



Diponegoro University

GUIDELINES LEARNING OUTCOME OF STUDY PROGRAM GRADUATES



**MASTER OF ENVIRONMENTAL SCIENCE
GRADUATE SCHOOL
DIPONEGORO UNIVERSITY**



Guideline
LEARNING OUTCOME OF STUDY PROGRAM GRADUATES



**DIRECTORATE OF LEARNING AND STUDENTS
DIRECTORATE GENERAL OF HIGHER EDUCATION
MINISTRY OF EDUCATION AND CULTURE
2014**

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I. PRELIMINARY

Following the provisions contained in the 2014 National Higher Education Standards (SN DIKTI), each study program must be equipped with learning achievement targets as a form of accountability for program implementation to stakeholders. For this purpose, the Directorate General of Higher Education c.q. The Directorate of Learning and Student Affairs, based on the mandate of the Minister of Education Regulation No. 73 of 2013 needs to compile a **Learning Outcome Guide** (CP) for graduates of study programs in higher education.

This guide is intended for managers of study programs or forums that organize similar study programs in reciting, correcting, adjusting, reformulating, or updating the CP formulations of their graduates so that the formulations comply with applicable regulations and are in accordance with the essence of CP. For universities that will propose new study programs or study programs that have not stated the "ability" of their graduates in a factual and clear manner, this guide can be used as a reference in formulating CP graduates.

CP graduates from study programs in addition to the formulation of learning objectives to be achieved and must be owned by all graduates is also a statement of the quality of graduates. Therefore, the study program is obliged to have a CP formulation that can be accounted for in terms of content, completeness of descriptions in accordance with the provisions in the SN DIKTI, and the equality of qualification levels with the Indonesian National Qualifications Framework (KKNI). Because it is a formulation of educational objectives and a statement of the quality of graduates, the formulation of CP is an integral part of the curriculum development of the study program.

The benefits of CP are not only to direct study program managers to achieve the quality target of graduates, but also to provide information to the public about the statement of the quality of graduates from study programs in higher education.

This guide contains the legal basis for the need to formulate CP, a brief description of the KKNI, the definition of CP, the provisions contained in the KKNI and SN DIKTI related to CP, the stages of preparing the CP, and ends with an explanation of general questions that are expected to add insight and sharpen understanding for the CP preparation process.

II. LEGAL BASIS

The legal basis for CP is stated in **Presidential Regulation Number 8 of 2012 concerning the Indonesian National Qualifications Framework (KKNI)**, which is a competency qualification framework that can juxtapose, equalize, and integrate the fields of education and the field of job training and work experience in order to provide recognition of work competencies in accordance with the structure of work in various sectors (article 1 paragraph 1). Furthermore, in Article 1 paragraph 2 of the regulation, CP is stated as an ability obtained through internalization of knowledge, attitudes, skills, competencies, and accumulated work experience.

KKNI in the higher education system is stated in the **Law of the Republic of Indonesia number 12 of 2012 concerning Higher Education**, hereinafter abbreviated as Law on Higher Education 12/2012. Article 29 of the Higher Education Law 12/2012 states that:

- (1) The National Qualifications Framework is a tiering of learning outcomes that equalize the outputs of formal, non-formal, informal education, or work experience in the context of recognizing work competencies in accordance with the work structure in various sectors.
- (2) The National Qualification Framework as referred to in paragraph (1) becomes the main reference in determining the competence of graduates of academic education, vocational education, and professional education.
- (3) Determination of graduate competence as referred to in paragraph (2) shall be determined by the Minister.

The application of article 29 of the Higher Education Law 12/2012 and Presidential Regulation Number 8 of 2012 concerning the IQF is set forth in 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 for Higher Education**. Article 10 paragraph (3) of the Regulation of the Minister of Education and Culture of the Republic of Indonesia Number 73 of 2013 states that in implementing the IQF in the field of higher education curriculum, the Directorate General has the following duties and functions:

- a. provide input, consultation, guidance/assistance, encourage and facilitate the process of implementing the IQF in the field of higher education;
- b. formulate policies, regulations, and guidelines on the preparation of curriculum for study programs that refer to the IQF in the field of higher education;
- c. evaluate the implementation of the curriculum by the study program towards the achievement of qualification levels at the IQF in the field of higher education;
- d. evaluate the description of CP proposed by the study program as the basis for determining competency standards for graduates of the study program by the Minister;
- e. evaluate periodically the description of CP proposed by the study program as the basis for determining competency standards for graduates of the study program by the Minister;

Article 35 paragraph 2 of the Higher Education Law 12/2012 concerning Curriculum states that the Higher Education Curriculum is developed by each university concerning the National Higher Education Standards for each study program which includes the development of intellectual intelligence, noble character, and skills.

SN DIKTI which is regulated in the **Regulation of the Minister of Education and Culture Number 49 of 2014** is a standard unit which includes the National Education Standards, plus the National Research Standards, and the National Community Service Standards. These regulations are the legal basis for formulating CP, especially the provisions contained in one of the standards, namely the **Graduate Competency Standards (SKL)**. SKL is the minimum criteria regarding qualifications of

graduate abilities that include attitudes, knowledge, and skills stated in the formulation of learning outcomes.

III. INDONESIAN NATIONAL QUALIFICATION FRAMEWORK

Globalization has resulted in changes in the overall life of society, including the education and employment sectors. The mobility of students and workforce between countries poses a challenge for universities to gain recognition from the global community for their educational outcomes. This causes countries participating in GATS and AFTA to develop national qualification frameworks.

