

## SCBE 221 Water Chemistry Laboratory 1 (0-3-1)

### วทส ๒๒๑ ปฏิบัติการเคมีของน้ำ

**Course Coordinator:** Toemthip Poolpak, Ph.D

**Instructors:** Dr.Prayad Pokethitiyook (PP) Email:prayad.pok@mahidol.edu

Dr. Toemthip Poolpak (TP) Email: toemthip.poo@mahidol.edu

### Course Description

Three hours of in person laboratory or virtual assignments per week. Basic laboratory techniques will be emphasized through experiments dealing with water quality parameters and calorimetry. Alkalinity and the pH of natural waters. Metals in aquatic systems, precipitation and dissolution reactions. Small projects based on heavy metal adsorption isotherms and surface complexation modeling. Biogeochemistry: microbial controls on water chemistry.

### Grading and evaluations

Grading for the SCBE221 course is based on several pieces of works. These include class attendance, assignments, midterm and final exams, a general evaluation from the lecturing staff.

### Course Outline

Class is on Friday 13.30-16.30 (3 hrs); Phayathai Campus

| Week | Date   | Topics                                                      | instructor |
|------|--------|-------------------------------------------------------------|------------|
| 1    | Aug 14 | Introduction to Water Chemistry Safety issues               | PP/AR/IM   |
| 2    | Aug 21 | Chemical preparations and instruments familiarity.          | TP/AR/IM   |
| 3    | Aug 28 | Phosphate buffer and pH buffer preparation                  | TP/AR/IM   |
| 4    | Sep 4  | Alkalinity and hardness                                     | TP/AR/IM   |
| 5    | Sep 11 | Dissolved Oxygen (DO) and Biochemical Oxygen Demand (BOD) 1 | TP/AR/IM   |
| 6    | Sep 18 | Dissolved Oxygen (DO) and Biochemical Oxygen Demand (BOD) 2 | TP/AR/IM   |
| 7    | Oct 9  | Chemical Oxygen Demand (COD)                                | TP/AR/IM   |
| 8    | Oct 16 | Ammonia Nitrogen                                            | TP/AR/IM   |

|    |        |                               |          |
|----|--------|-------------------------------|----------|
| 9  | Oct 30 | Phosphorus                    | PP/AR/IM |
| 10 | Oct 31 | Project proposal presentation | PP/TP    |
| 11 | Nov 6  | Mini projects 1               | PP/AR/IM |
| 12 | Nov 13 | Mini projects 2               | PP/AR/IM |
| 13 | Nov 21 | Project presentation          | PP/TP    |

**Scientist** Miss Anunya Rittichai (AR)

**Teaching Assistants (TA)** Inthiporn Malijan (IM)

**Evaluation**

|                                              |     |
|----------------------------------------------|-----|
| 1. Lab Reports                               | 30% |
| 2. Project Evaluation                        | 30% |
| 3. Attendance, Attentions, Lab Participation | 30% |
| 4. Group Presentation (project)              | 10% |