SYLLABUS

TLI 613 Manajemen Sistem Air Bersih
(Water Supply Management)

Lecturer:
Dr.Puti Sri Komala

MASTER STUDY PROGRAM OF ENVIRONMENTAL ENGINEERING
FACULTYOF ENGINEERING
UNIVERSITAS ANDALAS
2020

	SYLLABUS **SEMESTER**	No.Dok : ..... Revisi : .....
	(TLI 613 Water Supply System Management)	Tanggal : June 2020 Halaman:
Completed by: Dr. Puti Sri Komala, Ir., MT NIP 196211281997022001	Checked by: Reri Afrianita, MT NIP. 197704172006042002	Approved by: Dr.Eng Zulkarnaini NIP 198004212009121003
Lecturer	Head of QC	Head of Master Study Program

1. Lecture Information

Study Program Name : Environmental Sanitation Infrastructure
Lecture Name : Water Supply System Management
Lecture Code : TLI 613
Category : Elected
Unit : 2 units

Year	: Year 1
Semester	: 2 (two)
Prasyarat	: -
Status (required/elective)	: Elected
Lecturers	: Dr.Puti Sri Komala

2. Description of Lecture

The lecture describes an overview of the concept of water supply component, the correlation of the supply management and water cost, the interaction between demand management, price and reliability, the use and basis of water tariffs, Reliability of supply, causes of failures, system evaluation, water pollution risk, Drought management of reservoirs, the conjunctive use of alternative sources, loss control and rehabilitation, the Integration of water and wastewater utilities, Asset management and computer technology, the water supply to developing communities, Role of institutional and legal

3. Learning Achievement of Study Program

1. Mastering the theory of engineering science, design engineering, methods and the latest techniques needed for the analysis and design of environmental management efforts;
2. Mastering the contextual and current interdisciplinary approach related to the design of integrated environmental management systems.
3. Able to solve engineering and technological problems and design systems, processes and components in environmental management efforts including management of drinking water, wastewater, solid waste, settlement drainage, liquid, solid and gas waste control systems, air pollution control and occupational health and safety (OHS) by utilizing other fields of science (if needed) and taking into account economic, health and public safety, cultural, social and environmental factors;

4. Learning Achievement of Lecture

water supply component, water requirement, system design and system requirement, supply management and water cost,

1. Understand the concept of water supply component, water requirement, system design and system requirement,
2. Understand how the correlation of the supply management and water cost: the supply cost of water, pumping system optimization, the efffect of scale, the effect of obtaining water from further afield, the economics of alternative water supplies, optimum pumping system pipe and reservoir sizes
3. Understand the interaction between demand management, price and reliability: the ownership issue, water charges for redistribution of wealth, benefits and costs of water supply, water consumption management
4. Understand the use and basis of water tariffs, theory of supply and demand, management by use of water tariff, other types of water tariffs
5. Understand concept of Reliability of supply, causes of failures, system evaluation, water pollution risk

6. Understand how Drought management of reservoirs: basis of rationing, reservoir yield analysis, operating rules,case study
7. Work in group: Preparation of a case study of the water supply management
8. Understand the conjunctive use of alternative sources: ways of utilizing groundwater, conjunctive operation, optimization of conjunctive source use, artificial recharge, simulation model
9. Understand to determine the loss control and rehabilitation: Unaccounted for water, Monitoring programme, Economic assessment, Recommendations regarding standards, Factors influencing total water losses, Water audits, Water loss control, Rehabilitation of pipelines
10. Understandthe Integration of water and wastewater utilities: mergers of water and wastewater utilities
11. Understand concept of Asset management and computer technology: management principles, information systems, financial management, benefits of asset management, information technology, continuous simulation of flow in pipe networks
12. Understand the water supply to developing communities: The world population, Financial priorities, Water supply needs in developing communities, Community participation, Technical aspects, Developments in supply, Source of water, Value of water, Public involvement in identifying objectives, Problems relevant to developing areas, Affordability
13. Understand the role of Institutional and legal in water supply management: Privatization, Regulation, Water law
14. Presentation of the proposed case study by group

