Module Description

Module name	Photonic Physics
Module level, if applicable	Bachelor of Physics
Code, if applicable	
Subtitle, if applicable	-
Course, if applicable	Photonic Physics
Semester(s) in which the module is taught	
Person responsible for the module	Prof. Dr. Paulus Lobo Gareso, M.Sc.
Lecturer	1. Prof. Dr. Paulus Lobo Gareso, M.Sc. 2. Dr. Sri Dewi Astuty, M.Si.
Language	Indonesian Language [Bahasa Indonesia]
Relation to Curriculum	This course is a compulsory course and offered in the semester.
Type of teaching, contact hours	Teaching methods: [group discussion], [~~simulation~~], [~~case study~~], [~~collaborative learning~~], [~~project-based learning~~], [problem-based learning]. Teaching forms: [lecture], [tutorial], [~~seminar~~], [practicum], [~~research~~], [~~internship~~], [~~community service~~] CH : 08.00 - 16.00
Workload	For this course, students are required to meet a minimum of 91.20 hours in one semester, which consist of: - 27.20 hours for lecture, - 32.00 hours for structured assignments, - 32.00 hours for private study
Credit points	2 credit points (equivalent with 3.4 ECTS)

Requirements according to the examination regulations	Students have participated in at least 80% of the learning activities (Academic Regulations, Chapter VII)
Recommended prerequisites	
Module objectives/intended learning outcomes	After completing the course, Students are able: **Intended Learning Outcomes (ILO):** **ILO 1 :** Students have relatively deep understood in classical and basic quantum physics **ILO 3 :** Students are able to use the basic principles of physics in technology application. **Course Learning Objective (CLO):** After completing this course, students are expected to be able to: 1. Mastering the concepts and applications of modern physics in photonics. **2.** Able to identify physical phenomena in photonic technology in industrial engineering and healthcare. **Sub CLO :** ILO 1 ⇒ CLO 1: Able to master the basic concepts and principles of photonics ILO 1 ⇒ CLO 2: Able to describe the phenomenon of light interaction with matter. ILO 2 ⇒ CLO 3: Able to distinguish the meaning of photonics technology and optoelectronics. ILO 2 ⇒ CLO 4: Able to analyze optical trap system. ILO 2 ⇒ CLO 5: Able to explain the concept of nanophotonics technology, femtosecond and biophotonics.
Content	Students will learn about : 1. Photonics Introduction 2. Interaction of Light With Matter 3. Photonics and Optoelectronics 4. Optical Traps 5. Nanophotonic Technology 6. Femtosecond Photonics

	7. Biophotonics and biophotonic applications
Forms of Assessment	Assessment techniques: [~~observation~~], [participation], [~~performance~~], [written test], [~~oral test~~] Assessment forms: [quiz], [midterm exam], [final term exam], [assignment], [~~report~~], [~~presentation~~] Midterm exam = 30% Final term exam = 30%, Assignment = 30%, Quiz = 10% CLO 1 => ILO 1: 5% (Assignment: participation) CLO 2 => ILO 1: 5% (Assignment: participation) CLO 3 => ILO 3: 10% (Assignment: participation) CLO 1, CLO 2, and CLO 3=> ILO 1 and ILO 3: 30% (Midterm exam: written test) CLO 4 => ILO 3: 10% (Quiz: written test) CLO 5 => ILO 3: 10% (Assignment: participation) CLO 4 and CLO 5 => ILO 3: 30% (Final term exam: written test)
Study and examination requirements and forms of examination	**Study and examination requirements:** - Students must attend 15 minutes before the class starts. - Students must switch off all electronic devices. - Students must inform the lecturer if they will not attend the class due to sickness, etc. - Students must submit all class assignments before the deadline. - Students must attend the exam to get final grade. **Form of examination:** Written exam: Essay
Media employed	Text book, Learning Management System (SIKOLA), Whiteboard, and LED.
Reading list	**Main :** ● Markolf H. Niems, 2007, Biological and Medical Physics, Biomedical Engineering Laser Tissue Interaction, Springer Jerman. ● Chah Yeh, 1994, Applied Photonics, 1st Edition. **Support :**