	COURSE SYLLABUS OF PHYSICS EDUCATION STUDY PROGRAMME FACULTY OF EDUCATIONAL SCIENCES UIN SYARIF HIDAYATULLAH JAKARTA					Document Code MH-PFIS
COURSE	**CODE**	**CORE MODULE**	**WEIGHT (CREDITS)**	**WORKLOAD FOR EACH MODULE (IN MINUTES)**	**SEMESTER**	**COMPILATION DATE**
BASIC PHYSICS PRACTICUM II	FST6097122	Compulsory	1 SKS 1.5 ECTS	• Lecture : • Laboratory course: 160.0 • Project work: • Independent task: • Structured task: • Internship: **Total : 160**	2	March 4, 2024

Language details	Indonesian
Teaching methods	Project Based Learning (PjBL), Cooperative Learning (CL)
Type of Examination	• Participation (Attendance / Quiz): 10% • Observation (Practice / Assignment): 30% • Performance (Presentation): • Oral Test (Group Assignment): • Midterm Exam: 30% • Final Exam: 30%
Module Coordinator	Ahmad Suryadi, M.Pd
Lecturer	Ahmad Suryadi, M.Pd Reza Ruhbani Amarulloh, S.Pd, M.Pd
Course Requirements	Have or are currently taking the course FST6097121 Basic Physics II
Learning Outcomes	**PROGRAMME LEARNING OUTCOME (PLO)**
	PLO1 Graduates have expertise in physics and physics learning with an approach that is appropriate to Indonesia's social, cultural and environmental context. PLO2 Graduates have the ability to manage, develop and utilize technology in physics learning PLO3 Graduates have the ability to solve physics education problems using scientific methods PLO2 Graduates have the ability to manage, develop and utilize technology in physics learning
	Intended Learning Outcome (ILO)
	CPL01 Mastering Professionalism skills in Physics Education: Mastering basic educational concepts, learning theories, and physics and mathematics concepts to design, implement, and evaluate innovative physics learning by utilizing information technology and the environment; able to plan, implement and evaluate innovative physics learning, utilize ICT and the surrounding environment to develop students' critical thinking skills and scientific attitudes, apply mathematical models in explaining physical phenomena, demonstrate independent and quality performance, be responsible for the achievement of group work results, carry out supervision and evaluation, as well as communicating effectively both written and verbally in educational and research contexts, as well as demonstrating good leadership and administrative skills; and demonstrate faith and devotion to God Almighty and uphold religious, moral and ethical values in every action. CPL02 Mastering Physics Laboratory Management and Operational skills: Mastering the concepts and principles of physics laboratory management that integrate technology and the environment; able to utilize and manage a physics laboratory to support physics learning with the integration of technology and the environment, manage and operate a school laboratory efficiently, ensure the safety and effectiveness of education, be able to identify problems, formulate hypotheses, develop appropriate solutions using scientific methods, demonstrate independent and quality performance, responsible for achieving group work results, carrying out supervision and evaluation, and communicating effectively in an educational context; as well as respecting human values, working together in teams, and showing social responsibility and concern.
	Course Learning Outcome (CLO)
	CPMK01.36.13 Mastering the principles and concepts of Introduction to Laboratory Equipment, Series Circuits: Introduction to series circuits. Calculation of total resistance in a series circuit. Measurement of current and voltage in each component. , Series circuits and parallel circuits, Series Parallel Resistor Circuits Resistor Capacitor (RC) Circuits Part 1, Introduction to RC circuits. Calculation of time constant (τ) in RC circuits. Resistor Capacitor Circuits (RC) Part 2, Measuring the response of RC circuits to input signals. Frequency and phase analysis in RC circuits, ,Wheatstone Bridge Part 1, Basic principles of the Wheatstone Bridge. Measuring resistance using a Wheatstone Bridge. ,Wheatstone Bridges Part 2, Applications of Wheatstone Bridges in sensors and transducers. Measurement error and compensation, and Introduction to New Material Kirchhoff's Law Part 2, Kirchhoff's Law regarding tension (KVL) with logical, critical and independent thinking and upholding religious, moral and ethical values. CPMK02.36.69 Mastering the concepts and principles of Introduction to Laboratory Equipment, Series Circuits: Introduction to series circuits. Calculation of total resistance in a series