Qualification framework is an instrument to determine qualification level based on CP description. A description is a tool for mapping one's skills and career, as well as developing an educational curriculum. CP is a statement about what is known, understood, and can be done by someone after completing the learning process. The Indonesian National Qualifications Framework is a competency qualification tiering framework that can juxtapose, equalize, and integrate between the education sector and the field of job training and work experience (Figure 1).

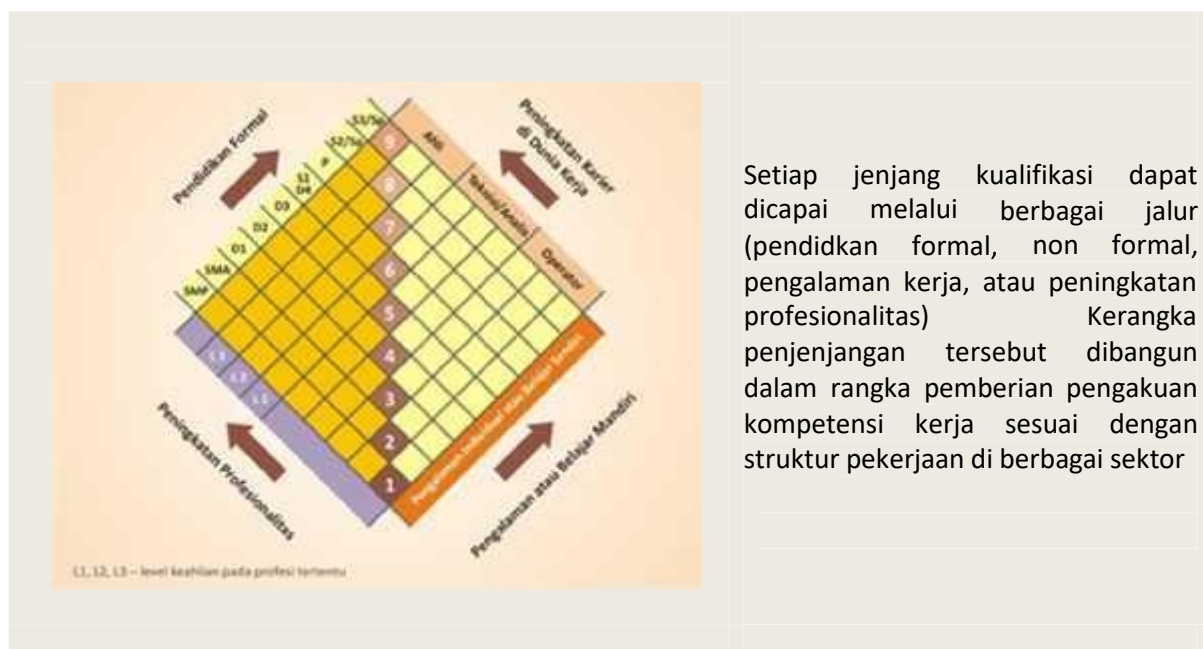


Figure 1.

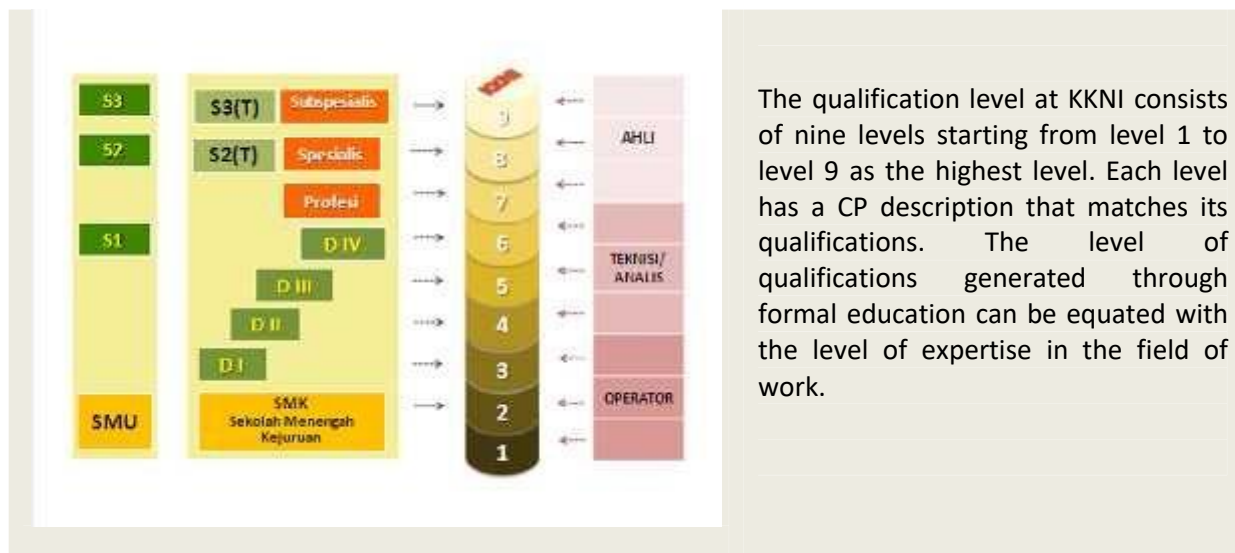


Figure 2

The CP equality generated through education with qualification levels at the KKNi consists of:

- basic education graduates equivalent to level 1;
- secondary education graduates at least equivalent to level 2;
- Diploma 1 graduates at least equivalent to level 3;
- Diploma 2 graduates at least equivalent to level 4;
- Diploma 3 graduates at least equivalent to level 5;
- Diploma 4 or Applied Bachelor and Bachelor degree at least equivalent to level 6;
- Applied Masters and Masters graduates are at least equivalent to level 8;
- Applied Doctoral and Doctoral graduates equivalent to level 9;
- graduates of professional education equivalent to level 7 or 8;
- specialist education graduate equivalent to level 8 or 9

IV. NATIONAL STANDARDS OF HIGHER EDUCATION (SN DIKTI)

The National Standard for Higher Education (SN DIKTI) as **regulated in the Regulation of the Minister of Education and Culture Number 49 of 2014** is a standard unit that includes the National Education Standards, plus the National Research Standards, and the National Community Service Standards. SN DIKTI is a minimum criterion regarding learning at the higher education level in universities in all jurisdictions of the Unitary State of the Republic of Indonesia.

