Module Handbook

Module Name:	**Radiological Physics and Dosimetry**
Module Level:	Undergraduate
Abbreviation, if applicable:	FIB 204
Sub-heading, if applicable:	-
Courses included in the module, if applicable:	-
Semester/term:	4th / second Year
Module coordinator(s):	Dr. Suryani Dyah Astuti
Lecturer(s):	Dr. Suryani Dyah Astuti Prof. Dr. Ir. Suhariningsih
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, 13 week per semester, and total 78 hours per semester ~2.6 ECTS
Credit Points:	2
Requirements:	Modern Physics, Biophysics
Learning goals/competencies:	**General Competence (Knowledge)**: After following this course, the students will be able to explain basic principal and physical concept on radiation and dosimetry. **Specific Competence**: After following this course, the students will be able to: 1. Explain radiation classification and application in medical system 2. Explain dimension and unit of radiation 3. Explain interaction between radiation and bio-organ particle 4. Explain exponential attenuation 5. Explain radioactive decay mechanism 6. Explain the definition of dosimetry radiation and classification 7.Explain cavity theory and ionization radiation process 8. Explain photon calibration
Content:	**Radiation:** classification, dimension and radiation units. **Ionization** : direct and indirect ionization, interaction between radiation and particle, exponential attenuation, radioactive decay. **Dosimetry:** definition of radiation dosimetry, ionization chamber, cavity theory, photon calibration, electron, relative dosimetry technique and absolute.
Attribut soft skill	Active and good communication

Study/exam achievements:	Students are considered to be competent and pass if at least get 40 of maximum mark of the exams (UTS dan UAS), structured activity (group discussion). Final score (NA) is calculated as follow: 15% assignment 1 + 15% assignment 2 + 35% UTS + 35% UAS Final index is defined as follow: 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
Forms of Media:	Slides and LCD projectors, whiteboards
Learning Methods	Lecture, assessments and group discussion
Literature:	1. F. H. Attix. *Introduction of Radiological Physics and Radiation Dosimetry* (John Willey and Sons, New York, NY, 1986) 2. H. E. Johns and J. R. Cunningham. *The Physics of Radiology*, 4th ed. (Charles C. Thomas, Springfield, IL, 1983) 3. J. F. Knoll. *Radiation Detection and Measurement*. 3rd. ed. (John Willey and Sons, New York, NY, 2000). 4. Podgorsak, *Radiation Oncology Physics: Handbook for Teacher and Student*. (IAEA, 2005) 5. Metcalfe, et al, *The Physics of Radiotherapy X-rays and Electron*. (Medical Physics Publishing, 2007) 6. S.D. Astuti & S. Kholimatussa'diyah, Dasar Fisika Radiasi dan Dosimetri, Buku Ajar, AUP, 2018
Notes:	*Total ECTS = {(total hours workload × 50 min) / 25 hours Each ECTS is equals with 25 hours.