



UNIVERSITAS NEGERI YOGYAKARTA
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
DEPARTMENT OF PHYSICS EDUCATION
PHYSICS STUDY PROGRAM

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Bachelor of Physics

MODULE HANDBOOK

Module name:	Radiation Physics
Module level, if applicable:	Undergraduate Programme
Code:	FSK6366
Sub-heading, if applicable:	-
Classes, if applicable:	-
Semester:	6
Module coordinator:	Dr. Rida SN Mahmudah, M.Si.
Lecturer(s):	Dr. Rida SN Mahmudah, M.Si., Dr. Restu Widiatmono, Dr. Kuncoro Asih Nugroho
Language:	Bahasa Indonesia
Classification within the curriculum:	Elective Course
Teaching format / class hours per week during the semester:	150 minutes lectures and 180 minutes structured activities per week.
Workload:	Total workload is 136 hours per semester which consists of 150 minutes lectures, 180 minutes structured activities, and 180 minutes individual study per week for 16 weeks.
Credit points:	3 sks (4.86 ECTS)
Prerequisites course(s):	FSK6226
Course Outcomes	Students graduating from this course will be able to:

	<p>CO1. Demonstrate collaborative attitude and independence in carrying out individual tasks and group assignments</p> <p>CO2. Mastering the basic concept of X rays</p> <p>CO3. Understand the interaction of X rays and gamma rays</p> <p>CO4. Understand the application of radiation in medical imaging: radiographic image, tomography, Magnetic Resonance Imaging, SPECT and PET CT</p>																						
Content:	<p>This course discusses the basic concept of X rays: electromagnetic waves, X rays production, and beam quality measurement, interaction of X rays and gamma rays and radiation application in medical imaging, such as MRI, SPECT and PET CT.</p>																						
Study / exam achievements:	<p>Attitude assessment is carried out at each meeting by observing several achievements, i.e. attendance, engagement in class activities, language usage and ethics. Results of these observations are not being a component of the final grades, but students must attend at least 12 of the 16 classes and have generally good attitude to pass the course.</p> <p>The final grade will be weighted as follow:</p> <table border="1"> <thead> <tr> <th>No</th> <th>CO</th> <th>Assessment Object</th> <th>Assessment Technique</th> <th>Weight</th> </tr> </thead> <tbody> <tr> <td rowspan="5">1</td> <td rowspan="5">CO2, CO3, and CO4</td> <td>a. Individual Assignment</td> <td rowspan="5">Presentation / written test</td> <td>15%</td> </tr> <tr> <td>b. Group Assignment</td> <td>15%</td> </tr> <tr> <td>c. Case Study</td> <td>25%</td> </tr> <tr> <td>d. Mid</td> <td>20%</td> </tr> <tr> <td>e. Final exam</td> <td>25%</td> </tr> <tr> <td colspan="3">Total</td> <td>100%</td> </tr> </tbody> </table>	No	CO	Assessment Object	Assessment Technique	Weight	1	CO2, CO3, and CO4	a. Individual Assignment	Presentation / written test	15%	b. Group Assignment	15%	c. Case Study	25%	d. Mid	20%	e. Final exam	25%	Total			100%
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		d. Mid		20%																			
		e. Final exam		25%																			
Total			100%																				
Forms of media:	Board, LCD Projector, Laptop/Computer																						
Literature:	<p>1. The physics of radiation therapy, Faiz M. Khan, 4th edition (2010), Lippincott, Williams and Wilkins, USA.</p>																						

	<p>2. First-Year Physics for Radiographers, George A. Hay, G. Hughes, W. B. Saunders, 1978.</p> <p>3. Systematic literature review on the benefit of patient protection shielding during medical X-ray imaging: Towards a discontinuation of the current practice, Eleni Theano Samara, Natalia Saltybaeva, et al., <i>Physica Medica</i> 94 (2022) 102–109, https://doi.org/10.1016/j.ejmp.2021.12.016</p>
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PLO and CO mapping

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
CO1	✓							
CO2		✓						
CO3		✓			✓			
CO4					✓			