CHEM 263, A1

Organic Chemistry II

Instructor: Hubert Taube

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Biography of H. Taube

1966	B.Sc. , TU Berlin, Germany
1972	Ph.D., U of A (Org. Chemistry)
1973 – 1977	Biol./ Chem./ Medical Research
1978 – 1979	Additional Training in Environmental Science
1980 – 1989	Environmental Scientist with Lavalin, Environmental Engineering Co.
1990 – 1995	Chemistry Instructor at NAIT
1996 – 2009	Chemistry Lecturer at NAIT/ Concordia/ U of A
2005	SALUTE, S U Teaching Award

Students' History

CHEM 164/261 by	% of Students
Hall	1%
Bundle	10%
Cairo	20%
Clive	30%
HT, fall	1%
HT, winter	40%
Other	1%

CHEM 164/261 Highlights

1.) Electron Mvmt

e^-'s tend to go from occupied MO to empty MO

- HOMO → LUMO
- source → sink
- donor site → acceptor site

neg. site → pos. site

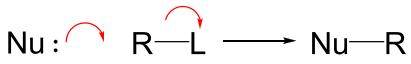
- acid → base
- nucleophile → electrophile

indicated by "curved arrows"

2.) Important Rxn. Mech.'s

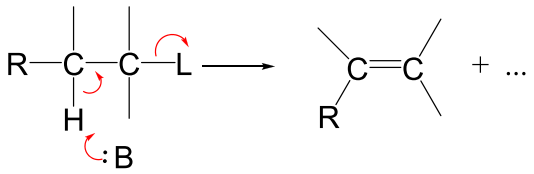
A.) Nucleophilic Substitution

S_N1 (2 step); S_N2 (1 step)

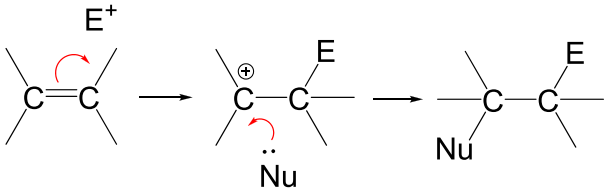


B.) Elimination

E1 (2 step); E2 (1 step)



C.) Electrophilic Addition



3.) "Stereochemistry"

Distinguish between :

- constitutional isomers
- diastereomers
- enantiomers
- conformers

} stereoisomers

4.) Misc. Topics

FG's

Nomenclature

Do HMWK #1 for Review Practice

CHEM 263, A1 **Course Overview** 2009 09 02 HT

Instructor:	Dr. H. Taube
Office:	Chem E3-51
Phone:	492-5239
Lecture Hours:	M, W, F 09:00 - 09:50 h; Location: CHEM E1-60
Office Hours:	open door policy; recommended: M, T, W, T, F 10:00 - 11:30 h
Email:	htaube@ualberta.ca
Course Mark Breakdown:	Labs (pass mark 60%) 25 % Quiz 11 % MidTerm Exam 25% Final Exam 39 % A letter grade will be assigned based on your course average, using the attached approximate University Guidelines.
Code of Student Behavior:	No misrepresentation, plagiarism or cheating. See 2009/10 University Calendar, pp. 759 – 783, for details.
Text: **Recommended Text:**	"Organic Chemistry", Solomons & Fryhle, 8th or 9th ed., 2004/8 "Study Guide ….", Solomons & Fryhle, 8th or 9th ed., 2004/8
Molecular Models:	Extremely useful; "Darling" type recommended; available at Chemistry Undergraduate Stores (West Wing, 1st Floor)
Lab Manuals:	2 items: "Organic Chemistry Experiments","Laboratory Report Book"; Chem 263; by H. Wan; **fa 09, wi 10, sp 10 ed.**
Course Outline:	Textbook chapters 9, 11 - 20; selected sections; detailed checklists of topics will be provided during the course.
Course Schedule:	See overleaf (includes exam dates).
Labs:	Begin week of 14 Sep. 2009. **Safety glasses mandatory**. Read lab manual and prepare for the first lab during the week before. Room assignments to be posted by Fri, 11 Sep., near Chem E1-34.
Help Sessions:	**Theory & Lab:** Room E1-34 Monday 9 - 11, 1 - 5 Tuesday 9 - 11, 1 - 5 Wednesday 9 - 1, 3 - 5 Thursday 9 - 1, 3 - 5 Friday 9 - 11, 1 - 3
Supplementary Information:	• (lecture notes, homework, exam information, ….): www.chem.ualberta.ca/~htaube or navigate through the University system. • exam scores: *on eClass (formerly WebCT)*

Molecular Models

very useful for 3D understanding

"Darling" kits recommended (~ $30), available in Chem Stores

(*others suitable also*)

Allowed in Exams

CHEM 263, A1 **Course Schedule** **2009 09 02**
(Topics Tentative, Exam Dates Firm) HT

Week		Theory			Labs
#	Be-ginning	Mon	Wed	Fri	
1	*31 Aug*	—	Introduction	NMR	—
2	*07 Sep*	NMR	NMR	NMR	—
3	*14 Sep*	NMR	NMR	Conj. Systems	Check-in
4	*21 Sep*	Conj. Systems	Aromatics	Aromatics	NMR
5	*28 Sep*	Aromatics	Aromatics / **Quiz**	Aromatics	Diels - Alder
6	*05 Oct*	Aromatics	Alcohols/Ethers	Alcohols/Ethers	Friedel - Crafts
7	*12 Oct*	—	Alcohols/Ethers	Ald./Ketones	Grignard I
8	*19 Oct*	Ald./Ketones	Ald./Ketones	Ald./Ketones	Grignard II
9	*26 Oct*	Ald./Ketones	Ald./Ketones	**Midterm Exam**	Borohydride
10	*02 Nov*	Ald./Ketones	Carbox. Acids	Carbox. Acids	Ether Synthesis
11	*09 Nov*	Carbox. Acids	—	Acid Derivatives	—
12	*16 Nov*	Acid Derivatives	Acid Derivatives	Acid Derivatives	Aldol
13	*23 Nov*	Carbonyl Alpha	Carbonyl Alpha	Carbonyl Alpha	... /Check-out
14	*30 Nov*	Amines	Amines	—	
FINAL EXAM: Wednesday, 09 December 2009, 09:00 h					
Deferred Exam (as required): Tue., 05 January 2010, 14:00 h					