	circuit. Measurement of current and voltage in each component. , Series circuits and parallel circuits, Series Parallel Resistor Circuits Resistor Capacitor (RC) Circuits Part 1, Introduction to RC circuits. Calculation of time constant (τ) in RC circuits. Resistor Capacitor Circuits (RC) Part 2, Measuring the response of RC circuits to input signals. Frequency and phase analysis in RC circuits, ,Wheatstone Bridge Part 1, Basic principles of the Wheatstone Bridge. Measuring resistance using a Wheatstone Bridge. ,Wheatstone Bridges Part 2, Applications of Wheatstone Bridges in sensors and transducers. Measurement error and compensation, and Introduction to New Material Kirchhoff's Law Part 2, Kirchhoff's Law of Voltage (KVL) using scientific methods collaboratively and responsibly.
	Sub-CLO
	SUB-CPMK01.36.13.02.01 Students can evaluate the differences between classical physics and modern physics. SUB-CPMK01.36.13.02.02 Students can create scenarios that illustrate the application of modern physics principles; SUB-CPMK01.36.13.02.03 Students can analyze the implications of the special theory of relativity on our understanding of time and space; SUB-CPMK01.36.13.02.04 Students can evaluate experimental evidence that supports the special theory of relativity; SUB-CPMK01.36.13.02.05 Students can analyze how the law of black body radiation affects our understanding of the nature of light; SUB-CPMK01.36.13.02.06 Students can create a model that describes the phenomenon of black body radiation; SUB-CPMK01.36.13.02.07 Students can evaluate how the photoelectric effect provides evidence about the particle nature of light; SUB-CPMK01.36.13.02.08 Students can create a model that describes the photoelectric effect; SUB-CPMK01.36.13.02.09 Students can analyze how the Hall effect affects our understanding of electrical and magnetic properties; SUB-CPMK01.36.13.02.10 Students can evaluate experimental evidence that supports the Hall effect theory; SUB-CPMK01.36.13.02.11 Students can explain and apply the basic concepts of the Hall Effect in the context of quantum physics; SUB-CPMK01.36.13.02.12 Students are able to identify how this phenomenon is related to the quantum properties of materials and interpret experimental data related to the Hall Effect; SUB-CPMK01.36.13.02.13 Students can evaluate how the principles of quantum mechanics influence our understanding of the behavior of subatomic particles; SUB-CPMK01.36.13.02.14 Students can create models that illustrate the basic principles of quantum mechanics; SUB-CPMK01.36.13.02.15 Students can evaluate how the principles of quantum mechanics influence our understanding of the behavior of subatomic particles; SUB-CPMK01.36.13.02.16 Students can create models that illustrate the basic principles of quantum mechanics; SUB-CPMK01.36.13.02.17 Students can apply Quantum Mechanics Applications; SUB-CPMK01.36.13.02.18 Students can apply Statistical Physics and the Principle of Uncertainty; SUB-CPMK01.36.13.02.19 Students can apply Elementary Particle Physics; SUB-CPMK01.36.13.02.20 Students can apply Electromagnetic Interaction in Quantum Physics. SUB-CPMK01.36.13.02.21 Students can integrate knowledge of technology, pedagogy, and lesson content in planning and implementing science learning. SUB-CPMK01.36.13.02.22 Students can select and use appropriate technological tools and resources to support science learning; SUB-CPMK01.36.13.02.23 Students can identify obstacles and solutions related to the use of technology in learning physics; SUB-CPMK01.36.13.02.24 Students can analyze a series of physics learning strategies that are interactive and activate students; SUB-CPMK01.36.13.02.25 Students can modify their pedagogical approach based on student needs and characteristics; SUB-CPMK01.36.13.02.26 Students can have a deep understanding of physics concepts and can relate them to everyday life; SUB-CPMK01.36.13.02.27 Students can identify common conceptual errors that students may experience and develop strategies to overcome them; SUB-CPMK01.36.13.02.28 Students can combine TPACK elements effectively in the design and implementation of learning plans; SUB-CPMK01.36.13.02.29 Students can evaluate the impact of TPACK integration on achieving physics learning objectives; SUB-CPMK01.36.13.02.30 Students can reflect on learning experiences and plan future improvements; SUB-CPMK01.36.13.02.31 Students can collaborate with peers and mentors to improve the quality of their teaching based on feedback. SUB-CPMK02.36.69.01.01 Students can demonstrate behavior that reflects faith and devotion in every action and daily activity. SUB-CPMK02.36.69.01.02 Students can demonstrate an attitude of responsibility and independence in carrying out tasks and work in their field of expertise. SUB-CPMK02.36.69.03.01 Students can operate physics laboratory equipment. SUB-CPMK02.36.69.03.02 Students can display independent and measurable work performance of adequate quality.
Brief Description of the Course	This course is a Compulsory course in the Physics Education Program. The topics covered in this course include Electromagnetic; Modern physics and quantum physics. The type of lecture used is Practicum with the method Project Based Learning (PjBL), Cooperative Learning (CL), conducted through Interactive, Collaborative.
Scientific Integration	2. develop and enrich the theories, substances and objects of scientific study; 3. change or create a new theory; 4. reconstructing auxiliary sciences; 5. direct research topics;

Research and Community Service Integration	
Learning Materials	Electromagnetic; Modern physics and quantum physics
References	I. Zemansky, S. (2000). Fisika untuk Universitas Jilid I. Jakarta: Erlangga 2. Petunjuk Metode Praktikum Fisika Dasar 2