5. Description of Lesson Plan

Week	Indicator of Learning Achievements of Subjects	Topics	Method of Learning	Course Time	Assignment and Evaluation	Reference
1	Understand the concept of water supply component	Water supply component, water requirement, system design and system requirement,	Lecture and discussion	2x50 minutes	Assignment	1)
2	Understand how the correlation of the supply management and water cost	Supply management and water cost: the supply cost of water, pumping system optimization, the economics of alternative water supplies, optimum pumping system pipe and reservoir sizes	Lecture and discussion	2x50 minutes	Assignment	1)
3	Understand the interaction between demand management, price and reliability	Demand management, price and reliability: the ownership issue, water charges for redistribution of wealth, benefits and costs of water supply, water consumption management	Lecture and discussion	2x50 minutes	Midterm	1)
4	Understand the use and basis of water tariffs	The use and basis of water tariffs, theory of supply and demand, management by	Lecture and discussion	2x50 minutes	Midterm	1)

Week	Indicator of Learning Achievements of Subjects	Topics	Method of Learning	Course Time	Assignment and Evaluation	Reference
		use of water tariff, other types of water tariffs				
5	Understand concept of Reliability of supply, causes of failures, system evaluation, water pollution risk	Reliability of supply, causes of failures, system evaluation, water pollution risk	Lecture and discussion	2x50 minutes	Assignment	1)
6	Understand how Drought management of reservoirs	Drought management of reservoirs: basis of rationing, reservoir yield analysis, operating rules, case study	Lecture and discussion	2x50 minutes	Mid-term exam	1)
7	Able to prepare a case study of the water supply management	Case study of the water supply management	discussion	2x50 minutes	Report	1)
8	Mid-term Examination					
9	Understand the conjunctive use of alternative sources	the conjunctive use of alternative sources: ways of utilizing groundwater, conjunctive operation, optimization of conjunctive source use, artificial recharge, simulation model	Lecture and discussion	2x50 minutes	Assignment	1)

Week	Indicator of Learning Achievements of Subjects	Topics	Method of Learning	Course Time	Assignment and Evaluation	Reference
10	Understand to determine the loss control and rehabilitation	Loss control and rehabilitation: Unaccounted for water, Monitoring programme, Economic assessment, Recommendations regarding standards, Factors influencing total water losses, Water audits, Water loss control, Rehabilitation of pipelines	Lecture and discussion	2x50 minutes	Assignment	1)
11	Understand concept of the Integration of water and wastewater utilities	Integration of water and wastewater utilities: mergers of water and wastewater utilities	Lecture and discussion	2x50 minutes	Final Exam	2)
12	Understand concept of Asset management and computer technology	Asset management and computer technology: management principles, information systems, financial management, benefits of asset management, information technology, continuous	Lecture and discussion	2x50 minutes	Final Exam	1)

Week	Indicator of Learning Achievements of Subjects	Topics	Method of Learning	Course Time	Assignment and Evaluation	Reference
		simulation of flow in pipe networks				
13	Understand the water supply to developing communities	Water supply to developing communities: Water supply needs in developing communities, Community participation, Technical aspects, Public involvement in identifying objectives, Problems relevant to developing areas, Affordability	Lecture and discussion	2x50 minutes	Final Exam	1)
14	Understand therole of Institutional and legal in water supply management	Institutional and legal in water supply management: Privatization, Regulation, Water law	Lecture and discussion	2x50 minutes	Assignment	1)
15	Able to present the proposed case study by group	Presentation of the proposed case study by group	discussion	2x50 minutes	Report	
16	Final Examination					

6. References

1. Water Supply System Management, David Stephenson, Springer Science+Business Media, B.V.
2. Water Services Management and Governance: Lessons for a Sustainable FutureEditors Tapio S. Katko, Petri S. Juuti, and Klaas Schwartz. IWA Publishing. 2013
3. Another reference related to Sanitation Technology

7. Annex

Scoring Instrument: Mid-term examination : 25%; Final Examination: 30%; Assignment: 20%; Report 25%