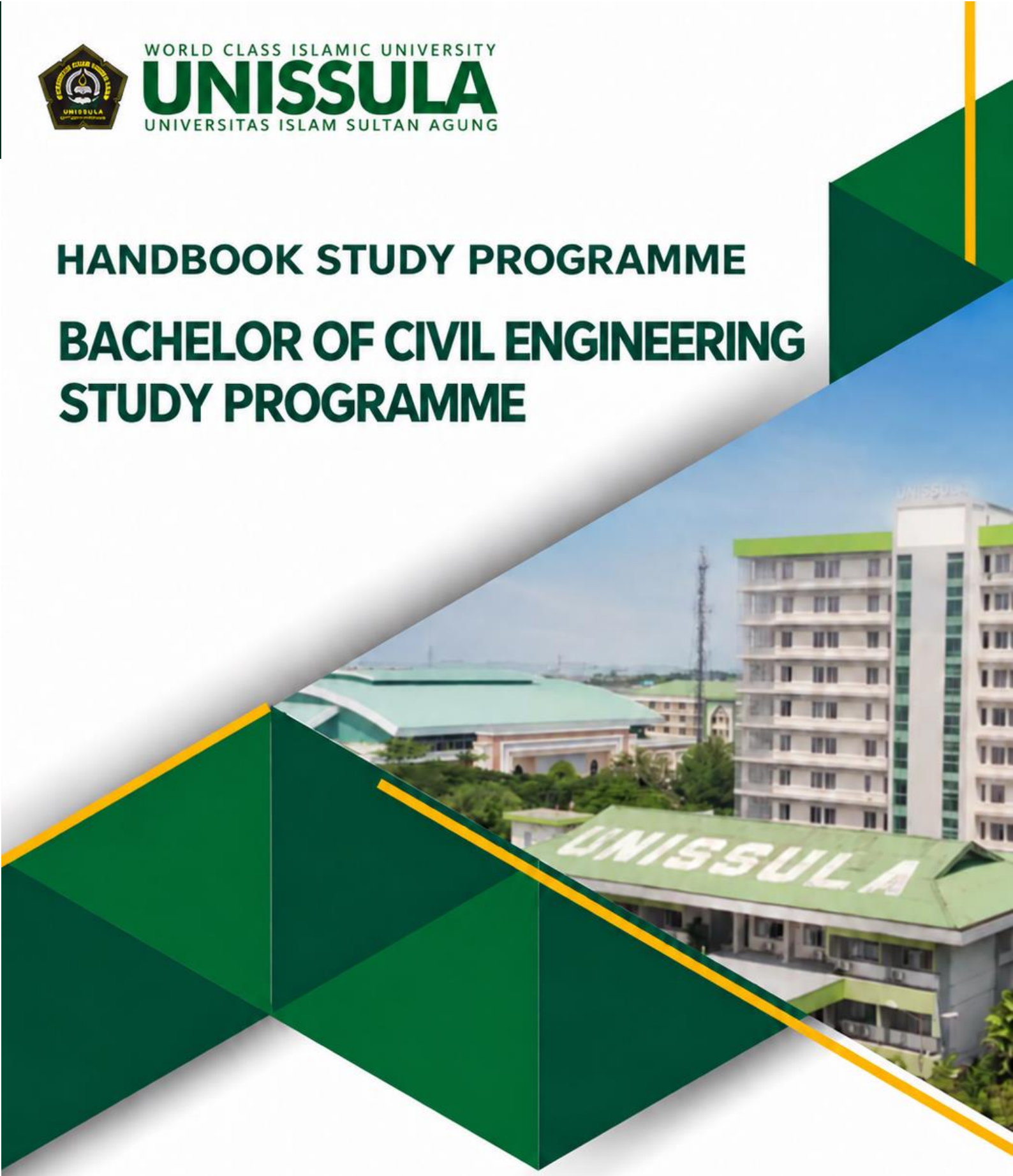
WORLD CLASS ISLAMIC UNIVERSITY

UNISSULA

UNIVERSITAS ISLAM SULTAN AGUNG

HANDBOOK STUDY PROGRAMME

BACHELOR OF CIVIL ENGINEERING STUDY PROGRAMME



FACULTY OF ENGINEERING
UNISSULA
2025

OUTCOME BASED EDUCATION (OBE) CURRICULUM DOCUMENTS

Bachelor of Civil Engineering
Semarang, 30 July 2025

Name of Team Leader : Muhamad Rusli Ahyar, S. T. , M. Eng.
NIP/NIDN : 2102160 89 / 0625059102
Study Programme : Civil Engineering
Faculty: Engineering

SULTAN AGUNG ISLAMIC UNIVERSITY
2025

RECTOR'S DECISION
NUMBER: 7217/A. 1/SA/VII/2025

ABOUT
OUTCOME BASED EDUCATION (OBE) CURRICULUM
GRADUATE STUDY PROGRAMME IN CIVIL ENGINEERING
FACULTY OF ENGINEERING UNIVERSITAS ISLAM SULTAN AGUNG (UNISSULA)

Bismillahirrahmanirrahim

RECTOR OF UNIVERSITAS ISLAM SULTAN AGUNG

Considering :

a. That in order to achieve quality higher education learning to meet the criteria of national higher education standards in the Bachelor of Bachelor of Civil Engineering, Faculty of Engineering, UNISSULA in providing services to the community and stakeholders, a responsive curriculum is needed;
b. That in the context of orderly administration and the smooth process of implementing academic activities, it is necessary to implement an Outcome Based Education (OBE) based curriculum;
c. That for the purposes as stated in letters a and b above, it is necessary to issue a Chancellor's Decree regarding the Curriculum for the Undergraduate Bachelor of Civil Engineering, Faculty of Engineering, Sultan Agung Islamic University, Semarang.

Remembering :

1. Law Number: 20 of 2003 concerning the National Education System;
2. Law Number: 12 of 2012 concerning Higher Education;
3. Government Regulation Number 4 of 2014 concerning the Implementation of Higher Education and Management of Higher Education Institutions;
4. Regulation of the Minister of Higher Education, Science and Technology of the Republic of Indonesia Number 39 of 2025 concerning Quality Assurance of Higher Education;
5. YBWSA's Articles of Association, Deed of Notary Tan A. Sioe Number: 86 of 1950 and has been amended several times, most recently the deed of Notary Sondhy Haryawan, SH, M. Kn Number: 1 of 2008 dated 06 October 2008 concerning the deed of amendment to the articles of association of the Sultan Agung Waqf Foundation and has been recorded by Dit. Jen AHU Department of Law and Human Rights of the Republic of Indonesia on November 10 2008 with Letter Number: AHU-AH. 01. 08-697 regarding: Sultan Agung Waqf Foundation;
6. UNISSULA STATUTE of 2019 as ratified in YBWSA Decree Number: 140/SK/YBWSA/XII/2019;
7. UNISSULA RENSTRA 2025 - 2030;
8. Deputy Chancellor of Universitas Islam Sultan Agung (UNISSULA) for the 2022-2027 period.
9. Chancellor's Decree Number: 8416/D. 1/SA/VII/2025 concerning Policy for Curriculum Development of Study Programmes within the Sultan Agung Islamic University

Pay attention : Application Letter from the Dean of the Faculty of Engineering Number: 552/A. 1/SA-T/VII/2025, dated 28 July 2025, concerning the Application for a Decree on Outcome Based Education (OBE) Curriculum for the Undergraduate Bachelor of Civil Engineering, Faculty of Engineering, UNISSULA;

M E M U T U S K A N:

Establish :

First : Curriculum Based on Outcome Based Education (OBE) Civil Engineering Undergraduate Study Programme, Faculty of Engineering, Sultan Agung Islamic University;

Second : Outcome Based Education (OBE) Curriculum for Civil Engineering Undergraduate Study Programme, Faculty of Engineering, Sultan Agung Islamic University as stated in the Attachment to this Chancellor's Decree;

Third : All expenses arising as a result of the issuance of this Chancellor's Decree are borne by the budget of the Civil Engineering Undergraduate Study Programme, Faculty of Engineering, UNISSULA;

Fourth : This decision is effective starting from the date of stipulation and if in the future it turns out there are errors in this stipulation, corrections and/or changes will be made as appropriate.

Set in Semarang,
On date: 05 Shafar 1447 H
July 30, 2025 AD
Chancellor,

Prof. Dr. Gunarto, S. H. , M. H.
NIP. 210 389 016

A copy of this Decision shall be submitted to:

1. Dear. Deputy Chancellor I, II & III UNISSULA
2. Dear. Dean of the UNISSULA Faculty of Engineering
3. Dear. Head of Civil Engineering Undergraduate Study Programme, Faculty of Engineering, UNISSULA
4. Dear. Head of LP3M UNISSULA
5. Dear. Ka. UNISSULA Academic Administration Bureau
6. Archives

DEAN'S FOREWORD

Assalamu'alaikum wr. wb.

Praise be to the presence of Allah SWT for all His mercy and grace, so that the 2025 Bachelor of Civil Engineering Curriculum Book can be prepared and completed well. This book was prepared as a guide for implementing higher education in the Bachelor of Civil Engineering, in order to answer the challenges of the times and the needs of the continuously developing world of work.

This curriculum was designed based on the Indonesian National Qualifications Framework (KKNI), National Higher Education Standards (SN-Dikti), as well as input from various stakeholders, both internal and external, including lecturers, students, alumni and graduate users. The preparation of this curriculum also takes into account the latest developments in science and technology, as well as the direction of sustainable and environmentally sound national development.

This book contains Programme Learning Outcomes (PLO), curriculum structure, course descriptions, and relevant learning strategies to produce graduates who are competent, professional, and have integrity. It is hoped that this curriculum book can become the main reference in implementing academic activities, as well as a reference in the evaluation and curriculum development process in the future.

We would like to thank the entire drafting team, lecturers, education staff, and all parties who have contributed to the preparation of this book. Hopefully this book can provide benefits and become a strong foundation in realising superior Civil Engineering higher education that is adaptive to global dynamics.

Wasssalamu'alaikum wr. wb.

Semarang, July 2025
Dean of the Faculty of Engineering

Dr. Abdul Rochim, ST. , MT.
VIN. 210200031

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CHAPTER I
INTRODUCTION

The development of science, technology and the dynamics of the needs of the world of work require universities to produce graduates who not only master scientific aspects, but also have competencies that are measurable, relevant and adaptive to change. In this context, the Outcome-Based Education (OBE) approach is an important paradigm in developing higher education curricula because it focuses on Programme Learning Outcomes (PLO) as the main orientation of the educational process.

The urgency of preparing the OBE-based 2025 Curriculum for the Bachelor of Civil Engineering is based on various recent policies and regulations in the field of higher education, including the National Higher Education Standards (SN-Dikti) policy, the Indonesian National Qualifications Framework (KKNI), and the Independent Learning – Independent Campus (MBKM) policy. The regulation emphasizes that the curriculum must be designed based on learning outcomes, in line with graduate profiles, and provide learning flexibility that supports strengthening student competencies.

The OBE approach requires a clear and measurable link between the graduate profile, Graduate Learning Outcomes, study materials, courses, learning processes, and the evaluation system. Thus, each curriculum component is designed systematically to ensure that graduates of the Bachelor of Civil Engineering have academic, professional and ethical competencies that are in line with the needs of stakeholders and developments in the construction and infrastructure industry.

Apart from that, the implementation of OBE also supports the internal quality assurance system through a continuous evaluation mechanism for the achievement of learning outcomes. This is in line with the principle of continuous quality improvement which is a requirement in national and international accreditation systems.

Based on these considerations, the preparation of the OBE-based 2025 Curriculum for the Bachelor of Civil Engineering is a strategic step to ensure the relevance, quality and competitiveness of graduates, as well as a form of compliance with applicable higher education regulations.

CHAPTER II
IDENTITY OF THE STUDY PROGRAMME

1.	College	:	Universitas Islam Sultan Agung
2.	Implementing the Learning Process		
	a. Faculty	:	Engineering
	b. Study Programme	:	Civil Engineering
	c. Establishment Decree number	:	74/B. S. T/P/64
	d. Date of establishment decree	:	February 28, 1964
	e. Office Address	:	Jl. Kaligawe Raya, No. Km. 4
	f. No. Telephone	:	+62 24 6583584
	g. Homepage	:	Ft. unissula. ac. id
	h. E-mail	:	sipil@unissula.ac.id
	i. Kode Programme Studi	:	T. S
3.	Study Programme Accreditation	:	Excellent
4.	Educational level	:	Undergraduate degree
5.	Graduate Qualification Levels based on KKNI	:	7
6.	Graduate Degree	:	S. T.
7.	Study Programme Vision	:	The scientific vision of the Bachelor of Civil Engineering is to become a leading study programme to produce graduates who are khaira ummah and excel in the application of environmentally sound civil engineering based on Islamic values.
8.	Study Programme Mission	:	The mission of the Bachelor of Civil Engineeringis to provide Islamic higher education that is oriented towards quality and universal/global equality with;

1. Developing environmentally sound Civil Engineering applications based on Islamic teachings,
2. Educate and develop human resources at all levels of higher education in the field of Civil Engineering and cadres of ulama who study/master religious knowledge (taffaqquh fiddin), by prioritising moral nobility, intelligence and expertise, environmental insight, as well as the ability to carry out the duties of community leadership and preaching,
3. Develop ideas, activities and institutions in accordance with the development and reconstruction of science with research,
4. Play an active role in building community welfare and developing Islamic civilization through community service towards a civil society that is blessed by Allah SWT.

CHAPTER III
CURRICULUM EVALUATION AND TRACER STUDY

3.1 Curriculum Evaluation

The Bachelor of Civil Engineering (S1), which is the first study programme at Unissula, in 1998 received A rank Accreditation status from BAN-PT. Furthermore, the A rating was maintained again in 2004 (SK. No. 06762/Ak-VIII-S1- 033/UKFLDS/VIII/2004), 2010 (SK. No. 020/BAN-PT/Ak-XIII/S1/X/2010) and 2020 (SK. No. 4866/BAN-PT/Akred/S/VIII/2020. Then submit a status conversion by completing the Conversion Supplement Instrument (ISK) to BAN-PT to obtain SUPERIOR status based on Decree No. 3623/SK/BAN-PT/Ak. KP/S/IX/2025 which is valid until 25 August 2025. Most recently the Bachelor of Civil Engineering received the SUPERIOR Accreditation title from LAM-Technique. SK 0529/SK/LAM Teknik/AS/VIII/2025 which is valid until 20 August 2030

The profile and CP of PSTS graduates are always reviewed periodically, a maximum of every four years, together with the macro curriculum review, in accordance with the SOP that has been established by UNISSULA regarding Evaluation and Curriculum Development Procedures. This document contains the process of implementing macro and micro curriculum evaluations according to developments in science and technology and user needs. PSTS conducts curriculum evaluations periodically.

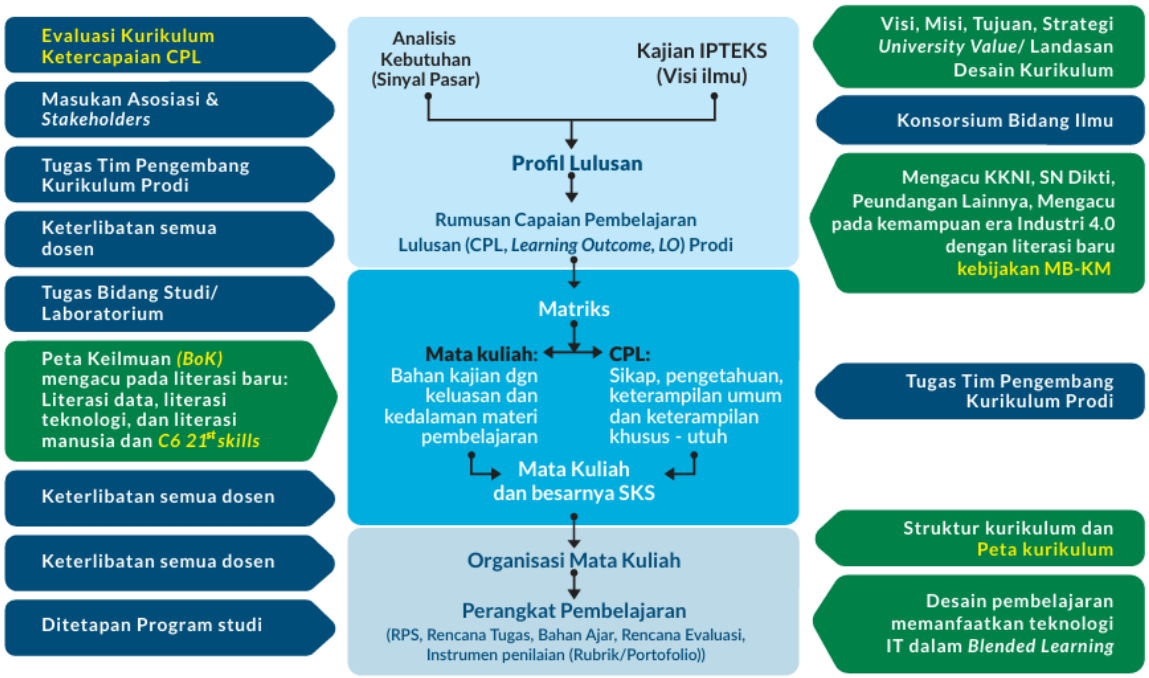


Figure 1. 1 Stages of Preparing Curriculum Documents1

Periodic Curriculum Evaluation includes:

1) The micro curriculum is evaluated at the end of each semester.
   A comprehensive evaluation of the micro curriculum is carried out at the end of each semester to see the achievement of learning objectives and the learning process. Micro curriculum evaluation is carried out on learning material, including lecture material, assignments, exam questions. Then evaluate the final assignment preparation process, as well as the scientific work publication process. This evaluation is carried out through curriculum meetings with a team of course lecturers, followed up with revisions to learning content, the process of preparing final assignments and publications. Implementation of the evaluation involves internal stakeholders.

2) The macro curriculum is evaluated every four years.
   The follow-up to the macro curriculum evaluation is a comprehensive curriculum revision, namely related to the curriculum map, credit load, learning methods, as well as the process of preparing final assignments and publications. Evaluation is carried out through workshops with students, alumni, lecturers, external stakeholders, especially graduate users and collaboration partners, input from other HEI experts and professional organisations.

Accuracy of curriculum structure in forming learning outcomes (CP)

The PSTS curriculum, which has 144 credits, is prepared by ensuring that all learning outcomes attitudes, general skills, special skills and knowledge and study materials are adopted in all courses arranged in the macro curriculum. To ensure PLO achievement, the PLO in each course is broken down into Course Learning Outcomes (CLO) and CLO is broken down again into sub CLO which has clear and measurable assessment indicators. Breakdown of PLO into CLO and Sub CLO and their distribution into courses.

The fundamental change from the previous Curriculum (2019 Curriculum) lies in the adjustment of basic science courses, capstone design, and MB-KM. Civil Engineering has a range of competencies, namely: Water Engineering, Structural Engineering, Geotechnical, Transportation Engineering, and Construction Engineering Management. The development of the 2025 Bachelor of Civil Engineering Curriculum is a follow-up to the results of a major evaluation that has been carried out involving internal and external stakeholders, including Unissula leaders, lecturers, students, educational staff, alumni, users, study programme associations, industry, government partners, subject matter experts, and lecturers from other universities. The results of the evaluation of the 2019 curriculum were then followed up on the 2025 Curriculum as shown in Table 3. 1 below.

Table 3. 1 Evaluation of the 2019 curriculum1

No	Topic	2019 Curriculum	Overview
1	Mathematics and basic science courses	Some mathematics and basic science study materials are already in the form of separate courses, but some are still study material in basic civil engineering courses. Mathematics and basic science courses which are explicitly separate are 12 credits (8. 3%)	ENGINEERING LAM requirements: Minimum 25 credits of basic science courses IABEE Requirements: Minimum 20% of total credits (29 credits) User FGD Results: Mastery of basic science is needed as preparation for work
2	Design Capstone Course	The capstone design in the 2019 Curriculum does not meet the requirements because it does not involve the construction industry in its implementation. Courses on The 2019 curriculum which is the starting point for	IABEE/LAM ENGINEERING Requirements Capstone design is a downstream course (in the final semester), and includes high order thinking, and involves external parties (the construction industry) in its implementation

No	Topic	2019 Curriculum	Overview
		capstone design is: Water Building Design (2 SKS) Building Design (2 SKS) Bridge Building Design (2 SKS) Total: 6 credits	FGD Results Users, students and alumni: need to add project experience
3	Mastery of technical and technical software	In the 2016 Curriculum there is a new Programming Language MK, which contains the basics of programming mathematics. This Constitutional Court has not provided knowledge about mastering civil engineering software	Results from User FGD: Graduates lack mastery of civil engineering software concepts

3.2 Tracer Study

To design the curriculum adequately, the Bachelor of Civil Engineering conducted a tracer study in collaboration with the Student and Alumni Development Institute (LPKA) and analysed input from stakeholders. The input gathering mechanism is carried out by means of surveys, project visits, tracer studies, as well as questionnaires and hearings in discussion forums.

Stakeholders involved in preparing the 2025 Curriculum for the Bachelor of Civil Engineering include internal stakeholders, namely lecturers, students, educational staff and alumni. Apart from that, the external stakeholders involved are graduate users, study programme associations, government partners, the construction industry, subject matter experts, and lecturers from other universities. A summary of the network results is shown in Table 3. 2 below.

Table 3. 2 Stakeholder input.2

Stakeholders	Enter
Student	1. Some courses feel too theoretical without examples of real application in the field. 2. Practicums or field studies are still lacking and not evenly distributed in all important subjects. 3. Assignments from several courses often overlap at the same time. 4. Collaborative learning and class discussions are not yet widely utilised. 5. Students need access to the latest references and literature, especially in Indonesian.
Alumni	1. The need for professional certification (such as SKA/SKK) was not introduced during college. 2. The use of new technology in the world of construction (such as drones, BIM, or cloud-based software) should be introduced in lectures. 3. Alumni feel that they are not equipped enough with the skills to write technical reports and project documentation.
Lecturer	1. Cross-subject integration is needed in the form of an integrated design project. 2. Lecturers need training in the use of digital and interactive teaching media. 3. The evaluation system for student learning outcomes should be more

Stakeholders	Enter
	diverse, not just written exams. 4. Students' final assignment topics still tend to be monotonous and do not reflect actual issues. 5. A more flexible curriculum is needed to adapt to technological developments and industry needs.
Graduate Users	1. Graduates are not used to the fast work rhythm and tight time targets on construction projects. 2. Lack of understanding of work safety aspects and risk management in the field. 3. Graduates tend to be passive when facing problems and waiting for instructions, lacking initiative. 4. Provision is needed regarding professional ethics in making technical decisions. 5. Graduates need to get used to making technical presentations and conveying ideas systematically to clients or superiors.
External Stakeholders	1. Graduates are expected to be further strengthened in project managerial abilities. 2. Mastery of civil engineering software (such as SAP2000, AutoCAD, etc.) needs to continue to be improved. 3. Project-based learning is considered very relevant and needs to be expanded. 4. The values of integrity, professional ethics and Islam are the advantages of graduates. 5. It is recommended that there be an increase in the topic of sustainability and the latest construction technology.

3.3 Improvement Recommendations

The results of the 2019 Curriculum evaluation were discussed with the stakeholders of the Bachelor of Civil Engineering at the Management Review Meeting and resulted in a number of follow-up actions as presented in Table 3. 3.

