


SYLLABUS

TLI 559 Perencanaan Infrastruktur Pemukiman (Settlement Infrastructure Planning)

**Lecturers:
Dr. Eng. Denny Helard
Dr. Puti Sri Komala
Rizki Aziz, Ph.D**

**STUDY PROGRAM OF ENVIRONMENTAL SANITATION INFRASTRUCTURE
FACULTY OF ENGINEERING
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	SYLLABUS SEMESTER	No.Dok :
	TLI 559 Perencanaan Infrastruktur Pemukiman (Settlement Infrastructure Planning)	Revisi :
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SYLLABUS		
1. Lecture Information		
Study Program Name : Environmental Sanitation Infrastructure Lecture Name : Perencanaan Infrastruktur Pemukiman (Settlement Infrastructure Planning) Lecture Code : TLI 559 Category : Required Study Program Unit : 2 units		

Year	: Year 1
Semester	: 1 (one)
Prasyarat	: -
Status (required/elective)	: Required
Lecturers	: Dr. Eng. Denny Helard Dr. Puti Sri Komala Rizki Aziz, Ph.D

2. Description of Lecture

The aim of this module is to provide basic theory on planning sanitation system and services on settlement.

3. Learning Achievement of Study Program

- Mastering the theory of engineering science, design engineering, methods and the latest techniques needed for the analysis and design of environmental management efforts;
- Mastering the contextual and current interdisciplinary approach related to the design of integrated environmental management systems.
- 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 factor

4. Learning Achievement of Lecture

1. Explain the importance of sanitation for development of settlement and municipality
2. Explain the basic theory of water supply system and services
3. Describe the framework of water supply system planning
4. Explain the principal of water supply services management
5. Explain the wastewater management problems in developing countries
6. Describe the slum drainage: grey water in developing countries
7. Explain the concept of sewerage system and alternative sewerage
8. Describe the framework of centralized vs decentralized systems
9. Describe current issues in journal articles
10. Explain the basic theory of solid waste management
11. Describe the framework of solid waste management system planning
12. Explain the non technical aspects of solid waste management

5. Description of Lesson Plan

Week	Indicator of Learning Achievements of Subjects	Topics	Method of Learning	Course Time	Assignment and Evaluation	Reference
1	<ul style="list-style-type: none"> To be able to explain the importance of sanitation for the development of settlement and municipality 	Introduction to sanitation	Lecture and discussion	2x50 minutes	Work individual and/ in groups	
2	<ul style="list-style-type: none"> To be able to explain the basic theory of the water supply system and services 	Water supply system and services	Lecture and discussion	2x50 minutes	Work individual and/ in groups	
3	<ul style="list-style-type: none"> To be able to explain the framework of water supply system planning on transmission dan distribution system 	Water supply system planning	Lecture and discussion	2x50 minutes	Work individual and/ in groups	
4	<ul style="list-style-type: none"> To be able to explain the use of the computer model application on the water distribution system 		Lecture and discussion	2x50 minutes	Work individual and/ in groups	
5	<ul style="list-style-type: none"> To be able to explain the water supply system planning for the region of municipality and case studies 		Lecture and discussion	2x50 minutes	Work individual and/ in groups	
6	<ul style="list-style-type: none"> To be able to explain the wastewater management problems in developing countries 	Wastewater management problems in Indonesia and the developing country	Lecture and discussion	2x50 minutes	Report of case study in local city	
7	<ul style="list-style-type: none"> To be able to explain the slum drainage: greywater in developing countries and case study 	<ul style="list-style-type: none"> The slum drainage: greywater in developing countries A case study in a developing country: success and failure factors 	Lecture and discussion	2x50 minutes	Work individual and/ in groups	
8	Mid-term Examination					

