



SYLLABUS

A. Course Description

Course Code	Course Num.	Course Name	Credit Hours	Lec.	Lab.	Tut.	Private study	Pre-requisites	Course Level	Language
CHM	326	Synthesis of Organic Compounds	2	0	4	0	4	CHM 325	6	English

A laboratory course designed to provide students with experience in single-step and multi-step syntheses, purifications and characterization of organic molecules with hands-on access to available instruments and techniques.

At the end of this course the student will be able to:

- To memorize the Synthetic methods of Organic Compounds
- To recognize one and multi-step technique used for selected organic compounds synthesis
- To list the required reactions covered in the Organic Chemistry Courses used for target synthesis.
- To write the appropriate the reaction mechanism used for synthesis.
- To outline the possible problems that might be faced during the synthesis, with proposed solutions.

B. References: Required Textbook & Internal Website

I shall use

Vogel's' Textbook of Practical Organic Chemistry, Vogel, A.I., Tatchell, A.R. , Furnis, B.S , Smith, P.W.G , Longman Group UK Limited, (5th Ed.), 1989 ISBN 978-0-582-46236-6

Students are required to purchase the textbook/materials (it is an obligation). The book contains the lecture notes as well as activities for the students to take part in; the book serves as a workbook. Other references:

- *Heterocyclic chemistry*; Gilchrist, T. L. (3rd Ed.), Prentice Hall:, 1979, ISBN:9780582278431.
- *Heterocyclic chemistry*; Joule, J. A.; Mills, K , (5th Ed.), Wiley-Blackwell; 2010, ISBN: 978-1405133005

Google Classroom Webpage: <http://www.imamm.org/>

C. Topics Outline

D. **Disclaimer:** this is a very fast-paced course. There will be little time—if any—for review. What follows is an approximate outline of the pace of the course. We may go faster or slower, contingent on the class response. The tentative list of topics to cover:

- Laboratory Instructions and Safety: Laboratory instructions and The laboratory rules, Common Laboratory Techniques: Filtration, Decolorization, Drying and drying agents, Reflux, Reporting results,
- Synthesis of 2,5-Dimethyl pyrrole: Pyrrole can be prepared from 1,4-Diketone in the Presence of Ammonium Carbonate.



- Synthesis of Hexahydro-1,3,5-tri-p-tolyl-s-triazine. Hexa hydro-1,3,5-tri-p-tolyl-s-triazine can be prepared by the reaction of p-toluidine with formaldehyde at room temperature.
- Synthesis of 2,3-diphenylquinoxaline 2,3-diphenylquinoxaline can be prepared by the reaction of benzil with o-phenylenediamine.
- Synthesis of 5,5-Diphenylhydantoin 5,5-Diphenylhydantoin can be prepared by the reaction of benzil with urea in the presence of a base.
- Synthesis of benzimidazole Benzimidazole can be prepared by the reaction of o-phenylenediamine with formic acid under refluxing.
- Synthesis of Benzotriazole Benzotriazole can be prepared by the reaction of o-phenylenediamine with nitrous acid.
- Synthesis of 3-Methyl-1-phenyl-5-pyrazolone 3-Methyl-1-phenyl-5-pyrazolone can be prepared by the reaction of ethyl acetoacetate with phenylhydrazine.
- Synthesis of Pyrano pyrazole:3-Methyl-1-phenyl-5-pyrazolone can be reacted with α,β -unsaturated nitriles affording fused pyrazole
- Synthesis of Pyridine Derivatives: Pyridine derivatives can be prepared from chalcones and active methylene compounds
- Synthesis of Barbituric Acid Barbituric acid can be prepared by the reaction of diethylmalonate with urea in the presence of sodium ethoxide.
- Synthesis of Hexahydro-1,3,5-tri-p-tolyl-s-triazine. Hexahydro-1,3,5-tri-p-tolyl-s-triazine can be prepared by the reaction of p-toluidine with formaldehyde at room temperature.
- Synthesis of 2,3-diphenylquinoxaline 2,3-diphenylquinoxaline can be prepared by the reaction of benzyl with o-phenylenediamine.
- Revision and Reports Discussion

E. Exams & Grading System

The semi-official dates of the exams for this course, with all the caveats, that the word “semi-official” entails, can be found here:

- **Midterm 1:** 6th or 7th week & **Midterm 2:** 11th or 12th week
- **Quizzes & Homeworks: During the semester**

Your course grade will be based on Final Exam, Midterms, Homework, Quizzes, Participation, Attendance and Project.

Midterm 1: 20 %	Midterm 2: 20 %	Final Exam: 40 %
Quizzes, Attendance, Participation, Lab. Reports: 20 %		

Grading distribution:

A+: [95, 100], A: [90, 95), B+: [85, 90), B: [80, 85), C+: [75, 80), C: [70, 75), D+: [65, 70), D: [60, 65), F: [0, 60).



E. Student Attendance/Absence

Only three situations will be considered as possible excused absences:

- Occurrence of a birth or death in the immediate family will be excused. (“Immediate family” is defined by the University as spouse, grandparents, parents, brother, or sister).
- Severe illness in which a student is under the care of a doctor and physically unable to attend class will be excused. Students are not excused for a doctor's appointment. Do not make appointments that conflict with rehearsals. Notes from the University Health Center will be accepted.

[Executive Rules for Study Regulations and Exams](https://examsgoo.gl/ykm7t3)
[goo.gl/ykm7t3](https://examsgoo.gl/ykm7t3)

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