



Course Syllabus (Academic Year 2022)

School of Interdisciplinary Studies, Kanchanaburi Campus, Mahidol University

1. **Course No. and Title** : KAED 341 Building Sanitation
Credit (study hours) : 3 (3-0-6)
2. **Program Name** : Bachelor of Engineering in Environmental Engineering and Disaster Management
3. **Course Module** : Major Required Course
Pre/co-requisite : KAED 206 Fluid mechanics
4. **Class Semester** : 1st Semester 2nd Semester Academic Year 2022
5. **Class Schedule & Venue** : Monday 9:00-12:00, Onsite course (MUKA e-learning)
 Google Classroom KAED451 EMS, code: r2ygm7p
6. **Class Coordinator** : Watcharapol Wonglertarak
 watcharapol.won@mahidol.ac.th, Tel 085 849 3199

7. Course description

Fundamentals of building sanitation, laws and regulations, design of cold and hot water supply system, swimming pool system, Sewage and vent pipe system, wastewater treatment and solid waste management for building, Fire protection system, Pumping design, Green Building & International Standard, integration the concepts of disaster management in building sanitation.

8. Course Objectives / Course Learning Outcomes (CLOs)

No.	Objectives/CLOs	Expected Skills/ Knowledge			
		Specific	Generic	Knowledge	PLOs
8.1	Learner can understand the fundamental of building sanitation and the key roles of environmental engineer, including laws and regulations.		Professional ethics and responsibility	Fluid mechanics and hydraulics Environmental Laws	2 (Reinforced)
8.2	Learner can understand the main concept of plumbing design, such as cold water system, sewage system and waste management for building.	Mathematical problem solving	Problem identification	Fluid mechanics and hydraulics	1 (Reinforced)

No.	Objectives/CLOs	Expected Skills/ Knowledge			
		Specific	Generic	Knowledge	PLOs
8.3	Learner can understand the concept of disaster management in building, such as fire protection system.	Practical design		Disaster preparedness	2 (Reinforced)
8.4	Learner enable to employ the practical skills in building sanitation for proper designs in the case study.	Innovation	-Attention to detail	Drawing/Sketching	6 (Reinforced)

9. Class instructor list

Watcharapol Wonglertarak Contact No. 085 849 3199 Email: watcgarapol.won@mahidol.ac.th

10. Course Outline

Week	Date	Contents	CLOs	Teaching & Learning method	Instructor
1	8 Aug 22	Introduction to Course outline and Course overview	8.1	Presentation Q&A	Watcharapol
2	15 Aug 22	<ul style="list-style-type: none"> - Fundamentals of building sanitation, including pipping materials, pipe accessories, fixture and plumbing equipment, pump, valve etc. - Review the basic knowledges, such as Units, fluid mechanic, Hydraulic, water and wastewater characteristics. 	8.1	Presentation	Watcharapol
3	22 Aug 22	Design concept of cold and hot water supply system in high-rise building.	8.2	Presentation and assignment	Watcharapol
4-5	29 Aug 22 And 5 Sep 22	Design concept of sewage system, vent pipping and drainage	8.2	Presentation and assignment	Watcharapol
6-7	12 Sep 22 And 19 Sep 22	plumbing design, such as cold water system, sewage system and waste management for building.	8.2	Presentation and assignment	Watcharapol
8	26 Sep 22	Solid waste management for building	8.2	Presentation and assignment	Watcharapol

Week	Date	Contents	CLOs	Teaching & Learning method	Instructor
9	Mid-term Examination				
10-11	10 Oct 22 And 17 Oct 22	Construction drawing for building	8.2	Presentation and assignment	Watcharapol
12-13	24 Oct 22 and 31 Oct 22	Fire protection system for building	8.3	Presentation	Watcharapol
14-15	7 Nov 22 and 14 Nov 22	Green Building & International Standard	8.1	Presentation	
16	21 Nov 21	Final project report and discussion	8.4	Presentation Q&A	Watcharapol
17	Final Examination				

11. Course Assessment

No.	Methods/Activities	Regulations	CLOs	Week	Weight Distribution (%)
1	Class participation and Class attention	Learner must attend the class more and 80% of course.		All	5
2	Quiz	Learner must be test the knowledge of previous week	8.2		10
3	Assignment report	<p>I. Learner must practice the engineering skills via exercises and assignments form each topic.</p> <p>II. The score will be evaluated according to the quality and details of work by instructors of those topics.</p>	8.1, 8.2, 8.3	6, 11	20
4	Midterm Examination	The scope of exam will be cover topics of the 1 st -8 th week in this course.	8.1, 8.2	9	25

5	Final project	<p>I. Learner must design the main part of plumbing system and present their work as project presentation.</p> <p>II. The score will be evaluated according to the quality and details of work by instructors or committee.</p>	8.2, 8.3, 8.4,	16	20
6	Final Examination	The scope of exam will be cover topics of the 10 th -15 th week in this course.	8.1,8.2,8.3	17	20
				Total	100

12. Grading system

Criterion-referenced evaluation

The student performance in overall course will be measured by Criterion-referenced assessment as following table.

Grade	Score
A	≥ 80%
B+	75-79.99 %
B	70-74.99%
C+	65-69.99%
C	60-64.99%
D+	55-59.99%
D	50-54.99%
F	<50

However, the rubric scoring scale will be applied for evaluation the student performance along their tasks, such as assignment responsibility, presentation skill, and use of language, and organization capability.

13. References

1. “การออกแบบระบบท่อภายในอาคาร” ดร.วริทธิ์ อึ้งภสกรณ. สมาคมวิศวกรรมสถานแห่งประเทศไทย ในพระบรมราชูปถัมภ์. พิมพ์ครั้งที่ 18

2. “การออกแบบระบบท่ออาคารและสิ่งแวดล้อมอาคาร เล่ม 1 และ เล่ม 2” ดร.เกรียงศักดิ์ อุดมสินโรจน์. พิมพ์ครั้งที่ 3
3. “Building Engineering and Systems Design”. Merritt, Frederick S. 1990. Springer US.
4. “Plumbing-water supply, sprinkler, and wastewater systems” Gregory P.Gladfelter and Brian L.Olesen. 2004. Mc-Graw-Hill.