EXECUTIVE SUMMARY

ROADMAP OF BGP CURRICULUM

Efforts to improve the quality of education in order to increase the competitiveness of graduates as well as to improve the service and quality of lecturers at UPPS (faculty), it is necessary to have a strategy set by the University of Bengkulu (UNIB). In the field of education, efforts to achieve SN-PT are carried out by changing the curriculum throughout the Study Program by referring to the KKNI standard. With this KKNI, each Study Program must have a curriculum that is more focused in carrying out the PBM process to achieve learning process in Bachelor of Geophysics (BGP) Faculty of Mathematics and Natural Sciences UNIB. In addition, the KKNI contains a BGP profile to produce graduates with Program Learning Outcome (PLO) in accordance with Vision Mission Objective Target of BGP, which is also aligned and supports Vision Mission Objective Target of UNIB towards World Class University in 2025. Referring to KKNI, the curriculum applied at BGP is designed to meet PLO standards. The curriculum design was made by involving Lecturers in BGP, stakeholders, professional organizations (Indonesian Association of Geophysicist/HAGI with web address is https://www.hagi.or.id/, Indonesian Association of Geophysical Education/APPGI with web address is https://appgi.org/, Indonesian Association of Geologist/IAGI with web address is https://www.iagi.or.id/, Physical Society of Indonesia/PSI with web address is https://www.fisika.or.id/), alumni of BGP in the field of geophysics interest and students. Stakeholders involved include other state universities, NTU Singapore, UBD, PT Firman Ketaun, Telkom, BMKG, BNPB, LIPI, and others. Stakeholder involvement is intended to obtain input from graduate users later. The contribution of PSF alumni in the field of geophysics interest related to the knowledge obtained during lectures with the needs in the world of work can be input for curriculum improvement. The curriculum contains courses and practicums that are carried out while students are studying at S-1 PSG FMIPA UNIB. In preparing the curriculum, BGP involves a team of lecturers through a Focus Group Discussion (FGD).

The curriculum discussion was also carried out in a workshop by inviting competent resource persons in the field of curriculum and geophysics science with the aim of producing a curriculum that can produce BGP graduates according to PLO and standard competencies that have been set. Starting in 2018, PSG has used the KKNI in accordance with the Regulation of the Minister of Education and Culture of the Republic of Indonesia Number 73 of 2013 concerning the Application of the Indonesian National Qualifications Framework in the field of Higher Education and the Regulation of the Minister of Research, Technology and Higher Education Number 44 of 2015 concerning SN-Dikti. Then, in 2021 using the KKNI curriculum which is integrated with MBKM activities with Ministry of Education and Culture Regulation No. 3 of 2020 concerning SN-Dikti, Ministry of Education and Culture Regulation No. 4 of 2020 concerning the change of PTN to PTNBH, Ministry of Education and Culture Regulation No. 5 of 2020 concerning accreditation of study programs and universities, Regulations Ministry of Education and Culture Number 6 of 2020 concerning new student admissions and Ministry of Education and Culture Regulation Number 7 of 2020 concerning the establishment, change and disbandment of Higher Education and UNIB Chancellor Regulation Number 25 of 2020 concerning the Implementation of Academic Activities for UNIB Vocational, Undergraduate, Professional and Postgraduate Education Programs.

Profile of Geophysics Study Program graduates, the Faculty of Mathematics and Natural Sciences, the University of Bengkulu are able to apply expertise and skills in the field of physics and its applications, especially in the fields of computing, instrumentation, geophysics and tropical marine areas so that they can meet the needs of the world of work in the field of science (Research Assistant), Lecturer/Academician, Consultant (Entrepreneurs), and practitioners (Industry, Services, Government) in government agencies and private companies both national and

multinational. In detail, the profile of graduates of the Geophysics Study Program is shown in Table 1.

Table 1. PLO of BGP

No.	Graduate Profile	Profile Description
1	Research assistant	Geophysics graduates are able to assist researchers in using survey equipment or acquisition processes, data processing and interpretation of research results from various geophysical methods, such as the geomagnetic method, the gravity method, the seismic method of refraction, microtremor, Multichannel Analysis of Surface Wave (MASW), geoelectric, MT/AMT , use of geodetic GPS, and others.
2	Lecturer/ Academician	Geophysics graduates are able to convey knowledge and understanding related to basic sciences and geophysics, and are able to continue their studies to the Masters and/or Doctoral level to become teaching staff in the field of geophysics.
3	Consultant/ Entrepreneur	Geophysics graduates are able to provide consulting and professional advice to customers related to geophysical sciences such as mineral exploration studies; oil and gas; geothermal; and symptoms of the layers of the earth's crust both in the fields of industry, services and government, and being able to develop various businesses by applying various knowledge and expertise possessed to the utilization of earth's resources, utilization of exploration capabilities to support the activities of academia, industry, services and government.
4	Practitioners (Industry, Services, Government)	Geophysics graduates are able to carry out work using geophysical methods in the fields of industry, services and government and display the results of work in digital mapping.

