



**STATE UNIVERSITY OF MEDAN**

**BIOLOGY EDUCATION PRE-SERVICE TEACHER  
PERCEPTION AND UNDERSTANDING ON  
TECHNOLOGICAL PEDAGOGICAL AND CONTENT  
KNOWLEDGE (TPACK) FRAMEWORK**

**THESIS**

**Submitted to Fulfill The Requirements for  
The Degree of Bachelor of Education**

**Rio Madani Putra Pascasah Sitompul  
IDN 4173141058  
Bilingual Biology Education Study Program**

**BIOLOGY DEPARTMENT  
FACULTY OF MATHEMATICS AND NATURAL SCIENCE  
MEDAN  
JULY 2024**