SCCH262 Fundamental Analytical Chemistry

**Semester 1 Academic year 2021**

**Date** Thursday 10.30-12.20 **Student Group** ENNM

Online Google classroom SCCH262 Fund Anal Chem\_1/2564 Class code: gisfeci

Meet link: https://meet.google.com/lookup/gnkrmnfs44

**Instructor:** Tinnakorn Tiensing E-mail: tinnakorn.tie@mahidol.edu

**Course description**

 Stoichiometry; atomic structure; chemical bonding; theory representative and transition metal elements; organic chemistry; nuclear chemistry; environmental chemistry

| **No** | **Date** | **Topics** | **Instructor** |
| --- | --- | --- | --- |
| 1 | 12 Aug 2021 | No class  |  |
| 2 | 19 Aug 2021 | Introduction to analytical chemistry, Sampling and sample preparation Errors in Analysis | Tinnakorn Tiensing |
| 3 | 26 Aug 2021 | Data evaluation & Using Excel in Data Analysis, Method Validation | Tinnakorn Tiensing |
| 4 | 2 Sep 2021 | Concentration systems and preparation reagent solutions | Tinnakorn Tiensing |
| 5 | 9 Sep 2021 | Gravimetric and volumetric analysis | Tinnakorn Tiensing |
| 6 | 16 Sep 2021 | Titration methods and reactions of the titration | Tinnakorn Tiensing |
| 7 | 23 Sep 2021 | Titration methods and reactions of the titration | Tinnakorn Tiensing |
| 8 | 30 Sep 2021 | Application of the titration methods | Tinnakorn Tiensing |
| 9 | 4-9 Oct 2021 | MIDTERM Examination |  |
| 10 | 14 Oct 2021 | Acid-base equilibrium and buffer concept | Tinnakorn Tiensing |
| 11 | 21 Oct 2021 | หยุดราชการ | Tinnakorn Tiensing |
| 12 | 28 Oct 2021 | Acid-base equilibrium and buffer concept | Tinnakorn Tiensing |
| 13 | 4 Nov 2021 | Introduction to spectrophotometry (Beer’s law) | Tinnakorn Tiensing |
| 14 | 11 Nov 2021 | Molecular absorption-emission spectrophotometry, instrumentation and its application | Tinnakorn Tiensing |
| 15 | 18 Nov 2021 | Introduction to electrochemistry technique: Potentiometry | Tinnakorn Tiensing |
| 16 | 25 Nov 2021 | Introduction to electrochemistry technique: Ion selective electrode and pH measurement | Tinnakorn Tiensing |
| 18 | 29 Nov – 10 Dec 2021 | Final Examination | Tinnakorn Tiensing |

Student evaluation is in accordance with the rules and regulations of the Faculty of Science, Mahidol University. Letter grades of A, B+, B, C+, C, D+, D, and F will be given according to the student’s score.

**Score** consists of:

Quiz 10%

Evaluate from report / home work / assignment 5%

Solving exercise 15%

Midterm Exam (Google form, Quiz assignment) 35%

Final Exam (Google form, Quiz assignment) 35%

| Score(percentage) | Symbols |
| --- | --- |
| 80 – 100 | A |
| 75 – 79 |  B+ |
| 65 – 74 | B |
| 55 – 64 |  C+ |
| 50 – 54 | C |
| 40 – 49 |  D+ |
| 30 – 39 | D |
| 0 – 29 | F |

**Reference;**

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. Skoog, D. A.; West, D. M. and Holler. J. Fundamental of Analytical Chemistry (7th ed.), Suanders College Publishing, **1997.**
4. Daniel C. Harris. Quantitative Chemical Analysis, 8th ed., **2010**.
5. Kellner, R.; Mermet, J. M.; Otto, M.; Valcarcel, M; Widmer, J. M. Analytical Chemistry: A Modern Approach to Analytical Science, 2nd Edition, Wiley-VCH Verlag Gmbh & Co. KGaA, Weiheim, **2004**.
6. Menham, J.; Denney, R. C. and Thomas, M. Vogel’s textbook of Quantitative Chemical Analysis. PRENTICE HALL, Pearson education Limited, Essex, **2000**.
7. Miller, J. C. and Miller, J. N. Statistics for Analytical Chemistry (2nd Edition) Ellis Horwood Limited, Sussex, **1998**.
8. Wang, J. Electroanalytical Chemistry, John Wiley & Son Inc., New York, **2006**.