	Universitas Negeri Surabaya Faculty of Engineering, Building Engineering Education Undergraduate Study Program	Document Code

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight			SEMESTER	Compilation Date
Construction Cost Estimates	8320502021	Compulsory Study Program Subjects	T=2	P=0	ECTS=3.18	4	April 27, 2023

AUTHORIZATION	SP Developer	Course Cluster Coordinator	Study Program Coordinator
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Learning model: Project Based Learning

Program Learning Outcomes (PLO)

PLO study program which is charged to the course

Program Objectives (PO)

PO - 1	Students are able to design a cost budget based on the types of construction work in accordance with applicable regulations
PO - 2	Students are able to make a budget estimate for construction work costs
PO - 3	Students are able to evaluate the results of construction work budget estimates honestly based on civil engineering principles.

PLO-PO Matrix

P.O
PO-1
PO-2
PO-3

PO Matrix at the end of each learning stage (Sub-PO)

P.O	Week															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PO-1																
PO-2																
PO-3																

Short Course Description: This course contains the basic concepts of project cost budget plans, calculation of cost budget plans for building work (civil, architectural, mechanical and electrical), water building work and road work. In calculating the budget plan, costs are also accompanied by calculations of material requirements. Learning is carried out using direct teaching methods, students are invited to discuss RAB calculations with case examples in planning drawings. Learning is carried out using a constructivist paradigm by emphasizing learning at the student center.

References

Main :

1. Nugraha Paulus, Natan Ishak, Sutjipto R. 1985. Manajemen Proyek Konstruksi 1. Surabaya:Kartika Yudha.
2. Soeharto Iman. 2001. Manajemen Proyek dari Konseptual Sampai Operasional Jilid 2.Jakarta: Erlangga.
3. Ibrahim Baktiar. 2001. 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. Pemerintah Kota Surabaya. 2014. Harga Satuan Pokok Kegiatan (HSPK) Kota Surabaya. Surabaya: PemkotSurabaya.
6. Kementerian Pekerjaan Umum. 2012. Analisa Harga Satuan Pekerjaan (AHSP) Bidang Pekerjaan Umum.Jakarta: Kementerian Pekerjaan Umum.
7. Kementerian Pekerjaan Umum. 2007. Permen PU No.45/PRT/M/2007 tentang Pedoman Teknis Pembangunan Bangunan Gedung Negara.Jakarta: Kementerian Pekerjaan Umum.

Supporters:

	1. Ikatan Nasional Konsultan Indonesia. 2013. Pedoman StandarMinimal 2013 Biaya Langsung Personil dan Biaya Langsung Non Personil untukKegiatan Jasa Konsultansi. Jakarta: Inkindo. 2. Journal of Cost Analysis andParametrics.
Supporting lecturer	Prof. Dr. Agus Wiyono, S.Pd., M.T. Dr. Gde Agus Yudha Prawira Adistana, S.T., M.T. Heri Suryaman, S.Pd., M.Pd. Desy Ratna Arthaningtyas, S.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	Understand the basic concepts of cost budget planning	Understand the meaning, types, components and methods of calculating cost budget plans	**Criteria:** Students can state the meaning, types, components and methods for calculating budget plans **Form of Assessment** : Participatory Activities	Lectures, discussions and questions and answers 2 X 50	Lectures, discussions and questions and answers 2 X 50	**Material:** Basic concepts of cost budget planning **Reference:** *Nugraha Paulus, Natan Ishak, Sutjipto R. 1985. Construction Project Management 1. Surabaya: Kartika Yudha.*	1%
2	Understand the basic concepts of cost budget planning	Understand the meaning, types, components and methods of calculating cost budget plans	**Criteria:** Students can explain the meaning, types, components and methods of calculating budget plans **Form of Assessment** : Participatory Activities	Lectures, discussions, questions and answers, and practice questions 2 X 50	Lectures, discussions, questions and answers, and practice questions 2 X 50	**Material:** basic concepts of budget planning **Reference:** *Soeharto Iman. 2001. Project Management from Conceptual to Operational Volume 2. Jakarta: Erlangga.*	2%
3	Understand how to calculate the budget plan for preparatory work costs, land and material requirements	Students can calculate the budget plan for the costs of preparatory work, land and material requirements	**Criteria:** Understand how to calculate the budget plan for preparatory work costs, land and material requirements **Form of Assessment** : Participatory Activities	Lectures, discussions, questions and answers, and case exercises on 2 X 50 planning drawings	Lectures, discussions, questions and answers, and case exercises on 2 X 50 planning drawings	**Material:** budget plan for preparatory work costs, land **Reference:** *Ibrahim Baktiar. 2001. Plan and Estimate Real of Cost. Jakarta: Bumi Literacy.*	2%
4	Understand how to calculate the budget plan for foundation work and material requirements	Understand how to calculate the budget plan for foundation work and material requirements	**Criteria:** Students can calculate the budget plan for the costs of preparatory work, land, foundations and material requirements **Form of Assessment** : Participatory Activities	Lectures, discussions, questions and answers, and case exercises on 2 X 50 planning drawings	Lectures, discussions, questions and answers, and case exercises on 2 X 50 planning drawings	**Material:** budget plan for preparatory work, land, foundations **Reference:** *National Standardization Agency. 2008. Procedures for Calculating Unit Prices of Work. Jakarta: National Standardization Agency.*	2%
5	Understand how to calculate the budget plan for reinforced concrete work (horizontal structural elements) and how to calculate material requirements	Understand how to calculate the budget plan for reinforced concrete work (horizontal structural elements) and material requirements	**Criteria:** Students can calculate the budget plan for reinforced concrete work (horizontal structural elements) and material requirements **Form of Assessment** : Participatory Activities	Lectures, discussions, questions and answers, and case exercises on 2 X 50 planning drawings	Lectures, discussions, questions and answers, and case exercises on 2 X 50 planning drawings	**Material:** budget plan for reinforced concrete work. **Reference:** *National Standardization Agency. 2008. Procedures for Calculating Unit Prices of Work. Jakarta: National Standardization Agency.*	2%

6	Understand how to calculate the budget plan for reinforced concrete work (vertical structural elements) and how to calculate material requirements	Understand how to calculate the budget plan for reinforced concrete work (vertical structural elements) and how to calculate material requirements	**Criteria:** Students can calculate the budget plan for reinforced concrete work (vertical structural elements) and how to calculate material requirements **Form of Assessment** : Participatory Activities	Lectures, discussions, questions and answers, and case exercises on 2 X 50 planning drawings	Lectures, discussions, questions and answers, and case exercises on 2 X 50 planning drawings	**Material:** budget plan for reinforced concrete work. **Reference:** *Ibrahim Baktiar. 2001. Plan and Estimate Real of Cost. Jakarta: Bumi Literacy.*	2%
7	Understand how to calculate the budget plan for reinforced concrete work (other structural elements) and how to calculate material requirements	Understand how to calculate the budget plan for reinforced concrete work (other structural elements) and how to calculate material requirements	**Criteria:** Students can calculate the budget plan for reinforced concrete work (other structural elements) and how to calculate material requirements **Form of Assessment** : Participatory Activities, Practice/Performance	Lectures, discussions, questions and answers, and case exercises on 2 X 50 planning drawings	Lectures, discussions, questions and answers, and case exercises on 2 X 50 planning drawings	**Material:** budget plan for reinforced concrete work. **Reference:** *Ibrahim Baktiar. 2001. Plan and Estimate Real of Cost. Jakarta: Bumi Literacy.*	2%
8	Understand how to calculate the budget plan for preparatory work, soil/excavation, and reinforced concrete and how to calculate material requirements	Understand how to calculate the budget plan for preparatory work, soil/excavation, and reinforced concrete and how to calculate material requirements	**Criteria:** Students can calculate the budget plan for the costs of preparatory work, soil/excavation, and reinforced concrete and how to calculate material requirements **Form of Assessment** : Project Results Assessment / Product Assessment, Test	SUB SUMATIVE EXAMINATION 100			10%
9	Meeting 01 - 08		**Form of Assessment** : Project Results Assessment / Product Assessment	Lectures, discussions, questions and answers, and case exercises on 2 X 50 planning drawings	Lectures, discussions, questions and answers, and case exercises on 2 X 50 planning drawings	**Material:** architectural work budget plan **Reference:** *Ministry of Public Works. 2012. Analysis of Work Unit Prices (AHSP) in the Public Works Sector. Jakarta: Ministry of Public Works.*	20%
10	Understand how to calculate the budget plan for finishing work costs and material requirements	Understand how to calculate the budget plan for architectural work (walls) and material requirements	**Form of Assessment** : Participatory Activities	Lectures, discussions, questions and answers, and case exercises on 2 X 50 planning drawings	Lectures, discussions, questions and answers, and case exercises on 2 X 50 planning drawings	**Material:** architectural work budget plan **Reference:** *Ministry of Public Works. 2012. Analysis of Work Unit Prices (AHSP) in the Public Works Sector. Jakarta: Ministry of Public Works.*	2%
11			**Form of Assessment** : Participatory Activities	Lectures, discussions, questions and answers, and case exercises on 2 X 50 planning drawings	Lectures, discussions, questions and answers, and case exercises on 2 X 50 planning drawings	**Material:** architectural work budget plan **Reference:** *Ministry of Public Works. 2012. Analysis of Work Unit Prices (AHSP) in the Public Works Sector. Jakarta: Ministry of Public Works.*	2%

