

PRACTICAL ORGANIC CHEMISTRY II

Program	BSc in Chemistry					
Module Name	Organic Chemistry					
Module code	Chem-M2041					
Module Number	04					
Course Title	Practical Organic Chemistry II					
Course Code	Chem2044					
Pre-requisite	Chem2043					
Module coordinator name and addresses	TBA					
Instructor(s) name and addresses	TBA					
Lecture days, Hours & room	TBA					
Cr. Hrs/EtCTS	1/2					
Work load	Lecture	Tutorial	Lab	Asses sment	Home study	Total
	6	---	42	3	29	80
Target group	2 nd year chemistry students					
Semester	Semester II					
Mode of delivery	Semester based					
Status of the course	Core compulsory					

Course description

Introduction to stereochemistry, Esterification reactions; dehydration of an alcohol to an olefin; acetylation of aniline; p-nitroaniline from acetanilide; azo dyes and the dying process, oxidation of alkyl arenes; synthesis using the aldol condensation, Friedel-Crafts reaction; and the Diels-Alder reaction, extraction of limonene from citrus fruit; isolation of caffeine from tea.

Learning outcomes

At the end of the course the students will be able to:

- Carry out small-scale laboratory synthesis involving esterifications , dehydrations, acetylations, oxidations, aldol condensation, Friedel-Crafts reactions; and the Diels-Alder reactions;
- Synthesize various dyes; and
- Interconvert one class of organic compounds to others

Week	Topics	Teaching methods	Learners' Activities	References
1	Introductory Session			
2	Experiment 1: Preparation of p-Nitro aniline	Brief lecture, laboratory method, demonstration, group work and discussion, guiding	Attending Doing experiments Group discussion Report writing	Practical Organic Chemistry manual pp.12-16
3	Experiment 2: Acetylation of Aromatic-Amines: Preparation of Acetanilide	Brief lecture, laboratory method, demonstration, group work and discussion, guiding	Attending Doing experiments Group discussion Report writing	Practical Organic Chemistry manual pp.16-19
4	Experiment 3: Oxidation of Alkylarenes	Brief lecture, laboratory method, demonstration, , group work and discussion, guiding	Attending Doing experiments Group discussion Report writing	Practical Organic Chemistry manual pp.7-10
5	Experiment 4: Azo Dyes and Ingrain Dyeing	Brief lecture, laboratory method, demonstration, , group work and discussion, guiding	Attending Doing experiments Group discussion Report writing	Practical Organic Chemistry manual pp.19-23
6	Experiment 5: Kobel-Schmitt reaction: Preparation of β Resorcylic Acid (2,4Dihydroxybenzoic Acid)	Brief lecture, laboratory method, demonstration, , group work and discussion, guiding	Attending Doing experiments Group discussion Report writing	Practical Organic Chemistry manual pp.10-12
7	Experiment 6: Esterification: Preparation of Amyl Acetate	Brief lecture, laboratory method, demonstration, group work and discussion, guiding	Attending Doing experiments Group discussion Report writing	Practical Organic Chemistry manual pp.26-29
8	Experiment 7: The Aldol Condensation and Cannizzaro Reaction	Brief lecture, laboratory method, demonstration, group work and discussion, guiding	Attending Doing experiments Group discussion Report writing	Practical Organic Chemistry manual pp.23-26

9	Experiment 8: Preparation of aldehydes and ketones by oxidation of alcohols	Brief lecture, laboratory method, demonstration, group work and discussion, guiding	Attending Doing experiments Group discussion Report writing	Practical Organic Chemistry manualpp.
10	Experiment 9: Introduction to Proteins	Brief lecture, laboratory method, demonstration, , group work and discussion, guiding	Attending Doing experiments Group discussion Report writing	Practical Organic Chemistry manualpp.25-28
11	Experiment 10: Introduction to Carbohydrates	Brief lecture, laboratory method, demonstration, , group work and discussion, guiding	Attending Doing experiments Group discussion Report writing	Practical Organic Chemistry manualpp.25-28
12 & 13	Experiment 11: Polymers	Brief lecture, laboratory method, demonstration, , group work and discussion, guiding	Attending Doing experiments Group discussion Report writing	Practical Organic Chemistry manualpp.
14	Feedback and Summary			
15	Practical Exam (20 %)			
16	Final exam (40 %)			

Mode of assessment

Type	Description	%	Assessment Date
Practical/Skills Evaluation	individual/group performance, and flow chart	10	Every Week
Individual Laboratory Performance	Practical examination	20	Week 10
Experiment Reports	Written report after each laboratory work	30	Every Week
Written Examinations	Exam at the end of the laboratory work	40	At the end of the Lab

Course policy

Beside the university's policy on course delivery and evaluation, students are expected to actively participate in learning process by obeying the following course policies:

- Coming to lab on time (punctuality)
- Attend all lab sessions, unless you are forced due to health and other reasonable problems
- Be prepared to learn and actively participate during lab activities and discussion
- Keep all laboratory safety rules
- Keep good hygiene practices
- Submit laboratory report for every experiments on time
- Be prepared to learn and actively participate in laboratory works
- Come with lab manual and flow chart
- Proper dressing is mandatory

Reference

1. Ermias Dagne. Experiments in organic Chemistry I: Addis Ababa University; 1978
2. Wendimagegn Mammo. Practical Organic Chemistry II Laboratory manual: Addis Ababa University; 1996.
3. Vogel, A. I.; Furniss, B. S.; Vogel, Arthur Israel. Vogel's Textbook of practical organic, Chemistry; Longman Scientific & Technical; Wiley: London; New York, 1989.
4. Whitford, D. Proteins: structure and function; John Wiley & Sons: Hoboken, NJ, 2005.
5. Richard C. Larock. Comprehensive Organic Transformations: A Guide to Functional Group Preparations. .1989
6. Kurti, L.; Czako, B. Strategic applications of named reactions in organic synthesis: background and detailed mechanisms; Elsevier Academic Press: Amsterdam; Boston, 2005.
7. E. J. Corey, Angew. Catalytic enantioselective Diels-Alder reactions: Methods, mechanistic fundamentals, pathways, and applications. Chem, Int. Ed. Engl., 2002, 41, 1650. 650.