**Analytical Chemistry Laboratory (SCCH 268)**

**Semester 1 Academic year 2564**

**Friday 13.30-16.20 น Talk lab: SC3-402**

**ห้องปฏิบัติการ:** ENNM (9)

**Course coordinator & LAB Instructor**

 Dr.Tinnakorn Tiensing SC4-309 (Salaya campus) tinnakorn.tie@mahidol.ac.th

**Scientist** Weerawan Waiyawat

**Time Table**

Google classroom: **SCCH219 Analytical Chemistry LAB\_01/2564** Class code: 4agyl7q

| **Date** | **Topics** | **Teaching activities/ media** | **Instructors** |
| --- | --- | --- | --- |
| 13 Aug 64 | 1. Lab introduction | Introduction LABOnline Google classroom | Dr. Tinnakorn |
| 20 Aug 64 | 2. Accuracy-Precision and Data Analysis  | Online Google classroomQuiz, Data Lab resultsReport assignment-google form | Dr. Tinnakorn |
| 27 Aug 64 | 3. Concept in Titration Technique   | Online Google classroomQuiz, VDO-Virtual Lab demonstration, Data Lab results,Report assignment-google form | Dr. Tinnakorn |
| 3 Sep 64 | 4. Acid-base titration1 – Standardization of HCl and NaOH Acid-base titration 2 – Quantitative analysis of antacid tablet / Ammonia from NH4Cl  | Online Google classroomQuiz, VDO-Virtual Lab demonstration, Data Lab results,Report assignment-google form | Dr. Tinnakorn |
| 10 Sep 64 | 5. Complexometric titration 1+2 – Standardization of Mg solution and Determination of Ca-Mg in milk sample | Online Google classroomQuiz, VDO-Virtual Lab demonstration, Data Lab results,Report assignment-google form | Dr. Tinnakorn |
| 17 Sep 64 | 6. Iodometry and iodimetry titration 1 + 2 – Standardization and formalin analysis | Online Google classroomQuiz, VDO-Virtual Lab demonstration, Data Lab results,Report assignment-google form | Dr. Tinnakorn |
| 24 Sep 64 | 7. (C-1) Colorimetric analysis– Absorption spectrum of color dyes (C-2) Fe-o-phenanthroline colorimetric analysis | Online Google classroomQuiz, VDO-Virtual Lab demonstration, Data Lab results,Report assignment-google form | Dr. Tinnakorn |
| 1 Oct 64 | 8. (E-1) pH measurement  (E-2) buffer capacity calculation | Online Google classroomQuiz, VDO-Virtual Lab demonstration, Data Lab results,Report assignment-google form | Dr. Tinnakorn |
| **4-8 Oct 64** | **Midterm exam – No LAB** | **Written exam** | Dr. Tinnakorn |
| 15 Oct 64 | 9. Practice skill in Titration technique | Lab practiceReport Quiz | Dr. Tinnakorn |
| 22 Oct 64 | No LAB |  |  |
| 29 Oct 64 | 10. Practice skill in Titration technique | Lab practiceReport Quiz | Dr. Tinnakorn |
| 5 Nov 64 | หยุด – วันจัดงานมหิดลวิชาการ | No LAB |  |
| 12 Nov 64 | 11. Using spectrophotometer for scanning abs. spectrum and measurement concentration | Lab practiceReport Quiz | Dr. Tinnakorn |
| 19 Nov 64 | 12. Using pH meter and measurement pH of buffer capacity  | Lab practiceReport Quiz | Dr. Tinnakorn |
| 26 Nov 64 | 13. Practical exam – Titration / Spectrophotometry | **Lab practical exam** |  |
| **29 Nov – 10 Dec 2564 Final exam** | **No exam paper** |  |

**#Problem base practical learning (PBPL/ PBL)**

| **Learning measurements** | Score (%) |
| --- | --- |
| (1) Quiz (before / after the experiment) | 15 |
| (2) Practical exam on using glassware / equipment | 10 |
| **(3) Practical exam** | **20** |
| **(4) Evaluation from lab report** (Details of lab report consisted of Title Lab experiment, Objective, Chemicals, Apparatus & Equipment. Procedure, Results, Discussion and Conclusion, Submit report on time) | **35** |
| (5) Assignment / Home work / exercise | 10 |
| (6) Evaluation from lab planning / attendance | 10 |
| **รวม** | **100** |

Criteria and conditions for measurement and evaluation are to be enforced in accordance with Mahidol University Regulation on Diploma and Undergraduate Study and recently Announcement, the Faculty of Science on Undergraduate Study, by using symbols showing results with assigned scores as shown in the table:

| Score (percentage) | Symbols |
| --- | --- |
|  80 – 100 | A |
| 70 – 79 |  B+ |
| 65 – 69 | B |
|  60 – 64 |  C+ |
| 55 – 59 | C |
| 50 – 54  |  D+ |
| 45 – 49 | D |
| < 44 | F |

**Required Texts / Suggested Materials**

1. Jeffery, G.H., Bassett, J., Mendham, J., Denney, R.C., Vogel’s textbook of quantitative chemical analysis, Essex (UK): Pearson Education Limited, 2000 (or other years).
2. SKOOG D.A., WEST D.M and HOLLER F.J, Fundamentals of analytical chemistry, 9th ed., 2014.
3. Daniel C. Harris. Quantitative Chemical Analysis. 8th ed., 2010.
4. Manual SCCH 268 Analytical Chemistry Laboratory, Chemistry Department, Faculty of Science, Mahidol University
5. All Books in Analytical Chemistry
6. Suggested Websites: http://www.rsc.org/