12			**Form of Assessment** : Participatory Activities	Lectures, discussions, questions and answers, and case exercises on 2 X 50 planning drawings	Lectures, discussions, questions and answers, and case exercises on 2 X 50 planning drawings	**Material:** budget plan for steel construction work. **Reference:** *Ibrahim Baktiar. 2001. Plan and Estimate Real of Cost. Jakarta: Bumi Literacy.*	3%
13	Understand how to calculate the budget plan for steel construction work and material requirements	Understand how to calculate the budget plan for electrical and sanitary installation work and material requirements	**Form of Assessment** : Participatory Activities	Lectures, discussions, questions and answers, and case exercises on 2 X 50 planning drawings	Lectures, discussions, questions and answers, and case exercises on 2 X 50 planning drawings	**Material:** budget plan for electrical and sanitary installation work. **Reader:** *Ibrahim Baktiar. 2001. Plan and Estimate Real of Cost. Jakarta: Bumi Literacy.*	2%
14	Understand how to calculate the budget plan for electrical and sanitary installation work and material requirements		**Form of Assessment** : Participatory Activities	Lectures, discussions, questions and answers, and case exercises on 2 X 50 planning drawings	Lectures, discussions, questions and answers, and case exercises on 2 X 50 planning drawings	**Material:** budget plan for irrigation or water canal work. **Reference:** *Ministry of Public Works. 2012. Analysis of Work Unit Prices (AHSP) in the Public Works Sector. Jakarta: Ministry of Public Works.*	2%
15	Understand how to calculate the budget plan for the construction of state buildings	Understand how to calculate road work budget plans and material requirements	**Form of Assessment** : Project Results Assessment / Product Assessment	Lectures, discussions, questions and answers, and case exercises on 2 X 50 planning drawings	Lectures, discussions, questions and answers, and case exercises on 2 X 50 planning drawings	**Material:** road work budget plan **Reference:** *Ministry of Public Works. 2012. Analysis of Work Unit Prices (AHSP) in the Public Works Sector. Jakarta: Ministry of Public Works.*	30%
16	Understand how to calculate the budget plan for building work (architectural components) or waterworks or road work	Understand how to calculate the budget plan for building work (architectural components) or waterworks or road work	**Criteria:** Students can calculate the budget plan for building work costs (architectural components) or waterworks or road work **Form of Assessment** : Test	Summative Exam 100			16%

Evaluation Percentage Recap: Project Based Learning

No	Evaluation	Percentage
1.	Participatory Activities	23%
2.	Project Results Assessment / Product Assessment	55%
3.	Practice / Performance	1%
4.	Test	21%
		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** abilities in the process and student learning outcomes are specific and measurable statements that identify the abilities 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.