Table 3. 3 Follow-up from the evaluation of the 2025 Curriculum3

No	Topic	Management Review Meeting	Curriculum 2025
1	Mathematics and basic science courses	Mathematics and basic science study materials are grouped into special basic science courses reaching 32 credits (22. 2%)	Mathematics and Basic Science Courses: 1. Basic Chemistry (2 credits) 2. Mathematics I (2 credits) 3. Statistics and Probability (2 credits) 4. Statics I (2 credits) 5. Basic Physics (2 credits) 6. Mathematics II (2 credits) 7. Statics II (2 credits) 8. Physics Mechanics (2 credits) 9. Construction Materials Technology (2 credits) 10. Fluid Mechanics and Hydraulics I (2 credits)

No	Topic	Management Review Meeting	Curriculum 2025
			11. Geology (2 credits) 12. Mathematics III (2 credits) 13. Environmental Science (2 credits) 14. Mathematics IV (2 credits) 15. Numerical Methods (2 credits) 16. Hydrology (2 credits)
2	Civil Building Design Course	A new MK was formed: Civil Building Design, which meets IABEE/LAM ENGINEERING requirements, and according to input from users, students, alumni, users and the construction industry	New MK: Civil Building Design in the form of: - Construction Project design (P), with a weight of 4 credits. - is MK Prakek. - in the form of practice working on real projects on campus - collaboration with practitioners, the construction industry and/or alumni - theory and software have been given in the previous MK - questions are given by practitioners - practitioners provide tutorials, and supervision, as well as evaluation in class - students can choose one of the types of projects offered: buildings, water, or roads.
3	Mastery of civil engineering software	Added study material about civil engineering software Adapting MK study materials for Designing with Computers related to the software needed in the field	New MK Established: Building Design with Computers (2 credits) MK study materials for Civil Engineering Applications include software in the fields of structural civil engineering, water, transportation and roads, geotechnical engineering, and construction management (without practicum), and other applications that are needed in the field

3.4 Market Needs Analysis

Analysis of job market needs is an important basis in preparing the 2025 Curriculum for the Bachelor of Civil Engineering to ensure the relevance of graduate competencies to the demands of the current world of work and projected needs in the next ten years. This analysis was prepared based on input from various stakeholders, including students, alumni, lecturers, graduate users and external stakeholders.

In the next ten years, the need for civil engineering professionals is projected to continue to increase in line with national infrastructure development, urban area development, the need for rehabilitation of existing infrastructure, and demands for sustainable development. Civil engineering graduates are not only required to have technical mastery, but also the ability to adapt to developments in construction technology, digital systems, and project-based work patterns with tight time targets.

Input from graduate users and external stakeholders shows that the world of work requires graduates who are ready to work, have an understanding of safety and risk management, are able to work in multidisciplinary teams, and have initiative and professional ethics in making technical decisions. In addition, mastery of civil engineering software, understanding project management, and technical communication and presentation skills are becoming increasingly important competencies.

From the alumni and student side, the need for more applicable learning, increasing the portion of practicum and field studies, as well as the introduction of the latest technology such as BIM, cloud-based systems and modern survey support tools are the main inputs. Alumni also emphasised the importance of provision related to professional certification and the ability to prepare technical reports as preparation for entering the world of work.

Meanwhile, lecturers and external stakeholders encourage strengthening project-based learning, cross-subject integration, and flexible curricula to be able to adapt to technological dynamics and industry needs. Strengthening the values of integrity, professional ethics and Islam is seen as a competitive advantage for graduates of the Bachelor of Civil Engineering.

Based on this analysis, the career prospects for graduates of the Bachelor of Civil Engineering in the next ten years include roles as planners, supervisors and construction implementers, project managers, professionals in the government and private sectors, entrepreneurs in the construction services sector, as well as scientific developers through research and further study. Therefore, the 2025 Curriculum is designed to equip graduates with technical, professional and ethical competencies that are in line with the needs of the job market and future developments in the construction industry.

CHAPTER IV
CURRICULUM BASIS

4.1 Philosophical Foundations

The implementation of education in the Bachelor of Bachelor of Civil Engineering is based on the national education philosophy which is guided by Pancasila and the 1945 Constitution of the Republic of Indonesia, which places education as a means of educating the nation's life, developing the potential of students as a whole, and forming Indonesian people who are faithful, devout, have noble character, excellence and responsibility.

Furthermore, the education process in higher education refers to Law Number 20 of 2003 concerning the National Education System and Law Number 12 of 2012 concerning Higher Education which confirms that higher education aims to develop student potential in the aspects of knowledge, skills and attitudes to meet national development needs.

The philosophical basis for implementing study programmes is also regulated in Minister of Education and Culture Regulation Number 53 of 2025 concerning Quality Assurance for Higher Education which establishes National Higher Education Standards, and emphasizes the relevance of learning outcomes, academic autonomy, and sustainable quality assurance as part of higher education's responsibility in responding to the needs of society, developments in science, technology, and the world of work.

In line with the identity of Universitas Islam Sultan Agung, education in the Bachelor of Bachelor of Civil Engineering is based on Islamic values which place science as part of worship and efforts to advance civilization, uphold Birrul Walidain, and bring benefits to society. The integration of Islamic values is considered important in forming people who are professional, trustworthy and contribute to sustainable and environmentally sound infrastructure development.

4.2 Foundations of Sociology

Curriculum development for the Bachelor of Bachelor of Civil Engineering at Universitas Islam Sultan Agung is based on a psychological foundation that takes into account the characteristics, stages of development and learning needs of students as adult individuals who are in the emerging adulthood phase. At this stage, students have increasingly mature abstract, analytical and reflective thinking skills, so the curriculum is designed to stimulate critical thinking skills, problem solving, decision making and professional responsibility.

In terms of developmental psychology, undergraduate students are at the formal operational cognitive development stage, which allows them to understand theoretical concepts, carry out scientific reasoning, and integrate various scientific disciplines in solving civil engineering engineering problems. Therefore, the curriculum structure is arranged in stages (scaffolding), starting from mastering basic concepts of mathematics, science and engineering, to the ability to analyse, synthesize, evaluate and design complex infrastructure systems.

From a learning psychology perspective, the OBE-based curriculum emphasizes student-centred learning, where students play an active role in building their knowledge through problem-based learning, project-based learning, discussions, practicums, case studies, and collaborative learning.

The psychological foundation also pays attention to the development of three learning outcomes domains, namely cognitive, affective and psychomotor. The cognitive domain is realised through mastery of engineering knowledge and analytical skills; the affective domain is manifested in the formation of professional attitudes, ethics, social responsibility, and the internalization of Islamic values; while the psychomotor domain is realised through technical

skills in design, use of engineering software, laboratory experiments, and implementation in the field.

Thus, the curriculum is designed not only to transfer knowledge, but also to shape students' character, emotional maturity and professional readiness so that they are able to adapt to the dynamics of developments in science, technology and the needs of the construction industry in a sustainable manner.

4.3 Psychological Foundations

Historically, Universitas Islam Sultan Agung (UNISSULA), which has been established for more than six decades and received SUPERIOR accreditation from BAN-PT, has a strong commitment to developing superior higher education with an Islamic character. The Bachelor of Bachelor of Civil Engineering, which was founded on February 28 1964, is one of the oldest study programmes in the university environment and has a strategic role in supporting national infrastructure development.

This long journey shows that curriculum development is always carried out adaptively to changes in regulations and the demands of the times. The initial curriculum is oriented towards mastering basic engineering knowledge in a teacher-centred manner. As the higher education paradigm develops, the curriculum undergoes a transformation towards a competency-based approach (Competency-Based Curriculum) which emphasizes the skills and work readiness of graduates.

In 2019, the curriculum was adjusted to the Independent Learning–Free Campus (MBKM) policy to provide learning flexibility and broaden students' academic and professional experiences. Furthermore, in 2025, curriculum improvements will be made by adopting the Outcome-Based Education (OBE) approach, which focuses on formulating clear graduate profiles, measurability Programme Learning Outcomes (PLO), as well as harmony between PLO, CLO, learning methods and assessment systems.

Internally, the curriculum structure is also developing with the strengthening of Expertise Groups (KBK) which include Geotechnical, Structural Engineering, Water Engineering, Transportation Engineering, and Construction Engineering Management. This division reflects the development of civil engineering disciplines which are increasingly specific and responsive to the needs of the modern construction industry.

This historical foundation shows that the UNISSULA Civil Engineering Undergraduate Study Programme curriculum is the result of a continuous academic evolution process, integrating Islamic values, national regulations, stakeholder needs, and the development of the global higher education paradigm. Thus, the implementation of an OBE-based curriculum is not a change separate from history, but rather a logical continuation of the study programme's commitment to maintaining the quality, relevance and competitiveness of graduates.

4.4 Historical Foundation

UNISSULA is conceptually more than 60 years old. Unissula has developed into a leading university in Indonesia with a SUPERIOR accreditation rating from BAN-PT with 13 faculties and 45 study programmes consisting of D3, S1, S2 and S3. The Bachelor of Bachelor of Civil Engineering at Universitas Islam Sultan Agung was founded on February 28 1964 as one of the oldest study programmes in the engineering family at the university.

Since its founding, the study programme has made regular curriculum adjustments to meet the demands of higher education regulations and the needs of the world of work. In 2019 the curriculum was revised to accommodate the Independent Learning – Independent Campus

(MBKM) policy. Furthermore, in 2025 the curriculum will be adjusted to the Outcome-Based Education (OBE) approach to ensure the achievement of the graduate profile and measurability of learning outcomes.

In an effort to achieve learning outcomes the Bachelor of Civil Engineering developed a curriculum based on learning outcomes in each course. Each course has a Course Learning Outcome (CP MK) that must be met during the teaching and learning process. In the TS Undergraduate Study Programme, there are generally 5 (five) areas of expertise which are divided into Expertise Groups (KBK) which consist of:

1. KBK Geotechnical Sector
2. KBK in the Field of Structural Engineering
3. KBK for Water Engineering
4. KBK in Transportation Engineering
5. KBK for Construction Engineering Management

4.5 Juridical Foundation

The legal basis used as the basis for preparing the 2025 Curriculum Book for the Bachelor of Civil Engineering, Faculty of Engineering, Unissula, is as follows:

1. Law of the Republic of Indonesia Number 14 of 2005 concerning Teachers and Lecturers (State Gazette of the Republic of Indonesia of 2005 Number 157, Supplement to the State Gazette of the Republic of Indonesia Number 4586);
2. Law of the Republic of Indonesia Number 12 of 2012 concerning Higher Education (State Gazette of the Republic of Indonesia of 2012 Number 158, Supplement to State Gazette of the Republic of Indonesia Number 5336);
3. Regulation of the President of the Republic of Indonesia Number 8 of 2012, concerning the Indonesian National Qualifications Framework (KKNI);
4. Regulation of the Minister of Education and Culture of the Republic of Indonesia Number 73 of 2013, concerning the Implementation of the KKNI in the Higher Education Sector;
5. Regulation of the Minister of Higher Education, Science and Technology of the Republic of Indonesia Number 39 of 2025 concerning Quality Assurance of Higher Education;
6. Regulation of the Minister of Education and Culture of the Republic of Indonesia Number 7 of 2020, concerning the Establishment, Changes, and Dissolution of PTNs, and the Establishment, Changes, and Revocation of PTS Permits;
7. Regulation of the Minister of Education, Culture, Research and Technology of the Republic of Indonesia Number 6 of 2022, concerning Diplomas, Competency Certificates, Professional Certificates, Degrees and Equivalence of Diplomas from Other Countries;
8. Decree of the Chancellor of Universitas Islam Sultan Agung No. 8415/D. 1/SA/IX/2025 concerning Guidelines for Preparing Curriculum Based on Outcome-based Education (OBE) for the Universitas Islam Sultan Agung Study Programme;
9. Decree of the Chancellor of Universitas Islam Sultan Agung Number: 8416/D. 1/SA/IX/2025 concerning Policy for Curriculum Development of Study Programmes within Universitas Islam Sultan Agung

CHAPTER V
PROFILE OF GRADUATES FORMULA Programme Learning Outcomes (PLO)

5.1 Graduate Profile

The graduate profile (PL) is a statement that describes the competencies, performance and roles that graduates of the Civil Engineering Undergraduate Study Programme are expected to achieve within three to five years after completing their education. The formulation of the graduate profile is the basis for preparing the Programme Learning Outcomes (PLO) Study Programme, as well as being a guideline in preparing the curriculum and learning strategies.

The formulation of graduate profiles is carried out through a process that involves stakeholders in the field of civil engineering, including graduate users, professional associations, alumni and lecturers, as well as considering the characteristics of graduates promoted by the study programme. In addition, the preparation of graduate profiles refers to the university level Graduate Profile as a normative and philosophical basis, and takes into account the results of tracer studies, technological developments, needs of the world of work, and industrial dynamics in the era of Industrial Revolution 4. 0 and Society 5. 0.

At the university level, Universitas Islam Sultan Agung determines the graduate profile as:
"Scholars who uphold Birrul Walidain are able to develop science and technology based on Islamic values, and are globally competitive. "

The formulation of the university graduate profile is described by the Bachelor of Civil Engineering into two more operational graduate profiles according to the characteristics of the civil engineering field, namely as explained in Table 5. 1.

Table 5. 1 Graduate Profile and description1

No	Graduate Profile	Graduate Profile Description
1	GP-1	Professional scholars in the field of civil engineering who uphold Islamic values and Birrul Walidain, and are able to design, implement, manage and evaluate infrastructure work in a sustainable manner by integrating knowledge of engineering, technology, safety, environmental sustainability and professional ethics.
2	GP-2	Graduates who are globally competitive, able to develop science and technology through lifelong learning, and demonstrate leadership, communication skills and collaboration in solving civil engineering problems.

5.2 PLO formulation

To create a Graduate Profile for the Bachelor of Civil Engineering, Programme Learning Outcomes (PLO) is prepared based on the results of tracer studies, stakeholder analysis, and adjusted to the description of the KKNI, SN Dikti, ABET and IABEE criteria, as well as the level of learning taxonomy. For the Undergraduate programme, the Indonesian National Qualifications Framework (KKNI) is level 6, namely:

1. Able to apply their field of expertise and utilise science and technology in their field to solve problems and be able to adapt to the situations they face.
2. Master the theoretical concepts of a particular field of knowledge in general and the theoretical concepts of a specific part of that field of knowledge in depth, and be able to formulate procedural problem solving.
3. Able to make the right decisions based on information and data analysis and able to provide guidance in choosing various alternative solutions independently and in groups.
4. Be responsible for your own work and can be given responsibility for achieving the

organisation's work results.

Graduate Learning Outcomes Study Programmes in the 2025 Civil Engineering curriculum can be seen in Table 5. 2 below.

Table 5. 2 Graduate Learning Outcomes Study Programme2

No	Description of Programme Learning Outcomes (PLO)	Minimum Graduation Score	Performance Indicators
PLO -1	Able to apply knowledge of mathematics, science and scientific basics to strengthen understanding in the field of civil engineering.	50	1. Using mathematical and physics concepts in solving basic engineering problems. 2. Explain the relationship between basic science and civil engineering phenomena precisely. 3. Carry out engineering calculations with accountable accuracy. 4. Presenting the results of the application of basic concepts in the form of simple analysis or simulation.
PLO -2	Able to design environmentally friendly construction by paying attention to health, safety and sustainability aspects	50	1. Integrate K3 (Occupational Health and Safety) parameters in construction design. 2. Consider environmental impact and sustainability in infrastructure design. 3. Choose materials or construction methods that support energy efficiency and waste reduction. 4. Produce designs that meet safety and environmental sustainability standards.
PLO-3	Able to select and apply the right resources in civil engineering activities, by utilising information technology-based design and analysis tools effectively and efficiently	50	1. Identify relevant human resources, materials, methods and equipment. 2. Use civil engineering design and analysis software effectively. 3. Manage resource usage to achieve time and cost efficiency. 4. Evaluating the performance of information technology-based resources.
PLO-4	Able to professionally and with integrity manage and identify computer-based	50	1. Apply technical standards and construction regulations to the construction work process.

No	Description of Programme Learning Outcomes (PLO)	Minimum Graduation Score	Performance Indicators
	construction work, in accordance with applicable ethics and technical provisions		2. Demonstrate a professional attitude, integrity and ethical compliance in project implementation. 3. Identify technical and administrative risks in construction work. 4. Carry out project quality and safety control according to standards.
PLO-5	Able to analyse construction problems based on basic civil engineering principles.	50	1. Describe civil engineering problems systematically and based on data. 2. Perform modelling, simulation, or calculations to support problem diagnosis. 3. Assess alternative solutions based on technical parameters and system constraints. 4. Conclude solutions based on analysis results with clear technical arguments.
PLO-6	Able to work together in a construction team, apply socio-engineering principles, and adapt to developments in science and technology in various fields	50	1. Actively participate in teamwork across Expertise Groups. 2. Demonstrate adaptive ability to developments in construction technology. 3. Identify social, cultural and community aspects in civil engineering solutions. 4. Manage conflict and team dynamics to achieve shared goals.
PLO-7	Able to convey information verbally and in writing effectively, using various appropriate communication media	50	1. Prepare technical reports that are systematic, clear and in accordance with academic principles. 2. Presenting ideas or work results orally using presentation media. 3. Use engineering terms appropriately in technical communications. 4. Adapt the form of communication to technical and non-technical audiences.
PLO-8	Able to identify the source of engineering problems through the process of	50	1. Collect data through observation, surveys, or laboratory/field testing.

No	Description of Programme Learning Outcomes (PLO)	Minimum Graduation Score	Performance Indicators
	investigation, analysis and interpretation of data and information based on engineering principles		2. Perform technical data validation and verification. 3. Interpret data to identify root engineering problems. 4. Relate findings to basic civil engineering principles in formulating solutions.
PLO-9	Able to make strategic decisions and develop professional knowledge based on Islamic values through logical, critical, systematic and creative scientific research, and supported by mastery of international languages, digital literacy and sharia-based entrepreneurship for the benefit of society.	50	1. Demonstrate a trustworthy, fair and professional attitude in decision making. 2. Produce logical, critical, systematic and creative scientific work. 3. Use international languages in academic or technical communications. 4. Developing sharia-based entrepreneurial ideas in the construction services sector. 5. Demonstrate the contribution of technical solutions that are oriented towards the benefit of society.
PLO-10	Able to analyse economic developments in order to realise public infrastructure projects and develop the construction industry	50	1. Identify economic parameters that influence public infrastructure projects. 2. Analyse the technical-economic feasibility of construction projects. 3. Assess the impact of economic policies on the construction industry. 4. Formulate a construction sector development strategy based on economic analysis.

Unissula established the University's Programme Learning Outcomes (PLO) as the basis for global values, character and competencies that all graduates must have. The University PLO consists of:

PLO-ULA. 1: Able to make strategic decisions to solve problems, demonstrate an attitude of commanding good, rejecting evil, and having faith in Allah SWT, by mastering the concept of Islam as a way of life to build Islamic civilization and making Islamic values the basis for professional behaviour in providing the best service to the community.

PLO-ULA. 2: Able to develop knowledge and professional skills based on Islamic values through logical, critical, systematic and creative scientific research, supported by mastery of international languages, digital literacy and sharia-based entrepreneurship, as well as mastery of the field of expertise with the highest standards based on monotheism and maqasid sharia.

In order to ensure the integration of the academic system and alignment with institutional goals, the Study Programme PLO is formulated by referring to and integrating the University's PLO. The mapping was carried out to ensure that Islamic values, professionalism, lifelong learning, internationalization, digital literacy and entrepreneurship which characterise the institution have been accommodated operationally in the PLO-9 Bachelor of Civil Engineering. The correlation results between the University PLO and the PLO-9 Bachelor of Civil Engineeringare presented in table 5. 3 below.

Table 5. 3 Correlation between Unissula PLO and Bachelor of Civil Engineering PLO3

PLO Unissula	Unissula PLO Keywords	Keywords PLO-9 PSTS
PLO-ULA. 1: Able to make strategic decisions to solve problems, demonstrate an attitude of commanding good, rejecting evil, and having faith in Allah SWT, by mastering the concept of Islam as a way of life to build Islamic civilization and making Islamic values the basis for professional behaviour in providing the best service to the community	Strategic decisions	Strategic decision making
	Problem solving	Professional problem solving
	Amar ma'ruf nahi evil	Islamic values as a professional foundation
	Faith in Allah SWT	Islamic Values (tawhid)
	Islamic way of life	Islamic values as a basis for behaviour
	Islamic Civilization	Community benefit
	Islamic values for professional behaviour	Based on Islamic values
	Community service	Community service/benefit
PLO-ULA. 2: Able to develop knowledge and professional skills based on Islamic values through logical, critical, systematic and creative scientific research, supported by mastery of international languages, digital literacy and sharia-based entrepreneurship, as well as mastery of their field of expertise with the highest standards based on monotheism and maqasid sharia	Scientific & skills development	Professional scientific development
	Logical research	Logical scientific research
	Critical	Critical scientific research
	Systematic	Systematic scientific research
	Creative	Creative scientific research
	International language	Mastery of international languages
	Digital literacy	Digital literacy
	Sharia entrepreneurship	Sharia-based entrepreneurship
	High standards (craftsmanship)	Professional science
	Tauhid & maqasid sharia	Islamic values (sharia based)

The Bachelor of Civil Engineering PLO covers all aspects described in KKNI Level 6, shown in Table 6. PLO also conforms to the general criteria formulated by IABEE, as explained in Table 5. 4.

Table 5. 4 Correlation of learning outcomes with KKNI Level 64

Description of KKNI Level 6	PLO Bachelor of Civil Engineering									
	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8	PLO 9	PLO 10
Able to apply their field of expertise and utilise science, technology and/or art in their field to solve problems and be able to adapt to the situations they face.		✓	✓					✓		✓
Master the theoretical concepts of a particular field of knowledge in general and the theoretical concepts of a specific part of that field of knowledge in depth, and be able to formulate procedural problem solving.	✓						✓			
Able to make the right decisions based on information and data analysis, and able to provide guidance in choosing various alternative solutions independently and in groups.					✓	✓				
Responsible for one's own work and can be given responsibility for achieving the organisation's work results.				✓					✓	

The Bachelor of Civil Engineering PLO covers all aspects described in KKNI Level 6, shown in Table 5. 4 above. PLO also has a correlation with the IABEE criteria which can be seen in Table 5. 5 below.

Table 5. 5 Correlation of TS Study Programme PLO with IABEE Criteria5

IABEE Criteria	PLO Bachelor of Civil Engineering									
	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8	PLO 9	PLO 10
Ability to apply knowledge of mathematics, natural and/or materials science, information technology and engineering to gain a thorough understanding of engineering principles.	✓									
Ability to design components, systems and/or processes to meet expected needs within realistic constraints, for example legal, economic, environmental, social, political, health and safety, sustainability and to recognise and/or utilise the potential of local and national resources with a global perspective.		✓	✓							✓
Ability to design and conduct laboratory and/or field experiments and analyse and interpret data to strengthen engineering judgement								✓		
Ability to identify, formulate, analyse and solve engineering problems	✓					✓		✓		
Ability to apply modern engineering methods, skills and tools required for engineering practice			✓	✓						
Ability to communicate							✓		✓	

IABEE Criteria	PLO Bachelor of Civil Engineering									
	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8	PLO 9	PLO 10
effectively both verbally and in writing										
Ability to plan, complete and evaluate tasks within existing constraints				✓						✓
Ability to work in cross-disciplinary and cross-cultural teams						✓				
Ability to be responsible to society and comply with professional ethics in solving engineering problems		✓		✓					✓	
Ability to understand the need for lifelong learning, including access to knowledge related to relevant current issues						✓			✓	

5.3 PLO Relationship Matrix and Graduate Profile

Graduate Learning Outcomes has been prepared so that it fulfills all Graduate Profiles formulated by the Bachelor of Civil Engineering, below is the relationship matrix for study programme PLO and Graduate Profiles in the 2025 Civil Engineering curriculum can be seen in Table 5. 6 below.

Table 5. 6 Relationship Matrix for Study Programme PLO & Graduate Profile6

PLO Study Programme		Profile of Study Programme Graduates	
		PL-1	PL-2
PLO 1	Able to apply knowledge of mathematics, science and scientific basics to strengthen understanding in the field of civil engineering.	✓	
PLO 2	Able to design environmentally friendly construction by paying attention to health, safety and sustainability aspects	✓	
PLO 3	Able to select and apply the right resources in civil engineering activities, by utilising information technology-based design and analysis tools effectively and efficiently	✓	
PLO 4	Able to professionally and with integrity manage and identify computer-based construction work, in accordance with applicable ethics and technical provisions	✓	

PLO Study Programme		Profile of Study Programme Graduates	
		PL-1	PL-2
PLO 5	Able to analyse construction problems based on basic civil engineering principles.	✓	
PLO 6	Able to work together in a construction team, apply socio-engineering principles, and adapt to developments in science and technology in various fields		✓
PLO 7	Able to convey information verbally and in writing effectively, using various appropriate communication media		✓
PLO 8	Able to identify the source of engineering problems through the process of investigation, analysis and interpretation of data and information based on engineering principles	✓	
PLO 9	Able to make strategic decisions and develop professional knowledge based on Islamic values through logical, critical, systematic and creative scientific research, and supported by mastery of international languages, digital literacy and sharia-based entrepreneurship for the benefit of society.		✓
PLO 10	Able to analyse economic developments in order to realise public infrastructure projects and develop the construction industry	✓	

CHAPTER VI
DETERMINATION OF STUDY MATERIALS AND CORRELATION MATRIX WITH PLO

6.1 Overview of the Body of Knowledge (BoK)

Body of Knowledge (BoK) is a component/material that must be studied/taught to achieve the planned learning outcomes. Body of Knowledge can be in the form of one or more branches of knowledge and their branches of knowledge, or a group of knowledge that has been integrated into new knowledge that has been agreed by a similar study programme forum as a characteristic of the study programme's field of knowledge. The Bachelor of Civil Engineering body of knowledge is defined as the attitudes, knowledge, and skills required to enter civil engineering practice at a professional level.

