MODULE HANDBOOK

Module Name	Nuclear Chemistry and Radiochemistry
Module Level	Bachelor
Abbreviation, if applicable	-
Sub-heading, if applicable	-
Course included in the module, if applicable	-
Semester/term	4th/Second Year
Module coordinator(s)	Dr. Ismono, M.S
Lecturer(s)	Samik, S.Si., M.Si
Language	Indonesian
Classification within the curriculum	Optional
Teaching format/class hours per week during the semester	2 hours lectures (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 1.59 ECTS.
Credit Point	2 CU = 2 x 1.59 = 3.18 ECTS
Prerequisites course(s):	Basic Chemistry
Learning Outcome	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 aksiology 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 Achievement	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, laboratory instruments
Learning Methods	Lectures, individuals assignment, group assignment, discussion, and presentation
Literature	1. Jens-Volker Kratz, Karl Heinrich Lieser, 2012, *Nuclear and Radiochemistry: Fundamentals and Applications, 2 Volume Set*, Wiley VCH, Verlag GmbH, and Co KgaA, Boschstr, 12 Weinheim, Germany 2. Choppin, Liljenzin, and Rydberg, 2002, *Radiochemistry and Nuclear Chemistry, 3rd Edition*, Butterworth-Heinemann Press 3. Amiruddin, Achmad, 2009, *Kimia Inti dan Radiokimia*, Bandung: PDIN-BATAN 4. Beiser, Arthur, 2003, *Concepts of Modern Physics*, 6th, New York: McGrow-Hill Companies.