



**Universitas Negeri Surabaya
Faculty of Engineering
Civil Engineering Undergraduate Study Program**

Document Code

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight	SEMESTER	Compilation Date																																																																													
Construction Cost Estimates	2220102013	Compulsory Study Program Subjects	T=2 P=0 ECTS=3.18	3	April 27, 2023																																																																													
AUTHORIZATION		SP Developer	Course Cluster Coordinator	Study Program Coordinator																																																																														
		Ir. Mas Suryanto HS., S.T., M.T.	Yogie Risdianto, S.T., M.T.																																																																														
Learning model	Case Studies																																																																																	
Program Learning Outcomes (PLO)	PLO study program that is charged to the course																																																																																	
	Program Objectives (PO)																																																																																	
	PO - 1	Students master and are able to use the budget planning course for carrying out civil engineering work.																																																																																
	PO - 2	Students are able to plan, implement and supervise budget plans for civil engineering work in accordance with scientific principles.																																																																																
	PLO-PO Matrix																																																																																	
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PO Matrix at the end of each learning stage (Sub-PO)																																																																																		
	<table border="1" style="margin: auto;"> <thead> <tr> <th rowspan="2">P.O</th> <th colspan="16">Week</th> </tr> <tr> <th>1</th><th>2</th><th>3</th><th>4</th><th>5</th><th>6</th><th>7</th><th>8</th><th>9</th><th>10</th><th>11</th><th>12</th><th>13</th><th>14</th><th>15</th><th>16</th> </tr> </thead> <tbody> <tr> <td>PO-1</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>PO-2</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </tbody> </table>															P.O	Week																1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	PO-1																	PO-2																
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Short Course Description	This course contains budget plans which include rough and thorough calculations of physical construction cost plans and consultancy services. The rough cost budget plan will be calculated based on the components of state building construction costs. A thorough cost budget plan for physical construction will be calculated based on the type of work, volume calculations, and unit price analysis for building and road construction work accompanied by calculations of material requirements. The budget plan for consultancy service costs will be carefully calculated for planning, supervision and activity management services.																																																																																	
References	Main :																																																																																	
	<ol style="list-style-type: none"> 1. Nugraha Paulus, Natan Ishak, Sutjipto R. 2013. Manajemen Proyek Konstruksi 1. Surabaya: Kartika Yudha. 2. Soeharto Iman. 2016. Manajemen Proyek dari Konseptual Sampai Operasional Jilid 2. Jakarta: Erlangga. 3. Ibrahim Baktiar. 2012. Rencana dan Estimate Real of Cost. Jakarta: Bumi Aksara. 4. Badan Standarisasi Nasional. 2008. Tata Cara Perhitungan Harga Satuan Pekerjaan. Jakarta: Badan Standarisasi Nasional. 5. Kementerian PUPR. 2018. Permen PUPR No 22/PRT/M/2018 tentang Pedoman Pembangunan Bangunan Gedung Negara. Jakarta: Kementerian PUPR. 6. Kementerian PUPR. 2022. Permen PUPR Nomor 1 Tahun 2022 tentang Pedoman Penyusunan Perkiraan Biaya Pekerjaan Konstruksi Bidang Pekerjaan Umum dan Perumahan Rakyat. Jakarta: Kementerian PUPR. 7. Pemerintah Kota Surabaya. 2022. Harga Satuan Pokok Kegiatan (HSPK) Kota Surabaya. Surabaya: Pemkot Surabaya. 8. Ikatan Nasional Konsultan Indonesia. 2023. Pedoman Standar Minimal 2023 Biaya Langsung Personil dan Biaya Langsung Non Personil untuk Kegiatan Jasa Konsultansi. Jakarta: Inkindo. 																																																																																	
	Supporters:																																																																																	
	<ol style="list-style-type: none"> 1. Journal of Cost Analysis and Parametrics. 2. Analisis Anggaran Biaya Pada Tender Pekerjaan Konstruksi Infrastruktur Transportasi Kota Surabaya 3. Jurnal Peningkatan Hard Skill Penjadwalan Proyek Menggunakan Microsot Project Bagi Siswa/Siswi SMKN 2 Surabaya 																																																																																	
Supporting lecturer	Krisna Dwi Handayani, S.T., M.MT., M.T. Ir. Mas Suryanto H.S., S.T., M.T. Alwan Gangsar Brilian Putra, S.Tr.T., M.T.																																																																																	
Week	Final abilities of each learning stage (Sub-PO)	Evaluation			Help Learning, Learning methods, Student Assignments, [Estimated time]	Learning materials [References]	Assessment Weight (%)																																																																											