National Education Standards consist of:

- graduate competence standard;
- learning content standards;
- learning process standards;
- learning assessment standards;
- standards of lecturers and education staff;
- standard of learning facilities and infrastructure
- learning management standards; and
- learning financing standards.

Graduate Competency Standards (SKL) are minimum criteria regarding the qualifications of graduates' abilities which include attitudes, knowledge, and skills stated in the formulation of learning outcomes. In the SKL it is stated that the graduate CP must refer to the KKNI CP description and have equivalence with the qualification level at the KKNI.

The standard of learning content is a minimum criterion for the level of depth and breadth of learning materials and must refer to the learning outcomes of graduates.

In SN DIKTI it is stated that the curriculum is a set of plans and arrangements regarding graduate learning outcomes, study materials, processes, and assessments that are used as guidelines for the implementation of study programs so that CP is the main element in curriculum preparation and development.

V. LEARNING OUTCOMES (CP)

5.1. Description of learning outcome

The description of qualifications at each level of the IQF is stated as CP which includes aspects of building national identity, mastery of science and technology, the ability to be able to do quality work, as well as the authority and obligations of a person according to his qualification level. Aspects of building national identity are reflected in Pancasila, the 1945 Constitution, and Bhineka Tunggal Ika, namely upholding the practice of the five precepts of Pancasila and law enforcement, and committing to respecting the diversity of religions, ethnicities, cultures, languages, and arts that grow and develop. on Indonesian soil.



In the IQF, CP is defined as the ability obtained through the internalization of knowledge, attitudes, skills, competencies, and accumulated work experience. CP is an indicator (measuring instrument) of what a person gets in completing the learning process, whether structured or not. The CP formulation is composed of 4 elements, namely attitudes and values, work ability, mastery of knowledge, and authority and responsibility.

Figure 3.

The four elements in CP are defined as follows:

- Attitudes and values** are behaviors and values that constitute the character or identity of the Indonesian nation and state. These attitudes and values are internalized during the learning process, whether structured or not.
- Workability:** is the final manifestation of the transformation of the potential that exists in each individual learner into applicable and useful competencies or abilities.
- Mastery of knowledge:** is information that has been processed and organized to gain understanding, knowledge, and accumulated experience to have an ability.
- Authority and responsibility:** is a consequence of a learner who already has the ability and supporting knowledge to play a role in society correctly and ethically.

Referring to the description of CP KKNi above, the formulation of CP graduates in SKL is stated into three elements, namely attitudes, knowledge, and skills which are divided into general and specific skills, which are adjusted for college graduates (Figure 4):

- The attitude element in the CP (SKL) is the attitude possessed by higher education graduates.
- The element of knowledge has an equivalent meaning to the element of 'knowledge mastery' from the CP KKNi, which must be mastered by graduates of certain study programs.
- The "skills" element is a combination of the 'workability element and the 'authority and responsibility element of the IQF CP description.
- Elements of special skills characterize the ability of graduates of study programs according to certain scientific fields/skills, while general skills characterize the abilities of graduates according to the level and type of education program that does not depend on the field of study.



Figure 4

Each element of CP in the SKL is defined as follows:

- (1) **Attitude** is right and cultured behavior as a result of internalizing and actualizing values and norms that are reflected in spiritual and social life through the process of learning, student

work experience, research, and/or community service related to learning.

- (2) **Knowledge** is the systematic mastery of concepts, theories, methods, and/or philosophies of a particular field of science obtained through reasoning in the learning process, student work experience, research, and/or community service related to learning.

What is meant by student work experience is an experience in activities in certain fields for a certain period in the form of job training, practical work, fieldwork practices, or other forms of similar activities..

- (3) **Skills** are the ability to perform work using concepts, theories, methods, materials, and/or instruments, which are obtained through learning, student work experience, research, and/or community service related to learning. Skill elements are divided into two, namely general skills and special skills which are defined as follows:
- a. **General skills** are general work skills that must be possessed by every graduate to ensure the equality of graduates' abilities according to the program level and type of higher education; and
 - b. **Special skills** are special work abilities that must be possessed by every graduate by the scientific field of the study program.

Specific skills and knowledge which are the formulation of the minimum ability of graduates of a particular field of the study program must be prepared by a similar study program forum or initiated and proposed by the organizer of the study program. The results of the CP formulation from the forum or study program manager are submitted to the Directorate of Learning and Student Affairs of the Directorate General of Higher Education, and together with the other study program, CP formulations will be published on the DIKTI website for a rebuttal period within a certain time before being determined as a graduate competency standard (SKL) by the Director-General of Higher Education who will become a reference for similar study programs.

5.2. Parameter CP.

The formulation of each element of the CP description is described in the parameters as stated in Table 1 below:

Table 1: Parameter CP

PARAMETERS CP	
ATTITUDE	The attitude element must contain a meaning that is following the details of the attitude element specified in the SN DIKTI. The addition of the attitude element is possible for study programs to add the characteristics of higher education to graduates or for study programs whose graduates require special attitudes to carry out certain professions.
GENERAL SKILLS	Elements of general skills must contain meaning following the details of elements of general skills set out in SN DIKTI. The addition of the skill element is possible for the study program to add the characteristics of higher education to graduates.

