



Course Syllabus (Academic Year 2023)
School of Interdisciplinary Studies, Kanchanaburi Campus, Mahidol University

- 1. Course No. and Title** : KAGS 474 Geoscience and Environmental Management
Credit (study hours) : 3 (3-0)
- 2. Program Name** : Bachelor of Science in Geosciences
- 3. Course Module** : Year IV
Pre/co-requisite : KAGS 313 Hydrogeology and
KAGS 381 Introduction to Geochemistry
- 4. Class Semester** : 1st Semester of Academic Year 2023
- 5. Class Schedule & Venue** : Monday, 09.00-12.00 Room 2215
- 6. Class Coordinator** : Dr. Patchawee Nualkhao

7. Course Description

Basic principle of household waste and industrial waste management, selection of waste disposal sites based on geological information, solving problems that caused by waste disposal, contamination of groundwater aquifer from waste disposal and protection, management of waste disposal system and EIA studies on the waste disposal projects.

8. Course Objectives / Course Learning Outcomes (CLOs)

| No. | Objectives/CLOs | PLOs |
|-----|---|------|
| 8.1 | Identify geology impact to environment problems and policy | 2 |
| 8.2 | Use all acquired knowledge and technology in various types of reasoning as appropriate to the situation and problems solving for environment impact | 2, 3 |
| 8.3 | Exercise flexibility and willingness to be helpful in making necessary compromises to accomplish a common goal | 5 |

9. Class Instructor List

Name : Dr. Patchawee Nualkhao

Email : patchawee.nua@mahidol.edu

Name : Mr. Narongsak Kaewdum

Email : narongsak.kae@mahidol.edu

10. Course Outline

| Week | Date | Contents | Instructor's Names |
|------|-------------|--|------------------------|
| 1 | 7 Aug 2023 | Introduction to Geology Environment and Management | Dr. Patchawee Nualkhao |
| 2 | 21 Aug 2023 | Introduction to Mining Exploration | Dr. Patchawee Nualkhao |

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|----|----------------------|---|------------------------|
| 3 | 28 Aug 2023 | Introduction to Mine Wastes | Dr. Patchawee Nualkhao |
| 4 | 4 Sep 2023 | Management of Mine Wastes | Dr. Patchawee Nualkhao |
| 5 | 11 Sep 2023 | Environmental Impacts of Mineral Exploration | Dr. Patchawee Nualkhao |
| 6 | 18 Sep 2023 | Environmental Impact Assessment (EIA) I | Mr. Narongsak Kaewdum |
| 7 | 25 Sep 2023 | Environmental Impact Assessment (EIA) II | Mr. Narongsak Kaewdum |
| 8 | Mid-term Examination | | |
| 9 | 9 Oct 2023 | Environmental Regulations and the Mining Industry | Dr. Patchawee Nualkhao |
| 10 | 16 Oct 2023 | Environmental Impact and management of Coal Mining | Dr. Patchawee Nualkhao |
| 11 | 30 Oct 2023 | Environmental impact and management of Limestone Mining | Dr. Patchawee Nualkhao |
| 12 | 6 Nov 2023 | Environmental impact and management of Coastal Erosion | Dr. Patchawee Nualkhao |
| 13 | 13 Nov 2023 | Environmental impact and management of Flooding and Land Subsidence | Dr. Patchawee Nualkhao |
| 14 | 20 Nov 2023 | Environmental impact and management of groundwater pumping | Dr. Patchawee Nualkhao |
| 15 | 27 Nov 2023 | Geoscience in advancing sustainable development | Dr. Patchawee Nualkhao |
| 16 | Final Examination | | |

11. Course Assessment

| No. | Methods / Activities | Regulations | Week | Weight Distribution (%) |
|------|----------------------|-----------------------|--------------|-------------------------|
| 11.1 | Mid-term exam | Paper Assessment | 8 | 40 |
| 11.2 | Final exam | Paper Assessment | 17 | 40 |
| 11.3 | Reports / Present | Report & Presentation | 16 | 10 |
| 11.4 | Class participation | None | 1-15 | 10 |
| | | | 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

- 1) Bernd G. Lottermoser (2010). Mine Wastes. Characterization, Treatment, Environmental Impacts. Second Edition. 410p.
- 2) Edward A. Keller (2008). Introduction to Environmental Geology. 4th ed. Pearson International Edition. 661p.
- 3) Montgomery, Carla W. (2011). Environmental Geology. 9th ed. New York: McGraw-Hill. 511p.