Course syllabus (Academic year 2021)

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 Environmental Engineering and Disaster Management
3. Course Module : Major Required Course
   Pre/co-requisit : KAED 206 Fluid mechanics
4. Class Semester : 1st Semester Academic Year 2021
5. Class schedule & Venue : Monday 9:00-12:00, Online course (MUKA e-learning)
6. Class co-ordinator : Monchai Pumkaew
   monchai.pum@mahidol.ac.th, Tel 061 4644 663
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, 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.	Calculation and Design		Plumbing/ Pipe material/ criteria /std.	1
8.2	Learner can understand and apply the main concept of plumbing design, such as cold water system, sewage system and waste management for building	Calculation and Design		Hydraulics/ Wastewater	1
8.3	Learner can understand the concept of disaster management in building, such as fire protection system	Calculation and Design		Fire protection system	2,3
8.4	Learner can understand the overall of construction project by obtaining the		Planning Presentation	Design criteria	3

No.	Objectives/CLOs	Expected Skills/ Knowledge			
		Specific	Generic	Knowledge	PLOs
	experience of case studies from practitioners and expertise in this field.		Discussion	Problem solving	
8.5	Learner enable to communicate and work with in international environments with confidence and competence.		Planning Presentation Discussion	Design criteria Problem solving	4

9. Class instructor list

1. Monchai Pumkaew

Contact No. 0972488554 Email: monchai.pum@mahidol.ac.th

2. Lalit Thitipaisal (Special guest; ESD Manager, Meinhardt (Thailand) Co. Ltd.)

Email: lalit.thitipaisal@gmail.com

3. Mongkon Kijlondphon (Special guest; Manager, Frasers Property Holdings (Thailand) Co. Ltd.)

Email: g.mongkon@gmail.com

4. Kasit Saengmukdah (Special guest; Meinhardt (Thailand) Co. Ltd.)

Email: kasit@meinhardt.net

10. Course Outline

Week	Date	Contents	CLOs	Teaching & Learning method	Instructor
1	9 Aug 21	Introduction to Course outline and Course overview	8.1	Presentation Q&A	Monchai Pumkaew
2	16 Aug 21	- 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	Monchai Pumkaew

Week	Date	Contents	CLOs	Teaching & Learning method	Instructor
3-4	23 Aug 21 and 30 Aug 21	Design concept of cold and hot water supply system in high-rise building and its pumping station.	8.2	Presentation with assignment	Monchai Pumkaew
5-6	6 Sep 21 and 13 Sep 21	Design concept of sewage system, vent pipping and drainage	8.2	Presentation with assignment	Monchai Pumkaew
7-8	20 Sep 21 and 27 Sep 21	- AutoCAD programs for plumbing design.	8.4	Demonstration and Personal Assignment	Monchai Pumkaew
9	To be announced	**Mid-term Examination**			
10-11	4 Oct 21 And 11 Oct 21	Fire protection system for building	8.2, 8.3	Presentation with assignment	Monchai Pumkaew
12-13	17 Oct 21 (AM.-PM.)	Green Building & International Standard	8.4	Presentation	Lalit Thitipaisal & Mongkon Kijlondphon
14-15	7 Nov 21 (AM.-PM.)	Experiences from the plumbing system designer	8.4	Presentation with assignment	Kasit Saengmukdah
16	22 Nov 21	Final project report and discussion	8.5	Presentation Q&A	Monchai Pumkaew
17	To be announced	**Final Examination**			

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	20
2	Quiz	Learner must be test the knowledge of previous week	8.2		5
3	Assignment report	I. Learner must practice the engineering skills via exercises and assignments form each topic. II. The score will be evaluated according to the quality and details of work by instructors of those topics.	8.1, 8.2, 8.3, 8.4, 8.5	6, 11	20
4	Midterm Examination	The scope of exam will be cover topics of the 1st-8th week in this course. The exam will be held via Moodle e-learning platform.	8.1,8.2, 8.3	9	15
5	Final project	I. Learner must design the main part of plumbing system and present their work as project presentation. II. The score will be evaluated according to the quality and details of work by instructors or committee.	8.2, 8.3, 8.4, 8.5	16	20
6	Final Examination	The scope of exam will be cover topics of the 1st-8th week in this course. The exam will be held via Moodle e-learning platform.	8.1,8.2, 8.3	17	20
				Total	100

11. 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.

12. References

1. “การออกแบบระบบท่อภายในอาคาร” ดร.วริทธิ์ อึ้งภสกรณ์. 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.