SPECIAL SKILL	Elements of special skills must demonstrate the ability to work in fields related to the study program, the methods or methods used in the work, and the level of quality that can be achieved, as well as the conditions/processes in achieving these results. The scope and level of skill must be equivalent to the scope and level of workability listed in the CP KKNl description by type and level of education (Table 2). The number and types of these special skills can be used as benchmarks for the minimum ability of graduates from an agreed type of study program.
KNOWLEDGE	Elements of knowledge must clearly indicate the field/branch of knowledge or cluster of knowledge that describes the specifics of the study program, by stating the level of mastery, breadth, and depth of knowledge that must be mastered by graduates. The results of the knowledge formulation must have equality with the Learning Content Standards in SN DIKTI. (Table 3) In mapping or describing the scientific field, references to existing knowledge clusters or areas of expertise or groups of scientific fields/knowledge developed by similar study programs can be used.

Table 2: The keyword level of work ability in the IQF description

QUALIFICATION LEVELS	KEY WORDS EMPLOYMENT LEVEL	PROGRAM
9	Conducting deepening and expansion of science and technology, multi-transdisciplinary research	Doktor
8	Develop science and technology through inter/multi-disciplinary research, innovation tested.	Master
7	Manage resources, apply, at least equivalent to professional standards, evaluate, strategic development of the organization.	Profession
6	Applying, studying, designing, utilizing science and technology, solving problems.	Bachelor
5	Complete a wide range of work, choose a variety of methods	Diploma 3
4	Complete wide-ranging and case-specific tasks, selecting standard method	Diploma 2
3	Carry out a series of specific tasks,	Diploma 1

Table 3: The level of mastery of knowledge according to the Standards of Learning Content

QUALIFICATION LEVELS	KNOWLEDGE MASTER	PROGRAM
9	mastering the scientific philosophy of certain fields of knowledge and skills	Doctoral/Applied Doctor/Specialist II
8	master the theory and application theory of a particular field of knowledge	Masters/Masters in Applied/Special I

7	master the theory of application of certain fields of knowledge and skills	Profession
6	master the theoretical concepts of certain areas of knowledge and skills in general and the theoretical concepts of specific sections in those areas of knowledge and skills in depth	Applied Bachelor/Bachelor
5	mastering theoretical concepts in certain areas of knowledge and skills in general	Diploma 3
4	master the basic principles of knowledge and skills in a particular area of expertise	Diploma 2
3	master the basic principles of knowledge and skills in a particular area of expertise	Diploma 1
Notes: the level of depth and breadth of learning material is cumulative and/or integrative.		

5.3. CP Formulation Functions and Formats

In general, CP functions as:

- a) curriculum components and indicators of graduate quality
- b) characteristics of study program specifications
- c) qualification level measure
- d) referrals for curriculum evaluation
- e) referrals for acknowledgment of equality
- f) comparison of educational attainment
- g) the main completeness of the description in the Certificate of Completion of Diplomas (SKPI).

The description of CP is an important component in the series of higher education curriculum (KPT) preparation. CP can be seen as the resultant of the overall results of the learning process that has been taken by a student during his studies in a particular study program.

Due to its multifunctional nature, the CP description format can vary according to its needs. In some cases, CP can and should be described briefly, but at other times it is necessary to describe it in more detail. The diversity of CP formats in accordance with their functions must not eliminate the main elements so that CP in the same study program will still provide the same meaning and meaning even though they are stated in different formats.

When used as an identifier or differentiator of a study program which will later be written in the SKPI which states the various abilities achieved by graduates, the CP statement tends to be concise but includes all the important information needed. Meanwhile, when it is used to develop the curriculum in the study program, the CP statement must be in more detail to track the study material that will be compiled.

5.4. CP penyusunan compiling flow

In general, the stages of preparing graduate CP can be schematized as shown in Figure 7 below:



Figure 7

The CP preparation process goes through the following stages:

- Determination of graduate profiles, namely determining the roles that graduates can play in certain fields of expertise or work fields between 1-3 years after completing the study program. The profile can be determined based on the results of a study of the needs of the labor market needed by the government and the business world as well as industry, as well as the need to develop science and technology. The profile of the study program should be compiled by groups of similar study programs so that there is an agreement that can be accepted and used as a national reference. To be able to carry out the roles stated in the profile, it is necessary to have "ability" that must be possessed by graduates.
- In the translation of capabilities, the involvement of stakeholders will also contribute to obtaining convergence and connectivity between educational institutions and stakeholders who will later use their learning outcomes. This guarantees the quality of graduates' abilities. The formulation of graduate abilities must include four elements to make it a learning achievement, namely elements of attitude, knowledge, general skills, and special skills as stated in SN DIKTI.
- Determination of some abilities (CP) must refer to the IQF qualification level, especially those related to elements of workability and mastery of knowledge. Medium which includes general attitudes and skills can fully refer to (assessed for conformance with) the formulation that has been set in SN DIKTI.
- To build the uniqueness of the study program, it is recommended to identify the advantages or local/regional wisdom. With this step, the CP formulation will contain

information about the ability to answer problems and challenges that develop or arise in their respective regions, even if it needs to be a superior value for graduates. In addition, the development of various sectors that appear in society must also be accommodated so that it also colors the CP graduates. However, the uniqueness of the CP of a study program based on local/regional wisdom, respectively, does not appear in the CP of graduates of the study program that will be determined by the Director-General of Higher Education because it will be used as a minimum reference nationally.