		Indicator	Criteria & Form	Offline (offline)	Online (online)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Students understand the basic concept of budget planning.	Students can state the meaning, types, components and methods for calculating budget plans	<p>Criteria: Good marks if questions are answered correctly.</p> <p>Form of Assessment : Participatory Activities</p>	Lectures, discussions and questions and answers. 2 X 50	Lectures and questions and answers. 2 X 50	<p>Material: Understanding and Methods for Calculating Cost Budget Plans Library: Soeharto Iman. 2016. <i>Project Management from Conceptual to Operational Volume 2.</i> Jakarta: Erlangga.</p> <p>Material: Project Procurement Documents Literature: <i>Cost Budget Analysis for Surabaya City Transportation Infrastructure Construction Work Tender</i></p>	5%
2	Students can calculate the rough/global costs of building construction.	<ol style="list-style-type: none"> 1.Students can calculate physical construction costs roughly/globally. 2.Students can calculate technical planning costs roughly/globally. 3.Students can calculate technical supervision costs (construction management/supervisory consultants) roughly/globally. 4.Students can calculate the costs of managing activities roughly/globally. 	<p>Criteria: Good marks if the practice questions can be done correctly.</p> <p>Form of Assessment : Project Results Assessment / Product Assessment</p>	Lectures, questions and answers, and practice questions. 2 X 50	Lectures, practice questions. 2 X 50	<p>Material: State Building Construction Costs Reference: <i>Ministry of PUPR. 2018. PUPR Ministerial Decree No 22/PRT/M/2018 concerning Guidelines for the Construction of State Buildings.</i> Jakarta: Ministry of PUPR.</p>	10%
3	Students can mention the Types, Components, and Methods of Calculating Physical Construction Budget Plans (RAB).	<ol style="list-style-type: none"> 1.Students can name the types of physical construction cost budget plans. 2.Students can mention the components of the physical construction cost budget plan. 3.Students can state how to calculate the physical construction cost budget plan. 	<p>Criteria: Good marks if questions are answered correctly.</p> <p>Form of Assessment : Participatory Activities</p>	Lectures, discussions and questions and answers. 2 X 50	Lectures, questions and answers. 2 X 50	<p>Material: Types of Cost Budget Plans References: Nugraha Paulus, Natan Ishak, Sutjipto R. 2013. <i>Construction Project Management 1.</i> Surabaya: Kartika Yudha.</p> <p>Material: Cost Budget Plan Components References: Nugraha Paulus, Natan Ishak, Sutjipto R. 2013. <i>Construction Project Management 1.</i> Surabaya: Kartika Yudha.</p> <p>Material: How to Calculate Cost Budget Plan Details Reference: Ibrahim Baktiar. 2012. <i>Plan and Estimate Real of Cost.</i> Jakarta: Bumi Literacy.</p>	5%