Week	Indicator of Learning Achievements of Subjects	Topics	Method of Learning	Course Time	Assignment and Evaluation	Reference
9	<ul style="list-style-type: none"> To be able to explain the concept of the sewerage system 	– Concept of sewerage system	Lecture and discussion	2x50 minutes	Work individual and/ in groups	
10	<ul style="list-style-type: none"> To be able to explain the alternative sewerage 	Alternative sewerage in dense informal settlements: advantage and disadvantage	Lecture and discussion	2x50 minutes	Work individual and/ in groups	
11	<ul style="list-style-type: none"> To be able to explain current issues in sewerage systems 	Discuss the journal articles	Lecture and discussion	2x50 minutes	Work individual and/ in groups	
12	<ul style="list-style-type: none"> Able to trace the problem to origins and successfully analyze the root cause of common sewerage systems problems 	Case Study on tracing the problem to origins for various sewerage systems	Lecture and discussion	2x50 minutes	Report of case study in local city	
13	<ul style="list-style-type: none"> To be able to explain the basic theory on the solid waste management system 	Solid waste management system	Lecture and discussion	2x50 minutes	Work individual and/ in groups	
14	<ul style="list-style-type: none"> To be able to apply the solid waste management system planning for a settlement of the municipality 	Solid waste management system planning	Lecture and discussion	2x50 minutes	Work individual and/ in groups	
15	<ul style="list-style-type: none"> To be able to explain the non-technical aspects of the solid waste management system and study cases 		Lecture and discussion	2x50 minutes	Report of case study in local city	
16	Final Examination					

6. References

1. Al-Layla, A., Water Supply Engineering, New York, McGraw-Hill, 1977.
2. Mays, L.W., Water Distribution Systems Handbook, McGraw-Hill, 2000.
3. Fair, G.M., Geyer, J.C., and Okun, D.A., Elements of water supply and wastewater, John Wiley & Sons, Inc., 1971.
4. Departemen Pekerjaan Umum, Dirjen. Cipta Karya, Petunjuk Teknis: Tata Cara Penyusunan Rencana Induk Air Minum Perkotaan.
5. Direktorat Jendral Tata Perkotaan dan Tata Pedesaan, Departemen Permukiman dan Prasarana Wilayah, 2004.

6. Keputusan Menteri Kesehatan Republik Indonesia Nomor 907/MENKES/SK/VII/2002 tentang Syarat-syarat dan Pengawasan Kualitas Air Minum.
7. Peraturan Pemerintah 16 tahun 2005, Pengembangan Sistem Penyediaan Air Minum
8. Standard Methode for Examination of Water and Wastewater, ANHA, AWWA, WPCF, 1998.
9. American society of civil engineers and the water pullution control federation, *Design and construction of sanitary and storm sewers*, 1969
10. Davis, ML & Cornwell, D.A, Introduction to Environmental Engineering, 3rd edition, McGraw-Hill, Inc, 1998
11. Ehler, S., Municipal and Rural Sanitation, John Wiley, 1982
12. Environmental Sanitation Review, "*The Design of Shallow Sewer Systems*", United Nations Centre for Human Settlements, Nairobi, 1986
13. Fair & Geyer, "*Water and Wastewater Engineering*", vol 1, John Wiley & Sons, Inc., 1986
14. King F.J., Antell, B.N., Eagle R. J" *Manual of Practice Sewer Design*", New South Wales Dept. of Public Work, 1984
15. Martin, T., & Martin, J., *Technologies for Small Water and Wastewater Systems*, Van Nostrand Reinhold, USA, 1991
16. Mc Ghee, T., *Water Supply and Sewerage*, 3rd Ed, Mc Graw Hill, 1991
17. Metcalf & Eddy. Inc, Tchobanoglous G., Burton F.L., "*Wastewater Engineering (Treatment, Disposal & Reuse)*", 3 rd Ed, McGraw Hill, Inc, 1991
18. Kementrian Pekerjaan Umum Dirjen Cipta Karya, Bahan Diseminasi dan Sosialisasi Keteknikan Bidang Air Limbah, Surabaya 1- 5 April 2013
19. Tchobanoglous, G. and Frank Kreith. 2002. Handbook of Solid Waste Management, 2nd ed. New York: Mc Graw Hill Inc.
20. Tchobanoglous, G., H. Theisen, and S. Vigil. 1993. *Integrated Solid Waste Management: Engineering Principles and management Issues*, McGraw-Hill, New York
21. Damanhuri, E dan Tri Padmi, 2016. *Pengelolaan Sampah Terpadu*, Penerbit ITB
22. Badan Standar Nasional Indonesia. SNI untuk tata cara sampling dan analisis timbulan, komposisi dan karakteristik sampah perkotaan
23. Other related scientific articles

7. Annex

Scoring Instrument: Mid-term examination : 35%; Final Examination: 35%; Assignment: 30%