The 2025 Curriculum Bachelor of Civil Engineering adopts ASCE proposals related to knowledge in the Civil Engineering Body of Knowledge, namely:

1. Basic Science (Foundational Outcomes)
2. Basic Engineering Sciences (Engineering Fundamentals Outcomes)
3. Technical Sciences (Technical Outcomes)
4. Professional Knowledge (Professional Outcomes)

Foundational outcomes act as a foundation for civil engineering knowledge as well as most other learned professions. Engineering fundamentals outcomes act as a bridge between foundational outcomes and technical outcomes for those studied by civil engineers and other engineering disciplines, which are fulfilled as part of undergraduate education. Technical outcomes provide knowledge that is more specific to civil engineering, focusing on the interpersonal and professional skills required to succeed in civil engineering practice at a professional level. Figure 6. 1 shows the hierarchy of achievements of the Civil Engineering body of knowledge (Civil Engineering Body of Knowledge Outcomes).

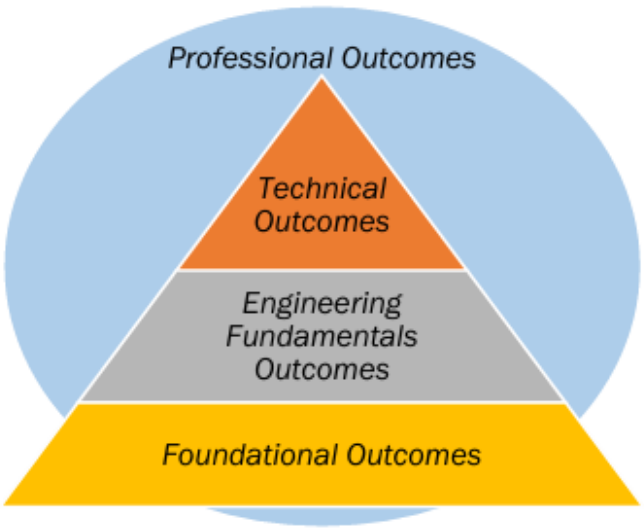


Figure 6. 1 Hierarchy of Civil Engineering Body of Knowledge Achievements1

Descriptions of 21 Study Materials from the Body of Knowledge achievements in the 2025 Curriculum for the Bachelor of Civil Engineering can be seen in Table 6. 1.

Table 6. 1 Study Material for the Body of Civil Engineering Knowledge1

Body of Knowledge	Code	Study Materials
Basic Science (Foundational Outcomes)	BK 1. 1	Mathematics (Mathematics)
	BK 1. 2	Natural Sciences (Natural Sciences)
	BK 1. 3	Social Sciences (Social Sciences)
	BK 1. 4	Humanities
Basic Engineering Science (Engineering Fundamentals Outcomes)	BK 2. 1	Materials Science (Material Sciences)
	BK 2. 2	Engineering Mechanics
	BK 2. 3	Experimental Methods and Data Analysis (Experiments Methods and Data Analysis)
	BK 2. 4	Critical Thinking and Problem Solving (Critical Thinking and Problem Solving)
Technical Sciences (Technical Outcomes)	BK 3. 1	Project Management (Project Management)
	BK 3. 2	Engineering Economics (Engineering Economics)
	BK 3. 3	Risk and Uncertainty (Risk and Uncertainty)
	BK 3. 4	Breadth in Civil Engineering Areas
	BK 3. 5	Design
	BK 3. 6	Depth in Civil Engineering Areas
	BK 3. 7	Sustainability
Professional Science (Professional Outcomes)	BK 4. 1	Communication
	BK 4. 2	Teamwork and Leadership (Teamwork and Leadership)
	BK 4. 3	Lifelong Learning (Lifelong Learning)
	BK 4. 4	Professional Attitudes (Professional Attitudes)
	BK 4. 5	Professional Responsibilities (Professional Responsibilities)
	BK 4. 6	Ethical Responsibilities

6.2 Description of Study Materials

Descriptions of study materials in the Outcome Based Education (OBE) curriculum for the Bachelor of Civil Engineering are prepared as a representation of the scope of scientific substance that supports the formation of graduate competencies in accordance with the predetermined profile. This study material describes material coverage in a systematic and structured manner as a basis for developing knowledge, skills and professional attitudes, while ensuring integration between academic substance, learning processes and expected learning outcomes within the OBE curriculum framework. Details of the study materials are presented in Table 6. 2 below.

Table 6. 2 Description of study materials2

No	Study Material Code	BK Description
1	BK 1. 1	Apply mathematical concepts and principles, including differential equations and numerical methods, to solve civil engineering problems
2	BK 1. 2	Apply concepts and principles of chemistry, calculus-based physics, and at least one other natural science field, to solve civil engineering problems
3	BK 1. 3	Apply social science concepts and principles relevant to civil engineering

No	Study Material Code	BK Description
4	BK 1. 4	Applying humanities aspects in solving civil engineering problems
5	BK 2. 1	Apply materials science concepts and principles to solve civil engineering problems
6	BK 2. 2	Apply the concepts and principles of solid and fluid mechanics to solve civil engineering problems
7	BK 2. 3	Conduct experiments in at least two specialty areas of civil engineering and report the results
8	BK 2. 4	Formulate possible solutions to complex problems, questions, or issues relevant to civil engineering
9	BK 3. 1	Explain the concepts and principles of project management
10	BK 3. 2	Apply the concepts and principles of engineering economics in civil engineering practice
11	BK 3. 3	Apply statistical and probability concepts and principles to determine risks relevant to civil engineering
12	BK 3. 4	Apply concepts and principles to prevent complex problems in at least four specialised areas of civil Engineering practice
13	BK 3. 5	Apply the Engineering design process to a specific set of requirements and constraints to prevent complex civil Engineering problems
14	BK 3. 6	Explains advanced concepts and principles related to specific areas that are appropriate to civil engineering practice
15	BK 3. 7	Apply sustainability concepts and principles to solve complex civil engineering problems
16	BK 4. 1	Formulate effective and persuasive communications for technical and non-technical audiences. Practice effective and persuasive communication to technical and non-technical audiences.
17	BK 4. 2	Apply the concepts and principles of teamwork and leadership, including diversity and inclusion, in solving civil engineering problems. Practices the concepts and principles of teamwork, leadership, diversity, and inclusion.
18	BK 4. 3	Explain the need for additional knowledge, skills and attitudes that must be obtained through independent learning. Participate in lifelong learning opportunities.
19	BK 4. 4	Describes professional attitudes relevant to the practice of civil engineering, including creativity, curiosity, flexibility, and dependability. Practice professional attitudes relevant to civil engineering practice, including creativity, curiosity, flexibility, and dependability.
20	BK 4. 5	Explains professional responsibilities relevant to the practice of civil engineering, including safety, legal issues, licensing, credentialing, and innovation. Examines professional responsibilities relevant to the practice of civil engineering including safety, legal issues, licensing, credentialing, and innovation.
21	BK 4. 6	Applying appropriate reasoning to an ethical dilemma. Comply with the applicable code of ethics.

6.3 Correlation Matrix of Study Materials with PLO

Based on the description of the Body of Knowledge, a number of study materials were

obtained which became references in forming the curriculum structure. So that the achievements can be analysed systematically, the study material is then mapped to the PLO of the Bachelor of Civil Engineering which can be seen in Table 6. 3.

Table 6. 3 Correlation matrix between BK and PLO.3

Code	Study Materials	Graduate Learning Outcomes Bachelor of Civil Engineering									
		PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8	PLO 9	PLO 10
BK 1. 1	Mathematics	✓									
BK 1. 2	Natural Sciences	✓									
BK 1. 3	Social Sciences	✓					✓			✓	
BK 1. 4	Humanities									✓	
BK 2. 1	Materials Science	✓									
BK 2. 2	Engineering Mechanics	✓				✓					
BK 2. 3	Experimental Methods and Data Analysis								✓		
BK 2. 4	Critical Thinking and Problem Solving	✓				✓			✓		
BK 3. 1	Manajemen Proyek			✓	✓						✓
BK 3. 2	Engineering Economics										✓
BK 3. 3	Risk and Uncertainty				✓	✓			✓		✓
BK 3. 4	Breadth in the Field of Civil Engineering	✓	✓	✓	✓						
BK 3. 5	Design		✓	✓							
BK 3. 6	Depth in Civil Engineering		✓	✓							
BK 3. 7	Sustainability		✓							✓	
BK 4. 1	Communication							✓			
BK 4. 2	Teamwork and Leadership				✓		✓	✓			
BK 4. 3	Lifelong Learning	✓		✓			✓	✓		✓	
BK 4. 4	Professional Attitude				✓	✓					
BK 4. 5	Professional Responsibility				✓					✓	✓
BK 4. 6	Ethical Responsibility		✓		✓					✓	

After mapping between Study Materials (BK) and Programme Learning Outcomes (PLO), the next step is to develop a correlation between Subjects (MK) and Study Materials (BK) as a basis for forming an integrated curriculum structure. This mapping aims to ensure that each course has a clear contribution to the mastery of the study material that has been formulated, so that continuity between curriculum planning and the achievement of graduate competencies can be maintained systematically. The correlation matrix for subjects and study materials in the 2025 Civil Engineering curriculum is presented in Table 6. 4 below.

Table 6. 4 Correlation Matrix between MK and BK.4

No		MK Code	BK																			
			1.1	1.2	1.3	1.4	2.1	2.2	2.3	2.4	3.1	3.2	3.3	3.4	3.5	3.6	3.7	4.1	4.2	4.3	4.4	4.5	4.6
Semester-1																							
1	Pancasila	TS236006001			✓	✓											✓		✓	✓		✓	✓
2	Indonesian Language	TS236006002			✓													✓	✓	✓			
3	Islamic Religious Education	TS236006003			✓	✓											✓	✓	✓	✓		✓	✓
4	Basic Chemistry	TS236007004	✓	✓	✓		✓	✓		✓				✓	✓	✓	✓			✓			✓
5	Digital Information Technology for Academics	TS236007005									✓			✓	✓	✓		✓	✓	✓			
6	English	TS236007006			✓													✓	✓	✓			
7	Mathematics I	TS236008007	✓	✓	✓		✓	✓		✓			✓	✓						✓	✓		
8	Statistics and Probability	TS236008008	✓	✓	✓		✓	✓	✓	✓			✓	✓						✓			
9	Engineering Drawings	TS236008009									✓		✓	✓	✓	✓			✓	✓	✓	✓	✓
10	Statics I	TS236108010	✓	✓	✓		✓	✓		✓			✓	✓						✓	✓		
Semester-2																							
1	Citizenship Education	TS236006011			✓	✓											✓		✓	✓		✓	✓
2	Basic Physics	TS236007012	✓	✓	✓		✓	✓		✓				✓	✓	✓	✓			✓			✓
3	Mathematics II	TS236008013	✓	✓	✓		✓	✓		✓			✓	✓						✓	✓		
4	Engineering Surveying	TS236008014									✓		✓	✓	✓	✓	✓		✓		✓	✓	✓
5	Engineering Surveying Laboratory	TS236008015			✓														✓	✓			
6	Statics II	TS236108016	✓	✓	✓		✓	✓		✓	✓		✓	✓					✓	✓	✓	✓	✓
7	Engineering Mechanics	TS236108017	✓	✓	✓		✓	✓		✓			✓	✓						✓	✓		
8	Construction Materials Technology	TS236108018									✓		✓	✓	✓	✓	✓		✓		✓	✓	✓
9	Construction Materials Technology Practicum	TS236108019			✓														✓	✓			
10	Geology	TS236208020	✓	✓	✓		✓	✓		✓			✓	✓						✓	✓		
11	Fluid Mechanics and Hydraulics I	TS236308021	✓	✓	✓		✓	✓		✓			✓	✓						✓	✓		
Semester-3																							

1	Building Construction	TS236007022									✓		✓	✓	✓	✓	✓		✓		✓	✓	✓
2	Sharia Entrepreneurship	TS236007023			✓	✓					✓	✓	✓				✓			✓		✓	✓
3	Islamic Disciplines I	TS236007024			✓	✓											✓			✓		✓	✓
4	Mathematics III	TS236008025	✓	✓	✓		✓	✓		✓			✓	✓						✓	✓		
5	Scientific Writing and Research Methodology	TS236008026							✓	✓			✓					✓	✓	✓			
6	Statically Indeterminate Structural Analysis	TS236108027						✓	✓	✓			✓								✓		
7	Soil Mechanics I	TS236208028						✓		✓	✓		✓	✓	✓	✓				✓	✓		
8	Fluid Mechanics and Hydraulics II	TS236308029	✓	✓	✓		✓	✓		✓			✓	✓						✓	✓		
9	Hydraulics Practical	TS236308030			✓														✓	✓			
10	Hydrology	TS236308031	✓	✓	✓		✓	✓		✓			✓	✓						✓	✓		
11	Environmental Science	TS236608032	✓	✓	✓		✓	✓		✓				✓	✓	✓	✓			✓			✓
Semester-4																							
1	Fiqh of Worship	TS236007033			✓	✓					✓		✓	✓			✓		✓	✓	✓	✓	✓
2	Islamic Civilization	TS236007034			✓	✓											✓	✓	✓	✓		✓	✓
3	Mathematics IV	TS236008035						✓	✓	✓			✓								✓		
4	Matrix Method Structural Analysis	TS236108036						✓		✓	✓		✓	✓	✓	✓				✓	✓		
5	Concrete Structures I	TS236108037						✓		✓	✓		✓	✓					✓		✓	✓	✓
6	Road Pavement I	TS236108038						✓		✓	✓		✓	✓					✓		✓	✓	✓
7	Soil Mechanics II	TS236208039						✓		✓	✓		✓	✓					✓		✓	✓	✓
8	Soil Mechanics Practical	TS236208040			✓														✓	✓			
9	Irrigation	TS236308041						✓		✓	✓		✓	✓					✓		✓	✓	✓
10	Land Transportation Engineering	TS236408042						✓		✓	✓		✓	✓					✓		✓	✓	✓
11	Cost Budget Plan and Project Scheduling	TS236508043									✓	✓	✓	✓					✓		✓	✓	✓
Semester-5																							
1	Numerical Methods	TS236007044	✓	✓	✓		✓	✓		✓			✓	✓						✓	✓		
2	Islamic Disciplines II	TS236007045			✓	✓											✓		✓	✓		✓	✓
3	Concrete Structures II	TS236108046						✓		✓	✓		✓	✓					✓		✓	✓	✓

4	Steel Structure	TS236108047							✓	✓	✓		✓	✓					✓		✓	✓	✓
5	Foundation Engineering	TS236208048							✓	✓	✓		✓	✓					✓		✓	✓	✓
6	Retaining Walls and Retaining Walls	TS236208049							✓	✓	✓		✓	✓					✓		✓	✓	✓
7	Water and Drainage Buildings	TS236308050							✓	✓	✓		✓	✓					✓		✓	✓	✓
8	Railway Road	TS236407051							✓	✓	✓		✓	✓					✓		✓	✓	✓
9	Road Pavement II	TS236408052							✓	✓	✓		✓	✓					✓		✓	✓	✓
10	Pavement Laboratory	TS236408053			✓														✓	✓			
Semester-6																							
1	Designing with Computers	TS236008054			✓						✓			✓	✓	✓			✓	✓			
2	Field Work Lectures	TS236012055			✓														✓	✓			
3	Practical Work	TS236012056									✓		✓	✓					✓		✓	✓	✓
4	Structural Dynamic Analysis	TS236108057						✓	✓	✓			✓								✓		
5	Water Resources Development	TS236308058						✓	✓	✓			✓								✓		
6	Highway Geometric	TS236408059						✓	✓	✓			✓								✓		
7	Engineering Economics	TS236508060			✓	✓					✓	✓	✓				✓			✓		✓	✓
8	Occupational Health and Safety	TS236508061			✓	✓								✓	✓	✓	✓			✓		✓	✓
9	Project Management	TS236508062									✓	✓	✓	✓	✓	✓	✓					✓	✓
10	Elective Courses										✓		✓	✓	✓	✓			✓	✓	✓	✓	✓
11	Elective Courses										✓		✓	✓	✓	✓			✓	✓	✓	✓	✓
Semester-7																							
1	Professional Ethics	TS236008063			✓	✓					✓		✓	✓			✓		✓	✓	✓	✓	✓
2	Civil Building Design	TS236008064									✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
3	Real Work Lectures	TS236012065			✓													✓	✓	✓			
4	Construction Implementation Methods	TS236508066							✓	✓	✓		✓	✓					✓		✓	✓	✓
5	Environmental Impact Analysis	TS236608067						✓		✓			✓	✓	✓	✓	✓				✓		✓
6	Elective Courses										✓		✓	✓	✓	✓			✓	✓	✓	✓	✓
7	Elective Courses										✓		✓	✓	✓	✓			✓	✓	✓	✓	✓
8	Elective Courses										✓		✓	✓	✓	✓			✓	✓	✓	✓	✓
Semester-8																							

1	Final Project	TS230009068			✓	✓			✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				

CHAPTER VII
FORMATION OF COURSES (MK) AND DETERMINATION OF CREDIT WEIGHTS

7.1 Formation of New Courses

In the 2025 Curriculum there are several new courses prepared based on the evaluation results of the 2019 Curriculum. These courses are designed in an integrated manner with the Programme Learning Outcomes (PLO) Bachelor of Civil Engineering and are in line with the study materials that have been determined. The matrix for forming new courses can be seen in Table 7. 1 below.

Table 7. 1 Formation of New Courses1

MK	BK	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8	PLO 9	PLO 10
Designing with Computers	BK 1. 3 BK 3. 1 BK 3. 4 BK 3. 5 BK 3. 6 BK 4. 2 BK 4. 3			✓			✓				
Professional Ethics	BK 1. 3 BK 1. 4 BK 3. 1 BK 3. 3 BK 3. 4 BK 3. 7 BK 4. 2 BK 4. 3 BK 4. 4 BK 4. 5 BK 4. 6									✓	✓
Perancangan Bangunan Sipil	BK 3. 1 BK 3.		✓		✓		✓	✓			✓

	2 BK 3. 3 BK 3. 4 BK 3. 5 BK 3. 6 BK 3. 7 BK 4. 1 BK 4. 2 BK 4. 3 BK 4. 4 BK 4. 5 BK 4. 6										

7.2 List of Courses, PLO, Study Materials, and Learning Materials

The study materials listed in Table 11 are then divided into courses (MK), each of which is given a weight in semester credit units (SKS). Determining the number of credits for each course is based on the breadth of material coverage (amount of study material) and the level of depth of learning (according to Bloom's taxonomy), which is represented through the weight of the courses against the total weight of the study programme of 144 credits. The course selection process and its weighting are presented in Table 7. 2. Overall, students are required to take 73 courses, consisting of 68 compulsory MK (134 credits) and 5 elective MK (10 credits).

Table 7. 2 List of Courses, PLO, BK, and Learning Materials2

No	PLO	Courses	Study Materials	Extensiveness	In-depth	Weight (%)	Determination of SKS
1	PLO 6, PLO 9	Pancasila	1. History, Basic Values, and Context of the Birth of Pancasila2. Pancasila as the Foundation of the State and National Ideology3. Pancasila as a Public Philosophy and Ethics System4. Pancasila as a Foundation for Scientific and	4	3	1,94	2

No	PLO	Courses	Study Materials	Extensiveness	In-depth	Weight (%)	Determination of SKS
			Professional Development				
2	PLO 6, PLO 7	Indonesian Language	1. The essence of Indonesian as a unified, state and academic language2. Academic and Literary Literacy3. Writing Academic and Activity Proposals4. Writing Scientific Papers	4	3	1,94	2
3	PLO 7, PLO 9	Islamic Religious Education	1. Aqidah and the Concept of God in Islam2. Islam as a System of Life and Happiness in the World–Hereafter3. Morals and Formation of the Whole Human 4. Qur'anic Paradigm in Modern Science and Technology	4	3	1,94	2
4	PLO 1, PLO 2	Basic Chemistry	1. Basic Concepts of Chemistry and Structure of Matter2. Chemical Reactions and Thermodynamics3. Solution Chemistry and Physico-Chemical Properties4. Chemical Applications in Civil Engineering and Construction Materials	4	3	1,94	2

No	PLO	Courses	Study Materials	Extensiveness	In-depth	Weight (%)	Determination of SKS
5	PLO 3, PLO 7	Digital Information Technology for Academics	1. Digital Literacy and Ethics of Intellectual Property Rights2. Digital Information and Data Processing3. Presentation and Management of Scientific References4. Multimedia Content Production	4	3	1,94	2
6	PLO 6, PLO 7	English	1. Language as a Means of Academic and Professional Communication2. Language as an Instrument of Diplomacy and Global Knowledge Transfer3. Integration of Language Skills and Academic Literacy4. Language for Research, International Publications and Global Islamic Da'wah	4	3	1,94	2
7	PLO 1, PLO 5	Mathematics I	1. Numbers and Basic Algebra2. Equations and Inequalities3. Vectors and Basic Analytical Geometry4. Introduction to Logic and Mathematical Structure	4	3	1,94	2
8	PLO 1, PLO 8	Statistics and Probability	1. Probability and Random Variables2. Probability Distribution3. Basic Descriptive and Inferential Statistics4. Data Analysis and Simple Regression	4	3	1,94	2

No	PLO	Courses	Study Materials	Extensiveness	In-depth	Weight (%)	Determination of SKS
9	PLO 3, PLO 4	Engineering Drawings	1. Basic Drawing and Line Representation Techniques2. Projection and Representation of Geometric Shapes3. Basic Building Technical Drawings4. Standards, Symbols, and Conventions in Engineering Drawings	4	3	1,94	2
10	PLO 1, PLO 5	Statics I	1. Principles of Balance and Force Systems2. Support Reactions and Fields of Simple Structures3. Force Diagrams in Structures4. Loading Analysis and Load Effects	4	3	1,94	2
11	PLO 6, PLO 9	Citizenship Education	1. Citizenship Education and National Identity2. Constitution, Rule of Law, and Citizens' Rights and Obligations3. Democracy and State Governance4. Geopolitics, Archipelago Insight, and National Resilience	4	3	1,94	2
12	PLO 1, PLO 2	Basic Physics	1. Basic Mechanics2. Fluids and Waves3. Thermodynamics4. Electromagnetism and Optics	4	3	1,94	2
13	PLO 1, PLO 5	Mathematics II	1. Limits and Continuity2. Derivatives and Applications3. Integrals and their applications4. Basic Calculus Techniques	4	3	1,94	2

No	PLO	Courses	Study Materials	Extensiveness	In-depth	Weight (%)	Determination of SKS
14	PLO 2, PLO 4	Engineering Surveying	1. Basic Measurement Principles and Methods2. Observation Instruments and Techniques3. Calculation of Angles, Distances and Elevation4. Data Processing and Representation of Measurement Results	4	3	1,94	2
15	PLO 6	Engineering Surveying Laboratory	1. Operation of measurement instruments and field data collection using a theodolite and spirit level2. Processing, correction and presentation of measurement results	2	3	0,97	1
16	PLO 1, PLO 4	Statics II	1. Concept of Truss Structure and Laying System2. Axial Force Analysis Method in Bars3. Evaluation of Tensile and Compressive Forces on Elements4. Classification of Loads and Applications in Trusse	4	3	1,94	2
17	PLO 1, PLO 5	Engineering Mechanics	1. Stress, Strain, and Mechanical Properties of Materials2. Deformation and Stress–Strain Relationships3. Analysis of Internal Force and Stress Distribution4. Stability and Strength of Basic Structural Elements	4	3	1,94	2

