



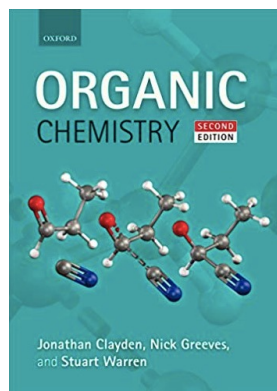
INTEGRATION OF THE CHEMISTRY³ TEXTBOOK WITH THE FIRST YEAR CURRICULUM

Amber Eggleton

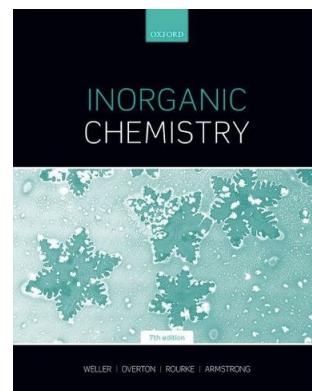
MChem Forensic and Investigative Chemistry
UEA

INTRODUCTION

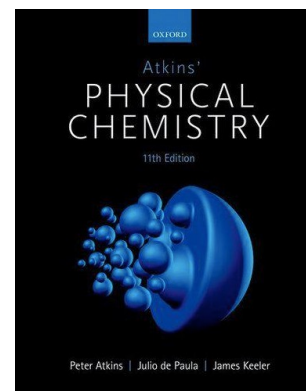
- ❖ Previous literature has shown students are not using textbooks as an accompaniment to their learning
- ❖ Aimed to explore attitudes toward textbooks and how they could be used more effectively by students and academics
- ❖ Specific focus on first year students and Chemistry³



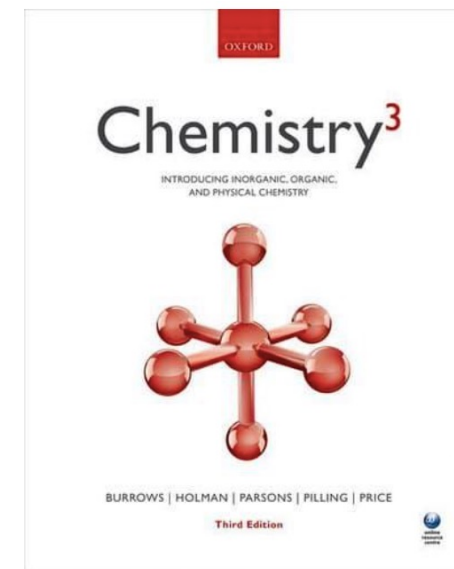
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VS.



RESEARCH QUESTIONS

- ❖ What are student perceptions and experiences using textbooks?
- ❖ What effect does the closer integration of the set text with the course have, if any?
- ❖ How could student use of textbooks be both increased and improved?



INFOGRAPHIC INTERVENTION

- ❖ Covered the core organic, inorganic and physical chemistry modules
- ❖ 42 unique infographics created and distributed
- ❖ Evaluated through a primarily qualitative approach

2020/1: BONDING, STRUCTURE & PERIODICITY - YEAR LONG - A

- Announcements
- Learning Materials
- Reading List
- Assessment Briefs
- My Grades
- Collaborate
- Pre-arrival activities
- Week 0
- S1 Week 1 SJL
- S1 Weeks 2,3 MRC
- S1 Weeks 4,6,7,9 MRC
- mrc constructing
- S1 Week 5 - directed study
- S1 Week 9 - directed study
- S1 Week 10 SJL
- S1 Week 12 SJL
- S2 Week 1 SJL
- S2 Week 3 SJL
- SJL formative course test
- S2 Week 4 AMF
- S2 Week 6 AMF
- S2 Week 7 NJC
- S2 Week 8

S2 Week 4 AMF

Build Content ▾ Assessments ▾ Tools ▾ Partner Content ▾

Getting the most out of your textbook

Enabled: Statistics Tracking

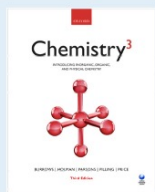
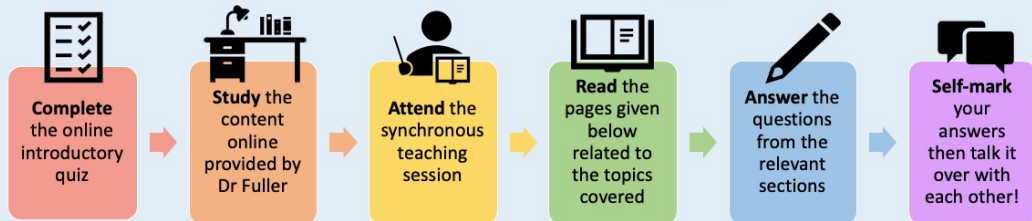
GETTING THE MOST OUT OF YOUR TEXTBOOK: WEEK 4 (S2)

Complete the online introductory quiz → Study the content online provided by Dr Fuller → Attend the synchronous teaching session → Read the pages given below related to the topics covered → Answer the questions from the relevant sections → Self-mark your answers then talk it over with each other!

