

Teaching Chemistry to First Year Bioscience Students

Stephen McClean

School of Biomedical Sciences
University of Ulster

Introductory Chemistry

- Chemistry 'service teaching' module
- Provides foundational chemistry for further study in biochemistry, clinical biochemistry, molecular biology etc.
- Taken by students in Biomedical Sciences, Pharmacology, Nutrition Courses, Biology
- 176 students in 2005/06; 123 students in 2006/07

The Problem...

- Historically - high failure rate
- Student dissatisfaction with the module as evidenced through module evaluation
- Negative Impact on Student Retention

The Solution...*Providing Support*

- Consultation with colleagues
- Appointment of Chemistry Teaching Fellow
- Enhancement of our support measures –
know your audience!

The Solution...*Providing Support*

- Provision of notes to students
- Implementing a compulsory tutorial support programme based on cohort group
- Supplementary tutorials in chemistry *and* mathematics
- Introduction of online support material / assessment delivered by Perception software

Building an Online Support Resource...

PlanetChemistry.com

Hosted on UU web server

Single login for all students

Easy to remember address

Enhancing communication



[Click here to access the Computer Aided Assessment Website.](#)

Homepage

Welcome to **PlanetChemistry.com**, the homepage for BMS105C1 / BMS109C1 Introductory Chemistry. Here you will find information relevant to the module. Check back regularly for updates etc

Please take a few moments to complete the [online survey](#) to tell us about your background in chemistry.

Mock Examination Paper...

Now available by clicking [here](#) (PDF Format). Please read carefully the instructions on the front. Note also for the actual exam that you should complete section C in a separate booklet.

Text Message Updates

Stay up to date with this module by signing up for text message updates regarding assignments, class tests and other important information about the module.

[Click here to complete the registration form...](#)

Please note that you are not obliged to disclose your mobile telephone number. However, by not supplying a mobile number you acknowledge that you may receive information about this module less promptly than other students.



Online Message Board

A Help / Discussion Board is now online as a means



[Click here to access the Computer Aided Assessment Website.](#)

Check below for resources relevant to the module.

Online Text Book

Click on the image below to access the online version of **CatchUp Chemistry**. If you are unable to open the file please download and install the [FREE Adobe Acrobat PDF Reader](#).



Required Text Book

General, Organic and Biochemistry
Katherine Denniston

Link to Amazon on the web;

amazon.co.uk

Module Notes in PowerPoint Format

Inorganic / Physical Chemistry Lecture Notes - Dr P Hagan

- [Lecture 1](#) - Atoms and Radioactivity
- [Lecture 2](#) - Electronic Configurations
- [Lecture 3](#) - Shapes of Molecules and Ions
- [Lecture 4](#) - Water, Hydrogen Bonding and Solubility
- [Lecture 5](#) - The Mole
- [Lecture 6](#) - Chemical Equations
- [Lecture 7](#) - Oxidations and Reduction Reactions
- [Lecture 8](#) - Solutions and their Physical Properties
- [Lecture 9](#) - Reaction Rates
- [Lecture 10](#) - Chemical Equilibrium
- [Lecture 11](#) - Acids, Bases, Salts and pH
- [Lecture 12](#) - Acid Base titrations and buffers
- [Lecture 13](#) - Thermodynamics
- [Lecture 14](#) - Entropy and Disorder

Organic Chemistry Lecture Notes - Dr S McClean

Help Forum

Having difficulty with aspects of the course? Post your query here and check back for replies from your class group or members of academic staff.

Thread	Last	Messages	
<u>How s It Going?</u>	smc	15	x
<u>Website Problems</u>	smc	1	x
<u>Organic Chemistry Help</u>	smc	1	x
<u>Welcome to PlanetChemistry.com!</u>	smc	6	x

[New Thread](#)



[Click here to access the Computer Aided Assessment Website.](#)

Please take a few moments to complete the online survey regarding your experience of chemistry to date. The form will also allow you to add your address to the module email list!

