Course Syllabus (Academic Year 2020)
School of Interdisciplinary Studies, Kanchanaburi Campus, Mahidol University

1. **Course No. and Title** : KAED 230 Hydraulic Laboratory
   Credit (3 Hour) : 1(0-3-1)

2. **Program Name** : Bachelor of Environment Engineering and Disaster Management

3. **Course Module** : Specific course
   Pre/co-requisite : none

4. **Course Semester** : 2/2020

5. **Class Schedule & Venue**: Laboratory room
   Class Coordinator :
   1. Yutthana Phankamolsil (PhD)
      Phone: (66) 81 695 4621
      Email: yutthana.pha@mahidol.ac.th

6. **Course Description**

Laboratory experiments: hydraulic head losses in closed conduits, impaction of fluid jets, flowing affected by sluice gate and hydraulic jump, pipe flow measurement, the Bernoulli's theorem, stability and buoyancy, flowing over sharp-crested weir and orifice, performance test of multi-pump sets, permeability and flow nets, flow measurement using Parshall flume, uniform open channel flow, forced vortex flow, centroid of hydrostatic pressure and flow velocity measurement.

7. **Course Learning Outcomes (CLOs)**

Learn and practice hydraulic theory to simulate water flow using hydraulic simulators.
[PLOs (1)]

8. **Instructor**

Yutthana Phankamolsil (PhD) +66 816954621, Email: yutthana.pha@mahidol.ac.th
8.1 Office Hours : 12:00 Noon – 15:00 PM, THU, FRI
8.2 Office : L321 Laboratory Building
8.3 **Course Website**
(1) the classroom name is KAED230 in Google Class Room. student have to register google account (xxxx.mahidol.edu) under Mahidol license.
(2) line group name is KAED230_2020

9. Course Outline

Content	Weeks [group]														
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Lab 1: Fluid circuit		1	3	2											
Lab 2: Forces on submerged plane areas		2	1	3											
Lab 3: Impact of Jet		3	2	1											
Lab 4: Bernoulli's principle						1	3	2							
Lab 5: Stability and buoyancy						2	1	3							
Lab 6: Permeability						3	2	1							
Lab 7: Performance of multi-pump set										1	3	2			
Lab 8: Flow through an orifice										2	1	3			
Lab 9: Water flow under water gate										3	2	1			
Quizzes (Week 5, 9, 13) Assignment (week 14-15)															

Remark: YP (Yutthana Phankamolsil): Lab 1, Lab 6, Lab 9
MP (Monchai Pumkaew): Lab 7
AB (Arika Bridhikitti): Lab 3, Lab 4, Lab 8
JK (Jutamas Kaewsuk): Lab 2, Lab 5

10. Course Assessment

No.	Methods / Activities	Regulations	CLOs	Weight Distribution (%)
1	Experiments	Exam will cover the content from the previous weeks.	1	70
2	Quizzes	Exam will cover the content from the previous weeks.	1	20
35	Class participation	Student must attend class more than 80% of course.	1	10
				100

11. Grading System

This course use the following 8 point grading system

Grade	A	B+	B	C+	C	D+	D	F
Percentage (%)	80-100	75-79	70-74	65-69	60-64	55-59	50-54	0-49
Description	Excellent	Very Good	Good	Fairly Good	Fair	Poor	Very Poor	Fail
GPA	4.0	3.5	3.0	2.5	2.0	1.5	1.0	0.0

12. Reference

Larock BE, Jeppson RW, Watters GZ. Hydraulics of pipeline systems: CRC press; 1999.