No	PLO	Courses	Study Materials	Extensiveness	In-depth	Weight (%)	Determination of SKS
18	PLO 2, PLO 4	Construction Materials Technology	1. Mechanical and Physical Properties of Construction Materials2. Concrete Characteristics and Manufacturing Technology3. Characteristics of Steel and Wood and Bamboo Materials4. Performance of Materials in Structural Construction	4	3	1,94	2
19	PLO 6	Construction Materials Technology Laboratory	1. Making samples and testing construction materials2. Analysis of Test Results and Evaluation of Material Performance	2	3	0,97	1
20	PLO 1, PLO 5	Geology	1. Earth and Basic Geological Processes2. Basic Mineralogy and Petrology3. Stratigraphy and Geochronology4. Geomorphology and Landform Forming Agents	4	3	1,94	2
21	PLO 1, PLO 5	Fluid Mechanics and Hydraulics I	1. Fluid Properties and Fluid Statics2. Kinematics and Fluid Dynamics3. Basic Equations of Conservation and Flow in Pipe Systems	3	4	1,94	2
22	PLO 2, PLO 4	Building Construction	1. Structural Systems and Building Elements2. Construction and Connection Details3. Implementation Method and Construction Sequence4. Building Materials, Standards and Performance	4	3	1,94	2

No	PLO	Courses	Study Materials	Extensiveness	In-depth	Weight (%)	Determination of SKS
23	PLO 9, PLO 10	Sharia Entrepreneurship	1. entrepreneurial mindset2. skills in designing and compiling sustainable entrepreneurial concepts3. skills in using technology in carrying out entrepreneurship4. innovation-based business strategy skills	4	3	1,94	2
24	PLO 9	Islamic Disciplines I	1. Islamic Worldview in Science and Civil Engineering 2. Reconstruction of Civil Engineering Scientific Concepts Based on Islamic Values	2	3	0,97	1
25	PLO 1, PLO 5	Mathematics III	1. First Order Differential Equations2. Higher Order Differential Equations3. Systems of Linear Differential Equations4. Basic Mathematical Modelling	4	3	1,94	2
26	PLO 7, PLO 8	Scientific Writing and Research Methodology	1. Concept and Formulation of Research Problems2. Research Methodology and Data Collection Techniques3. Data Analysis and Interpretation Techniques4. Academic Writing Skills and Preparation of Scientific Work	4	3	1,94	2

No	PLO	Courses	Study Materials	Extensiveness	In-depth	Weight (%)	Determination of SKS
27	PLO 5, PLO 8	Statically Indeterminate Structural Analysis	1. Concept of Static Indeterminate Structure and Initial Conditions2. Energy Methods and Force–Deformation Relationships3. Slope-Deflection Method for Portal and Beam Analysis4. Cross Method (Moment Distribution) and Internal Force Evaluation	4	3	1,94	2
28	PLO 3, PLO 5	Soil Mechanics I	1. Soil Physical Properties, Classification, and Consistency2. Effective Stress and Pore Water Pressure3. Soil Compressibility and Consolidation	3	4	1,94	2
29	PLO 1, PLO 5	Fluid Mechanics and Hydraulics II	1. Open Channel Flow and Hydraulic Capacity2. Hydraulic Structure and Flow Regulation3. Energy, Momentum, and Hydraulic System Analysis	3	4	1,94	2
30	PLO 6	Hydraulics Practical	1. Open Channel Flow Testing2. Closed Channel (Pipe) Flow Testing	2	3	0,97	1
31	PLO 1, PLO 5	Hydrology	1. Hydrological Cycle and Hydrometeorological Processes2. Hydrological Data Measurement and Analysis3. DAS4 Runoff and Response. Statistical Hydrological Analysis	4	3	1,94	2

No	PLO	Courses	Study Materials	Extensiveness	In-depth	Weight (%)	Determination of SKS
32	PLO 1, PLO 2	Environmental Science	1. Basic Environmental Concepts and Principles2. Natural Resources and Environmental Carrying Capacity3. Environmental Pollution and Its Impacts4. Sustainability and Environmental Management	4	3	1,94	2
33	PLO 4, PLO 9	Fiqh of Worship	1. the essence of sharia2. science of jurisprudence 3. pillars of Islam 4. hypocritical	4	3	1,94	2
34	PLO 7, PLO 9	Islamic Civilization	1. the essence of Islamic civilization2. history of Islamic civilization3. Birrul Walidain 4. akrimul aulad	4	3	1,94	2
35	PLO 5, PLO 8	Mathematics IV	1. Linear and Matrix Systems2. Determinants and Rank3. Eigenvalues and Eigenvectors4. Vector Spaces and Linear Transformations	4	3	1,94	2
36	PLO 3, PLO 5	Matrix Method Structural Analysis	1. Formulation of Element Stiffness and System Coordinates2. Preparation of Structural Stiffness Systems3. Solving Systems of Structural Equations4. Internal Force Evaluation and Structural Performance Analysis	4	3	1,94	2

No	PLO	Courses	Study Materials	Extensiveness	In-depth	Weight (%)	Determination of SKS
37	PLO 4, PLO 5	Concrete Structures I	1. Material Properties of Concrete and Reinforcing Steel2. Analysis and Design of Basic Reinforced Concrete Structural Elements3. Detailing of Reinforcement and Fulfilment of Technical Requirements	3	4	1,94	2
38	PLO 4, PLO 5	Road Pavement I	1. Pavement Materials and Mechanical Properties2. Pavement Structure Concepts and Systems3. Evaluation and Testing of Pavement Material Quality	3	4	1,94	2
39	PLO 4, PLO 5	Soil Mechanics II	1. Soil Shear Strength and Failure Criteria2. Stresses within the Soil Mass3. Soil and Slope Stability	3	4	1,94	2
40	PLO 4, PLO 5	Soil Mechanics Practical	1. Testing and Characterization of Soil Physical Properties 2. Testing and Evaluation of Soil Mechanical Properties	2	3	0,97	1
41	PLO 4, PLO 5	Irrigation	1. Irrigation Network Hydraulic Design2. Irrigation Management and Operations3. Performance Evaluation and Modernization of Irrigation Systems	3	4	1,94	2

No	PLO	Courses	Study Materials	Extensiveness	In-depth	Weight (%)	Determination of SKS
42	PLO 4, PLO 10	Land Transportation Engineering	1. Land Transportation Systems and Demand2. Transportation Performance Planning and Analysis3. Land Transportation Infrastructure and Operations	3	4	1,94	2
43	PLO 6	Cost Budget Plan and Project Scheduling	1. Cost Estimation and Preparation of Project Budget Plan2. Project Implementation Planning and Scheduling3. Project Cost and Time Control	3	4	1,94	2
44	PLO 1, PLO 5	Numerical Methods	1. Basics of Numerical Representation and Computational Error2. Methods for Solving Mathematical Problems Numerically3. Numerical Methods for Systems of Linear Equations and Calculus Operations4. Implementation of Computational Algorithms and Convergence Analysis	4	3	1,94	2

No	PLO	Courses	Study Materials	Extensiveness	In-depth	Weight (%)	Determination of SKS
45	PLO 6, PLO 9	Islamic Disciplines II	1. Critical Analysis of Western and Secular Perspectives in the Discipline of Civil Engineering2. Identify Contradictions between the Civil Engineering Discipline and the Islamic Worldview3. Deconstruction and Elimination of Secular Values in Civil Engineering 4. Formulation of Civil Engineering Science Based on Maqasid Sharia and Public Benefit	4	3	1,94	2
46	PLO 4, PLO 5	Concrete Structures II	1. Structural Behaviour and Interaction of Reinforced Concrete Elements2. Analysis and Design of Reinforced Concrete Structural Systems3. Engineering Details and Applications of Advanced Concrete Design Standards	3	4	1,94	2
47	PLO 4, PLO 8	Steel Structure	1. Behaviour of Steel Materials and Components in Tensile, Compressive and Bending2. Analysis and Design of Steel Truss and Portal Structural Systems3. Detailing, Connections, and Implementation of Design Standards	3	4	1,94	2
48	PLO 4, PLO 8	Foundation Engineering	1. Type and Selection of Foundations2. Foundation Design3. Foundation	3	4	1,94	2

No	PLO	Courses	Study Materials	Extensiveness	In-depth	Weight (%)	Determination of SKS
			Implementation and Monitoring Methods				
49	PLO 4, PLO 8	Retaining Walls and Sheet Piles	1. Types and Design Concepts of Retaining Walls2. Soil Lateral Pressure Analysis3. Calculation and structural design of retaining walls and sheet piles	3	4	1,94	2
50	PLO 4, PLO 8	Water and Drainage Buildings	1. Drainage Channel Design2. Complementary Building Design3. Flood Management System Design	3	4	1,94	2
51	PLO 4, PLO 8	Railway Road	1. Rail Design and Rail Placement2. Bearing and Ballast Design3. Design of Base Layer Pavement and Supporting Structures	3	4	1,94	2
52	PLO 4, PLO 8	Road Pavement II	1. Thickness Planning and Pavement Structure Design2. Pavement Performance, Damage and Maintenance3. Latest Pavement Standards, Methods and Technology	3	4	1,94	2
53	PLO 6	Pavement Laboratory	1. Asphalt Material Testing2. Job Mix Design Asphalt Mixture	2	3	0,97	1
54	PLO 3, PLO 6	Designing with Computers	1. Structural Modeling2. Building Structural Analysis to obtain internal forces and structural stability3. Design of 3 Dimensional Portal Structural Elements	3	4	1,94	2
55	PLO 6	Field Work Lectures	1. Observation of the Construction Implementation Process 2. Field	2	3	0,97	1

No	PLO	Courses	Study Materials	Extensiveness	In-depth	Weight (%)	Determination of SKS
			Analysis and Documentation				
56	PLO 4, PLO 6	Practical Work	1. Observation of the Project Implementation Process 2. Project and Workforce Management3. Work Quality and Safety4. Report Documentation and Analysis	4	3	1,94	2
57	PLO 5, PLO 8	Structural Dynamic Analysis	1. Linear Dynamic Analysis2. Analysis of Earthquake Loads and Lateral Dynamics3. Resonance Analysis and Transient Response4. Design of Structures against Vibration	4	3	1,94	2
58	PLO 5, PLO 8	Water Resources Development	1. Hydrological Planning and Analysis2. Water Building Design3. Distribution and Drainage System	3	4	1,94	2
59	PLO 5, PLO 8	Highway Geometric	1. Design of Road Paths and Axes2. Road and Lane Width3. Intersections and Complementary Elements	3	4	1,94	2
60	PLO 9, PLO 10	Engineering Economics	1. Concept of Value for Money and Cost Analysis2. Project Economic Feasibility Analysis3. Alternative and Sensitivity Analysis4. Life Cycle Costing Analysis	4	3	1,94	2

No	PLO	Courses	Study Materials	Extensiveness	In-depth	Weight (%)	Determination of SKS
61	PLO 2, PLO 9	Occupational Health and Safety	1. Basics of Occupational Health and Safety2. Hazard Control and Accident Prevention3. Safety on Tools and Machines4. Accident Preparedness and Management	4	3	1,94	2
62	PLO 2, PLO 10	Project Management	1. Project Planning2. Project Control3. Performance Evaluation and Project Closure	3	4	1,94	2
63	PLO 4, PLO 9	Professional Ethics	1. Basic principles of professional ethics 2. Professional responsibility 3. Ethical conflicts and decision making4. Application of professional ethics in the field	4	3	1,94	2
64	PLO 2, PLO 4, PLO 6, PLO 7, PLO 10	Civil Building Design	1. Project programme planning2. Load Analysis and structural modeling3. Design of the building's superstructure 4. Geotechnical and foundation analysis5. Cost analysis and planning documents6. Construction method	6	4	3,87	4
65	PLO 6, PLO 7	Real Work Lectures	1. Activeness 2. Creativity 3. Problem solving 4. Collaboration 5. Performance 6. Report writing	6	3	2,90	3

No	PLO	Courses	Study Materials	Extensiveness	In-depth	Weight (%)	Determination of SKS
66	PLO 4, PLO 8	Construction Implementation Methods	1. Construction implementation planning 2. Method of implementing the foundation structure3. Method of implementing the superstructure4. Evaluation and Optimization of implementation	4	3	1,94	2
67	PLO 2, PLO 5	Environmental Impact Analysis	1. Identify environmental impacts2. Environmental impact analysis3. Evaluation and prioritization of impacts4. Mitigation and monitoring plans	4	3	1,94	2
68	PLO 2, PLO 4, PLO 7, PLO 8, PLO 9	Final Project	1. Write research reports according to the correct methodology. Mastery of basic and practical knowledge about civil engineering 3. Analytical skills4. Extent of research5. Depth of research6. Able to conclude and present research well	6	4	3,87	4
69	PLO 3, PLO 4	MK Option 1					2
70	PLO 3, PLO 4	MK Option 2					2
71	PLO 3, PLO 4	MK Option 3					2
72	PLO 3, PLO 4	MK Option 4					2
73	PLO 3, PLO 4	MK Choice 5					2
Number of credits							144

7.3 Determination of Course PLO Weights

Determination of the Programme Learning Outcomes (PLO) weight for each course is

carried out to ensure harmony between the graduate profile, PLO of the study programme, and the contribution of each course in the Outcome-Based Education (OBE) based curriculum structure. This weighting reflects the level of contribution and proportion of achievements assigned to each course according to the depth of the material, the weight of credits, and their strategic role in supporting the competency of graduates of the Bachelor of Civil Engineering. With this mapping and weighting, the measurability of learning outcomes becomes more systematic, structured and documented as part of the academic quality assurance mechanism. Details of the PLO weight distribution for each course in the 2025 Curriculum for the Bachelor of Civil Engineering can be seen in Table 7. 3 below.

Table 7. 3 Determination of Course PLO Weights3

No	MK's name	SKS weight	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8	PLO 9	PLO 10	Total
1	Pancasila	2						0,8			1,2		2
2	Indonesian Language	2						0,8	1,2				2
3	Islamic Religious Education	2							0,6		1,4		2
4	Basic Chemistry	2	1,6	0,4									2
5	Digital Information Technology for Academics	2			1,2				0,8				2
6	English	2						0,8	1,2				2
7	Mathematics I	2	1,6				0,4						2
8	Statistics and Probability	2	1,4							0,6			2
9	Engineering Drawings	2			1	1							2
10	Statics I	2	1,2				0,8						2
11	Citizenship Education	2						0,8			1,2		2
12	Basic Physics	2	1,6	0,4									2
13	Mathematics II	2	1,6				0,4						2
14	Engineering Surveying	2		0,6		1,4							2
15	Engineering Surveying Laboratory	1						1					1
16	Statics II	2	1			1							2
17	Engineering Mechanics	2	1				1						2
18	Construction Materials Technology	2		1,4		0,6							2
19	Construction Materials Technology Practicum	1						1					1
20	Geology	2	1,4				0,6						2
21	Fluid Mechanics and Hydraulics I	2	1,2				0,8						2
22	Building Construction	2		1,2		0,8							2
23	Sharia Entrepreneurship	2									0,6	1,4	2
24	Islamic Disciplines I	1									1		1
25	Mathematics III	2	1,6				0,4						2

No	MK's name	SKS weight	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8	PLO 9	PLO 10	Total
26	Scientific Writing and Research Methodology	2							1,4	0,6			2
27	Statically Indeterminate Structural Analysis	2					1,2			0,8			2
28	Soil Mechanics I	2			1		1						2
29	Fluid Mechanics and Hydraulics II	2	1				1						2
30	Hydraulics Practical	1						1					1
31	Hydrology	2	1,2				0,8						2
32	Environmental Science	2	1,2	0,8									2
33	Fiqh of Worship	2				0,4					1,6		2
34	Islamic Civilization	2							0,8		1,2		2
35	Mathematics IV	2					0,6			1,4			2
36	Matrix Method Structural Analysis	2			1		1						2
37	Concrete Structures I	2				1	1						2
38	Road Pavement I	2				1	1						2
39	Soil Mechanics II	2				1	1						2
40	Soil Mechanics Laboratory	1						1					1
41	Irrigation	2				1	1						2
42	Land Transportation Engineering	2				1	1						2
43	Cost Budget Plan and Project Scheduling	2				0,4						1,6	2
44	Numerical Methods	2	1,2				0,8						2
45	Islamic Disciplines II	2						0,8			1,2		2
46	Concrete Structures II	2				1	1						2
47	Steel Structure	2				1				1			2
48	Foundation Engineering	2				1				1			2
49	Retaining Walls and Retaining Walls	2				1				1			2
50	Water and Drainage Buildings	2				1				1			2
51	Railway Road	2				1				1			2
52	Road Pavement II	2				1				1			2
53	Pavement Laboratory	1						1					1
54	Designing with Computers	2			1,2			0,8					2
55	Field Work Lectures	1						1					1
56	Practical Work	2				0,6		1,4					2

No	MK's name	SKS weight	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8	PLO 9	PLO 10	Total
57	Structural Dynamic Analysis	2					1			1			2
58	Water Resources Development	2					1			1			2
59	Highway Geometric	2					1			1			2
60	Engineering Economics	2									0,6	1,4	2
61	Occupational Health and Safety	2		1,4							0,6		2
62	Project Management	2		0,6								1,4	2
63	Professional Ethics	2									1,2	0,8	2
64	Civil Building Design	4		0,4		1,2		0,8	0,4			1,2	4
65	Real Work Lectures	3						1,2	1,2		0,6		3
66	Construction Implementation Methods	2				1				1			2
67	Environmental Impact Analysis	2		1,2			0,8						2
68	Final Project	4		0,8		0,8			1,6	0,4	0,4		4
69	MK Option 1	2			1	1							2
70	MK Option 2	2			1	1							2
71	MK Option 3	2			1	1							2
72	MK Option 4	2			1	1							2
73	MK Choice 5	2			1	1							2

CHAPTER VIII
COURSE STRUCTUR

8.1 Study Programme Subject Structure Matrix

The curriculum structure in matrix form shown in Table 8. 1 is a mapping of all mandatory courses presented by study programmes in accordance with the Compulsory University Subjects (MKWU), Compulsory Curriculum Subjects (MKWK) and Expertise Subjects (MKK) groups. From Table 8. 1, there are a total of 134 credits of mandatory courses that students must take in the 2025 Civil Engineering Curriculum.

Table 8. 1 Curriculum Structure1

Sem	Credits/Sem	Code	Courses	SKS	Course Classification
1	20	TS236006001	Pancasila	2	University Course
		TS236006002	Indonesian Language	2	University Course
		TS236006003	Islamic Religious Education	2	University Course
		TS236007004	Basic Chemistry	2	Compulsory Course
		TS236007005	Digital Information Technology for Academics	2	University Course
		TS236007006	English	2	University Course
		TS236008007	Mathematics I	2	Compulsory Course
		TS236008008	Statistics and Probability	2	Compulsory Course
		TS236008009	Engineering Drawings	2	Compulsory Course
		TS236108010	Statics I	2	Compulsory Course
2	20	TS236006011	Citizenship Education	2	University Course
		TS236007012	Basic Physics	2	Compulsory Course
		TS236008013	Mathematics II	2	Compulsory Course
		TS236008014	Engineering Surveying	2	Compulsory Course
		TS236008015	Engineering Surveying Laboratory	1	Compulsory Course
		TS236108016	Statics II	2	Compulsory Course
		TS236108017	Engineering Mechanics	2	Compulsory Course
		TS236108018	Construction Materials Technology	2	Compulsory Course
		TS236108019	Construction Materials Technology Practicum	1	Compulsory Course

Sem	Credits/Sem	Code	Courses	SKS	Course Classification
		TS236208020	Geology	2	Compulsory Course
		TS236308021	Fluid Mechanics and Hydraulics I	2	Compulsory Course
3	20	TS236007022	Building Construction	2	Compulsory Course
		TS236007023	Sharia Entrepreneurship	2	University Course
		TS236007024	Islam and Scientific Disciplines I	1	University Course
		TS236008025	Mathematics III	2	Compulsory Course
		TS236008026	Scientific Writing and Research Methodology	2	Compulsory Course
		TS236108027	Statically Indeterminate Structural Analysis	2	Compulsory Course
		TS236208028	Soil Mechanics I	2	Compulsory Course
		TS236308029	Fluid Mechanics and Hydraulics II	2	Compulsory Course
		TS236308030	Hydraulics Practical	1	Compulsory Course
		TS236308031	Hydrology	2	Compulsory Course
		TS236608032	Environmental Science	2	Compulsory Course
4	21	TS236007033	Fiqh of Worship	2	University Course
		TS236007034	Islamic Civilization	2	University Course
		TS236008035	Mathematics IV	2	Compulsory Course
		TS236108036	Matrix Method Structural Analysis	2	Compulsory Course
		TS236108037	Concrete Structures I	2	Compulsory Course
		TS236108038	Road Paving I	2	Compulsory Course
		TS236208039	Soil Mechanics II	2	Compulsory Course
		TS236208040	Soil Mechanics Practical	1	Compulsory Course
		TS236308041	Irrigation	2	Compulsory Course
		TS236408042	Land Transportation Engineering	2	Compulsory Course
		TS236508043	Cost Budget Plan and Project Scheduling	2	Compulsory Course

Sem	Credits/Sem	Code	Courses	SKS	Course Classification
5	19	TS236007044	Numerical Methods	2	Compulsory Course
		TS236007045	Islamic Disciplines II	2	University Course
		TS236108046	Concrete Structures II	2	Compulsory Course
		TS236108047	Steel Structure	2	Compulsory Course
		TS236208048	Foundation Engineering	2	Compulsory Course
		TS236208049	Retaining Walls and Retaining Walls	2	Compulsory Course
		TS236308050	Water and Drainage Buildings	2	Compulsory Course
		TS236407051	Railway Road	2	Compulsory Course
		TS236408052	Road Paving II	2	Compulsory Course
		TS236408053	Pavement Laboratory	1	Compulsory Course
6	17	TS236008054	Designing with Computers	2	Compulsory Course
		TS236012055	Field Work Lectures	1	Compulsory Course
		TS236012056	Practical Work	2	Compulsory Course
		TS236108057	Structural Dynamic Analysis	2	Compulsory Course
		TS236308058	Water Resources Development	2	Compulsory Course
		TS236408059	Highway Geometric	2	Compulsory Course
		TS236508060	Engineering Economics	2	Compulsory Course
		TS236508061	Occupational Health and Safety	2	Compulsory Course
		TS236508062	Manajemen Proyek	2	Compulsory Course
7	13	TS236008063	Professional Ethics	2	Compulsory Course
		TS236008064	Civil Building Design	4	Compulsory Course
		TS236012065	Real Work Lectures	3	Compulsory Course
		TS236508066	Construction Implementation Methods	2	Compulsory Course
		TS236608067	Environmental Impact Analysis	2	Compulsory Course

Sem	Credits/Sem	Code	Courses	SKS	Course Classification
8	4	TS230009068	Final Project	4	Compulsory Course

The 2025 Curriculum Bachelor of Civil Engineering provides elective courses which are included in the Expansion and Deepening Course Classification (MKPP) which students must take for 10 credits. Students can take elective courses in even or odd semesters. The list of elective courses in the 2025 Civil Engineering curriculum can be seen in Table 8. 2 below.

