



Course Syllabus (Academic Year 2021)

School of Interdisciplinary Studies, Kanchanaburi Campus, Mahidol University

- Course No. and Title** : KAED 476 Geo-hazard Management
Credit (study hours) : 3 (3-0-6)
- Program Name** : Bachelor of Engineering Program in Environmental Engineering and Disaster Management
- Course Module** : Major Required Courses
Pre/co-requisite : KAED 375 Geo-Informatics for Environment and Disaster Management
: KAED 205 (Chemistry for Environmental Engineering) (co-requisite)
- Class Semester** : 1st Semester 2nd Semester Academic Year 2021
- Class Schedule & Venue** : **Tuesday: 13:00 – 16:00 Online classroom**
- Class Coordinator** : Dr. Pensiri Prachakittikul
Contact No: 086-024-0919
: Email: pensiri.prc@mahidol.edu

7. Course Description

Geo-hazards: landslides, rock falls, debris flows, earthquakes, tsunamis, the study of geo-hazard by using remote sensing, geotechnical services directed at identifying and assessing geo-hazards, risk evaluation of geo-hazard in Thailand, application of geo-hazard risk assessment in risk reduction and management planning

8. Course Objectives / Course Learning Outcomes (CLOs)

No.	Objectives / CLOs	Expected Skills / Knowledge			PLOs
		Specific (SS)	Generic (GS)	Knowledge (K)	
8.1	Describe the causes of Geohazard	SS1	GS1-GS4	K1	2
8.2	Describe the preparedness of Geohazard	SS1-SS2	GS1-GS4	K1	3, 4, 5
8.3	Describe how to make risk map of earthquake and landslide	SS1-SS2	GS1-GS4	K1	3, 4, 5

9. Class Instructor List

9.1. Dr.Songkhun Boonchaisuk (SB) Contact No. : 080-5997690 Email : songkhun.booo@mahidol.edu

9.2. Dr.Patchawee NualKhao (PN) Contact No. : 0828683270 Email : patchawee.nua@mahidol.edu

10. Course Outline

Week	Date	Contents	CLOs	Teaching & Learning	Instructor's Names
1	29/06/2021	Basic principles of earthquake	1	<ul style="list-style-type: none"> • Lecture • Assignment in Class • Homework 	Songkhun
2	6/07/2021	Fault and geologic mapping	1	<ul style="list-style-type: none"> • Lecture • Assignment in Class • Homework 	Songkhun
3	13/07/2021	Seismic waves and development of seismology	2	<ul style="list-style-type: none"> • Lecture • Assignment in Class • Homework • Quiz I 	Songkhun
4	20/07/2021	Locating the source of an earthquake	2	<ul style="list-style-type: none"> • Lecture • Assignment in Class • Homework 	Songkhun
5	3/08/2021	Magnitude of earthquake	2	<ul style="list-style-type: none"> • Lecture • Assignment in Class • Homework 	Songkhun
6	10/08/2021	Earthquake and seismic wave frequency	2	<ul style="list-style-type: none"> • Lecture • Assignment in Class • Homework • Quiz II 	Songkhun
7	17/08/2021	Earthquake prediction and mitigation	2	<ul style="list-style-type: none"> • Lecture • Assignment in Class • Homework 	Songkhun
8	Tue 24/08/2021 Midterm examination				
9	31/08/2021	External causes of slope failure I	3	<ul style="list-style-type: none"> • Lecture • Assignment in Class • Homework 	Patchawee
10	7/09/2021	External causes of slope failure II	3	<ul style="list-style-type: none"> • Lecture • Assignment in Class • Homework 	Patchawee

Week	Date	Contents	CLOs	Teaching & Learning	Instructor's Names
11	14/09/2021	Internal causes of slope failure I	3	<ul style="list-style-type: none"> Lecture Assignment in Class Homework Quiz III 	Patchawee
12	21/09/2021	Internal causes of slope failure II	1, 3	<ul style="list-style-type: none"> Lecture Assignment in Class Homework 	Patchawee
13	28/09/2021	Classification of mass movement	1, 3	<ul style="list-style-type: none"> Lecture Assignment in Class Homework 	Patchawee
14	05/10/2021	Reducing losses from mass wasting, control, and stabilization	1, 2, 3	<ul style="list-style-type: none"> Lecture Assignment in Class Homework Quiz IV 	Patchawee
15	12/10/2021	Subsidence and mitigation	1, 2, 3	<ul style="list-style-type: none"> Lecture Assignment in Class Homework 	Patchawee
16	19/10/2021 Final examination				

11. Course Assessment

No.	Methods / Activities	Regulations	CLOs	Week	Weight Distribution (%)
11.1	Mid-term exam	<ul style="list-style-type: none"> Content week 1-7 Closed book Faculty-approved calculator 	1-3	8	35
11.2	Final exam	<ul style="list-style-type: none"> Content week 9-15 Closed book Faculty-approved calculator 	1-3	16	35
11.3	Quiz	<ul style="list-style-type: none"> Quizzes will be given in class and cover the content from the previous weeks. There will be no make-up quizzes. 	1-3	3, 6, 11, 14	20
11.4	Homework/Assignment	Homework will be due a week after it is handed out.	1-3	1-7, 9-15	5

No.	Methods / Activities	Regulations	CLOs	Week	Weight Distribution (%)
11.4	Class participation	Student must attend class 80 % of course	1-3	All	5
				Total	100

12. Grading System

Criterion-referenced evaluation

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

13. References

13.1 Abbott, P. L., 2009, Natural Disaster, McGraw- Hill, 1221 Avenue of The Americas, New York, NY., 526 p.

13.2 Richard, J. S., 2011, Environmental Geology, McGraw- Hill, Avenue of the Americas, New York, NY., p. 1-155.

13.3 Darling, T., 2005, Well Logging and Formation Evaluation, Elsevier Science, Amsterdam, 326 p.

13.4 Tiab, D., and E. C. Donaldson, 2004, Petrophysics Theory and practice of measuring reservoir rock and fluid transport properties, Elsevier, Amsterdam, 889 p.

13.5 James S., and Reed Wicander Monroe, 2006, The Changing Earth. 4th Edition, Thomson Brooks/Cole, Calle Magallnes, 2528015 Madrid Spain, 753 p.

Note:

PLO	
PLO2	Apply practical skills in environmental engineering and disaster management to real situations based on academic principles and professional ethics
PLO3	Apply geo-informatics system and information technologies in planning to handle environmental and disaster problems in accordance with academic principles
PLO4	Effectively present and discuss engineering knowledge to relate professional people for objective fulfillment by using proper language and media
PLO5	Work as an environmental engineer with other people to solve complicated problems according to economic, social, and environmental issues
Specific Skill (SS)	
SS1	Basic science and General Geology
SS2	Basic Computer skill
Generic Skill (GS)	
GS1	Systematic Thinking, Problem Solving and Analytical Skills
GS2	Environmental and Disaster Risk Awareness
GS3	The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.
GS4	Analytical thinking, Reasonable, Life-long learning
Knowledge (K)	
K1	Earth processes