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Undergraduate Programme in Physics

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MODULE HANDBOOK

Module Name	Physics of Nuclear Medicine
Module level, if applicable	Bachelor
Code, if applicable	FIS425064
Subtitle, if applicable	-
Courses, if applicable	-
Semester(s) in which the module is taught	7th (Seventh)
Person responsible for the module	Dr. Nita Handayani, M.Si
Lecturer(s)	Dr. Nita Handayani, M.Si
Language	Indonesia
Relation to curriculum	compulsory course in the fourth year (7th semester) Bachelor Degree
Type of teaching, contact hours	150 minutes lectures, and 180 minutes structured activities per week.
Workload	Total workload is 136 hours per semester, which consists of 150 minutes lectures per week for 14 weeks, 180 minutes structured activities per week, 180 minutes individual study per week, in total is 16 weeks per semester, including mid exam and final exam
Credit points	3
Requirements according to the examination regulations	Minimum attendance 75% All assignments submitted Attendance on time
Recommended prerequisites	No prerequisites stated on
Module objectives/intended learning outcomes	After completing this course, the students: CO 1. Able to explain physics concepts applied in nuclear medicine CO 2. Able to explain how to produce radioisotopes using reactors, generators and accelerators as well as produce radiopharmaceuticals for clinical applications. CO 3. Able to explain the working principles of various medical tools that utilize radioisotopes for both diagnostic and therapeutic purposes, such as gamma cameras, SPET and PET Scans CO 4. Able to apply the concepts of dosimetry and radiation protection in nuclear medicine.
Content	1. Basic Concepts of Nuclear Medicine Physics 2. Radioisotope Production with Reactors 3. Radioisotope Production with Generator and Accelerators 4. Radiopharmaceutical Production 5. Radiopharmaceuticals for Clinical Applications 6. Radiation Dose Measurement 7. Thyroid Function Check

	8. Kidney Function Check 9. Gamma Camera 10. Single Photon Emission of Computed Tomography (SPECT) 11. Positron Emission Tomography (PET)
Study and examination requirements and forms of examination	The final mark will be weighted as follows:

NO	Assessment methods (components, activities)	Weight (percentage)
1	Final Examination	30%
2	Mid-Term Examination	30%
3	Class Activities : Quiz, Homework, etc.	20%
4	Project Based Learning (PBL)	20%

The final assessment is expressed in the form of a letter value converted from a number value with the following categories:

NO	Number Value	Letter Value	NO	Number Value	Letter Value
1	≥ 95	A	7	65-69.99	B/C
2	90-94.99	A-	8	60-64.99	C+
3	85-89.99	A/B	9	55-59.99	C
4	80-84.99	B+	10	50-54.99	C-
5	75-79.99	B	11	55-34.99	D
6	70-74.99	B-	12	<35	E

Media employed	White-board, LCD Projector, e-learning (https://daring.uin-suka.ac.id/)
Reading list	1. Simon R. Cherry, James A. Sorenson, Michael E. Phelps, *Physics in Nuclear Medicine*, Fourth Edition, Saunders Elsevier, 2012 2. D.L. Bailey, J.L. Humm, A. Todd-Pokropek, A.van Aswegen, *Nuclear medicine Physics: A Handbook for Teachers and Students*, International Atomic Energy Agency, Vienna, 2014 3. Majid Assadi, Hojjat Ahmadzadehfar, H.J. Biersack, *Principles of Nuclear Medicine*, 1st Edition, Springer International Publishing, 2018 4. Rachel A. Powsner, Matthew R. Palmer, Edward R. Powsner, *Essentials of Nuclear Medicine Physics and Instrumentation*, Third Edition, Wiley-Blackwell, 2013

PLO and CO Mapping

	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8	PLO 9
CO 1		√							
CO 2				√					
CO 3					√				
CO 4							√		