Topic	Sections to read	Questions to answer
Intro to transition metals	Pgs. 1255-64	
Ligands	Pgs. 1265-70	
Redox reactions	Pgs. 729-30	
Oxidation states	28.2	Ch 28: 2 & 3
Electrochemical cells and cell diagrams	16.3	Ch 16: 3, 4 & 9
Reduction potentials	Pgs. 742-52	Ch 16: 5, 6, 8 & 10-14

CHE-4301Y BONDING, STRUCTURE AND PERIODICITY

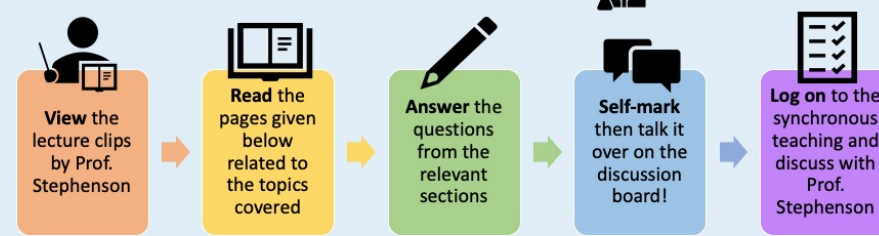
GETTING THE MOST OUT OF YOUR TEXTBOOK: WEEK 4 (S2)



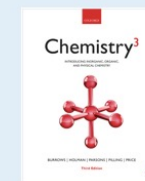
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CHE-4301Y BONDING, STRUCTURE AND PERIODICITY

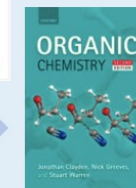
GETTING THE MOST OUT OF YOUR TEXTBOOK: WEEK 9



Resource	Sections to read	Questions to answer
Chemistry ³ textbook - Esterification - Hydrolysis - Acyl chlorides	Pgs. 1108-9 Pgs. 1118-20, 1123-4 Pgs. 1111-1113	Ch 24: 3(b) & (c) Ch 24: 1(a), 5(b) & (d)
Clayden textbook - Esterification - Hydrolysis - Acyl chlorides	Pg. 208 Pgs. 209-13 Pgs. 198-9, 202-3	



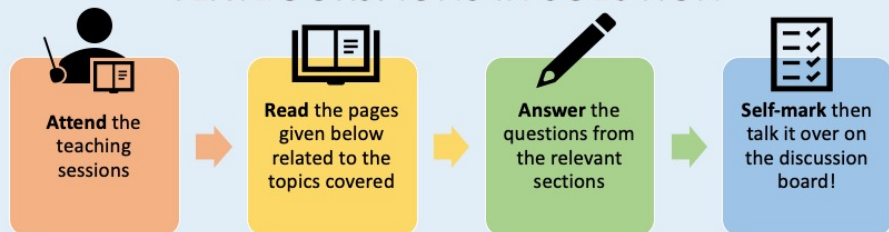
Chem³ 3rd ed.



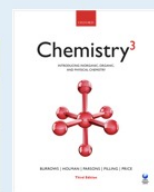
Clayden 2nd ed.

CHE-4101Y CHEMISTRY OF CARBON-BASED COMPOUNDS

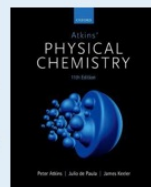
GETTING THE MOST OUT OF YOUR TEXTBOOKS: IONS IN SOLUTION



Resource	Section	Questions to answer
Chemistry ³ textbook	16.2	Ch 16: 1 & 2
Atkins textbook	16B	E16B.2a-4b
Blackboard	Mobius quiz	1-10
Blackboard	Blackboard quiz	1-4