4	Students can calculate the RAB for Preparatory Work, Land, Foundations and Material Requirements.	<ol style="list-style-type: none"> 1. Students can calculate the RAB for Preparatory Work and Material Requirements. 2. Students can calculate the RAB for earthworks and material requirements. 3. Students can calculate the RAB for Foundation Work and Material Requirements. 	<p>Criteria: Good marks if the practice questions can be done correctly.</p> <p>Form of Assessment : Project Results Assessment / Product Assessment</p>	Lectures, questions and answers, and practice questions. 2 X 50	Lectures, practice questions. 2 X 50	<p>Material: Procedure for calculating unit prices for earthworks for building and housing construction.</p> <p>Reference: <i>National Standardization Agency. 2008. Procedures for Calculating Unit Prices of Work. Jakarta: National Standardization Agency.</i></p> <hr/> <p>Material: Unit Price Analysis of Preparatory Work</p> <p>Literature: <i>Ministry of PUPR. 2022. PUPR Ministerial Decree Number 1 of 2022 concerning Guidelines for Preparing Cost Estimates for Construction Work in the Field of Public Works and Public Housing. Jakarta: Ministry of PUPR.</i></p> <hr/> <p>Material: Unit Price Analysis of Preparatory Work and Unit Price Analysis of Foundation Work Library : <i>Ministry of PUPR. 2022. PUPR Ministerial Decree Number 1 of 2022 concerning Guidelines for Preparing Cost Estimates for Construction Work in the Field of Public Works and Public Housing. Jakarta: Ministry of PUPR.</i></p>	5%
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5	Students can calculate the RAB for concrete work and material requirements.	<ol style="list-style-type: none"> 1.Students can calculate the RAB for concrete work. 2.Students can calculate the material requirements for concrete work. 	<p>Criteria: Good marks if the practice questions can be done correctly.</p> <p>Form of Assessment : Project Results Assessment / Product Assessment</p>	Lectures, questions and answers, practice questions. 2 X 50	Lectures, practice questions. 2 X 50	<p>Material: Procedures for Calculating Unit Prices for Concrete Work for Building and Housing Construction. References: <i>National Standardization Agency. 2008. Procedures for Calculating Unit Prices of Work. Jakarta: National Standardization Agency.</i></p> <hr/> <p>Material: Unit Price Analysis of Concrete Work Reference: <i>Ministry of PUPR. 2022. PUPR Ministerial Decree Number 1 of 2022 concerning Guidelines for Preparing Cost Estimates for Construction Work in the Field of Public Works and Public Housing. Jakarta: Ministry of PUPR.</i></p>	5%
6	Students can calculate the RAB for steel work and material requirements.	<ol style="list-style-type: none"> 1.Students can calculate the RAB for steel work. 2.Students can calculate material requirements for steel work. 	<p>Criteria: Good marks if the practice questions can be done correctly.</p> <p>Form of Assessment : Project Results Assessment / Product Assessment</p>	Lectures, questions and answers, practice questions. 2 X 50	Lectures, practice questions. 2 X 50	<p>Material: Procedures for Calculating Unit Prices for Iron Work for Building and Housing Construction. Reference: <i>National Standardization Agency. 2008. Procedures for Calculating Unit Prices of Work. Jakarta: National Standardization Agency.</i></p> <hr/> <p>Material: Unit Price Analysis of Cast Iron Works. References: <i>Ministry of PUPR. 2022. PUPR Ministerial Decree Number 1 of 2022 concerning Guidelines for Preparing Cost Estimates for Construction Work in the Field of Public Works and Public Housing. Jakarta: Ministry of PUPR.</i></p>	10%

7	Students can calculate the RAB for Formwork Work and Material Requirements.	<ol style="list-style-type: none"> Students can calculate the RAB for Formwork Work. Students can calculate material requirements for formwork work. 	<p>Criteria: Good marks if the practice questions can be done correctly.</p> <p>Form of Assessment : Project Results Assessment / Product Assessment</p>	Lectures, questions and answers, practice questions. 2 X 50	Lectures, practice questions. 2 X 50	<p>Material: Procedures for Calculating Unit Prices for Formwork Work for Building and Housing Construction Reference: <i>National Standardization Agency. 2008. Procedures for Calculating Unit Prices of Work. Jakarta: National Standardization Agency.</i></p> <hr/> <p>Material: Unit Price Analysis of Formwork Work Reference: <i>Ministry of PUPR. 2022. PUPR Ministerial Decree Number 1 of 2022 concerning Guidelines for Preparing Cost Estimates for Construction Work in the Field of Public Works and Public Housing. Jakarta: Ministry of PUPR.</i></p>	10%
8	Midterm Exam (UTS)						0%
9	Students can calculate the RAB for wall work, frames, doors, windows and material requirements.	<ol style="list-style-type: none"> Students can calculate the RAB for wall work and material requirements. Students can calculate the RAB for Frame, Door and Window work and the material requirements. 	<p>Criteria: Good marks if the practice questions can be done correctly.</p> <p>Form of Assessment : Project Results Assessment / Product Assessment</p>	Lectures, questions and answers, practice questions. 2 X 50	Lectures, practice questions. 2 X 50	<p>Material: Unit Price Analysis of Wall Work Library: <i>Ministry of PUPR. 2018. PUPR Ministerial Decree No 22/PRT/M/2018 concerning Guidelines for the Construction of State Buildings. Jakarta: Ministry of PUPR.</i></p> <hr/> <p>Material: Unit Price Analysis of Frame, Door and Window Work Reference: <i>Surabaya City Government. 2022. Basic Activity Unit Prices (HSPK) for the City of Surabaya. Surabaya: Surabaya City Government.</i></p>	10%

