

ICCH223/390 Organic Laboratory Techniques

INSTRUCTOR: Asst. Prof. Dr. Chayanant Hongfa

Email: chayanant.hon@mahidol.edu

MAIN TEXT:

Louis F. Fieser; Kenneth L. Williamson, Organic Experiments, 6th Edition, D.C. Heath and Company, Massachusetts

SUPPLEMENTARY TEXTS:

K. Peter C. Vollhardt; Neil E. Schore, Organic Chemistry – Structure and Function, 5th Edition, W.H. Freeman and Company, New York, 2007.

COURSE DESCRIPTION

The course is designed to augment the basic and essential laboratory techniques in organic chemistry. Supplementary organic laboratory practicals for those interested in developing more advanced organic laboratory techniques through more advanced organic reactions, Grignard synthesis, Friedel-Crafts, Esterification and spectroscopic analysis.

Course Outline

Week	Lab Topic	Hours	Manual Reading for labs
1	Lab safety; preparations and MU Lab Pass	4	Ch 1: p. 1-10 Ch 2: p. 12-22
2	Recrystallisation of acetanilide using water Experiments 1 & 2 combined, p. 39-42 (post lab quiz 1)	4	Ch. 5: p. 39-49
3	Extractions: Two acids and a neutral compound Experiment 1, p. 60-61 (post lab quiz 2)	4	Ch. 6 p. 52-61
4	Friedel-Crafts alkylation of dimethoxybenzene Experiment 2, p. 150-151 (Lab report 1)	4	Ch. 18: p. 146-151
5	Official Holiday (No lab)		
6	Grignard synthesis of triphenylmethanol Experiment 1 & 2, p. 82-84 (lab report 2)	4	Ch. 10: p. 78-85
7	Continuation of Grignard synthesis	4	
8	Esterification: synthesis of methyl benzoate Experiment, p. 74-75 (Thin Layer Chromatography)	4	Ch. 9: p. 73-75
9	Distillation of methyl benzoate Ch. 9, p. 75	4	Ch 3: p. 23-32 Ch. 9: p. 75
10	Nitration of methyl benzoate Experiment 1, p. 143 (Lab report 3 from week 8-10)	4	Ch. 17: p.140-143
11	Dibenzalacetone by the Aldol condensation Experiment, p. 209-210 (Lab Report 4) Aldehydes and Ketones Experiments 2, 3, 4, 5, 6 and 7, p. 97-100	4	Ch. 11: p. 90-100 Ch. 25; p. 209-210
12	Unknown Determinations	4	Final Lab Practical

	Total		48

COURSE REQUIREMENTS:

- Each student is responsible for the **advanced preparation of the lab practicals before entering the lab**. This means reading and preparing flow charts or related materials ahead of time. You can only use your notebook as a guide to perform the experiment and nothing else.
- Each student will be graded on the following criteria during the lab practical.
 - Pre-labs: 10%
 - Post-lab quizzes: 30% (2 lab quizzes)
 - Safety awareness: 10%
 - Lab reports: 40% (4 reports)
 - Final lab practical (Unknown determination): 10%