- e. Considering the description of general attitudes and skills has been stated in the attachment of SN DIKTI, this section of the guide explains how the mechanism for formulating several “special skills” is described; namely the ability to work related to certain fields of expertise and knowledge.
- f. In developing “special skills”, the compiler is required to analyze:
 - input on used competencies that can be obtained from alumni who work 1-3 years after graduating at national and international institutions,
 - proposals for work competencies required by various stakeholders (government, legal entities, organizing universities, professional/skilled associations, collegiums/scientific consortia),
 - relevant work competencies that have been determined by the relevant certification bodies at both national and international levels,
 - formulation of CP graduates from similar study programs that have a good reputation at home and abroad,
 - accreditation standards both from within and outside the country,
 - and from other sources that have been written, for example from educational journals.
 - probability of shifting work competence in the short and medium-term
 - development of science and technology
 - development of new learning systems

Examples of specific skill descriptions can be seen in the following illustration:

Table 4. Title

PROFIL LULUSAN SARJANA GISI		KEMAMPUAN
1	PENYELIA GIZI	Mampu merancang dan melaksanakan pelayanan gizi untuk berbagai kasus gizi secara mandiri.
		Mampu mengembangkan pelayanan gizi, berdasarkan analisis masalah gizi, dengan metode pengembangan yang tepat, dan dengan memanfaatkan IPTEKS yang terkait.
		Mampu beradaptasi dalam menghadapi masalah gizi dan memberi usulan penyelesaian berdasarkan data yang tersedia.
2	PENASEHAT GIZI	Mampu mengidentifikasi, memformulasikan, dan menyusun solusi masalah gizi ke dalam program pengembangan gizi.
		Mampu berkomunikasi secara efektif dan sopan baik dalam pelayanan gizi di lingkup kerjanya maupun di luar bidang kerjanya.

- g. To be able to have the general attitudes and skills as stated in the attachment of SN DIKTI and special skills as formulated above, knowledge/scientific skills are required with a certain level of breadth and depth.

Formulation of mastered knowledge can be done by making a list of scientific clusters and or skills studied in the study program. The list is further elaborated into study material with the breadth and depth following the level and type of education of the study program

An example of the formulation of mastery of knowledge can be seen in Tables 5 and 6 below

Table 5. Nutritional Field

CONTOH PRODI SARJANA GIZI		RINCIAN BIDANG KEILMUAN, KELUASAN DAN KEDALAMAN BAHAN KAJIAN YANG HARUS DIKUASAI	
BIDANG IPTEKS yang dipelajari		BAHAN KAJIAN YANG HARUS DIKUASAI	
		Tingkat keluasan materi	Tingkat Kedalaman
1	Ilmu Gizi	• kebutuhan dasar kalori tubuh • Komposisi nutrisi • diet	Konsep teoretis mendalam
2	Biomedik	Fisiologi tubuh	Konsep teoretis secara umum
3	Biologi	Pertumbuhan sel	Prinsip-prinsip
4	Ilmu komunikasi	Komunikasi sosial dan interpersonal	Prinsip-prinsip
5	Keperawatan	Prosedur keperawatan	Pengetahuan prosedural
6	Ilmu sosial	Klasifikasi masyarakat	Pengetahuan faktual

Table 6: Pharmaceutical field

BIDANG IPTEKS yang dipelajari		Tingkat keluasan	Tingkat Kedalaman (misal)		
			Diploma	Sarjana	Apoteker
1	Pharmaceutical Public Health	1. Health promotion 2. Medicines information and advice	Pengertian faktual	Prinsip prinsip	teori aplikatif
2	Pharmaceutical Care	1. Assessment of medicines 2. Compounding medicines 3. Dispensing Accurately dispense 4. Medicines 5. Monitor medicines therapy 6. Patient consultation and diagnosis	Prinsip prinsip	konsep teoretis	teori dan teori aplikatif
3	Organisation and management	1. Budget and reimbursement 2. Human Resources management 3. Improvement of service 4. Procurement 5. Supply chain and management 6. Supply chain and management 7. Work place management	Pengertian prosedural	Konsep dan prinsip	teori dan teori aplikatif
4	Profesional/ Personal	1. Communication skills 2. Continuing Professional Development 3. Legal and regulatory practice 4. Professional and ethical practice 5. Quality Assurance and Research in the work place 6. Self-management	Pengertian faktual	Pengertian prosedural	teori dan teori aplikatif

- h. For graduates to have qualifications following the KKNi and meet the standards that have been set, the CP formulation of graduates must be reviewed for equivalence to the CP description from the KKNi and reviewed against the Learning Content Standards from SN DIKTI.

The preparation of CP can be seen in two contexts, namely first for a new study program that will be proposed or a study program that has not stated its "graduate ability" factually and accurately. In this context, **the preparation of CP is the initial process of preparing the curriculum for the study program**. Second, for study programs that already exist or are already operating. In this context, **the preparation of CP is part of the evaluation and development of the curriculum**.

In study programs that have been in operation, the preparation of CP is carried out in the context of curriculum evaluation and development, namely CP that has been owned or expected to be possessed by graduates needs to be evaluated for compliance with applicable regulations and with the development of user needs as well as the development of expertise or knowledge. Adjustments to provisions or regulations can be made by reviewing the following aspects:

- completeness of CP description parameters: ie it must consist of attitudes, general skills, special skills, and knowledge.
- general attitudes or skills is it necessary to have additional abilities beyond those specified in SN DIKTI, which can characterize graduates.
- special skill:
 - has referred to the results of the agreement on similar study programs, and whether.
 - already have equality with the description of work abilities listed in the KKNi following the level of qualification.
- knowledge:
 - whether it refers to the results of the agreement of similar study programs, and also

- already has equality with the formulation of the level of breadth and depth of material/study materials that have been listed in the Standards of Learning Content in SN Dikti.