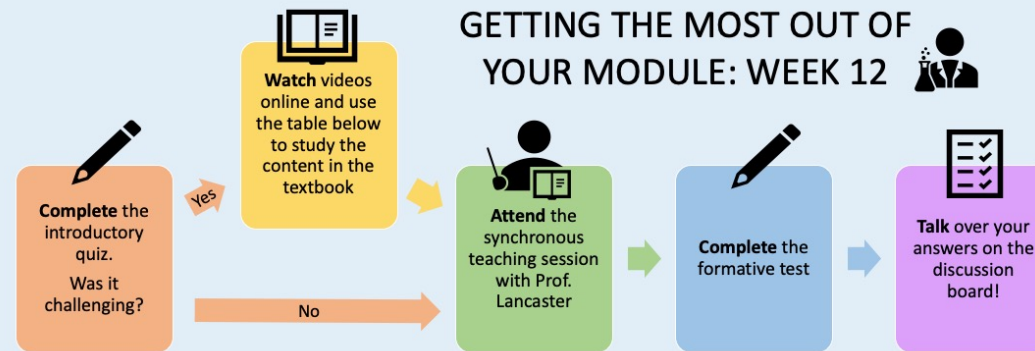
Chem³ 3rd ed.



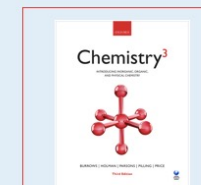
Atkins 11th ed.

CHE-4202Y LIGHT, ATOMS AND MOLECULES

GETTING THE MOST OUT OF YOUR MODULE: WEEK 12



Topic	Sections to read
p-block elements	27.1
Group 13	27.2
Group 14	27.3



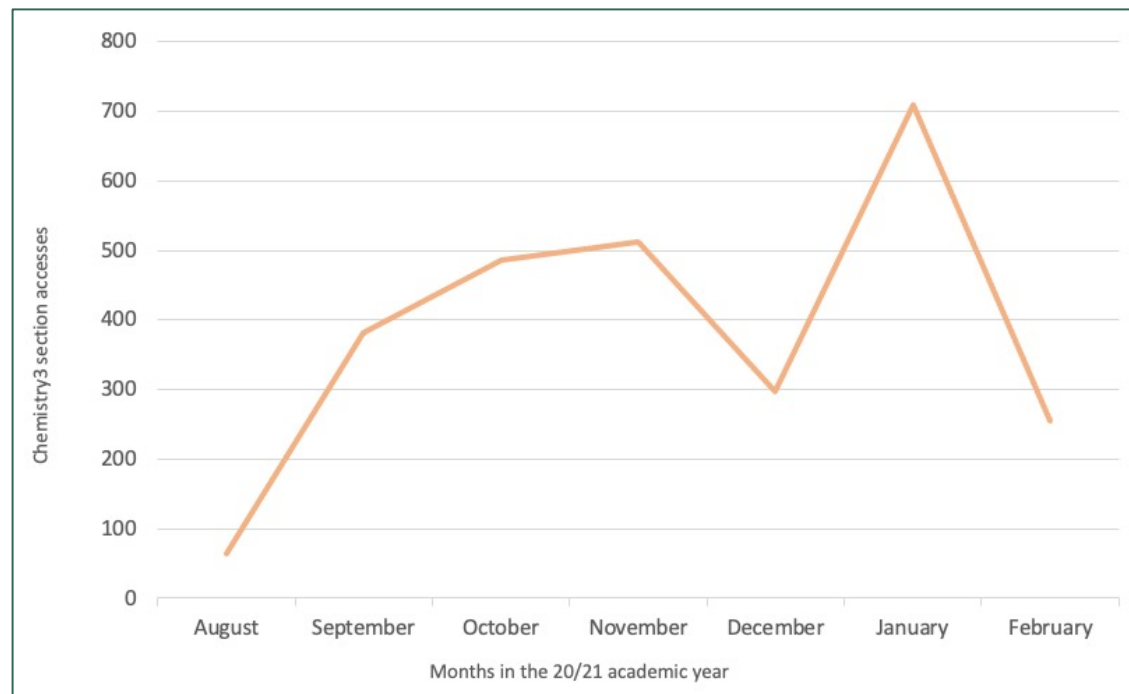
Questions for the introductory quiz and the formative test will be taken from the Chemistry³ textbook (3rd ed.)