Ability of Graduates from the Elements of Attitude, Knowledge, General Skills, and Special Skills

Table 2. General Attitudes and Skills Outcome

a) Attitude Learning Outcomes	1. Able to show religious, Pancasila, nationalist, honest, disciplined and responsible characteristics in carrying out tasks. 2. Able to cooperate, respect other people's original opinions or findings and uphold academic ethics.
b) General Skills Learning Outcomes	1. Able to apply logical, critical, systematic and innovative thinking in the context of the development or implementation of science and technology that pays attention to and applies the values of the humanities in accordance with the field of physics both independently and in groups. 2. Able to study the implications of the development or implementation of science and technology in accordance with their expertise based on scientific principles, procedures and ethics in producing solutions, ideas and scientific descriptions of the results of studies in the form of theses, scientific articles, patents and Intellectual Property Rights which are protected from plagiarism.

	3. Be able to understand the need for lifelong learning with data literacy, technology literacy and human literacy.
c) Learning Outcomes of Specific Skills	1. Ability to thoroughly understand basic science, basic science, mathematics, and their interrelationships and basic principles. 2. Ability to fully understand and apply basic science, mathematics, information, and computerization in explaining various physical problems, related to the application of geophysics in tropical and coastal areas by operating various geophysical equipment for disaster mitigation and exploration of natural resources. 3. The ability to communicate both orally and in writing as well as transfer knowledge obtained from lectures and learning experiences outside the campus.
d) Knowledge Learning Outcomes	1. 1. Ability to apply basic science, mathematics, statistics, information systems and technology that are useful in the world of work. 2. Ability to develop technology in various fields such as remote sensing, disaster, climate change, natural resource exploration, renewable energy and medical instrumentation.

Formulation of Program Learning Outcome (PLO) of the Geophysics Study Program (BGP)

The BGP profile can be achieved through the learning process with reference to learning outcomes. The curriculum of the Geophysics Study Program refers to CP SN DIKTI as in the following table:

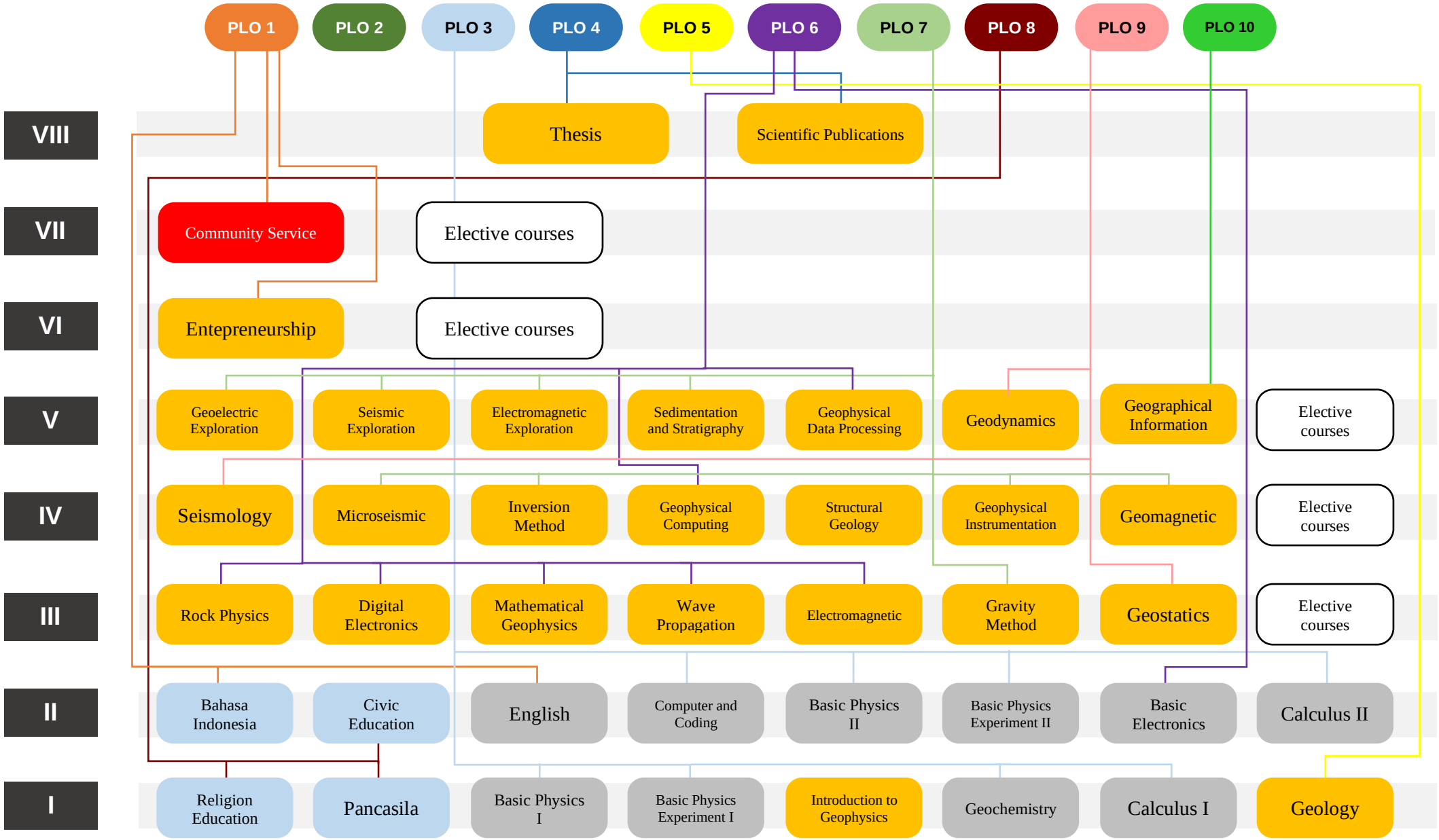
Table 3. Learning Outcomes refer to SN DIKTI

PLO-1	Able to understand basic science, mathematics and computer applications related to the field of geophysics.
PLO-2	Able to design and develop systems and components needed to support various prototypes developed in the Field of Physics utilizing local and national resources.
PLO-3	Able to design and carry out experiments with the correct methodology, as well as analyze and interpret data appropriately.
PLO-4	Able to identify, formulate, analyze, and solve problems in the field of geophysics.
PLO-5	Able to use modern methods, skills and devices needed in the field of geophysics.
PLO-6	Able to communicate effectively orally and in writing, both within the Geophysics Study Program environment, and the general public.
PLO-7	Have knowledge of current issues related to the field of geophysics.
PLO-8	Able to work in interdisciplinary, multidisciplinary and multicultural teams.
PLO-9	Have professional responsibility and ethics.
PLO-10	Be able to understand the need for lifelong learning with data literacy, technology literacy and human literacy.

Table 4. Courses Organizational Matrix in OBE Geophysics Curriculum Structure

Sem	Course Title	Program Learning Outcomes									
		1	2	3	4	5	6	7	8	9	10
I	Religion Education										
	Pancasila										
	Basic Physics I										
	Basic Physics Experiment I										
	Introduction to Geophysics										
	Geochemistry										
	Calculus I										
	Geology										
II	Bahasa Indonesia										
	Civic Education										
	English										
	Computer and Programming (Coding)										
	Basic Physics II										
	Basic Physics Experiment II										
	Basic Electronics										
	Calculus II										
III	Rock Physics										
	Digital Electronics										
	Mathematical Geophysics										
	Wave Propagation										
	Electromagnetic										
	Gravity Method										
	Geostatics										
IV	Seismology										
	Microseismic										
	Inversion Method										
	Geophysical Computing										
	Structural Geology										
	Geophysical Instrumentation										
	Geomagnetic										
V	Geoelectric Exploration										
	Seismic Exploration										
	Electromagnetic Exploration										
	Sedimentation and Stratigraphy										
	Geophysical Data Processing										
	Geodynamics										
	Geographical Information System										
VI	Entepreneurship										
	Elective courses										
VII	Community Service										
	Elective courses										
VIII	Scientific Publications										
	Thesis										

Curriculum map of BGP



MPK = Attitude Development Courses
MBB = Social Life Courses
MKK = Science and Skills Courses
MKB = Work Skills Courses