10	Students can calculate the RAB for ceramic and ceiling work and the material requirements.	<p>1. Students can calculate the RAB for ceramic work and the material requirements.</p> <p>2. Students can calculate the RAB for ceiling work and material requirements.</p>	<p>Criteria: Good marks if the practice questions can be done correctly.</p> <p>Form of Assessment : Project Results Assessment / Product Assessment</p>	Lectures, questions and answers, practice questions. 2 X 50	Lectures, practice questions. 2 X 50	<p>Material: Procedures for Calculating Unit Prices for Floor Covering Work for Building and Housing Construction; Procedures for Calculating Unit Prices for Ceiling Work for Building and Housing Construction Library: <i>National Standardization Agency. 2008. Procedures for Calculating Unit Prices of Work. Jakarta: National Standardization Agency.</i></p> <hr/> <p>Material: Unit Price Analysis of Ceramic and Ceiling Work Reference: <i>Ministry of PUPR. 2022. PUPR Ministerial Decree Number 1 of 2022 concerning Guidelines for Preparing Cost Estimates for Construction Work in the Field of Public Works and Public Housing. Jakarta: Ministry of PUPR.</i></p> <hr/> <p>Material: Unit Price Analysis of Ceramic and Ceiling Work Library: <i>Surabaya City Government. 2022. Basic Activity Unit Prices (HSPK) for the City of Surabaya. Surabaya: Surabaya City Government.</i></p>	5%
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11	Students can calculate the RAB for roofing work, steel construction and material requirements	<p>1. Students can calculate the RAB for roofing work and the material requirements.</p> <p>2. Students can calculate the RAB for steel construction work and the material requirements.</p>	<p>Criteria: Good marks if the practice questions can be done correctly.</p> <p>Form of Assessment : Project Results Assessment / Product Assessment</p>	Lectures, questions and answers, practice questions. 2 X 50	Lectures, practice questions. 2 X 50	<p>Material: Procedures for Calculating Unit Prices for Roofing Work for Building and Housing Construction Reference: <i>National Standardization Agency. 2008. Procedures for Calculating Unit Prices of Work. Jakarta: National Standardization Agency.</i></p> <hr/> <p>Material: Unit Price Analysis of Roofing and Steel Construction Works Reference: <i>Ministry of PUPR. 2022. PUPR Ministerial Decree Number 1 of 2022 concerning Guidelines for Preparing Cost Estimates for Construction Work in the Field of Public Works and Public Housing. Jakarta: Ministry of PUPR.</i></p> <hr/> <p>Material: Unit Price Analysis of Roofing and Steel Construction Works Library: <i>Surabaya City Government. 2022. Basic Activity Unit Prices (HSPK) for the City of Surabaya. Surabaya: Surabaya City Government.</i></p>	5%
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12	Students can calculate the RAB for Electrical, Sanitary Work and Material Requirements.	<ol style="list-style-type: none"> Students can calculate the RAB for electrical work and material requirements. Students can calculate the RAB for Sanitary Work and Material Requirements. 	<p>Criteria: Good marks if the practice questions can be done correctly.</p> <p>Form of Assessment : Project Results Assessment / Product Assessment</p>	Lectures, questions and answers, practice questions. 2 X 50	Lectures, practice questions. 2 X 50	<p>Material: Unit Price Analysis of Electrical Work Library: Surabaya City Government. 2022. Basic Activity Unit Prices (HSPK) for the City of Surabaya. Surabaya: Surabaya City Government.</p> <hr/> <p>Material: Unit Price Analysis of Sanitary Works Library: Ministry of PUPR. 2022. PUPR Ministerial Decree Number 1 of 2022 concerning Guidelines for Preparing Cost Estimates for Construction Work in the Field of Public Works and Public Housing. Jakarta: Ministry of PUPR.</p>	5%
13	Students can calculate the RAB for road work and material requirements and project indirect costs	<ol style="list-style-type: none"> Students can calculate the RAB for road works and material requirements. Students can calculate project indirect costs 	<p>Criteria: Good marks if the practice questions can be done correctly.</p> <p>Form of Assessment : Project Results Assessment / Product Assessment</p>	Lectures, questions and answers, practice questions. 2 X 50	Lectures, practice questions. 2 X 50	<p>Material: Unit Price Analysis of Highways Works Library: Ministry of PUPR. 2022. PUPR Ministerial Decree Number 1 of 2022 concerning Guidelines for Preparing Cost Estimates for Construction Work in the Field of Public Works and Public Housing. Jakarta: Ministry of PUPR.</p> <hr/> <p>Material: Indirect Project Costs References: Nugraha Paulus, Natan Ishak, Sutjipto R. 2013. Construction Project Management 1. Surabaya: Kartika Yudha.</p>	10%