CHE-4301Y BONDING, STRUCTURE AND PERIODICITY

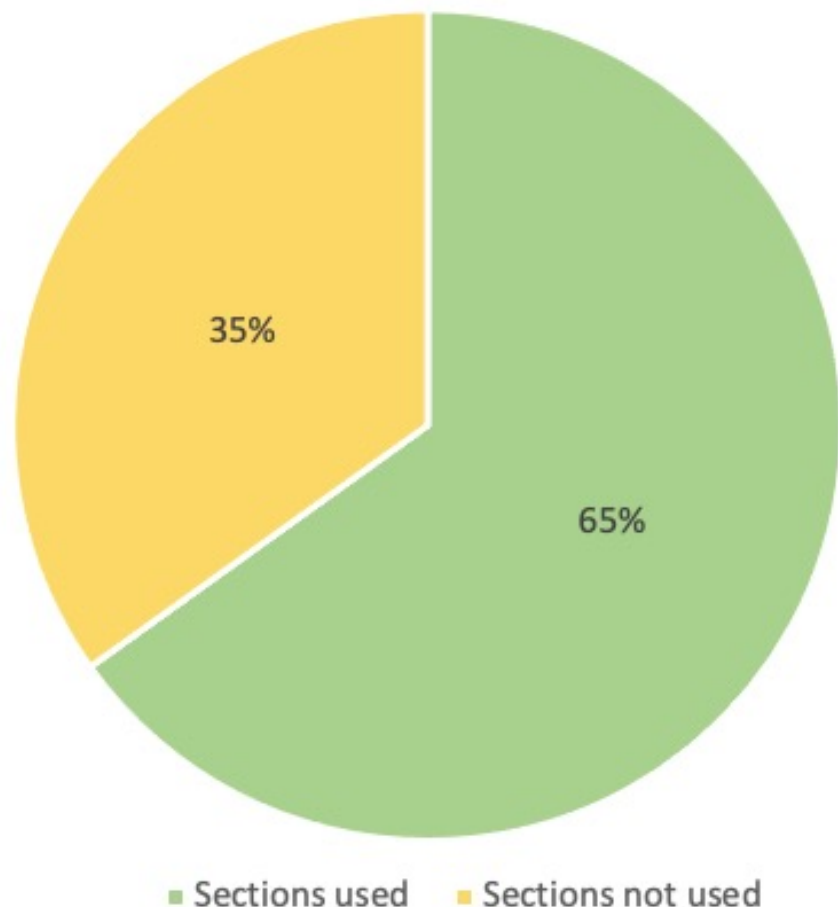
QUANTITATIVE RESULTS: UEA LIBRARY

- ❖ Most used chemistry textbook in the BibliU collection
- ❖ General upward trend in Chemistry³ access via the library throughout the academic year

	Chemistry textbook	Copies purchased	Activations	Usage (%)
S1	Chemistry ³	103	103	100
	Organic Chemistry	80	23	29
	Physical Chemistry	80	11	14
	Inorganic Chemistry	80	1	1
S2	Chemistry ³	103	133	129
	Organic Chemistry	80	39	49
	Physical Chemistry	80	30	37
	Inorganic Chemistry	80	13	16



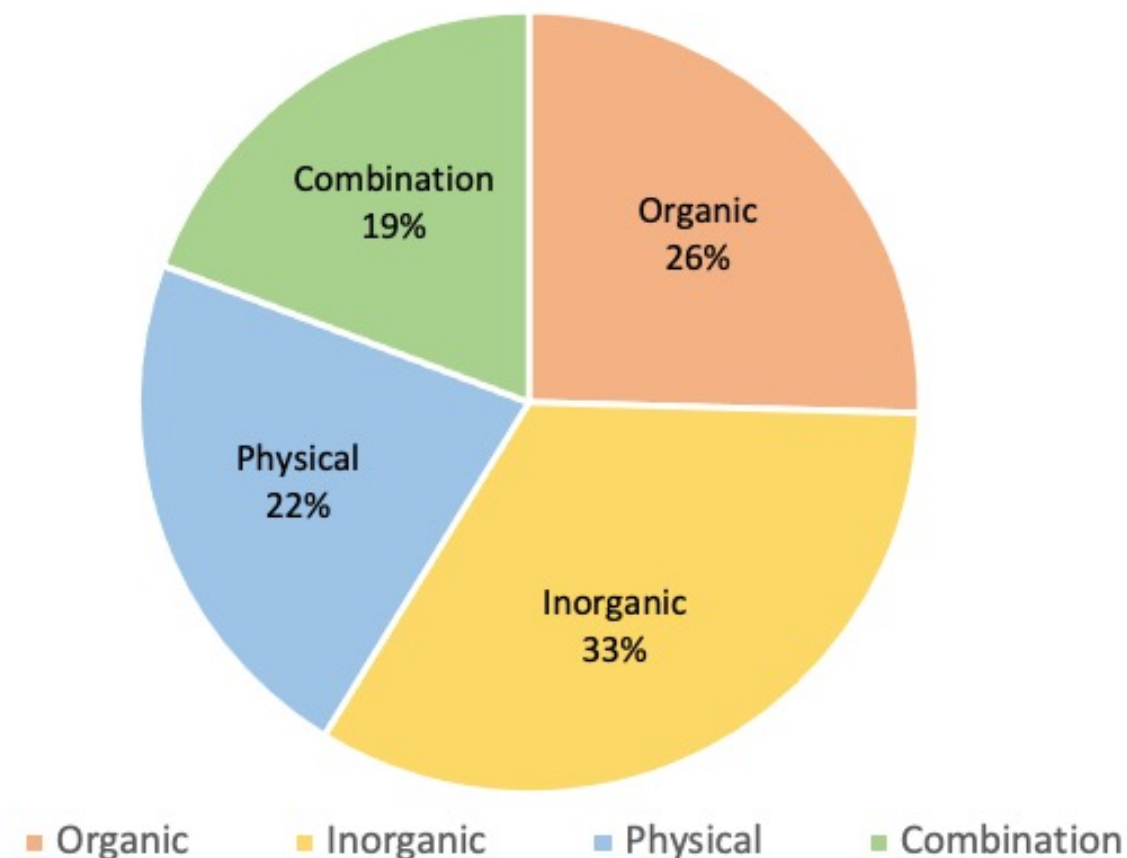
QUANTITATIVE RESULTS: CHEMISTRY³ AND THE INFOGRAPHICS



