

COURSE PLAN SEM II SESSION 2021/2022

COURSE/ CODE: WASTEWATER ENGINEERING/ SEAA2922

SEMESTER: 2 2021/2022

Class: 01

Lecturer: Dr. Mohamad S. J. Darwish

Course Learning Outcomes

By the end of the course, students should be able to:

1. Describe the basic concept of microbiology, wastewater characteristics, sewer system and able to explain the concept of wastewater treatment and sludge treatment system
2. Solve problems related to wastewater parameters and design unit processes in sewage treatment system
3. Produce report or presentation related to current environmental issues

LECTURE PLANNING			
WEEK	LECTURE	TOPIC / CONTENT	DATE
1	1 2	Introduction Environmental Microbiology – types and classes	
2	3 4	Environmental Microbiology –metabolism and biological growth in wastewater treatment Wastewater – types, characteristics – SS	
3	5 6	Wastewater - characteristics – BOD Wastewater - characteristics – COD	
4	7 8	Discharge Standards & Sewerage Act Wastewater Quantity	
5	9 10	Sewer System Sewage Treatment System	
6	11 12	Preliminary Treatment - screen, grit removal, balancing tank, flow measurement Primary Treatment – primary sedimentation tank design Test 1	Test 1: 28 April 2022
7		MID SEMESTER BREAK	1 – 6 Mei
8	13 14	Secondary Treatment – biological treatment, secondary sedimentation, chlorination	
9	15 16	Activated Sludge – Principles and Concept Conventional Activated Sludge – Design	
10	17 18	Extended Aeration –Design Sequencing Batch Reactor	
11	19 20	Biological Nitrogen Removal Trickling Filters – Principles and Concept	
12	21 22	Trickling Filters – Biological Tower Design Test 2	Test 2: 08 Jun 2022
13	23 24	Waste Stabilization Pond – Principles and Concept Waste Stabilization Pond – Design	
14	25 26	Aerated Lagoon – Principles, Concept and Design	
15	27 28	Sludge – Sources and Quantity Sludge Treatment and Disposal	

ASSESSMENT

1. Assignments & Quizzes	10 %
2. Test 1 (1 hour)	20 %
3. Test 2 (1 hour)	20 %
4. Final Examination (2 hours)	40 %
5. Generic Skill (Life Long Learning)	10%
TOTAL	100 %

BASIC REFERENCES

1. Warren Viessman, Jr., Mark J. Hammer, Elizabeth M. Perez, and Paul A. Chadik (2009) Water Supply and Pollution Control, 8thEd. Pearson Education
2. Hammer, M.J., (2005) Water and Wastewater Technology, 5thEd., Pearson Education South Asia Ltd.
3. Metcalf & Eddy., (2003) Wastewater Engineering: Treatment and Reuse, 4thEd., Mc Graw-Hill
4. SPAN Malaysian Sewerage Industry Guidelines, 2009

ATTENDANCE

The student should adhere to the rules of attendance as stated in the University Academic Regulation: -

1. Student must attend not less than 80% of lecture hours as required for the subject.
2. The student will be prohibited from attending any lecture and assessment activities upon failure to comply the above requirement. Zero mark will be given to the subject