SYLLABUS

TLI 564 Infrastruktur Air Minum dan Sanitasi Daerah Rawan Bencana (Water Supply and Sanitation Infrastructure in Disaster-Prone Areas)

> Lecturers: Dr. Eng. Denny Helard Dr. Puti Sri Komala Dr. Eng. Slamet Raharjo

MASTER STUDY PROGRAM OF ENVIRONMENTAL ENGINEERING FACULTYOF ENGINEERING UNIVERSITAS ANDALAS 2020

UNIVERSITAS AND AL AL	SYLLABUS	No.Dok :				
	SEMESTER	Revisi :				
	(TLI 564 Water Supply and Sanitation Infrastructure in Disaster-Prone Areas)	Tanggal : June 2020				
		Halaman:				
Completed by:	Checked by:	Approved by:				
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Lecturer	Head of QC	Head of Master Study Program				
1. Lecture Information						
Study Program Name : Environmental Sanitation Infrastructure						
Lecture Name : Water Supply and Sanitation Infrastructure in Disaster-Prone Areas						
Lecture Code : TLI	564					
Category : Requ	ired Study Program					
Unit : 3 un	its					

Year	: Year 1
Semester	: 1 (one)
Prasyarat	:-
Status	: Required
(required/elective)	
Lecturers	: Dr. Eng. Denny Helard
	Dr. Puti Sri Komala
	Dr. Eng. Slamet Raharjo

2. Description of Lecture

The aim of this module is to provide guidance and tools to prepare for deployment to emergency responses in a WASH (Wash, Sanitation, and Hygiene) role, with a focus on sanitation. It will ensure an understanding of the interdisciplinary humanitarian action.

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 factors;

4. Learning Achievement of Lecture

- 1. Describe the history of humanitarian aid, key elements of the legal context and key sectors of humanitarian assistance, and apply humanitarian principles and work within the framework and coordination of humanitarian assistance;
- 2. Describe the stages of humanitarian aid and recognise the main actors of the international relief system and their respective mandates;
- 3. Explain the key environmental sanitation needs and approaches common in emergency situations;
- 4. Compare the suitability of different technical options depending on the phase of emergency and variety of practical settings, adjusting to time and resources available;
- 5. To implement a specific sanitation solution;
- 6. Plan, implement and monitor a sanitation response to a disaster situation;
- 7. Integrate and apply the theory in a case scenario

5. Description of Lesson Plan

Week	Indicator of Learning Achievements of	Topics	Method of	Course	Assignment	Referenc
	Subjects		Learning	Time	and	e
					Evaluation	
1	• To be able to explain about the key	Humanitarism; History of	Lecture and	2x50	Work	
	elements of the term humanitarianism, key	humanitarian action;	discussion	minutes	individual and/	
	events that have impacted humanitarian	dilamma's: Principle of			in groups	
	examples of the possible negative impact	'doing no harm'				
	humanitarian aid	doing no numi,				
2	• To be able to overview of the international	The legal framework;	Lecture and	2x50	Work	
	legal framework (Refugee law, International	International Relief	discussion	minutes	individual and/	
	Humanitarian Law-IHL, International	System; Key actors in			in groups	
	Disaster Relief Law-IDRL), code of	humanitarian relief; code				
	conduct and guiding principles of	of conduct and guiding				
	humanitarian action;	principles of humanitarian				
2		action	T / 1	2.50	XX 7 1	
3	• To be able to explain standards applied by	Humanitarian contexts;	Lecture and	2x50	WOrk	
	WASH objector	standards: Cluster	discussion	minutes	in groups	
	w ASH cluster	approach			in groups	
4	• To be able to explain disaster cycle, risk	Emergency response	Lecture and	2x50	Work	
	reduction/ response/ recovery/ development,	phases and relief	discussion	minutes	individual and/	
	emergency response phases.	organizations and			in groups	
	• To be able to overview of relief	mandates;type disaster,				
	organizations, their mandates, their	risk analysis and disaster				
_	commitments and priorities in emergencies.	vulnerability.				
5		Post-Disaster Waste	Lecture and	2x50	Work	
		Management in	discussion	minutes	individual and/	
6	The heights to complete the two AGU (W. 1	Introduction to the WASH	Lootumo on d	2.50	in groups	
0	• 10 be able to explain about WASH (Wash, Somitation and Hygiana) and SDIEDE	cluster: SDHEDE	discussion	2X3U minutos	work	
	Saintauon, and nygiene) and SPREKE.	handbook. Standar	u15Cu551011	minutes	in groups	
		Minimum (WASH)			in groups	