- ❖ Out of 172 sections in Chemistry³, 112 (65%) were referenced in the infographics
- ❖ Almost all of the first year curriculum could be located in Chemistry³
- ❖ Those not referenced could be sorted into three categories:
 - ❖ A-level content
 - ❖ Optional module content
 - ❖ Second year content at UEA

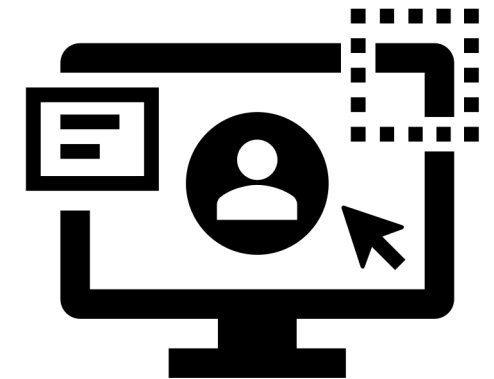
QUANTITATIVE RESULTS: CHEMISTRY³ AND THE INFOGRAPHICS

- ❖ Those 112 sections were then divided further based on the module they were referenced in
- ❖ Two reasons for inorganic having the largest section of the chart:
 - ❖ Better alignment between the Chemistry³ content and the content delivered by lecturers
 - ❖ Overlap between the organic and physical chemistry content



SEMI-STRUCTURED INTERVIEWS

- ❖ Ethics applications approved in November 2020
- ❖ 10 participants in total, 5 students and 5 academics
- ❖ Interviewees were asked 10 questions, focused mainly on Chemistry³ and the infographic intervention
- ❖ Transcripts of each interview were coded and co-coded by another researcher to identify any major themes from the responses



QUALITATIVE RESULTS: SEMI-STRUCTURED INTERVIEWS

General textbook usage

- ❖ Student use
- ❖ Academic use
- ❖ Suitability
- ❖ Accessibility

Chemistry³

- ❖ Usage
- ❖ Suitability
- ❖ Positive perceptions
- ❖ Negative perceptions

Infographic intervention

- ❖ Integration
- ❖ Development
- ❖ Positive perceptions

Alternate resources

- ❖ Other textbooks
- ❖ Online resources

Teaching methods on the first year curriculum

- ❖ Utilisation of textbooks
- ❖ Student engagement
- ❖ Active learning approaches

CONCLUSION: LIMITATIONS AND FUTURE DEVELOPMENTS

❖ Limitations of the project:

- ❖ Undergraduate project timescales
- ❖ Small number of interviewees

❖ Future developments:

- ❖ Implement infographics for the foundation year curriculum
- ❖ Incorporate the optional Analytical Chemistry module (CHE-4501Y)

CONCLUSION: ADDRESSING THE RESEARCH QUESTIONS

- ❖ What are student perceptions and experiences using textbooks?
 - ❖ While students' previous experiences with textbooks varied a lot, all of them said they found textbooks overwhelming and inaccessible
- ❖ What effect does the closer integration of the set text with the course have, if any?
 - ❖ Students expressed how seeing the correlation between their teaching sessions and the content in the textbook helped their understanding
- ❖ How could student use of textbooks be both increased and improved?
 - ❖ Students confirmed that the infographics had this effect, with all of the students saying they used the infographics to guide their independent study