14	Students can find out the components and methods for calculating the consultancy service budget plan.	<ol style="list-style-type: none"> Students can mention the components of the Consultancy Services Budget Plan. Students can explain how to calculate the budget plan for consulting services. 	<p>Criteria: Good marks if questions are answered correctly.</p> <p>Form of Assessment : Participatory Activities</p>	Lectures, discussions, questions and answers. 2 X 50	Lectures, questions and answers. 2 X 50	<p>Material: Cost of Work for Library Consultancy Services : <i>Ministry of PUPR. 2018. PUPR Ministerial Decree No 22/PRT/M/2018 concerning Guidelines for the Construction of State Buildings. Jakarta: Ministry of PUPR.</i></p> <p>Material: Calculation of Direct Costs for Personnel and Non-Personnel Work for Consultancy Services Library: <i>National Association of Indonesian Consultants. 2023. 2023 Minimum Standard Guidelines for Direct Personnel Costs and Non-Personnel Direct Costs for Consultancy Service Activities. Jakarta: Inkindo.</i></p>	5%
15	Students can calculate the Budget Plan for Planning Consultancy Services, Construction Management/Supervision, and Activity Management.	<ol style="list-style-type: none"> Students can calculate the Budget Plan for Planning Consultancy Services. Students can calculate the Budget Plan for Construction Management/Supervision Consultancy Services. Students can calculate the Activity Management Cost Budget Plan. 	<p>Criteria: Good marks if the practice questions can be done correctly.</p> <p>Form of Assessment : Project Results Assessment / Product Assessment</p>	Lectures, questions and answers, practice questions. 2 X 50	Lectures, practice questions. 2 X 50	<p>Material: Calculation of Construction Costs for State Buildings Reference: <i>Ministry of PUPR. 2018. PUPR Ministerial Decree No 22/PRT/M/2018 concerning Guidelines for the Construction of State Buildings. Jakarta: Ministry of PUPR.</i></p> <p>Material: Calculation of Direct Costs for Personnel and Non-Personnel Work for Consultancy Services Library: <i>National Association of Indonesian Consultants. 2023. 2023 Minimum Standard Guidelines for Direct Personnel Costs and Non-Personnel Direct Costs for Consultancy Service Activities. Jakarta: Inkindo.</i></p>	10%
16	Final Semester Examination (UAS)						0%

Evaluation Percentage Recap: Case Study

No	Evaluation	Percentage
1.	Participatory Activities	15%
2.	Project Results Assessment / Product Assessment	85%
		100%

Notes

1. **Learning Outcomes of Study Program Graduates (PLO - Study Program)** are the abilities possessed by each Study Program graduate which are the internalization of attitudes, mastery of knowledge and skills according to the level of their study program obtained through the learning process.
2. **The PLO imposed on courses** are several learning outcomes of study program graduates (CPL-Study Program) which are used for the formation/development of a course consisting of aspects of attitude, general skills, special skills and knowledge.
3. **Program Objectives (PO)** are abilities that are specifically described from the PLO assigned to a course, and are specific to the study material or learning materials for that course.
4. **Subject Sub-PO (Sub-PO)** is a capability that is specifically described from the PO that can be measured or observed and is the final ability that is planned at each learning stage, and is specific to the learning material of the course.
5. **Indicators for assessing** ability in the process and student learning outcomes are specific and measurable statements that identify the ability or performance of student learning outcomes accompanied by evidence.
6. **Assessment Criteria** are benchmarks used as a measure or measure of learning achievement in assessments based on predetermined indicators. Assessment criteria are guidelines for assessors so that assessments are consistent and unbiased. Criteria can be quantitative or qualitative.
7. **Forms of assessment:** test and non-test.
8. **Forms of learning:** Lecture, Response, Tutorial, Seminar or equivalent, Practicum, Studio Practice, Workshop Practice, Field Practice, Research, Community Service and/or other equivalent forms of learning.
9. **Learning Methods:** Small Group Discussion, Role-Play & Simulation, Discovery Learning, Self-Directed Learning, Cooperative Learning, Collaborative Learning, Contextual Learning, Project Based Learning, and other equivalent methods.
10. **Learning materials** are details or descriptions of study materials which can be presented in the form of several main points and sub-topics.
11. **The assessment weight** is the percentage of assessment of each sub-PO achievement whose size is proportional to the level of difficulty of achieving that sub-PO, and the total is 100%.
12. TM=Face to face, PT=Structured assignments, BM=Independent study.