Table 8. 2 List of Expansion and Deepening Courses2

Semester	Code	Courses	SKS	Course Classification
Even Semester	TS236109070	Earthquake Resistant Structure Design	2	Elective
	TS236109071	Prestressed Concrete Design	2	Elective
	TS236109072	Structural Analysis with Finite Element Method	2	Elective
	TS236109073	Composite Steel Design	2	Elective
	TS236109074	Light Steel Design	2	Elective
	TS236409086	Public Transport and Goods Management	2	Elective
	TS236509088	Construction Management	2	Elective
	TS236509089	Construction Project Equipment	2	Elective
	TS236509090	Skills Certification	2	Elective
	TS236509091	Introduction to Infrastructure Management	2	Elective
	TS236509092	Decision Making Methods	2	Elective
	TS236509093	Infrastructure Operations and Maintenance Management	2	Elective
Odd Semester	TS236209075	Soft Soil Improvement	2	Elective
	TS236209076	Soil Reinforcement with Geosynthetics	2	Elective
	TS236209077	Slope and Embankment Stability	2	Elective
	TS236209078	Forensik dalam bidang Geoteknik	2	Elective
	TS236309079	Harbour	2	Elective
	TS236309080	Estuary and Coastal Engineering	2	Elective
	TS236309081	Hydrometry	2	Elective
	TS236309082	River Engineering	2	Elective
	TS236409083	Airports	2	Elective
	TS236409084	Urban Transportation	2	Elective
	TS236409085	Traffic Impact Analysis	2	Elective

The PLO and course matrix is arranged to show the direct link between each course in the curriculum and the Programme Learning Outcomes (PLO) Bachelor of Civil Engineering. This mapping aims to ensure that all PLO are distributed proportionally and integrated in the curriculum structure in each semester, so that there are no gaps or overlaps learning outcomes. Through this matrix, the contribution of each course to fulfilling the PLO can be analysed, as well as being the basis for evaluating and improving the Outcome-Based Education (OBE) based curriculum. The relationship between courses and PLO in the 2025 Curriculum for the Bachelor of Civil Engineering can be seen in Table 8. 3 below.

Table 8. 3 PLO Matrices and Courses3

No	MK	PLO									
		1	2	3	4	5	6	7	8	9	10
Semester-1											
1	Pancasila						✓			✓	
2	Indonesian Language						✓	✓			
3	Islamic Religious Education							✓		✓	
4	Basic Chemistry	✓	✓								
5	Digital Information Technology for Academics			✓				✓			
6	English						✓	✓			
7	Mathematics I	✓				✓					
8	Statistics and Probability	✓							✓		
9	Engineering Drawings			✓	✓						
10	Statics I	✓				✓					
Semester-2											
1	Citizenship Education						✓			✓	
2	Basic Physics	✓	✓								
3	Mathematics II	✓				✓					
4	Engineering Surveying		✓		✓						
5	Engineering Surveying Laboratory						✓				
6	Statics II	✓			✓						
7	Engineering Mechanics	✓				✓					
8	Construction Materials Technology		✓		✓						
9	Construction Materials Technology Practicum						✓				
10	Geology	✓				✓					
11	Fluid Mechanics and Hydraulics I	✓				✓					
Semester-3											
1	Building Construction		✓		✓						
2	Sharia Entrepreneurship								✓	✓	
3	Islamic Disciplines I									✓	
4	Mathematics III	✓				✓					
5	Scientific Writing and Research Methodology							✓	✓		
6	Statically Indeterminate Structural Analysis					✓			✓		

No	MK	PLO									
		1	2	3	4	5	6	7	8	9	10
7	Soil Mechanics I			✓		✓					
8	Mekanika Fluida dan Hidrolika II	✓				✓					
9	Hydraulics Practical						✓				
10	Hydrology	✓				✓					
11	Environmental Science	✓	✓								
Semester-4											
1	Fiqh of Worship				✓					✓	
2	Islamic Civilization							✓		✓	
3	Mathematics IV					✓			✓		
4	Matrix Method Structural Analysis			✓		✓					
5	Concrete Structures I				✓	✓					
6	Road Paving I				✓	✓					
7	Soil Mechanics II				✓	✓					
8	Soil Mechanics Practical						✓				
9	Irrigation				✓	✓					
10	Land Transportation Engineering				✓	✓					
11	Cost Budget Plan and Project Scheduling				✓						✓
Semester-5											
1	Numerical Methods	✓				✓					
2	Islamic Disciplines II						✓			✓	
3	Concrete Structures II				✓	✓					
4	Steel Structure				✓				✓		
5	Foundation Engineering				✓				✓		
6	Retaining Walls and Retaining Walls				✓				✓		
7	Water and Drainage Buildings				✓				✓		
8	Railway Road				✓				✓		
9	Road Paving II				✓				✓		
10	Pavement Laboratory						✓				
Semester-6											
1	Designing with Computers			✓			✓				
2	Field Work Lectures						✓				
3	Practical Work				✓		✓				
4	Structural Dynamic Analysis					✓			✓		
5	Water Resources Development					✓			✓		
6	Highway Geometric					✓			✓		
7	Engineering Economics									✓	✓
8	Occupational Health and Safety		✓							✓	
9	Project Management		✓								✓
10	Elective Courses			✓	✓						
11	Elective Courses			✓	✓						
Semester-7											

No	MK	PLO									
		1	2	3	4	5	6	7	8	9	10
1	Professional Ethics				✓					✓	
2	Civil Building Design		✓		✓		✓	✓			✓
3	Real Work Lectures						✓	✓			
4	Construction Implementation Methods				✓				✓		
5	Environmental Impact Analysis		✓			✓					
6	Elective Courses			✓	✓						
7	Elective Courses			✓	✓						
8	Elective Courses			✓	✓						
Semester-8											
1	Final Project		✓		✓			✓	✓	✓	

8.2 Curriculum Map Based on PLO Study Programme

Overall, the layout of the 2025 Curriculum map for the Bachelor of Civil Engineering is presented in Figure 8. 1. The curriculum map shows the flow and interrelationship of course prerequisites that students must take from Semester I to Semester VIII. Furthermore, in Figures 8. 2 to Figure 8. 11 a more specific curriculum map is presented based on its relationship to the ten Programme Learning Outcomes (PLO) Bachelor of Civil Engineering