CHEM 263, A1 Exams

Quiz (11%)

Room: CHEM E1-60
Date: 30 Sep
Duration: ~ 20 - 30 min

MidTerm Exam (25%)

Room: CHEM E1-60
Date: 30 Oct
Duration: ~ 50 min

Final Exam (39%)

Room: TBA, (Gym XXX)
Date: 09 Dec 2009, 09:00 h
Duration: 3 h

Excused Absences

Quiz: Weight goes to MidTerm
MidTerm: Weight goes to Final
Final: Deferred Exam on 05 Jan 2010, 09:00h

No Re-Examinations

CHEM 263, A1

Grade Determination

- based on Course Avg (%) =

  (0.25 x Lab%) + (0.11 x Quiz%) +

  (0.25 x MidTerm%) + (0.39 x Final%)

- then a grade is assigned acc. to general

  University Guidelines

Preliminary/Approximate
Guide for Grade Assignments

CHEM 263, A1 2009 09 02 HT

Avg. Course Mark	Grade (num. equiv.)	# of Students
> 91 %	A+ (4.0)	5 %
> 86 %	A (4.0)	7 %
> 81 %	A- (3.7)	12 %
> 76 %	B+ (3.3)	15 %
> 71 %	B (3.0)	16 %
> 66 %	B- (2.7)	14 %
>61 %	C+ (2.3)	11 %
> 56 %	C (2.0)	8 %
>51%	C- (1.7)	5 %
>49%	D+ (1.3)	3 %
>45%	D (1.0)	2 %
<45%	F (0.0)	2 %

Code of Student Behavior

(academic honesty)

(*abbreviated*)

No:

- misrepresentation
  e.g., falsifying facts in lab
- plagiarism
  copying discussions from others
- cheating
  in exams using non-permitted notes,
  copying from neighbors

Potential Penalties

- marks & grades of zero
- suspension
- expulsion

Full Details :

University Calendar, p. 759 - 783

Teaching & Learning Styles

Teaching

- material mostly on O/H
- lectures organized by topics
- each lecture will have title sheet listing

  main topics
  reference pages
  set of problems
  advanced reading note

- lecture notes will be posted on the Internet,
  pre lecture: at 5 p.m. on day before lecture
  post lecture: one day after lecture is complete
- ~ 10 sets of HMWK will be posted on the internet
  (do on your own, no handing in, no grading ...)

Teaching Philosophy:

Strive for: structure, organization, conciseness
clarity & simplicity

~ 1 - 2 weeks before exams I provide:
checklist of topics
extra practice questions
practice exam c/w answers

Learning

- pre-print lecture notes
- attend lectures & take/ supplement notes
- engage instructor if can't follow (±)
- review/ improve/ customize notes ~ weekly
  (using textbook, internet, ...)
- **Do Suggested Problems and HMWK in Timely Manner**
- clarify difficulties by discussion with
  classmates, TA's, HT .....
- before exams

  - prepare lecture summaries (e.g., cue cards .....)
  - work on checklist, practice exam

N.B.: trying to do everything 2 or 3 days before the exam will not work !!!

CHEM 263, A1 **List of Common Abbreviations** 2009 09 02 HT

Abbreviation	Full Term	Abbreviation	Full Term
A/B	acid/ base	g	gaseous
acc	according to	gem	geminal
add^{l}	additional	h, hi	high
amt	amt	i.e.	that is; (definition)
approx	approximate	ill	illustration
aq	aqueous	incl	including
atm	atmosphere	KE	kinetic energy
ax	axial	l	liquid
b/c	because	l, lo	low
B/L	Bronsted - Lowry	lge	large
c/w	complete with	lvl	level
cat	catalyst	mech	reaction mechanism
cmpd	compound	MF	molecular formula
coeff	coefficient	mvmt	movement
conc	concentrated	N.B.	nota bene; note carefully
config	configuration	neg	negative
conform	conformation	org	organic
conj	conjugated	ox^{n}	oxidation
const	constant	PE	potential energy
def	definition	pos	positive
diff	different	re	regarding
dil	dilute	red^{n}	reduction
DofU	degree of unsaturation	ref	reference
e^{-}	electron	req^{d}	required
e.g.	for example	res	resonance
e/n	electronegative	rev	reverse
Ex	example	r.t.	room temp., ~ 20°C
edg	electron donating group	rxn	reaction
emr	electromagnetic radiation	s	solid
eq	equatorial	sat^{d}	saturated
equil	equilibrium	sol^{n}	solution
equiv	equivalent	sub	substituent
equ^{n}	equation	TBA	to be announced
ewg	e^{-} withdrawing group	tot	total
exp	experimental	trtmt	treatment
FC	formal charge	vic	vicinal
FG	functional group	v.v.	vice versa; "opposite also true"
fig	figure	w/	with
fwd	forward	w/t	without
		xs	excess

Miscellaneous

- Attend **Help Sessions**
  anytime, to suit you,
  as often or as little as you wish, ...

- Consult CHEM 263
  lab web homepage
  for lab announcements;
  e. g. , assignments of lab rooms, ..

- **No hand-in**, grading of problem sets,
  HMWK, ...