Week	Indicator of Learning Achievements of	Topics	Method of	Course	Assignment	Referenc
	Subjects		Learning	Time	and	е
					Evaluation	
		(Water and Sanitation				
		Standards in Humanitarian				
		Action) dan SPHERE				
7	• To be able to select vector control and	Sanitation-related diseases	Lecture and	2x50	Work	
	surface water drainage	in emergencies;	discussion	minutes	individual and/	
		Communicable disease			in groups	
		control in emergencies;				
		Pedoman dan aplikasi				
		sanitasi air limbah di				
		daerah bencana				
		Sanitation System				
		Template and Technology				
		Selection.				
8		Mid-term Examination	on			
9	• To be able to select options for the	Excreta management in	Lecture and	2x50	Work	
	provision safe excreta disposal	emergencies; Technical	discussion	minutes	individual and/	
		options for excreta			in groups	
		disposal in emergencies;				
		Aplikasi ECOSAN				
10	• To be able to select optionsolid waste	Solid waste management	Lecture and	2x50	Work	
	management in emergencies	in emergencies	discussion	minutes	individual and/	
					in groups	
11	• To be able to arrange a development of a	Sanitation planning;	Lecture and	2x50	Work	
	sanitation plan for a specific situation	Design criteria for water	discussion	minutes	individual and/	
	including budgeting (contingency planning,	supply infrastructure			in groups	
	acquisition, management, use of	planning; component				
	information for decision making,	analysis in water supply				
	monitoring and reporting)	technology				
		(simple/appropriate)				

SubjectsLearningTimeand Evaluation1212City planning analysis for water supply infrastructure design; Water supply planning in emergencies.Lecture and discussion2x50Work individual and/ in groups1313To be able to understand complexity of sanitation plan, including understanding principle of Sanitation safety planning, key stakeholder analyses, environmental and cultural considerationEvaluation on constraint condition and development of sanitation-related discussionXx50 minutesWork individual and/ in groups14, 15• To be able to understand complexity of sanitation plan, including understanding principle of Sanitation safety planning, key stakeholder analyses, environmental and energencies, environmental and energencies/Disaster will be discussedLecture and discussed2x50 minutesReport of case study in local city14, 15• To be able to conduct evaluation on some case studies on different stakeholders in a humanitarian engency contextEvaluation on some case studies on different stakeholders in a humanitarian organizations adapting their practices (and responses) to the local context (local resources, local practices, tro)Identifies and the local context (local resources, local practices, tro)Lecture and discussedIdentifies and tro)Identifies and tro)14, 15• To be able to explain an example about humanitarian organizations adapting their practices (and responses) to the local context (local resources, local practices, tro)Identifies and the local context (local resources, local practices, tro)Identifies an	Assign	Course	(Method of	Topics	arning Achievements of	dicator of Learning Achievements of Topics Method of	Course Assign	nment	Referenc
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eta)						resources local practices	context (local resources local practices			
						resources, room practices,	etc.)			
• To be able to explain annied approaches						explaing applied approaches	To be able to explain annied approaches			
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6. References

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- 2. The Sphere Handbook, Sphere 2018 Edition
- 3. Natural Disaster Mitigation in Drinking Water and Sewerage Systems, WHO, Washington D.C., 1998.
- 4. Risk Management of Water Supply and Sanitation Systems, Hlavinek, P., Popovska, C., Marsalek, J., Mahrikova, I., Kukharchyk, T., Springer, 2008.
- 5. The Challenge in Disaster Reduction for the Water and Sanitation Sector, PAHO, Washington D.C., 2006.
- 6. Handbook on Climate Change and Disaster Resilient Water, Sanitation and Hygiene Practices, WaterAid, 2012.
- 7. Disaster Waste Management (DWM) Guideline for Asia and the Pacific, Ministry of The Environment, Government of Japan
- 8. Disaster Waste Management Mechanism, A Practical Guide for Construction and Demolition Wastes in Indonesia, UNEP, 2008
- 9. Evaluation of Disaster Resilience on Waste Management in Developing Countries, Kyushu University International Repository, 2015
- 10. Other related scientific articles

7. Annex

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