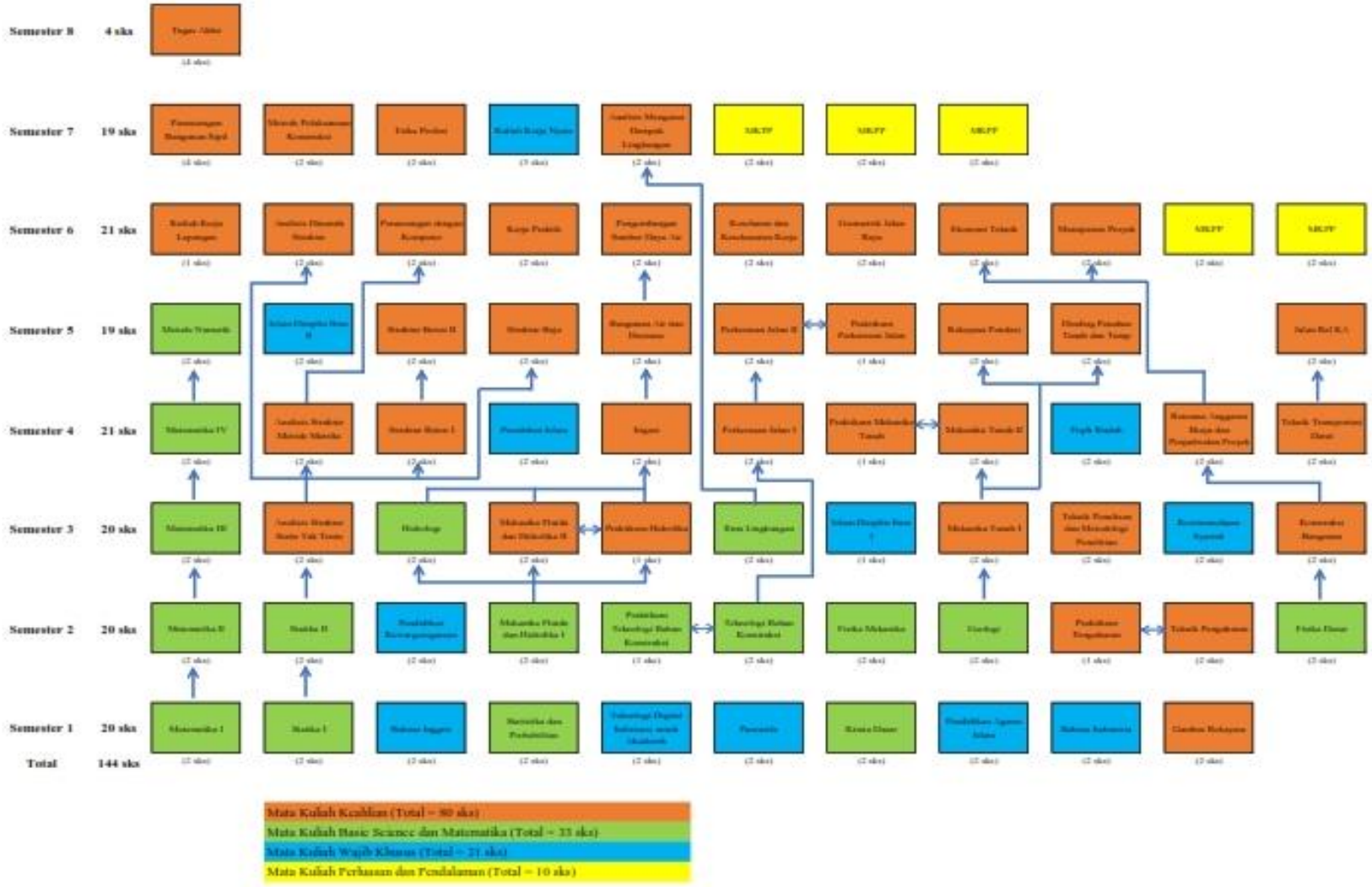


Figure 8. 1 Curriculum map for 2025 Bachelor of Civil Engineering

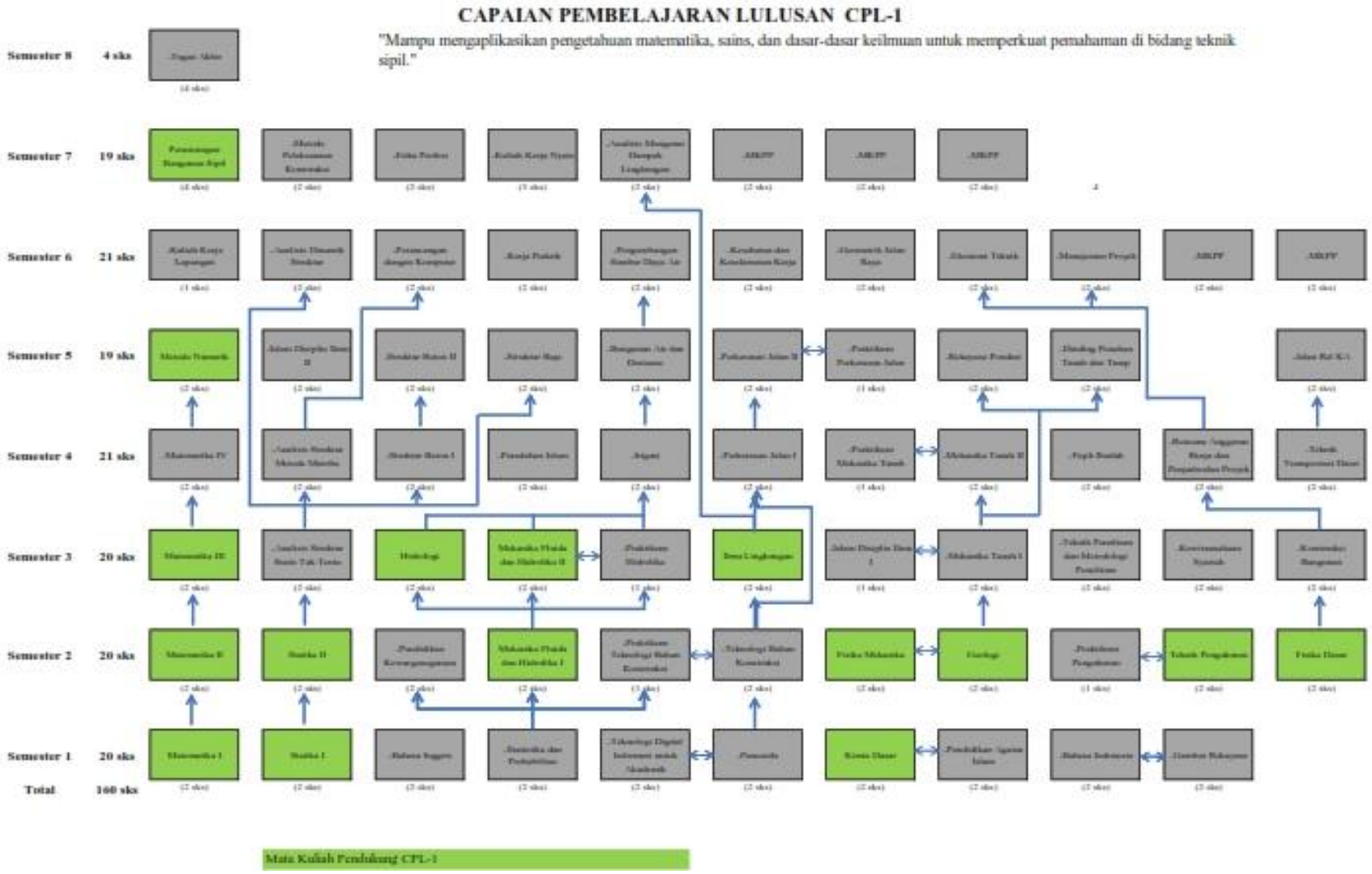


Figure 8. 2 2025 curriculum map based on PLO 11

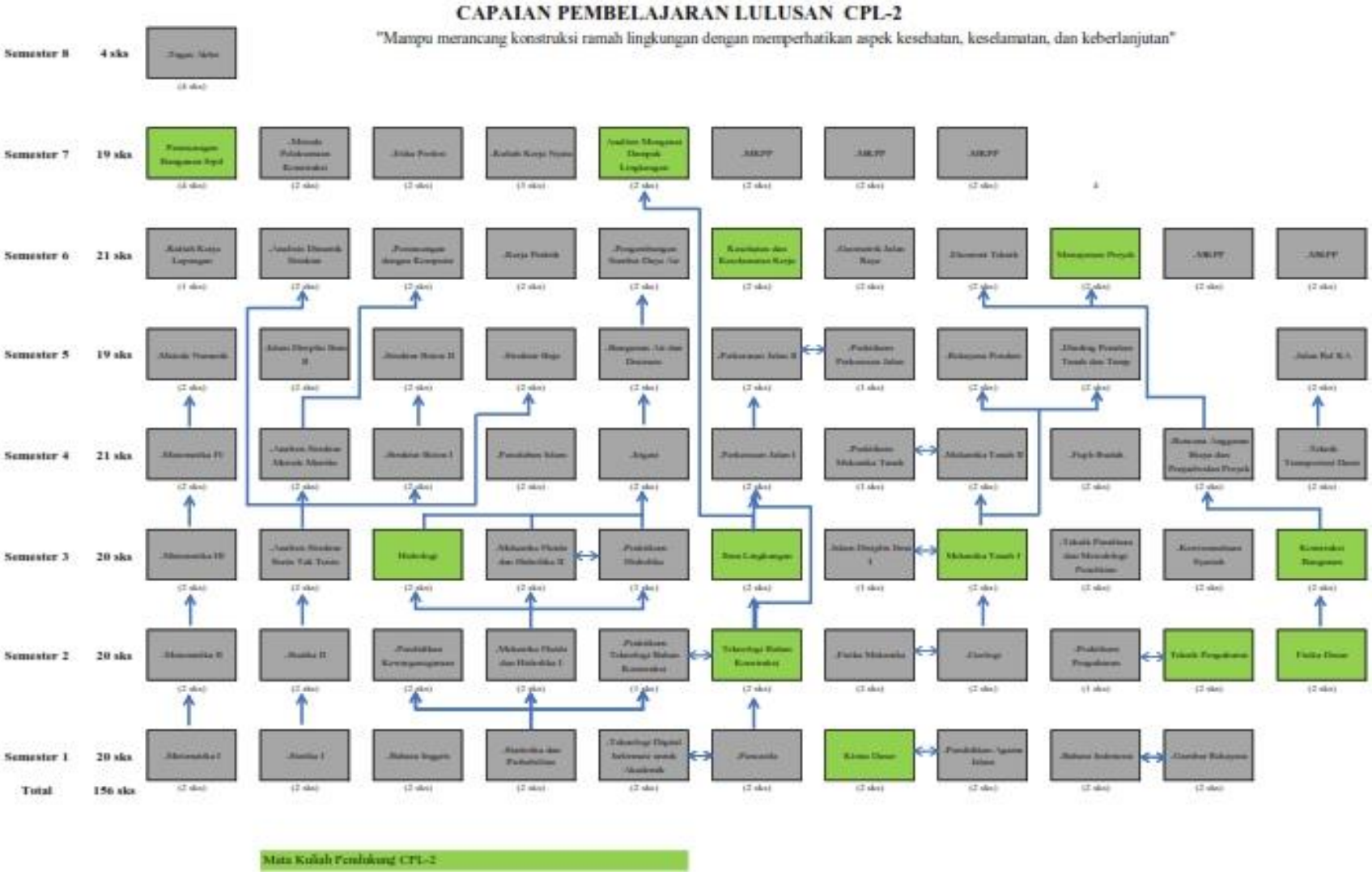


Figure 8. 3 2025 curriculum map based on PLO 22

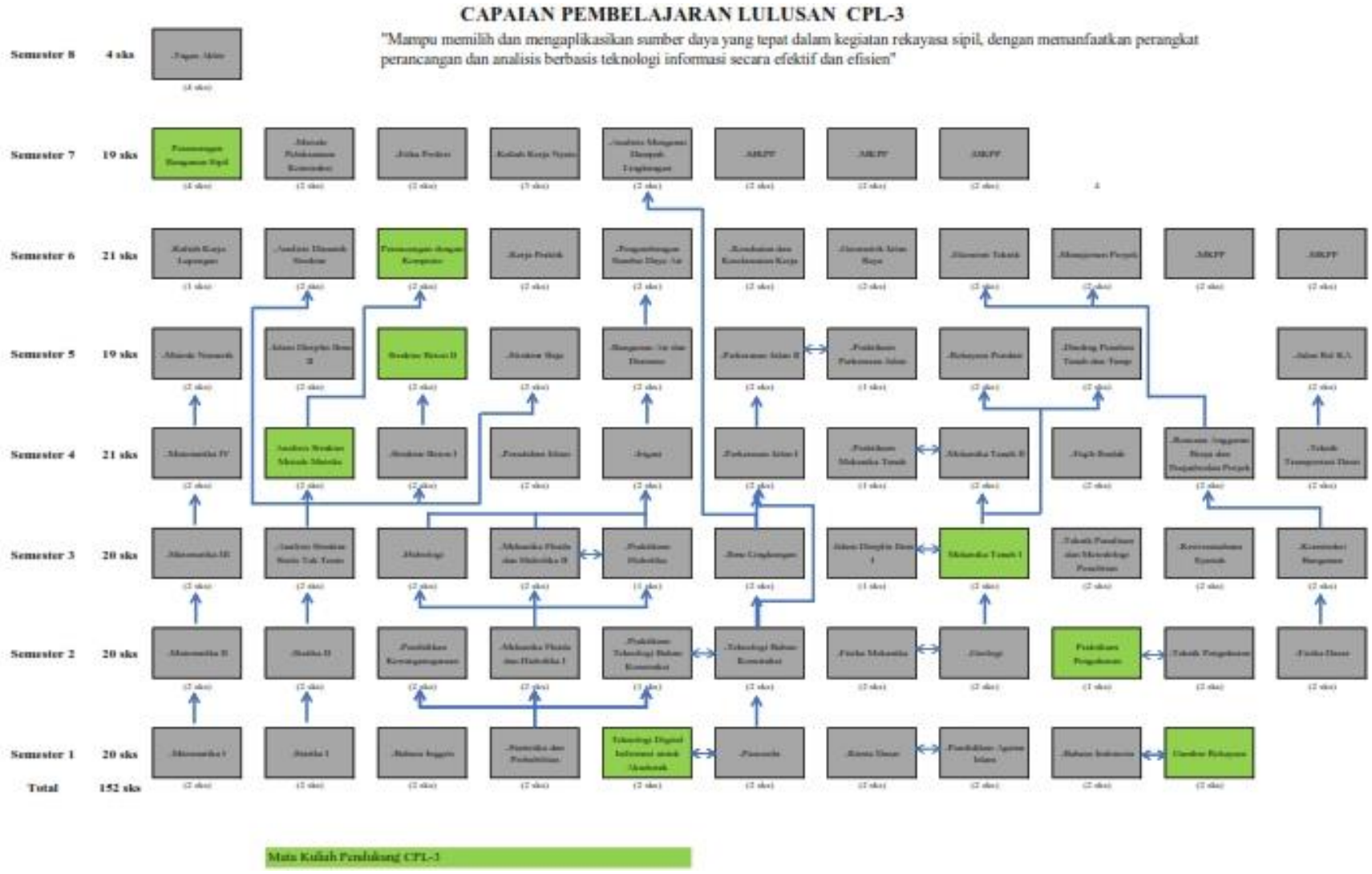


Figure 8. 4 2025 curriculum map based on PLO 33

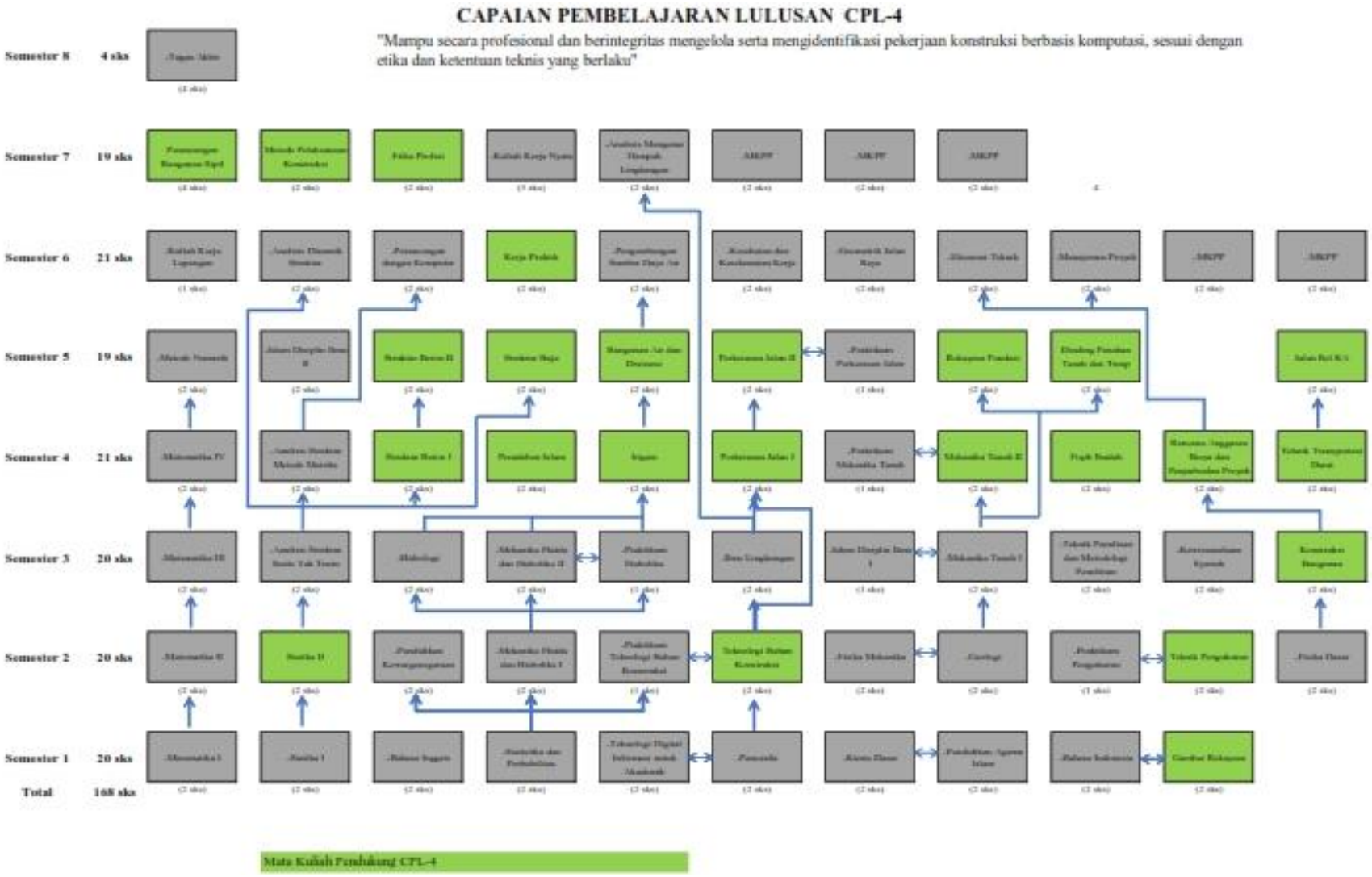


Figure 8. 5 2025 curriculum map based on PLO 44

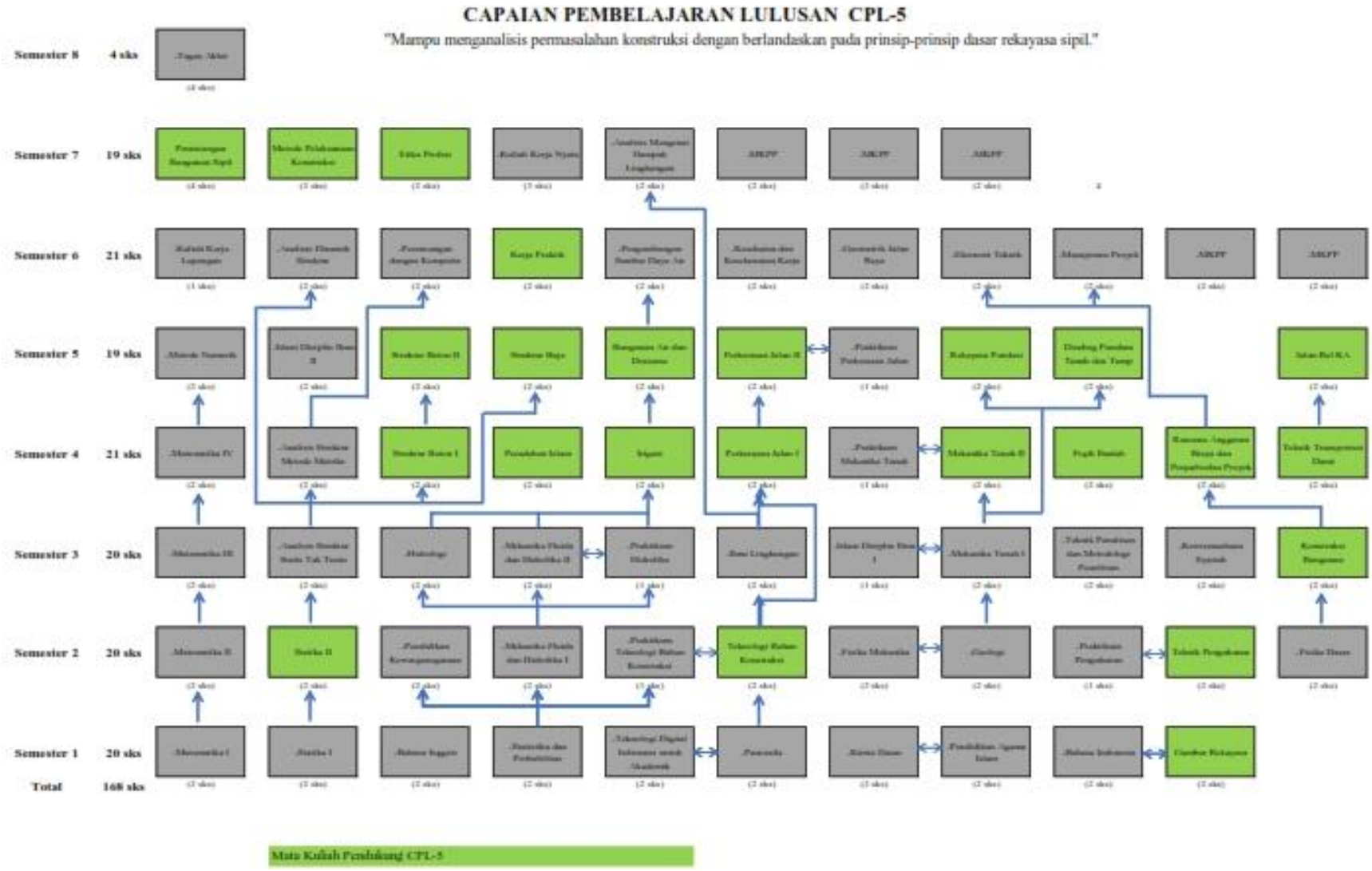


Figure 8. 6 2025 curriculum map based on PLO 55

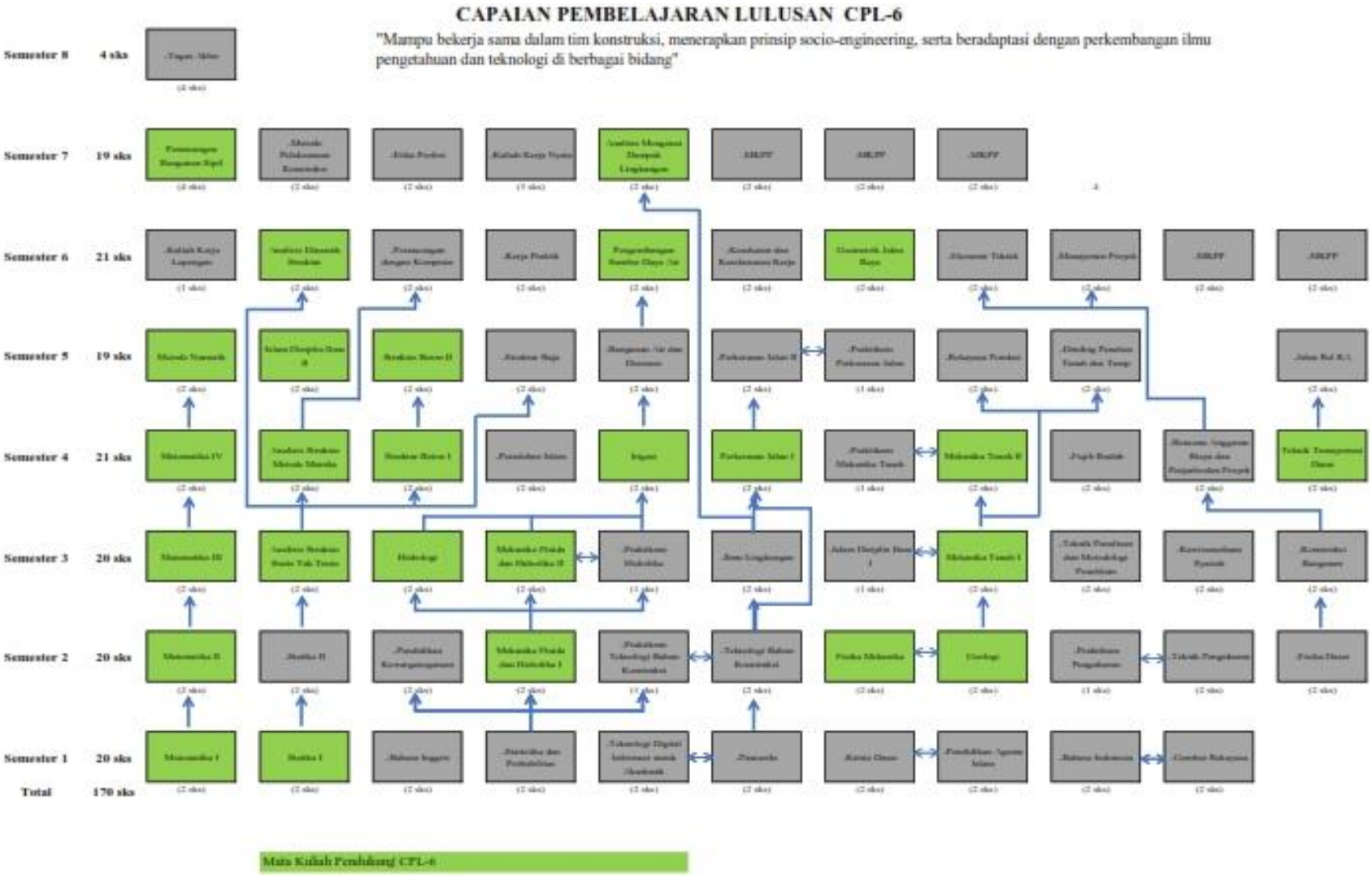


Figure 8. 7 2025 curriculum map based on PLO 66

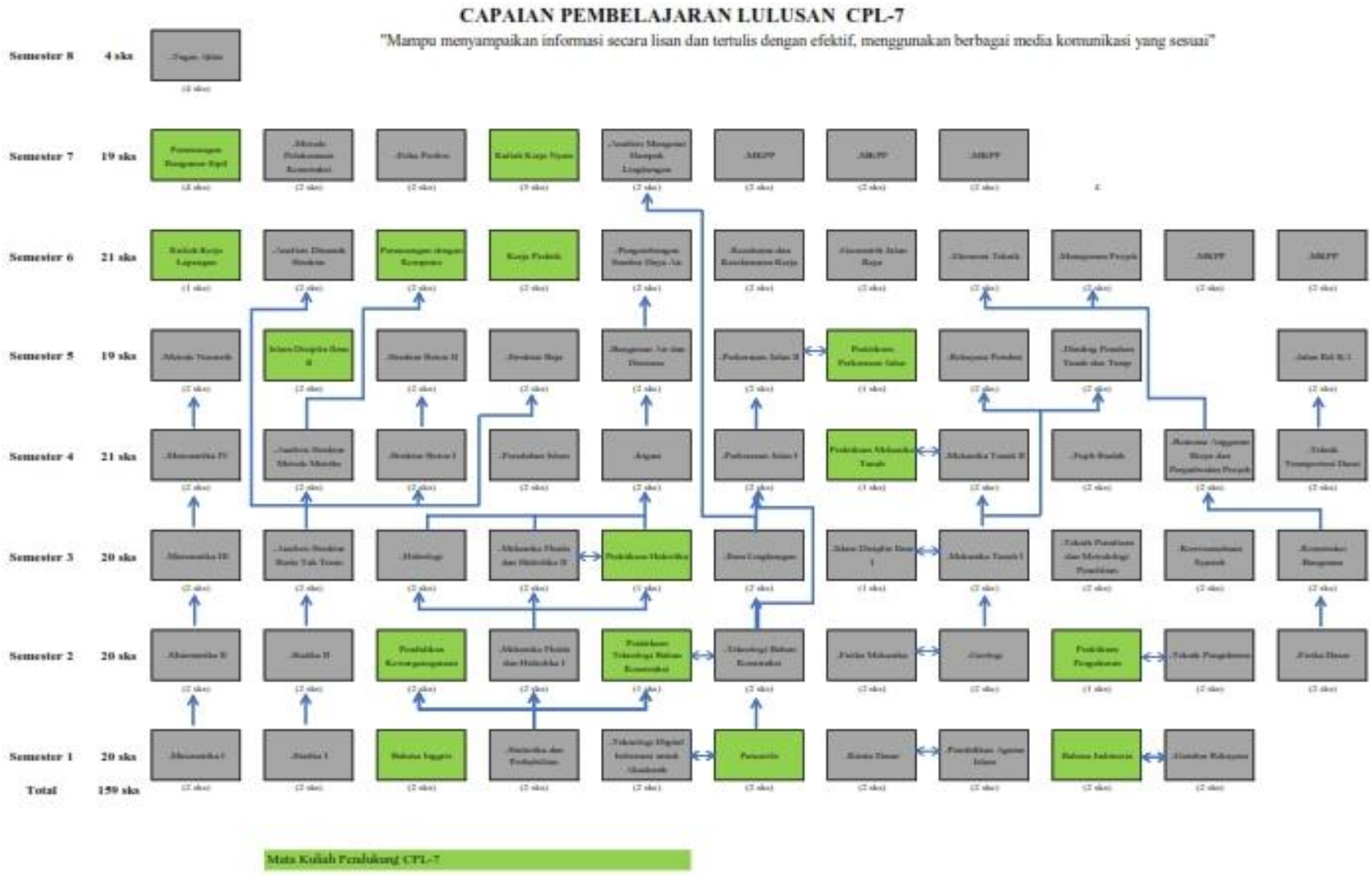


Figure 8. 8 2025 curriculum map based on PLO 77

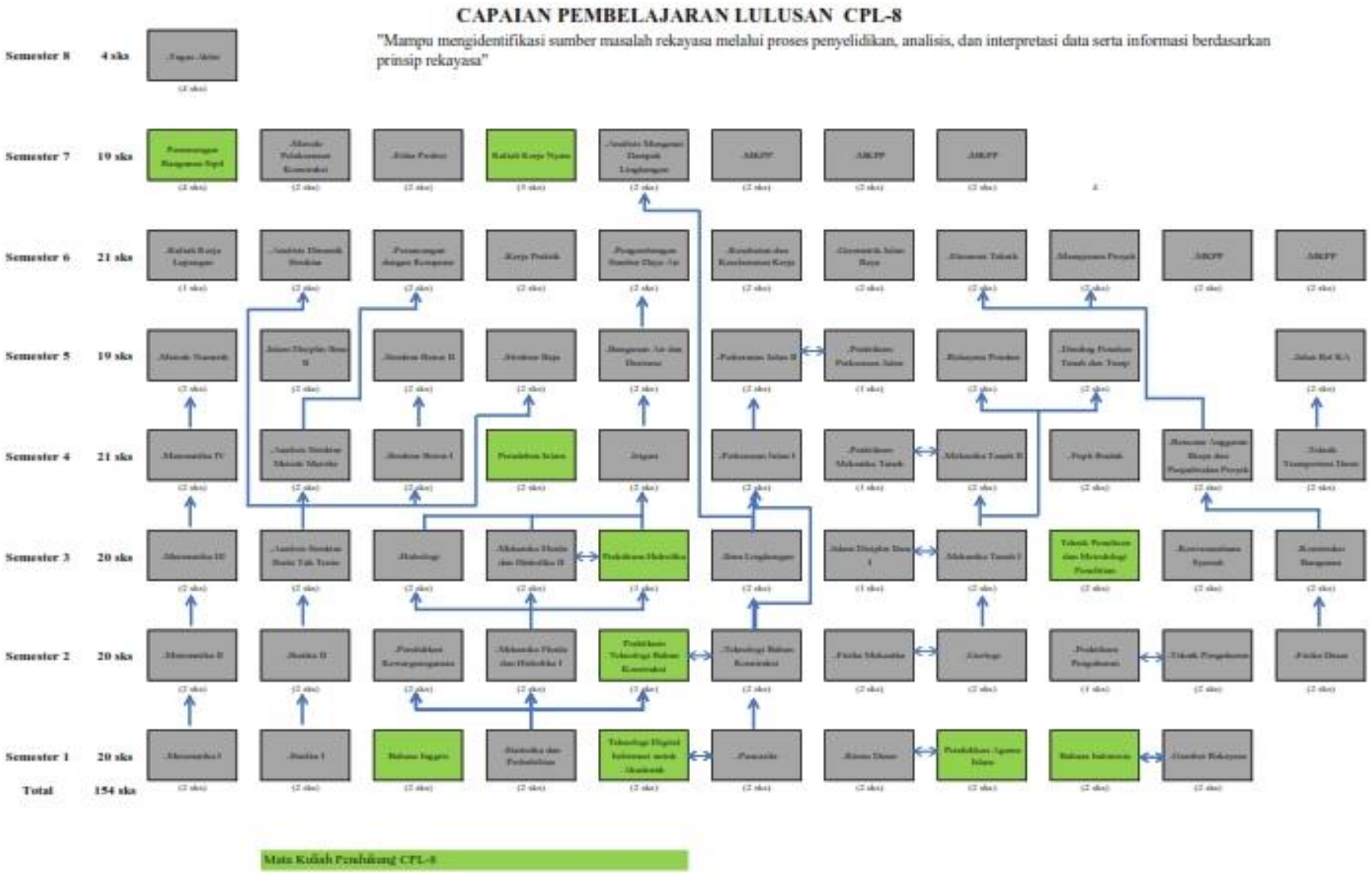


Figure 8. 9 2025 curriculum map based on PLO 88

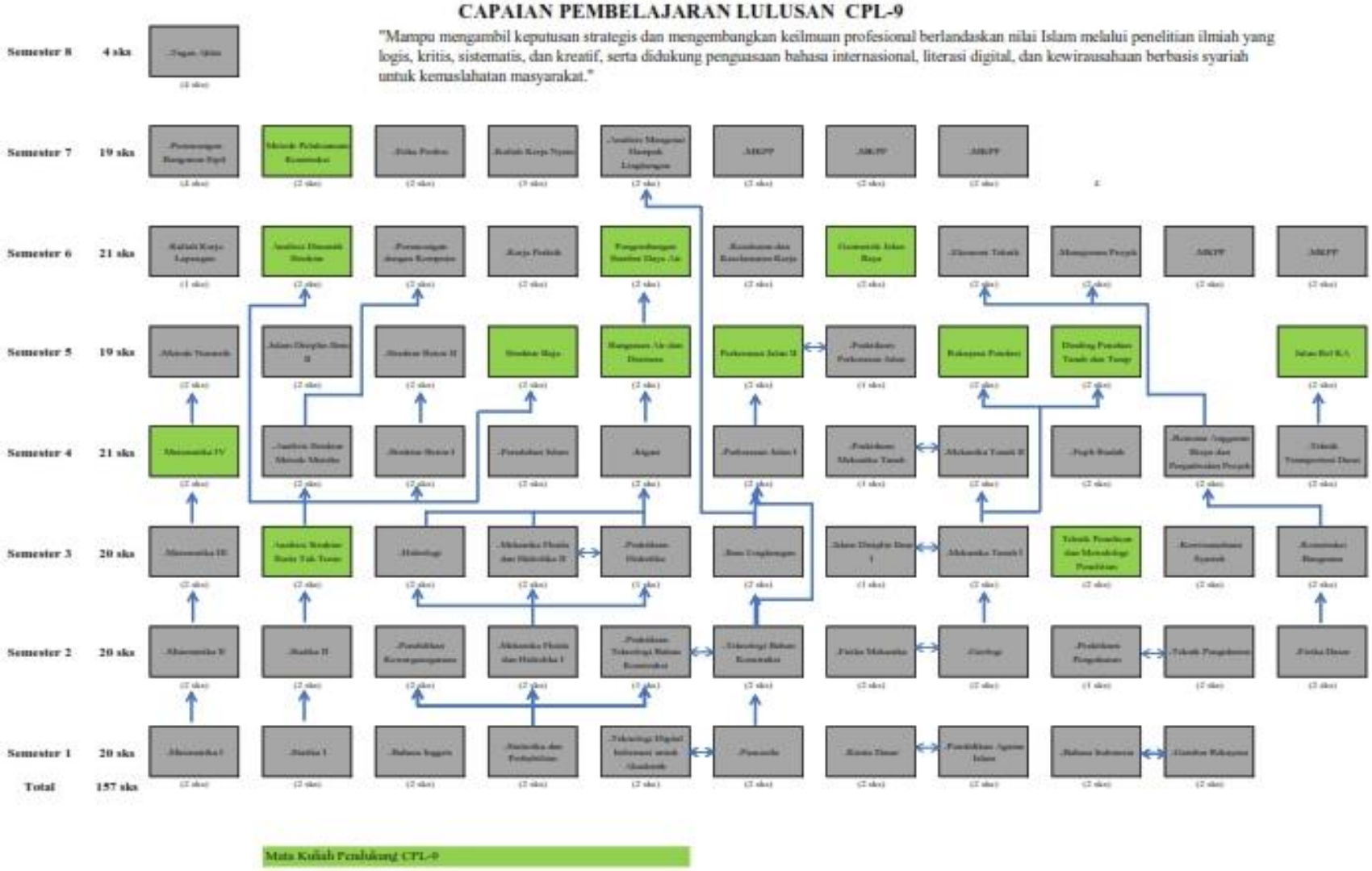


Figure 8. 10 2025 curriculum maps based on PLO 99

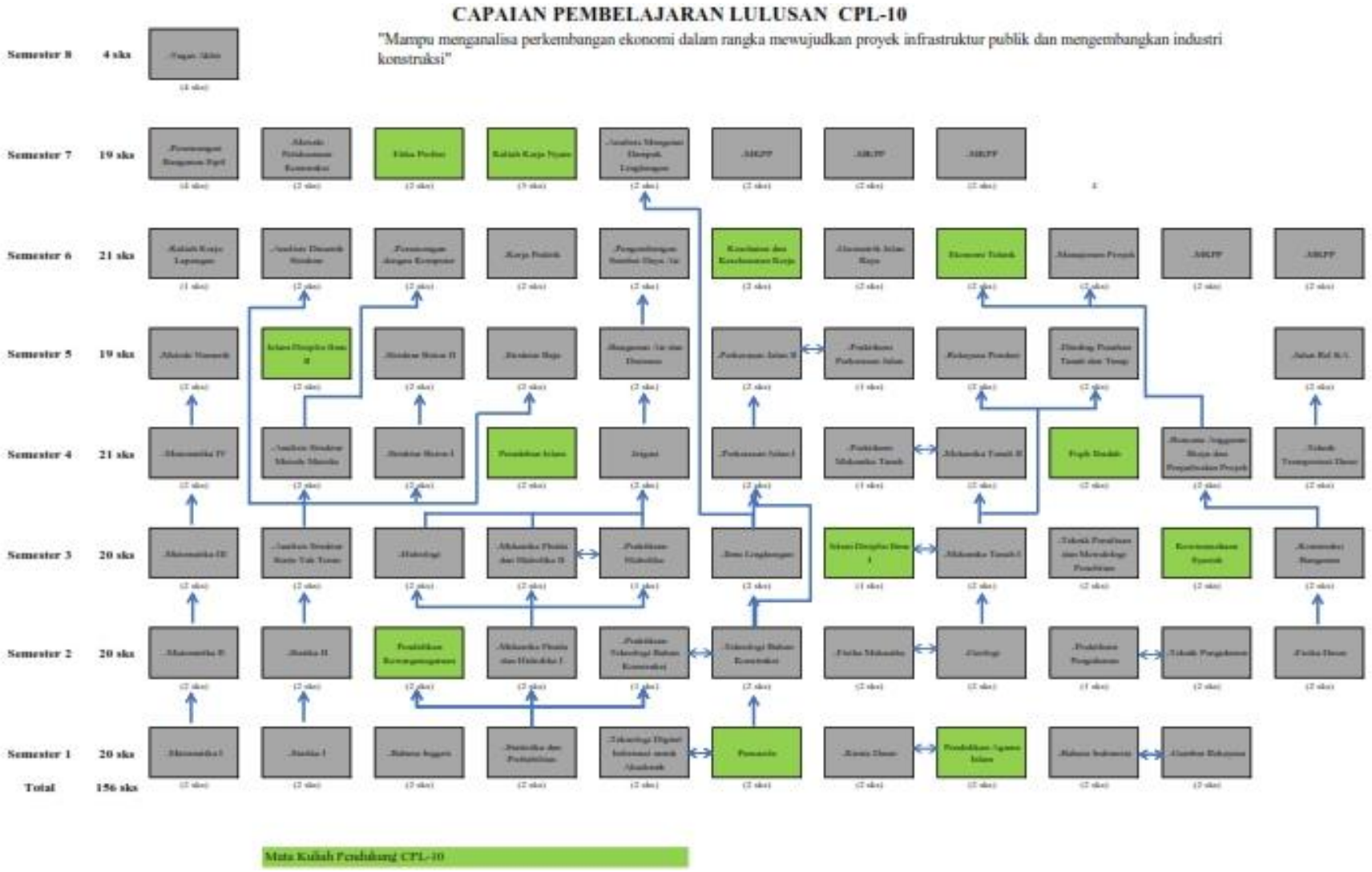


Figure 8. 11 2025 curriculum map based on PLO 1010

8.3 List of course distribution for each semester

Courses in the 2025 Curriculum consist of Compulsory Courses totaling 134 credits spread from semester 1 to semester 8, and Elective Courses where students are required to take at least 10 credits of these Courses in semesters 6 and 7. So overall, Unissula Bachelor of Civil Engineering students can complete their studies in 8 semesters with a load of 144 credits. The 2025 Curriculum Course Structure of the Unissula Bachelor of Civil Engineering can be seen in Table 8. 4 to Table 8. 11 below.