5.5. CP assessment indicators

To review the resulting CP formulation, the following indicators can be used as a reference:

- a. Completeness of description elements.
- b. Compatibility with qualification level:
 - special skill grading
 - gradation of knowledge mastery;
- c. Clarity of the boundaries of the scientific field/expertise of the study program;
- d. The level of mastery, depth, and breadth of study materials that must be mastered;
- e. References of similar study programs as a comparison;
- f. The clarity of the formulation, the similarity of meaning when read by laymen/stakeholders.

The CP evaluation period is carried out in line with the curriculum evaluation period.

VI. QUESTION AND ANSWER

- 1) **Question:** Question: What are Learning Outcomes? what's the difference with the result?

Figure 9

Answer:

- 2) **Question:** Question: In education discussions, the term learning outcomes is often used which is abbreviated as LO, is the CP that was introduced in the KKNP Presidential Decree the same as LO?

Answer:

- 3) **Question:** Question: When the higher education curriculum was framed with Ministerial Regulation 232 and Ministerial Regulation 045 based on competence so that it was known as the Competency-Based Curriculum (KBK), what are the similarities or differences between Learning Outcomes and competencies?

Answer:

- 4) **Question :** Article 29 of Law No. 12 concerning higher education states that there are Graduate Competencies that are then confirmed with Graduate Competency Standards in the SNPT, how is it related to CP?

Answer:

- 5) **Question :** is there a standard format for making CP statements? or can be made freely?

Answer:

- 6) **Question:** Is there a requirement to make a CP? What is the academic or legal basis? Is it necessary to validate the CP? Who certifies ?

Answer:

- 7) **Question:** Is there any guide in making CP?

Answer:

- 8) **Question:** What is the relationship between CP and profile in the study program? How does it relate to the curriculum?
Answer:
- 9) **Question:** What elements makeup CP? Are there specific parameters or variables? Are there keywords that can be used as a reference?
Answer:
- 10) **Question:** Are there indicators that reflect the scientific field? for example "design" in engineering.
Answer:
- 11) **Question:** Is there a gap in the ability level?
Answer:
- 12) **Question:** Is there a size range at the qualification level? does it affect CP?
Answer:

VII. ATTACHMENT

The formulation of GENERAL ATTITUDES and SKILLS from SN DIKTI
(Attachment to Kepmendiknas no 49 of 2014)

All graduates of academic, vocational, and professional education are required to have the following attitudes:

- a. devoted to God Almighty and able to show a religious attitude;
- b. upholding human values in carrying out duties based on religion, morals, and ethics;
- c. contribute to improving the quality of life in society, nation, state, and civilization based on Pancasila;
- d. act as citizens who are proud and love their homeland have nationalism and a sense of responsibility to the state and nation;
- e. respect the diversity of cultures, views, religions, and beliefs, as well as the opinions or original findings of others;
- f. cooperate and have social sensitivity and concern for society and the environment;
- g. obey the law and discipline in social and state life
- h. internalize academic values, norms, and ethics;
- i. demonstrate a responsible attitude towards work in their field of expertise independently;
- j. internalize the spirit of independence, struggle, and entrepreneurship

General skills of graduates of DIPLOMA PROGRAM 1

1. able to carry out a series of specific tasks using tools, information, and the right choice of work procedures from several standard choices;
2. able to show performance with measurable quality and quantity, some of which are the result of their work with indirect supervision;
3. able to solve work problems with familiar nature and context, and carried out under guidance;
4. able to cooperate and communicate in a manner and language that is following ethics in the work environment;

5. able to be responsible for their work and can be given responsibility for the quality and quantity of the work of others who are equal.
6. Able to document, store, secure, and retrieve data to ensure validity.

General skills of DIPLOMA PROGRAM 2 graduates

1. able to complete work with a wide range of tasks in a specific field, analyze limited information, and choose the appropriate method from several standard options;
2. able to demonstrate quality and measurable performance from the work which is entirely the result of his work, without supervision;
3. able to solve work problems with the usual nature and context, as well as being carried out and responsible for the results independently;
4. Able to compile a written report in a limited scope.
5. able to cooperate, communicate, and take the necessary initiatives in the context of the implementation of their work,
6. Able to be responsible for their work and can be given responsibility for the quality and quantity of the work of others.
7. Able to document, store, secure, and retrieve data to ensure validity.

General skills of DIPLOMA PROGRAM 3 graduates

1. able to complete a wide range of work and analyze data with a variety of appropriate methods, both unfinished and standardized;
2. able to demonstrate quality and measurable performance;
3. able to solve work problems with the nature and context following the field of applied expertise, based on logical thinking, innovative, and responsible for the results independently;
4. able to compile reports on results and work processes accurately and validly, as well as communicate them effectively to other parties in need;
5. Able to work together, communicate, and be innovative in their work
6. able to be responsible for the achievement of group work results and to supervise and evaluate the completion of work assigned to workers under their responsibility;
7. able to carry out the process of self-evaluation of the working group under their responsibility, and manage the development of work competencies independently;
8. able to document, store, secure, and recover data to ensure validity and prevent plagiarism;

General skills of DIPLOMA 4/APPLICATION BACHELOR PROGRAM graduates

1. able to apply logical, critical, innovative, quality, and measurable thinking in carrying out specific types of work, in their field of expertise and accordance with work competency standards in the relevant field;
2. able to demonstrate independent, quality, and measurable performance;
3. able to examine cases of the application of science, technology that pays attention to and applies humanities values according to their field of expertise to produce prototypes, standard procedures, designs or works of art,
4. able to compile the results of the study in the form of working papers, design specifications, or art essays, and upload them on the university's website;