Please Complete the Survey Below
Please fill out the form below and press "SEND".

First, some questions about you!

First Name:	<input type="text"/>
Surname:	<input type="text"/>
Student Number:	<input type="text"/>
Course (Biomed, Optometry etc):	Biomedical Sciences <input type="button" value="v"/>
Your Mobile Number: [More info..]	<input type="text"/>
Preferred E-Mail Address:	<input type="text"/>

Now some questions relating to the module!

"I have NEVER done chemistry before!"

True

If "False" above, to what level have you previously studied chemistry?

Do you have a computer username and PIN/password for the computers in the University?:

Yes

Have you accessed the Computer Assisted Assessment page as yet?

Yes

Do you have any other modules that involve the use of PC's?:

Are you relatively confident in the use of PC's?:

Please provide any comments you may wish to make about the module below.



Welcome To PageOne's Developers Site - Oventus

Whether you have never written code to interface with an SMS messaging platform before or even if you're familiar with messaging interfaces, getting started can sometimes be a little daunting.

This site is here to help you. It will make finding content, tools and answers to all those integration questions altogether easier. You can take advantage of demos, sample code or share information with other developers, get support for a particular issue, or give feedback to PageOne.

Latest News

PageOne have launched a new SOAP Web Services Testing and Development tool. The tool offers a model of a client application that illustrates the key features of PageOne's SOAP client, with full protocol message flow login. It enables you to generate real time packet creation and shows you how to generate messages in the correct SOAP format. [Click Here To Launch](#)

Request A Free Trial



Click on the above trial box to request your free trial.

Contact Us

[Online Form >](#)

Telephone: 08700 555 300

Fax: 020 8914 5001

Email: enquiries@pageone.co.uk

[Click here to access the Computer Aided Assessment Website.](#)

Mock Examination Paper...

Now available by clicking [here](#) (PDF Format). Please read carefully the instructions on the front. Note also for the actual exam that you should complete section C in a separate booklet.

Text Message Updates

Stay up to date with this module by signing up for text message updates regarding assignments, class tests and other important information about the module.

[Click here to complete the registration form...](#)

Please note that you are not obliged to disclose your mobile telephone number. However, by not supplying a mobile number you acknowledge that you may receive information about this module less promptly than other students.



Online Message Board

A Help / Discussion Board is now online as a means of providing further support to students taking this module. [Click here to access the board...](#)

CA Mark Look-Up Facility...

Lookup CA Marks :



[Click here to access the Computer Aided Assessment Website.](#)

Record for Student Number: 31641706

Please find below your CA profile for this module. You should check that these marks agree with your own records. If there are any discrepancies or if you have a **final** mark below 40% you should contact [Dr Stephen McClean](#) IMMEDIATELY!

Please note that all marks are subject to moderation and change.

Practical Marks

Practical 1 (/10)	8.5
Practical 2 (/10)	
Practical 3 (/10)	8.5
Practical 4 (/10)	7
Practical 5 (/10)	7.25
Practical 6 (/10)	7.2
Practical 7 (/10) - Health & Safety	
Practical 8 (/10)	7.5
Practical 9 (/10)	6.25
Practical 10 (/10)	7
Total Practical Mark	66%

Class Test Marks

CAA Test 1	50%
------------	-----

Practical 8 (/10)	7.5
Practical 9 (/10)	6.25
Practical 10 (/10)	7
Total Practical Mark	66%

Class Test Marks	
CAA Test 1	50%
CAA Test 2	40%
CAA Test 3	30%
CAA Test 4	30%
Organic Chemistry Homework (SMC)	90%
Organic Chemistry Class Test	45%
Total Class Test Mark	44%

Final CA Mark for the Module (Pass Mark - 40%)	
YOUR FINAL CA MARK	55%

Comment:

The mark given above is your FINAL mark that will be submitted to the exams office. For clarification: the 4 computer tests are worth 3.75 marks each. The organic chemistry assignment is worth 2 marks and the organic chemistry class test is worth 8 marks. Total = 25 marks. The practical classes are worth 25 marks altogether. In the light of the fact that I have still to receive marks for the Health and Safety practical (Practical 7) I have taken the decision to ignore it and to mark the practicals out of 90 rather than 100. The final reported practical mark is your percentage mark based on this scoring system.