Table 8. 4 List of semester-I courses4

SEMESTER I						
MK Code	Courses (MK)	SKS weight				Prerequisites
		Theory	Practicum	Practice	Amount	
TS236006001	Pancasila	2			2	
TS236006002	Indonesian	2			2	
TS236006003	Islamic Religious Education	2			2	
TS236007004	Basic Chemistry	2			2	
TS236007005	Digital Information Technology for Academics		2		2	
TS236007006	English	2			2	
TS236008007	Mathematics I	2			2	
TS236008008	Statistics and Probability	2			2	
TS236008009	Engineering Drawings	1		1	2	
TS236108010	Statics I	2			2	
Total Semester I Study Load					20	

Table 8. 5 List of second semester courses5

SEMESTER II						
MK Code	Courses (MK)	SKS weight				Prerequisites
		Theory	Practicum	Practice	Amount	
TS236006011	Civic Education	2			2	
TS236007012	Basic Physics	2			2	
TS236008013	Mathematics II	2			2	Matematika I
TS236008014	Engineering Surveying	2			2	
TS236008015	Engineering Surveying Laboratory		1		1	
TS236108016	Statics II	2			2	Statika I
TS236108017	Physics Mechanics	2			2	
TS236108018	Construction Materials Technology	2			2	
TS236108019	Construction Materials Technology		1		1	

SEMESTER II						
MK Code	Courses (MK)	SKS weight				Prerequisites
		Theory	Practicum	Practice	Amount	
	Laboratory					
TS236208020	Geology	2			2	
TS236308021	Fluid Mechanics and Hydraulics I	2			2	
Total Study Load for Semester II					20	

Table 8. 6 List of third semester courses6

SEMESTER III						
MK Code	Courses (MK)	SKS weight				Prerequisites
		Theory	Practicum	Practice	Amount	
TS236007022	Building Construction	1		1	2	
TS236007023	Sharia Entrepreneurship	2			2	
TS236007024	Islam and Scientific Disciplines I	1			1	
TS236008025	Mathematics III	2			2	Matematika II
TS236008026	Scientific Writing and Research Methodology	2		0	2	
TS236108027	Statically Indeterminate Structural Analysis	1		1	2	Statika II
TS236208028	Soil Mechanics I	2			2	
TS236308029	Fluid Mechanics and Hydraulics II	2			2	Mekanika Fluida dan Hidrolika I
TS236308030	Hydraulics Practical		1		1	Mekanika Fluida dan Hidrolika I
TS236308031	Hydrology	2			2	Mekanika Fluida dan Hidrolika I
TS236608032	Environmental Science	2			2	
Jumlah Beban Studi Semester III					20	

Table 8. 7 List of IV semester courses7

SEMESTER IV						
MK Code	Courses (MK)	SKS weight				Prerequisites
		Theory	Practicum	Practice	Amount	
TS236007033	Fiqh of Worship	2			2	
TS236007034	Islamic Civilisation	2			2	
TS236008035	Mathematics IV	2			2	Matematika III
TS236108036	Matrix Method Structural Analysis	1		1	2	Analisis Struktur Statis

SEMESTER IV						
MK Code	Courses (MK)	SKS weight				Prerequisites
		Theory	Practicum	Practice	Amount	
						Tak Tentu
TS236108037	Concrete Structures I	2			2	Analisis Struktur Statis Tak Tentu
TS236108038	Road Pavement I	2			2	Construction Materials Technology
TS236208039	Soil Mechanics II	2			2	Mekanika Tanah I
TS236208040	Soil Mechanics Practical		1		1	Mekanika Tanah I
TS236308041	Irrigation	1		1	2	Mekanika Fluida dan Hidrolika II
TS236408042	Land Transportation Engineering	2			2	
TS236508043	Cost Budget Plan and Project Scheduling	1		1	2	Fisika Bangunan
Total Study Load for Semester IV					21	

Table 8. 8 List of V-semester courses8

SEMESTER V						
MK Code	Courses (MK)	SKS weight				Prerequisites
		Theory	Practicum	Practice	Amount	
TS236007044	Numerical Methods	2			2	Matematika IV
TS236007045	Islam and Scientific Disciplines II	2			2	
TS236108046	Concrete Structures II	1		1	2	Struktur Beton I
TS236108047	Steel Structure	1		1	2	Analisis Struktur Statis Tak Tentu
TS236208048	Foundation Engineering	1		1	2	Mekanika Tanah I
TS236208049	Retaining Walls and Retaining Walls	1		1	2	Mekanika Tanah I
TS236308050	Water and Drainage Buildings	1		1	2	
TS236407051	Railway Road	2			2	Teknik Transportasi Darat
TS236408052	Road Paving II	2			2	Construction Materials Technology
TS236408053	Pavement Laboratory		1		1	Construction Materials Technology

SEMESTER V						
MK Code	Courses (MK)	SKS weight				Prerequisites
		Theory	Practicum	Practice	Amount	
Jumlah Beban Studi Semester V					19	

Table 8. 9 List of VI semester courses9

SEMESTER VI						
MK Code	Courses (MK)	SKS weight				Prerequisites
		Theory	Practicum	Practice	Amount	
TS236008054	Designing with Computers			2	2	Matrix Method Structural Analysis
TS236012055	Field Work Lectures			1	1	
TS236012056	Practical Work			2	2	Credits > 100GPA > 2. 75
TS236108057	Structural Dynamic Analysis	1		1	2	Statika II
TS236308058	Water Resources Development	2			2	Irigasi
TS236408059	Highway Geometric	1		1	2	Teknik Transportasi Darat
TS236508060	Engineering Economics	2			2	Rencana Anggaran Biaya dan Penjadwalan Proyek
TS236508061	Occupational Health and Safety	2			2	
TS236508062	Project Management	2			2	Rencana Anggaran Biaya dan Penjadwalan Proyek
	Elective Courses	2			2	
	Elective Courses	2			2	
Jumlah Beban Studi Semester VI					21	

Table 8. 10 List of VII semester courses10

SEMESTER VII						
MK Code	Courses (MK)	SKS weight				Prerequisites
		Theory	Practicum	Practice	Amount	
TS236008063	Professional Ethics	2			2	
TS236008064	Civil Building Design			4	4	Metode Numerik

SEMESTER VII						
MK Code	Courses (MK)	SKS weight				Prerequisites
		Theory	Practicum	Practice	Amount	
TS236012065	Real Work Lectures			3	3	Credits > 110
TS236508066	Construction Implementation Methods	2			2	Rencana Anggaran Biaya dan Penjadwalan Proyek
TS236608067	Environmental Impact Analysis	2			2	Environmental Science
	Elective Courses	2			2	
	Elective Courses	2			2	
	Elective Courses	2			2	
Total Study Load for Semester VII (Regular Scheme)					19	

Table 8. 11 List of VIII semester courses11

SEMESTER VIII						
MK Code	Courses (MK)	SKS weight				Prerequisites
		Theory	Practicum	Practice	Amount	
TS230009068	Final Project			4	4	Credits > 120 GPA > 2. 75
Total Study Load for Semester VIII					4	

The list of elective courses that students can take in semester 6 (even) and semester 7 (odd) can be seen in table 28. Elective courses are courses that come from 5 areas of civil engineering scientific expertise, namely: Structural Engineering, Construction Engineering Management, Geotechnical, Water Engineering, and Transportation Engineering

Table 8. 12 Selected Subjects in the 2025 Curriculum Unissula Bachelor of Civil Engineering 12

OPTIONAL COURSES SEMESTER VI AND VII						
MK Code	Courses (MK)	SKS weight				Prerequisites
		Theory	Practicum	Practice	Amount	
Structural Engineering Expertise Group						
TS236109070	Earthquake Resistant Structure Design	2			2	Struktur Beton I
TS236109071	Prestressed Concrete Design	2			2	Struktur Beton I
TS236109072	Structural Analysis with Finite Element Method	2			2	Matrix Method Structural Analysis

OPTIONAL COURSES SEMESTER VI AND VII						
MK Code	Courses (MK)	SKS weight				Prerequisites
		Theory	Practicum	Practice	Amount	
TS236109073	Composite Steel Design	2			2	Struktur Baja
TS236109074	Light Steel Design	2			2	Struktur Baja
Construction Engineering Management Expertise Group						
TS236509088	Construction Management	2			2	Rencana Anggaran Biaya dan Penjadwalan Proyek
TS236509089	Construction Project Equipment	2			2	Mekanika Tanah II
TS236509090	Skills Certification	2			2	Rencana Anggaran Biaya dan Penjadwalan Proyek
TS236509091	Introduction to Infrastructure Management	2			2	Rencana Anggaran Biaya dan Penjadwalan Proyek
TS236509092	Decision Making Methods	2			2	Rencana Anggaran Biaya dan Penjadwalan Proyek
TS236509093	Infrastructure Operations and Maintenance Management	2			2	Rencana Anggaran Biaya dan Penjadwalan Proyek
Geotechnical Expertise Group						
TS236209075	Soft Soil Improvement	2				Mekanika Tanah II
TS236209076	Soil Reinforcement with Geosynthetics	2				Mekanika Tanah II
TS236209077	Slope and Embankment Stability	2				Mekanika Tanah II
TS236209078	Forensics in the field of Geotechnics	2				Mekanika Tanah II
Water Engineering Expertise Group						
TS236309079	Port	2				Mekanika Fluida dan Hidrolika II
TS236309080	Estuary and Coastal Engineering	2				Mekanika Fluida dan Hidrolika II

OPTIONAL COURSES SEMESTER VI AND VII						
MK Code	Courses (MK)	SKS weight				Prerequisites
		Theory	Practicum	Practice	Amount	
TS236309081	Hydrometry	2				Mekanika Fluida dan Hidrolika II
TS236309082	River Engineeringi	2				Mekanika Fluida dan Hidrolika II
Transportation Engineering Expertise Group						
TS236409083	Airports	2				Teknik Transportasi Darat
TS236409084	Urban Transportation	2				Teknik Transportasi Darat
TS236409085	Traffic Impact Analysis	2				Teknik Transportasi Darat
TS236409086	Public Transport and Goods Management	2				Teknik Transportasi Darat

CHAPTER IX
LEARNING MODALITIES IN Semester Learning Plan (RPS)

The RPS is prepared from the results of the 2025 Curriculum learning design, has been written in full for all courses in the Bachelor of Civil Engineering, accompanied by other learning tools including: assignment plans, assessment instruments in the form of rubrics and/or portfolios, teaching materials, etc. The principles used in preparing the 2025 Curriculum RPS are:

a) RPS is a learning programme document designed to produce graduates who have abilities according to the PLO that has been determined, so that it must be able to be carried out by students at every stage of learning in related subjects.
b) The RPS focuses on how to guide students to learn so that they have abilities in accordance with the graduate PLO assigned to the course, not on the interests of the lecturer's teaching activities.
c) The learning designed in RPS is student-centred learning (SCL).
d) The RPS must be reviewed and adjusted periodically according to developments in science and technology.

The RPS that has been prepared in the 2025 Curriculum contains several learning parameters, namely as follows:

a) Study programme name, course name and code, semester, credits, name of the teaching lecturer;
b) Graduate Learning Outcomes charged to courses;
c) Final capabilities planned at each learning stage to meet Graduate Learning Outcomes;
d) Study materials related to the abilities to be achieved;
e) Learning methods;
f) The time provided to achieve abilities at each learning stage;
g) Student learning experiences are manifested in descriptions of assignments that must be carried out by students during one semester;
h) Criteria, indicators and assessment weights; and a list of references (must include books/research results/MK teaching staff) used.

The Semester Learning Plan (RPS) document for all 2025 Curriculum courses in the Bachelor of Civil Engineering can be seen in the attachment.

CHAPTER X
MECHANISMS, PROCEDURES AND ASSESSMENT INSTRUMENTS

10. 1 Valuation Rules

Evaluation of each course is carried out attached to the class and is the responsibility of the course instructor. Each course instructor carries out evaluations through various methods, such as mid-semester exams, final semester exams, written assignments, oral assignments, and quizzes. The evaluation carried out includes cognitive, affective and psychomotor aspects that are in accordance with the substance of the course, especially the PLO that will be achieved through the course. Each course has several CLO. Students are declared to have passed the course if they are able to fulfil all the CLO. The evaluation results are in the form of letter grades which are equivalent to numbers as in Table 10. 1. Students are declared to have passed the course if they get a CD score. For students who get a D grade in Subjects, they are allowed to take remedial exams which are held in the same semester.

Table 10. 1 Value Score Conversion1

No	Value Range	Letter Value	Value Weight
1	85-100	A	4,0
2	75-84	AB	3,5
3	65-74	B	3,0
4	60-64	BC	2,5
5	50-59	C	2,0
6	40-49	CD	1,5
7	30-39	D	1,0
8	0-29	E	0,0

10. 2. Evaluation of Practicum, Practical Work, and Final Assignment

Evaluation of Practicum, Practical Work and Final Assignment (TA) In accordance with the provisions of the study programme, for both laboratory practicum and design work (capstone design), students are declared not to have passed if they cannot pass a minimum score of 60 out of 100. Practical work courses are assessed using three evaluation methods (1) Field Supervisor Assessment Rubric (2) internal supervisor and (3) dissemination/seminar.

At the end of the study period (usually semester 7 or 8), students are required to prepare a Final Assignment. Each student will be accompanied by a supervisor during their final assignment. The minimum number of consultations between students and supervisors is 8 times. As part of the graduation requirements, students must present their final assignment in a Proposal Seminar and Results Seminar in front of a Board of Examiners (consisting of two or three examiners). Students completing the exam also have the opportunity to make minor changes to their TA Report based on the recommendations provided during the Proposal Seminar and Results Seminar.

After the revised Final Assignment report is approved by the Board of Examiners, students are given permission to take the Recognition Examination. This exam is a comprehensive exam that tests students' understanding and mastery of all the material and abilities acquired during lectures, starting from the first semester to the eighth semester.

Apart from approval of the report, there are several other requirements that students must fulfil before they can take the Awareness Examination, namely:

1. Minimum GPA 2. 75
2. Total credits taken are 144

3. Satisfied Letter from a Big Task
4. Have a minimum TOEFL/TEPT certificate of 450
5. Have a UNISSULA PAI Tutorial certificate with a minimum grade of B
6. Have a minimum Activity Credit System (SKK) score of 100
7. Turnitin TA report results are the greatest 24%

The list of Satisfaction Letters that students must complete after completing the Major Assignments in the 2025 Civil Engineering Curriculum can be seen in Table 10. 2 below.

Table 10. 2 List of Subjects that have a Letter of Satisfaction requirement for the Awareness Examination2

No	Courses	Semester
1	Engineering Drawings	1
2	Construction Materials Technology Practicum	2
3	Measurement Practicum	2
4	Hydraulics Practical	3
5	Analysis of Static Indeterminate Structures	3
6	Building Construction	3
7	Irrigation	4
8	Matrix Method Structural Analysis	4
9	Cost Budget Plan and Project Scheduling	4
10	Soil Mechanics Practical	4
11	Foundation Engineering	5
12	Concrete Structures II	5
13	Steel Structure	5
14	Retaining Walls and Retaining Walls	5
15	Road Paving Practicum	5
16	Water and Drainage Buildings	5
17	Highway Geometric	6
18	Structural Dynamic Analysis	6
19	Designing with Computers	6

CHAPTER XI
IMPLEMENTATION OF LEARNING OUTSIDE THE PRODUCT

The Bachelor of Civil Engineering has facilitated the implementation of learning outside the Study Programme for students. The PSTS curriculum has mapped courses that can be converted from learning activities outside the study programme that students participate in. Learning outside the study programme that is carried out over a period of more than 16 weeks or the equivalent of 560 cumulative hours up to a maximum of 24 weeks or 840 cumulative hours is given academic recognition equivalent to 20 credits. The implementation of the right to study outside the Study Programme is converted through an internship curriculum scheme in Semester VI or Semester VII of 20 credits, provided that the programmes and courses that can be recognised have been determined in the PSTS curriculum. Learning activities outside the study programme are carried out independently by students, and the courses that are converted or replaced are shown in Table 11. 1.

Learning activities outside the study programme that can be awarded course conversion points are: Student Exchange, Internship/Work Practicum, Research/Research, Humanitarian Projects, Entrepreneurial Activities, Independent Studies, and Thematic Real Work Lectures in accordance with the regulations set by Unissula.

Table 11. 1 Conversion of Learning Courses outside the Study Programme1

SEMESTER VI (Learning Conversion outside the Study Programme)					
MK Code	Courses (MK)	SKS weight			
		Theory	Practicum	Practice	Amount
TS236008054	Designing with Computers			2	2
TS236012056	Practical Work			2	2
TS236108057	Structural Dynamic Analysis	1		1	2
TS236308058	Water Resources Development	2			2
TS236408059	Highway Geometric	1		1	2
TS236508060	Engineering Economics	2			2
TS236508061	Occupational Health and Safety	2			2
TS236508062	Project Management	2			2
	Elective Courses	2			2
	Elective Courses	2			2
Total Study Load for Semester VI (Conversion of Learners outside the Study Programme)					20
SEMESTER VII (Learning Conversion outside the Study Programme)					
MK Code	Courses (MK)	SKS weight			
		Theory	Practicum	Practice	Amount
TS236012055	Field Work Lectures			1	1
TS236012065	Real Work Lectures			3	3
TS236008063	Professional Ethics	2			2
TS236008064	Civil Building Design			4	4
TS236508066	Construction Implementation Methods	2			2
TS236608067	Environmental Impact Analysis	2			2
	Elective Courses	2			2
	Elective Courses	2			2
	Elective Courses	2			2

SEMESTER VI (Learning Conversion outside the Study Programme)					
MK Code	Courses (MK)	SKS weight			
		Theory	Practicum	Practice	Amount
Total Study Load for Semester VII (Learning Conversion outside the Study Programme)					20

CHAPTER XII
MANAGEMENT AND CURRICULUM IMPLEMENTATION MECHANISMS

The management and implementation mechanism of the 2025 Curriculum for the Universitas Islam Sultan Agung Bachelor of Civil Engineering is implemented within the framework of the Universitas Islam Sultan Agung Internal Quality Assurance System (SPMI) which refers to the PPEPP cycle (Determination, Implementation, Evaluation, Control and Improvement). The implementation of the curriculum quality assurance system is carried out in a structured and sustainable manner through coordination with the Quality Assurance Unit (UPM) and Quality Assurance Group (GPM) at the faculty level as well as the Education and Learning Development Institute (LP3M) of the Universitas Islam Sultan Agung. This mechanism ensures that the curriculum is designed, implemented and developed consistently according to the quality standards set by the university.

The implementation of the PPEPP cycle in managing the 2025 Curriculum is as follows:

1. Curriculum Determination

The 2025 Curriculum was determined based on the results of the 2019 Curriculum evaluation, stakeholder needs, developments in science and technology, as well as national and institutional policies. The curriculum is prepared based on Outcome-Based Education (OBE) with reference to Programme Learning Outcomes (PLO), graduate profiles, and the Body of Knowledge of the Bachelor of Civil Engineering. Determination is carried out through official mechanisms at the study programme, faculty and university levels.

2. Implementation of the Curriculum

The implementation of the curriculum is realised through the implementation of the learning process according to Semester Learning Plan (RPS) which has been prepared based on PLO and study materials. Learning activities include lectures, practicums, structured assignments, and other academic activities that support the achievement of graduate competencies. Curriculum implementation is monitored regularly by the study programme involving UPM and GPM.

3. Curriculum Evaluation

Curriculum evaluation is carried out to assess PLO achievements, learning effectiveness, and the relevance of the curriculum to the needs of the world of work and industrial development. Evaluation is carried out by:

- Micro, namely annual evaluation (every 1 year) through curriculum review meetings, learning evaluations, student feedback, and monitoring PLO achievements.
- Macro, namely a comprehensive evaluation every 4 years as part of the overall curriculum review and development cycle.

4. Curriculum Control

Control is carried out to ensure that the implementation of the curriculum is in accordance with established standards and plans. Control includes monitoring the conformity of the RPS with the PLO, evaluating the implementation of learning, as well as following up on the findings of the evaluation results. The control mechanism is carried out through active coordination between the Study Programme, UPM, GPM, and LP3M.

5. Curriculum Improvement

Curriculum improvement is a follow-up to the results of evaluation and control. Improvements can take the form of adjustments to the curriculum structure, study materials, learning methods, and assessment systems. Improvements are carried out continuously to maintain the relevance of the curriculum to the dynamics of developments in science,

technology, regulations and stakeholder needs.

At the Study Programme level, learning management in the Unissula Bachelor of Civil Engineering is carried out systematically through a clear division of roles and responsibilities between the study programme leadership elements. Each stage in the learning cycle—starting from planning, implementation, to evaluation—is coordinated by officials appointed according to their field of duty, to ensure optimal achievement of Programme Learning Outcomes (PLO).

The Head of the Study Programme is responsible for preparing the curriculum as the main direction of academic development. The Chair of the Expertise Group (KBK) plays an important role in managing learning tools (RPS) as well as carrying out monitoring and evaluation regarding the suitability of assessment questions to CLO/PLO and the duration of the assessment to the weight of SKS.

Meanwhile, the Study Programme Secretary has a strategic role in overseeing the implementation of policies for learning activities outside the study programme as well as evaluating PLO achievements as a whole. All of these activities are listed in detail in the following table and are part of efforts to maintain the quality of learning and alignment with national higher education standards. The division of learning management can be seen in Table 12. 1.

Table 12. 1 Distribution of Learning Management for the 2025 Curriculum Bachelor of Civil Engineering

No	Activity	Official
1	Responsible for preparing the curriculum	Head of Study Programme
2	PIC Learning tools (RPS, RAE and RT) MK in the Curriculum	Chairman of the CBC
3	PIC monitoring and evaluation of curriculum implementation (refers to learning tools) ● Checking the suitability of questions with CLO and / PLO ● Examination of the length of assessment time with the weight of MK credits	Chairman of the CBC
4	PIC monev and implementation of learning outside the study programme ● Check the duration of the activity ● Checking the suitability of the abilities obtained with the PLO ● Checking suitability of form and technique in assessment with PLO ● Examination of guidelines for students, supervisors in the field, and study programme supervisors	Study Programme Secretary
5	PIC monitoring and evaluating PLO achievement, as well as reporting PLO achievement	Study Programme Secretary

CHAPTER XIII
PROCEDURES FOR ADMISSION OF STUDENTS AT VARIOUS STAGES OF THE CURRICULUM

Admission of new students to the Bachelor of Civil Engineering at Universitas Islam Sultan Agung is carried out in a structured and transparent manner through several selection routes determined by the university. The admission system is designed to attract prospective students who have academic potential, achievements, and suitability to the character and needs of the study programme. The admission process is managed by the New Student Admissions (PMB) unit and carried out in accordance with university regulations.

13. 1. Registration Time

Student registration is carried out at the same time as the period for filling out the Study Plan Card (KRS), namely:

- Odd Semester: August
- Even Semester: February
- Filling in the KRS is done approximately 2 weeks before lectures start

13. 2. New Student Admission Process

The Faculty of Engineering and Universitas Islam Sultan Agung through the PMB system ensure that every prospective student can take part in the selection according to their abilities and achievements. The selection system aims to:

- Assessing the academic potential of prospective students
- Measuring readiness to take part in education in the Bachelor of Civil Engineering Ensure suitability of prospective students with the chosen study programme

13. 3. New Student Selection Pathways and Systems

The admission process is carried out through several selection routes as follows:

1. Outstanding Student Tracking Track (PSB)

PSB is a selection route intended for SMA/SMK/MA/MAK class XII students based on academic and non-academic achievements. Selection is carried out based on verification of academic documents and achievements with the following selection criteria:

- The average score for semester 1–4 report cards is at least 75
- Non-academic achievements (art, scientific work, sports) are at least First Place at Regency/City level

2. Regular Track

The Regular Route is carried out through the Computer Based Test (CBT) system with the One Day Service method, namely:

- Registration
- Selection test (CBT or via report card)
- Announcement of results
- Registration (can be done on the same day)

Mechanism:

- Can be done online if the average score for semester 5 or 6 report cards is ≥ 75
- Can be done offline by coming directly to PMB UNISSULA
- After payment, participants receive a test card and take part in CBT

- Test results can be known on the same day

3. Cooperation Pathway (PMBK)
This pathway is intended for prospective students from partner institutions, such as:

- School
- Islamic boarding school
- Tutoring institute

Selection is carried out through a collaborative mechanism between UNISSULA and partner institutions. The list of partners is listed in the PMB Handbook.