5. able to make appropriate decisions based on standard procedures, design specifications, and work safety and security requirements in supervising and evaluating their work;
6. able to maintain and develop a network of cooperation and the results of cooperation within and outside the institution;
7. able to be responsible for the achievement of group work results and to supervise and evaluate the completion of work assigned to workers under their responsibility;
8. able to carry out the process of self-evaluation of the working group under their responsibility, and able to manage to learn independently;
9. able to document, store, secure, and recover data to ensure validity and prevent plagiarism;

General skills of BACHELOR PROGRAM graduates

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 humanities values following their field of expertise;
2. Able to demonstrate independent, quality, and measurable performance;
3. able to examine the implications of the development or implementation of science and technology that pays attention to and applies humanities values according to their expertise based on scientific principles, procedures, and ethics to produce solutions, ideas, designs, or art criticisms;
4. Able to compile a scientific description of the results of the studies mentioned above in the form of a thesis or final project report, and upload it on the university's website;
5. able to make appropriate decisions in the context of solving problems in their area of expertise, based on the results of analysis of information and data;
6. able to maintain and develop a network with supervisors, colleagues, colleagues both inside and outside the institution.
7. able to be responsible for the achievement of group work results and to supervise and evaluate the completion of work assigned to workers under their responsibility;
8. able to carry out the process of self-evaluation of the working group under their responsibility, and able to manage to learn independently;
9. able to document, store, secure, and recover data to ensure validity and prevent plagiarism;

General skills of MASTER PROGRAM graduates

1. able to develop logical, critical, systematic, and creative thinking through scientific research, creation of designs or works of art in the field of science and technology that pays attention to and applies humanities values according to their field of expertise, compiles scientific conceptions and results of studies based on rules, procedures, and scientific ethics in the form of a thesis published in an accredited scientific journal;
2. able to carry out academic validation or studies according to their field of expertise in solving problems in the community or relevant industries through the development of their knowledge and expertise;
3. able to compile ideas, thoughts, and scientific arguments responsibly and based on academic ethics, as well as communicate through the media to the academic community and the wider community;
4. able to identify the scientific field that is the object of his research and positions it into a research map developed through an inter or multi-disciplinary approach;

5. able to make decisions in the context of solving problems in the development of science and technology that pays attention to and applies the values of the humanities-based on studies, analysis, or experiments on information and data;
6. able to manage, develop and maintain a network with colleagues, peers within the institution and the wider research community;
7. able to increase learning capacity independently;
8. able to document, store, secure, and rediscover research data to ensure validity and prevent plagiarism;

General skills of DOCTORAL PROGRAM graduates

1. able to discover or develop scientific theories/conceptions/ideas, and contribute to the development, and practice of science and/or technology that pays attention to and applies humanities values in their fields of expertise, by producing scientific research based on scientific methodologies, logical, critical thinking, systematic, and creative;
2. Able to compile interdisciplinary, multidisciplinary, or transdisciplinary research, including theoretical studies and/or experiments in the fields of science, technology, art, and the resulting innovations in the form of a dissertation, and publish 2 articles in indexed international scientific journals.
3. able to choose appropriate, current, and advanced research and provide benefits to mankind through an interdisciplinary, multidisciplinary, or transdisciplinary approach, to develop and/or produce problem-solving in the fields of science, technology, art, or society, based on the results of studies on availability of internal and external resources.
4. able to develop a research roadmap with an interdisciplinary, multidisciplinary, or transdisciplinary approach, based on a study of the main research objectives and their constellation to broader targets
5. able to formulate scientific, technological, or artistic arguments and solutions based on a critical view of facts, concepts, principles, or theories that can be accounted for scientifically and academically ethically, and communicate them through mass media or directly to the public
6. Able to demonstrate academic leadership in the management, development, and guidance of resources and organizations under their responsibility.
7. able to manage, including storing, auditing, securing, and retrieving data and information on research results that are under their responsibility.
8. Able to develop and maintain collegial and peer relations within their environment or through collaborative networks with research communities outside the institution.

General skills of APPLIED MASTER PROGRAM graduates

1. able to develop logical, critical, systematic, and creative thinking in the application of technology or art according to their field of expertise by producing prototypes, design works, art products, or value-added technological innovations, compiling scientific conceptions of their works based on scientific principles, procedures, and ethics in the form of a thesis and publish articles in accredited scientific or expertise journals;
2. able to carry out academic validation or studies according to their field of expertise in solving problems in the community or relevant industries through the development of their knowledge and expertise;
3. able to formulate ideas, thoughts, and technical arguments responsibly and based on academic ethics, and communicate through the media to the academic community and the wider community;

4. able to identify the scientific field that is the object of his research and position it into a more comprehensive and interdisciplinary or multi-disciplinary problem-solving scheme;
5. able to make decisions in the context of solving technology application problems that pay attention to and apply humanities values based on experimental studies of information and data;
6. able to manage, develop and improve the quality of cooperation both in the institution and other institutions, by prioritizing the quality of the results and the timeliness of completing the work;
7. able to increase learning capacity independently;
8. able to document, store, secure, and rediscover prototype data, design works, or art products to ensure validity and prevent plagiarism;

