



**UNIVERSITAS NEGERI MEDAN**

**THE DEVELOPMENT OF PHYSICS E-MODULES ASSISTED  
BY FLIP PDF CORPORATE ON MECHANICAL WAVE  
MATERIAL BASED ON PROBLEM BASED  
LEARNING IN SENIOR HIGH SCHOOL**

**THESIS**

**Submitted to Fulfill Requirement for Degree of  
Sarjana Pendidikan**

**Lasma Enita Siahaan  
IDN 4182121010**

**Bilingual Physics Education Study Program**

*Character Building*  
UNIVERSITY

**DEPARTEMENT OF PHYSICS  
FACULTY OF MATHEMATICS AND NATURAL SCIENCES  
MEDAN  
OCTOBER 2022**