physics</i>, 6th, New York: McGraw-Hill Companies. 										
Notes:	*1 CU in learning process = three periods consist of: (a) scheduled instruction in a classroom or laboratory (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.										
	**1 CU = 1,59 ECTS according to Rector Decree Of Universitas Negeri Surabaya No. 598/UN38/Hk/Ak/2019										