General skills of APPLIED DOCTORAL PROGRAM graduates

1. able to discover, create and contribute to the development, and practice of science and/or technology that pays attention to and applies humanities values in their field of expertise, by producing design works, prototypes, or technological innovations that add value or can be used to solve problems, based on logical, critical, creative, and wise thinking.
2. able to compile scientific conceptions and results of studies of his work based on scientific principles, procedures, and ethics in the form of a dissertation, as well as publish 2 articles on scientific conceptions and the results of studies of his work in indexed international scientific journals by taking into account the legal aspects related to the results his research;
3. able to choose appropriate, current, and advanced research and provide benefits to mankind by involving economic aspects, through an interdisciplinary, multidisciplinary, or transdisciplinary approach, to produce solutions to technological problems in relevant industries or arts,
4. able to develop a technology or art development strategy with an interdisciplinary, multidisciplinary, or transdisciplinary approach, based on a study of the main research objectives and their context with broader goals
5. able to formulate scientific, technological, or artistic arguments and solutions based on a critical view of facts, concepts, principles, or theories that can be accounted for scientifically and academically ethically, and communicate them through the mass media or directly to the public;
6. able to demonstrate academic leadership in the management, development, and guidance of resources and organizations under their responsibility;
7. able to manage, including storing, auditing, securing, and retrieving data and information on research results that are under their responsibility;
8. Able to develop and maintain collegial and peer relations within their environment or through collaborative networks with research communities outside the institution.

General skills of PROFESSIONAL PROGRAM graduates

1. able to work in the field of basic expertise for specific types of work, and have work competencies that are at least equivalent to the standard of professional work competence;
2. able to make independent decisions in carrying out their professional work based on logical, critical, systematic, and creative thinking;
3. able to compile reports or working papers or produce design works in their field of expertise based on design rules and standard procedures, as well as professional codes of ethics, which can be accessed by the academic community;

4. able to communicate ideas/arguments or innovative works that are beneficial for professional development, and entrepreneurship, which can be scientifically and professionally accounted for, to the public, especially the professional community;
5. able to critically evaluate the results of work and decisions made in carrying out his work by himself and by colleagues
6. able to improve their professional expertise in specific fields through training and work experience;
7. able to improve the quality of resources for the development of the organization's strategic program;
8. able to lead a work team to solve problems in their professional field;
9. able to cooperate with other professions in the same field in solving work problems in their professional field;
10. able to develop and maintain a network with the professional community and its clients;
11. be responsible for work in the field of his profession following the code of professional ethics;
12. able to increase learning capacity independently.
13. Able to contribute to the evaluation or development of national policies in the context of improving the quality of professional education or developing national policies in their professional fields;
14. able to document, store, audit, secure, and rediscover data and information to develop the results of their professional work;

General skills of graduates of SPECIALIST PROGRAM ONE

1. able to work in the field of basic/professional expertise for specific and complex types of work, and have work competencies that are at least equivalent to the national/international standards of professional competence;
2. able to make independent decisions in carrying out their professional work based on logical, critical, systematic, creative, and comprehensive thinking;
3. able to compile a report on the results of studies equivalent to a thesis whose results are compiled in the form of publications in accredited professional scientific journals, or produce specific design works and their descriptions based on design methods or rules and professional codes of ethics recognized by the professional community at the regional or international level;
4. able to communicate the results of studies, criticisms, appreciation, arguments, or innovation works that are beneficial for professional development, entrepreneurship, and human benefit, which can be accounted for scientifically and professionally ethically, to the general public through various forms of media;
5. able to critically evaluate the results of work and decisions made in carrying out his professional work either by himself, his colleagues, or his institutional system;
6. able to improve their professional expertise in specific fields through training and work experience by taking into account the latest in their professional fields at the national, regional, and international levels;
7. able to improve the quality of resources for the development of the organization's strategic program;
8. able to lead a work team to solve problems both in the field of his profession, as well as problems that are wider than the field of his profession;
9. able to work together with other professions that are in the same field or not in the same field in solving complex work problems related to their professional field;
10. able to develop and maintain a network with the professional community and its clients;

11. able to be responsible for work in the field of his profession following the code of professional ethics;
12. able to increase the capacity of learning independently and the team under their responsibility;
13. able to contribute to the evaluation or development of national policies in the context of improving the quality of professional education or developing national policies in their professional fields;
14. able to document, store, audit, secure, and rediscover data and information to develop the results of their professional work.

General skills of graduates of SPECIALIST PROGRAM TWO

1. able to work in the field of basic/professional expertise for specific and complex types of work, and have work competencies that are equivalent to the internationally applicable standards of professional competence;
2. able to make independent decisions in carrying out their professional work based on logical, critical, systematic, creative, comprehensive, and wise thinking;
3. able to compile a report on the results of studies equivalent to a dissertation whose results are compiled in the form of articles that can be published in accredited scientific periodicals, or scientific periodicals that meet the requirements for accreditation, or proceedings of international seminars, or international scientific periodicals, or produce works specific designs and their descriptions based on design methods or rules and professional codes of ethics recognized by the professional community at the regional or international level;
4. able to communicate the results of studies, criticisms, appreciations, arguments, or innovative works that are beneficial for professional development and human benefit, which can be accounted for scientifically and professionally ethically, to the general public through various forms of media;
5. able to critically evaluate the results of work and decisions made in carrying out his professional work either by himself, his colleagues, or his institutional system;
6. able to improve their professional expertise in specific fields through training and work experience by taking into account the latest in their professional fields at the national, regional, and international levels;
7. able to improve the quality of resources for the development of the organization's strategic program;
8. able to contribute to the evaluation or development of national policies in the context of improving the quality of professional education or developing national policies in their professional fields;
9. able to lead a work team to solve problems both in the field of his profession, as well as problems that are wider than the field of his profession;
10. able to cooperate with other professions in the same field or not in solving complex work problems related to their professional field;
11. able to develop and maintain a network with the professional community and its clients;
12. able to be responsible for work in the field of his profession following the code of professional ethics;
13. able to contribute to the evaluation or development of national policies in the context of improving the quality of professional education or the development of national policies in their professional fields;
14. able to document, store, audit, secure, and rediscover data and information to develop the results of their professional work.