4. Admission Route for Foreign Students
Admission of foreign students is managed by Universitas Islam Sultan Agung through the Office of International Affairs (OIA).
Stages:

1. Registration with OIA by attaching:
   - Enrolment form
   - Application letter
   - Last academic diploma/certificate
   - Language proficiency certificate (if available)
2. OIA forwards documents to faculties and study programmes
3. The faculty issues a conditional Letter of Acceptance (LoA).
4. Prospective students fulfil the requirements within a maximum of 30 days
5. Issued final LoA and VISA cover letter

13. 4. New Student Selection Exam Material
Selection material for the Regular Pathway (CBT) includes:

- Academic Potential Test (TPA)
- Basic maths skills
- Logic and reasoning abilities
- Basic science (physics/mathematics according to study programme requirements)

CHAPTER XIV
2025 CURRICULUM CONVERSION GUIDELINES

The previous curriculum for the Bachelor of Civil Engineering was the 2019 version which paid attention to the Independent Learning Campus (MBKM) activities. In 2020, an evaluation of the curriculum was carried out. This evaluation includes an analysis of the strengths and weaknesses of the 2019 curriculum, both in terms of quality, quantity and learning achievement. One aspect that is considered in the evaluation is the accreditation of the Independent Engineering Accreditation Institute (LAM Teknik), which stipulates the requirement that the curriculum must include basic science and mathematics courses as much as 20% of the total credits to achieve Superior accreditation.

In response to this evaluation, the 2025 curriculum was prepared by considering several inputs. These inputs include:

1. Criticism, suggestions and input from experts, practitioners and alumni.
2. The core curriculum of the BMPTTSSI Bachelor of Civil Engineering
3. The Indonesian National Qualifications Framework (KKNI) is in accordance with Government Regulation (PP) No. 8 of 2012.
4. Competency-based curriculum approach (KBK).
5. Limitations of corridors for preparing civil engineering higher education curricula.
6. Achievement of the vision, mission and objectives of Universitas Islam Sultan Agung (UNISSULA) as well as the Bachelor of Civil Engineering with a focus on environmentally based civil engineering competencies.

Based on the results of this evaluation, the Bachelor of Civil Engineering of Universitas Islam Sultan Agung (UNISSULA) responded by developing a new curriculum, aimed at increasing the relevance and quality of graduates in line with the vision and mission of UNISSULA and the UNISSULA Bachelor of Civil Engineering. This new curriculum will officially be implemented starting in the 2024/2025 academic year, named Curriculum 2025.

In the 2025 Curriculum, students are expected to complete a total of 144 credits, consisting of 134 credits of compulsory courses and 10 credits of elective courses. The main changes focus on improving the material for each course by integrating structured assignments, as well as responding to the demands of the Industry 4. 0 era by combining courses that are relevant to the current development needs of society.

In addition, to comply with Minister of Education and Culture Regulation no. 3/2020 and to enrich students' experience in applying the knowledge gained in class, two practical work schemes are provided, namely Independent and Regular internships. With the implementation of the 2025 Curriculum, it is necessary to equalise student achievements from the 2019 curriculum to the 2025 curriculum.

To maintain student achievement and performance, there are general principles that are applied in the equalization process from the 2019 curriculum to the 2025 curriculum. The first principle is to carry out the equalization as best as possible to avoid student losses, both quantitatively and qualitatively. The second principle is to ensure that the equivalency approaches the desired learning objectives in accordance with the 2025 curriculum concept. In implementing the equivalency, the approach used is to keep the course letter grades constant and unchanged.

Several categories below can be used to facilitate the equalization process from the 2019 curriculum to the 2025 curriculum, namely:

1. **Category I,** which involves courses with the same name and the number of credits equivalent to the 2025 curriculum.
2. **Category II,** includes courses that have changed their name, but have a credit load that is parallel to the 2025 curriculum.
3. **Category III,** consists of courses that are part of the 2025 Curriculum, but still maintain the total credit load unchanged.
4. **Category IV,** involves courses that are combined results in the 2025 Curriculum.
5. **Category V,** are courses that change in nature from Compulsory Courses to Elective Courses
6. **Category VI,** is a special category that aims to ensure the principle of avoiding student losses.

Solutions for Completing the Equivalence of 2019 Curriculum Courses to the 2025 Curriculum

A. Category I and Category II

The course grades in the 2019 Curriculum remain valid and students do not need to take equivalent courses in the 2025 Curriculum. The list of courses included in category I and Category II can be seen in Table 14. 1 below.

Table 14. 1 Equivalent Courses for Categories I and II1

No	Compulsory Courses 2019 Curriculum	Compulsory Courses Curriculum 2025
1	Pancasila	Pancasila
2	Indonesian	Indonesian
3	Islamic Religious Education	Islamic Religious Education
4	Digital Information Technology for Academics	Digital Information Technology for Academics
5	English	English
6	Calculus I	Mathematics I
7	Statistics and Probability	Statistics and Probability
8	Engineering Drawings	Engineering Drawings
9	Citizenship Education	Citizenship Education
10	Calculus II	Mathematics II
11	Construction Materials Technology	Construction Materials Technology
12	Construction Materials Technology Practicum	Construction Materials Technology Practicum
13	Soil Mechanics I	Soil Mechanics I
14	Fluid Mechanics and Hydraulics I	Fluid Mechanics and Hydraulics I
15	Sharia Entrepreneurship	Sharia Entrepreneurship
16	Calculus III	Mathematics III
17	Writing Techniques and Research Methodology	Writing Techniques and Research Methodology
18	Soil Mechanics II	Soil Mechanics II
19	Fluid Mechanics and Hydraulics II	Fluid Mechanics and Hydraulics II
20	Hydraulics Practical	Hydraulics Practical
21	Jurisprudence of Worship	Jurisprudence of Worship

No	Compulsory Courses 2019 Curriculum	Compulsory Courses Curriculum 2025
22	Islamic Civilization	Islamic Civilization
23	Calculus IV	Mathematics IV
24	Struktur Beton I	Concrete Structures I
25	Road Paving I	Road Paving I
26	Soil Mechanics Practical	Soil Mechanics Practical
27	Irrigation	Irrigation
28	Cost Budget Plan and Project Scheduling	Cost Budget Plan and Project Scheduling
29	Concrete Structures II	Concrete Structures II
30	Foundation Engineering	Foundation Engineering
31	Retaining Walls and Retaining Walls	Retaining Walls and Retaining Walls
32	Water and Drainage Buildings	Water and Drainage Buildings
33	Railway Road	Railway Road
34	Road Paving II	Road Paving II
35	Road Paving Practicum	Road Paving Practicum
36	Structural Dynamic Analysis	Structural Dynamic Analysis
37	Geometrik Jalan Raya	Highway Geometric
38	Engineering Economics	Engineering Economics
39	Construction Implementation Methods	Construction Implementation Methods
40	Environmental Impact Analysis	Environmental Impact Analysis
41	Field Work Lectures	Field Work Lectures
42	Practical Work	Practical Work
43	Final Project	Final Project
44	Structural Analysis I	Statics I
45	Land Surveying	CCC
46	Land Measuring Practical	Measurement Practicum
47	Structural Analysis II	Statics II
48	Mechanics of Materials	Physics Mechanics
49	Building Structure II	Building Construction
50	Structural Analysis III	Analysis of Static Indeterminate Structures
51	Hydrological Engineering	Hydrology
52	Environmental Engineering	Environmental Science
53	Structural Analysis IV	Matrix Method Structural Analysis
54	Engineering Geology	Geology
55	Traffic Engineering	Land Transportation Engineering
56	Steel Structures II	Steel Structure
57	Building Design with Computers	Designing with Computers
58	Water Resources Development (PSDA)	Water Resources Development

No	Compulsory Courses 2019 Curriculum	Compulsory Courses Curriculum 2025
59	Occupational Health and Safety (K3)	Occupational Health and Safety
60	Click Download to save Kuliah Kerja Nyata mp3 youtube com	Real Work Lectures

B. Category III

The courses included in Category III are Islamic Science Disciplines with a weight of 3 credits (2019) which are split in the 2025 curriculum into Islamic Science Disciplines I (weight 1 credit) and Islamic Science Disciplines II (weight 2 credits).
For students who already have grades for these subjects in the 2019 Curriculum, the grades will remain valid and students do not need to take the equivalent courses in the 2025 Curriculum. For students who want to improve their grades in the 2025 Curriculum, students must take Islamic Science Disciplines I and Islamic Science Disciplines II courses collectively.

C. Category IV

Courses included in Category IV are from the 2019 Curriculum for Bridge Building Design, Building Design, and Water Building Design which were merged into Civil Building Design.

Table 14. 2 Equivalent Courses for Category IV2

No	2019 Curriculum	SKS	Curriculum 2025	SKS
1	Bridge Building Design	2	Civil Building Design	4
2	Building Design	2		
3	Water Building Design	2		

The solution for equalising Category IV courses is as follows:

1. For students who have just taken one of the 3 2019 Curriculum Subjects, students MUST take Civil Building Design in the 2025 Curriculum.
2. For students who have taken 2 of the 3 2019 Curriculum courses, students are NOT REQUIRED to take Civil Building Design in the 2025 Curriculum.
3. For students who have taken the 3 2019 Curriculum courses, students are NOT REQUIRED to take Civil Building Design in the 2025 Curriculum and will receive equivalency in Category VI.
4. For students who want to improve their grades in part or all of the 2019 Curriculum subjects, students must take Civil Building Design in the 2025 Curriculum.

D. Category V

Courses included in Category V are Project Management and Construction Management. Where, in the 2019 Curriculum, Project Management was included as an Elective Subject, then in the 2025 Curriculum it changed to a Compulsory Subject. Likewise with Construction Management.
The solution to equalising the curriculum is as follows:

1. For students who have never taken Project Management in the 2019 curriculum, since the 2025 Curriculum comes into effect, they are MANDATORY to take Project Management.
2. For students who have taken Project Management in the 2019 Curriculum, students do not HAVE to take Construction Management, because in the 2025 Curriculum Construction Management has changed to an Elective Subject.

E. Category VI

The existence of Category VI equalization was made so that curriculum changes do not harm students. The list of equivalent courses included in Category VI can be seen in the table below. For students who have already taken courses in the 2019 Curriculum, students are NOT REQUIRED to take equivalent courses in the 2025 Curriculum.

Table 14. 3 Equivalent Courses for Category VI3

No	2019 Curriculum Subjects	2025 Curriculum Subjects
1	Building Structure I	Basic Chemistry
2	Wooden Structure	Basic Physics
3	Steel Structure I	Numerical Methods
4	Bridge Building Design	Professional Ethics

For the Ketogri IV Equalization Solution, conditions where students have taken 3 courses in Bridge Building Design, Building Design, and Water Building Design in the 2019 Curriculum, then apart from having their grades equalized in the 2025 Curriculum with the Civil Building Design Course, the student's grades will be equalized with the Professional Ethics Course.

To smooth the transition from the 2019 Curriculum to the 2025 Curriculum, a policy will be adopted that the Wood Structure Subject will continue to appear in the learning activities that students of the 2021 and 2022 classes MUST take.

CHAPTER XV
CLOSING

The 2025 Curriculum for the Bachelor of Civil Engineering was prepared as a form of commitment to producing graduates who are competent, have character and are adaptive to developments in science, technology and the needs of the world of work. This curriculum is designed in an integrated manner with the vision and mission of Universitas Islam Sultan Agung, refers to national policies, and applies an Outcome-Based Education (OBE) approach to ensure the achievement of Graduate Learning Outcomes.

The implementation of the 2025 Curriculum is carried out consistently through an internal quality assurance system that refers to the PPEPP cycle (Determination, Implementation, Evaluation, Control and Improvement). Evaluation and improvement of the curriculum is carried out continuously to ensure the relevance, quality and competitiveness of graduates, including through the use of input from stakeholders and the dynamics of development in the construction and civil engineering industries.

The Bachelor of Civil Engineering is committed to implementing this curriculum responsibly, transparently, and oriented towards improving the quality of continuous education, by upholding Islamic values, professional ethics, and the benefit of society. It is hoped that this commitment can become a strong foundation in creating graduates who are superior, globally competitive, and able to make a real contribution to the development of national infrastructure and civilization.

CHAPTER XVI
OVERVIEW CURRICULUM

Course Type	Credit Points	Semester								TOTAL
		1	2	3	4	5	6	7	8	
University Course	31,5	15	3	4,5	6	3	0	0	0	31,5
Compulsory Course	148,5	15	27	25,5	25,5	25,5	21	9	0	148,5
Final Project, Internship, Thesis	21	0	0	0	0	0	4,5	10,5	6	21
Elective Course	15	0	0	0	0	0	6	9	0	15
Total ECTS Credit Points	**216**	**30**	**30**	**30**	**31,5**	**28,5**	**31,5**	**28,5**	**6**	**216**
Total SKS Credit Points	**144**	**20**	**20**	**20**	**21**	**19**	**21**	**19**	**4**	**144**

Legends		**SKS**	**Type**	**Semester**	**Credit Points**	**Academic Hours**	**Learning Activities**	**Weight for GPA**
Type	C = Compulsory;							
	E = Elective							
Credit Points	ECTS Credit Points (1 SKS = 1.5 ECTS)							
Academic Hours	1 ECTS = 30 academic hours							
Learning Activities	Theory component uses L, A, E; add La when a laboratory/practical component is present.							
	A = Assignment							
	E = Exercise							

	FP = Final Project / Capstone Project									
	La = Laboratory / Practical Activity									
	In = Internship / Field Work									
University Course		**21**			**31,5**	**945**				
TS236006001	Pancasila	2	C	1	3	90	L = 27	A = 32	E = 32	0,01388889
TS236006002	Indonesian	2	C	1	3	90	L = 27	A = 32	E = 32	0,01388889
TS236006003	Islamic Religious Education	2	C	1	3	90	L = 27	A = 32	E = 32	0,01388889
TS236007005	Digital Information Technology for Academics	2	C	1	3	90	La = 90			0,01388889
TS236007006	English	2	C	1	3	90	L = 27	A = 32	E = 32	0,01388889
TS236006011	Civic Education	2	C	2	3	90	L = 27	A = 32	E = 32	0,01388889
TS236007023	Sharia Entrepreneurship	2	C	3	3	90	L = 27	A = 32	E = 32	0,01388889
TS236007024	Islam and Scientific Disciplines I	1	C	3	1,5	45	L = 13	A = 16	E = 16	0,00694444
TS236007033	Fiqh of Worship	2	C	4	3	90	L = 27	A = 32	E = 32	0,01388889
TS236007034	Islamic Civilisation	2	C	4	3	90	L = 27	A = 32	E = 32	0,01388889
TS236007045	Islam and Scientific Disciplines II	2	C	5	3	90	L = 27	A = 32	E = 32	0,01388889
Compulsory Course		**99**			**148,5**	**4455**				
TS236007004	Basic Chemistry	2	C	1	3	90	L = 27	A = 32	E = 32	0,01388889
TS236008007	Mathematics I	2	C	1	3	90	L = 27	A = 32	E = 32	0,01388889
TS236008008	Statistics and Probability	2	C	1	3	90	L = 27	A = 32	E = 32	0,01388889
TS236008009	Engineering Drawings	2	C	1	3	90	L = 13	A = 16	E = 16; La = 45	0,01388889

TS236108010	Statics I	2	C	1	3	90	L = 27	A = 32	E = 32	0,01388889
TS236007012	Basic Physics	2	C	2	3	90	L = 27	A = 32	E = 32	0,01388889
TS236008013	Mathematics II	2	C	2	3	90	L = 27	A = 32	E = 32	0,01388889
TS236008014	Engineering Surveying	2	C	2	3	90	L = 27	A = 32	E = 32	0,01388889
TS236008015	Engineering Surveying Laboratory	1	C	2	1,5	45	La = 45			0,00694444
TS236108016	Statics II	2	C	2	3	90	L = 27	A = 32	E = 32	0,01388889
TS236108017	Physics Mechanics	2	C	2	3	90	L = 27	A = 32	E = 32	0,01388889
TS236108018	Construction Materials Technology	2	C	2	3	90	L = 27	A = 32	E = 32	0,01388889
TS236108019	Construction Materials Technology Laboratory	1	C	2	1,5	45	La = 45			0,00694444
TS236208020	Geology	2	C	2	3	90	L = 27	A = 32	E = 32	0,01388889
TS236308021	Fluid Mechanics and Hydraulics I	2	C	2	3	90	L = 27	A = 32	E = 32	0,01388889
TS236007022	Building Construction	2	C	3	3	90	L = 13	A = 16	E = 16; La = 45	0,01388889
TS236008025	Mathematics III	2	C	3	3	90	L = 27	A = 32	E = 32	0,01388889
TS236008026	Scientific Writing and Research Methodology	2	C	3	3	90	L = 27	A = 32	E = 32	0,01388889
TS236108027	Statically Indeterminate Structural Analysis	2	C	3	3	90	L = 13	A = 16	E = 16; La = 45	0,01388889
TS236208028	Soil Mechanics I	2	C	3	3	90	L = 27	A = 32	E = 32	0,01388889
TS236308029	Fluid Mechanics and Hydraulics II	2	C	3	3	90	L = 27	A = 32	E = 32	0,01388889
TS236308030	Hydraulics Practical	1	C	3	1,5	45	La = 45			0,00694444
TS236308031	Hydrology	2	C	3	3	90	L = 27	A = 32	E = 32	0,01388889

TS236608032	Environmental Science	2	C	3	3	90	L = 27	A = 32	E = 32	0,01388889
TS236008035	Mathematics IV	2	C	4	3	90	L = 27	A = 32	E = 32	0,01388889
TS236108036	Matrix Method Structural Analysis	2	C	4	3	90	L = 13	A = 16	E = 16; La = 45	0,01388889
TS236108037	Concrete Structures I	2	C	4	3	90	L = 27	A = 32	E = 32	0,01388889
TS236108038	Road Pavingt I	2	C	4	3	90	L = 27	A = 32	E = 32	0,01388889
TS236208039	Soil Mechanics II	2	C	4	3	90	L = 27	A = 32	E = 32	0,01388889
TS236208040	Soil Mechanics Practical	1	C	4	1,5	45	La = 45			0,00694444
TS236308041	Irrigation	2	C	4	3	90	L = 13	A = 16	E = 16; La = 45	0,01388889
TS236408042	Land Transportation Engineering	2	C	4	3	90	L = 27	A = 32	E = 32	0,01388889
TS236508043	Cost Budget Plan and Project Scheduling	2	C	4	3	90	L = 13	A = 16	E = 16; La = 45	0,01388889
TS236007044	Numerical Methods	2	C	5	3	90	L = 27	A = 32	E = 32	0,01388889
TS236108046	Concrete Structures II	2	C	5	3	90	L = 13	A = 16	E = 16; La = 45	0,01388889
TS236108047	Steel Structure	2	C	5	3	90	L = 13	A = 16	E = 16; La = 45	0,01388889
TS236208048	Foundation Engineering	2	C	5	3	90	L = 13	A = 16	E = 16; La = 45	0,01388889
TS236208049	Retaining Walls and Retaining Walls	2	C	5	3	90	L = 13	A = 16	E = 16; La = 45	0,01388889
TS236308050	Water and Drainage Buildings	2	C	5	3	90	L = 13	A = 16	E = 16; La = 45	0,01388889
TS236407051	Railway Road	2	C	5	3	90	L = 27	A = 32	E = 32	0,01388889
TS236408052	Road Paving II	2	C	5	3	90	L = 27	A = 32	E = 32	0,01388889
TS236408053	Pavement Laboratory	1	C	5	1,5	45	La = 45			0,00694444

TS236008054	Designing with Computers	2	C	6	3	90	La = 90			0,01388889
TS236108057	Structural Dynamic Analysis	2	C	6	3	90	L = 13	A = 16	E = 16; La = 45	0,01388889
TS236308058	Water Resources Development	2	C	6	3	90	L = 27	A = 32	E = 32	0,01388889
TS236408059	Highway Geometric	2	C	6	3	90	L = 13	A = 16	E = 16; La = 45	0,01388889
TS236508060	Engineering Economics	2	C	6	3	90	L = 27	A = 32	E = 32	0,01388889
TS236508061	Occupational Health and Safety	2	C	6	3	90	L = 27	A = 32	E = 32	0,01388889
TS236508062	Project Management	2	C	6	3	90	L = 27	A = 32	E = 32	0,01388889
TS236008063	Professional Ethics	2	C	7	3	90	L = 27	A = 32	E = 32	0,01388889
TS236508066	Construction Implementation Methods	2	C	7	3	90	L = 27	A = 32	E = 32	0,01388889
TS236608067	Environmental Impact Analysis	2	C	7	3	90	L = 27	A = 32	E = 32	0,01388889
Final Project, Internship, Thesis		**14**			**21**	**630**				
TS236012055	Field Work Lectures	1	C	6	1,5	45	In = 45			0,00694444
TS236012056	Practical Work	2	C	6	3	90	In = 90			0,01388889
TS236008064	Civil Building Design	4	C	7	6	180	FP = 180			0,02777778
TS236012065	Real Work Lectures	3	C	7	4,5	135	In = 135			0,02083333
TS230009068	Final Project	4	C	8	6	180	FP = 180			0,02777778
Elective Course (choose 5 courses / 10 SKS: 4 SKS in Semester VI and 6 SKS in Semester VII)		**10**			**15**	**450**				
TS236109070	Earthquake Resistant Structure Design	2	E	6	3	90	L = 27	A = 32	E = 32	0,01388889
TS236109071	Prestressed Concrete Design	2	E	6	3	90	L = 27	A = 32	E = 32	0,01388889

TS236109072	Structural Analysis with Finite Element Method	2	E	6	3	90	L = 27	A = 32	E = 32	0,01388889
TS236109073	Composite Steel Design	2	E	6	3	90	L = 27	A = 32	E = 32	0,01388889
TS236109074	Light Steel Design	2	E	6	3	90	L = 27	A = 32	E = 32	0,01388889
TS236409086	Public Transport and Goods Management	2	E	6	3	90	L = 27	A = 32	E = 32	0,01388889
TS236509088	Construction Management	2	E	6	3	90	L = 27	A = 32	E = 32	0,01388889
TS236509089	Construction Project Equipment	2	E	6	3	90	L = 27	A = 32	E = 32	0,01388889
TS236509090	Skills Certification	2	E	6	3	90	L = 27	A = 32	E = 32	0,01388889
TS236509091	Introduction to Infrastructure Management	2	E	6	3	90	L = 27	A = 32	E = 32	0,01388889
TS236509092	Decision Making Methods	2	E	6	3	90	L = 27	A = 32	E = 32	0,01388889
TS236509093	Infrastructure Operations and Maintenance Management	2	E	6	3	90	L = 27	A = 32	E = 32	0,01388889
TS236209075	Soft Soil Improvement	2	E	7	3	90	L = 27	A = 32	E = 32	0,01388889
TS236209076	Soil Reinforcement with Geosynthetics	2	E	7	3	90	L = 27	A = 32	E = 32	0,01388889
TS236209077	Slope and Embankment Stability	2	E	7	3	90	L = 27	A = 32	E = 32	0,01388889
TS236209078	Forensics in the field of Geotechnics	2	E	7	3	90	L = 27	A = 32	E = 32	0,01388889
TS236309079	Port	2	E	6/7	3	90	L = 27	A = 32	E = 32	0,01388889
TS236309080	Estuary and Coastal Engineering	2	E	6/7	3	90	L = 27	A = 32	E = 32	0,01388889
TS236309081	Hydrometry	2	E	6/7	3	90	L = 27	A = 32	E = 32	0,01388889
TS236309082	River Engineeringi	2	E	6/7	3	90	L = 27	A = 32	E = 32	0,01388889
TS236409083	Airports	2	E	6/7	3	90	L = 27	A = 32	E = 32	0,01388889

TS236409084	Urban Transportation	2	E	6/7	3	90	L = 27	A = 32	E = 32	0,01388889
TS236409085	Traffic Impact Analysis	2	E	6/7	3	90	L = 27	A = 32	E = 32	0,01388889
TOTAL W.GPA										**1,00000000**