

MODULE HANDBOOK

Course:	Radiobiology
Module Level:	Undergraduate
Code:	FIB302
Sub-heading, if applicable:	-
Courses included in the module, if applicable:	-
Semester/Term:	4 th / Second Year
Module Coordinator (S)	Prof.Dr.Ir. Suhariningsih
Lecture (s):	Prof.Dr.Ir. Suhariningsih and Dr. Prihartini, Drg., MS
Language:	Bahasa Indonesia
Classification within the Curriculum:	Compulsory Course / Elective Studies
Teaching format/ class hours per week during semester:	2 hours lectures (50 min / hour)
Workload:	2 hours lectures, 2 hour structural activities, 2 hours individual study, 14 weeks per semester, and total 78 hours per semester ~ 2.6 ECTS*
Credit Points:	2
Requirement(s):	Modern physics, Biophysics
Learning Goals/Competencies:	<p>General Competence (Knowledge): After following this course, students have knowledge about interactions between radioactive radiation and biological tissue as well as the effects.</p> <p>Specific Competence :</p> <ol style="list-style-type: none"> 1. To explain the effects of radiation on living cells (radiation interactions with cells, DNA) 2. To explain the effects of radiation on all medical activities that utilize ionizing radiation, in the areas of diagnostics, radiotherapy and nuclear medicine 3. To explain the physical meaning RBE, OER, LET, TDF 4. Utilize ionizing radiation, in the field diagnostics, radiotherapy and nuclear medicine
Contents:	This course discusses: the interaction review of radiation with the material, the effects of radiation on DNA, repair of DNA damage, damage and repairs chromosomes induced by radiation, the theory of the survival curve, death cell: the concept of death cell (apoptosis and reproductive cell death), healing process mobile, cell cycle, Modifiers responses radiation-sensitizer and protector, RBE, OER, and LET, Kinetic cell, tissue radiation injuries, pathology radiation- acute effects and further, Histopathology, Radiobiology tumor, TDF (time, dose, and fractionation), Genetics of radiation: the radiation effects on fertility and mutagenesis , molecular mechanism

Soft Skill Attribute:	Discipline and communication skill
Study/Exam Achievements:	<p>Students are considered to be competent and passed, if at least get 40% of maximum mark of the mid-term test, final examination, quizzes and homework.</p> <p>Final score is calculated as follow: 10% soft skill (study activities and discuss), 15% assignment 1 + 15% assignment 2 + 30% midterm exams + 30% final exams</p> <p>Final index is defined as follow:</p> <p>A : 75 - 100 AB : 70 - 74.99 B : 65 - 69.99 BC : 60 - 64.99 C : 55 - 59.99 D : 40 - 54.99 E : 0 - 39.99</p>
Forms of Media:	Laptop, LCD projectors, and whiteboards
Learning Methods:	Lecture, group discussion, and structural activity
Literature(s):	<ol style="list-style-type: none"> 1. G. Gordon Steel (Editor). <i>Basic Clinical Radiobiology</i>. 2. (Edward Arnold, London, UK, 1993) Eric J. Hall . <i>Radiobiology for the Radiologist</i>. 5thed. (Lippincott Williams and Wilkins, Philadelphia, PA, 2000).
Notes :	*Total ECTS = {(total hours workload × 50 min) / 25 hours Each ECTS is equals with 25 hours.