[Click here to access the Computer Aided Assessment Website.](#)

News

Check this page regularly for recent additions to the site and important announcements.

Mock Examination Paper

| Added: 12th December 2006 |

The paper is now available on the website.. [More...](#)

****REMINDER - No Lecture Tomorrow! ****

| Added: 7th November 2006 |

There will be no lecture tomorrow (8/12/06) at 12:15PM. [More...](#)

Lectures and Tutorials in Week 12

| Added: 7th December 2006 |

Arrangements for the last teaching week of semester are as follows... [More...](#)

Website Problems

| Added: 1st December 2006 |

Some of you have experienced problems... [More...](#)

Organic Chemistry Class Test

| Added: 1st December 2006 |

Important information about the test included here.. [More...](#)

Online Open-Book Assessment

| Added: 30th November 2006 |

The organic chemistry open-book assessment is now available.. [More...](#)

****Preliminary Notice - Pre-Exam Tutorials****

| Added: 22nd November 2006 |

Prior to the Christmas break students will be.. [More...](#)

Preliminary Notice - Organic Chemistry Class Test

| Added: 17th November 2006 |

The organic chemistry class test will take place... [More...](#)

Online Self-Assessment

- Self-assessment questions delivered using Perception Software
- Banks of questions available to complement the lecture material

Online Assessment

- 4 x online class tests at 2-weekly intervals
- 1 x open-book assessment (organic chemistry)
- Delivered using the Tesol QuizTest CGI Script (www.tesol.net/scripts/QuizTest)



[Click here to access the Computer Aided Assessment Website.](#)

Organic Chemistry Open-Book Assessment 2006

Answer the Questions Below and then hit the submit button. There is no negative marking but please be careful with the spelling of words in the short-answer questions. You may only hit the submit button **ONCE**. All other attempts to resubmit the work will be ignored and the **lower** of your marks recorded.

Please take a note of **your answers!** Feedback will be provided at a later date - you will be notified by email about this.

Please enter your Full Name:

Your Email Address:

Your Student Number:

1:

How many carbons does 5,6-dimethyl heptane have?

- 3
- 5
- 7
- 9

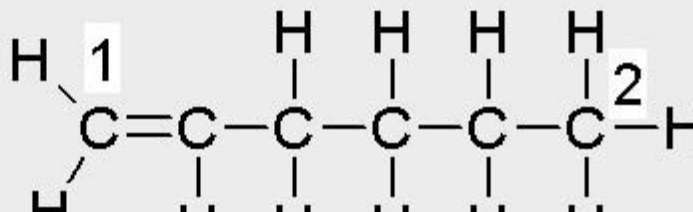
2:

A compound has nine carbons as the longest chain. Its root name is based upon..

- Nonane
- Octane
- Decane
- Undecane

3:

Ignoring the labels "1" and "2" what is the best name for the compound below?



Mean	Median	Mode	Lowest	Highest
84.17%	90%	90% (33)	45%	100%

Score Frequency Table

Frequency of Scores	
Score	Number of Students
100%	9
95%	20
90%	33
85%	14
80%	12
75%	5
70%	10
65%	6
60%	1
55%	1
45%	4

Detailed Question/Answer Statistics:

Question: How many carbons does 5,6-dimethyl heptane have? Answers: 1. 3 2. 5 3. 7 4. 9			
Type	Answer	Responses	Percent
Correct:	9	79	66%
Distractor:	3	0	0%
Distractor:	5	2	2%
Distractor:	7	38	32%

Maintaining Cohort Identity

- *Regular, Compulsory
Tutorials*
- *Practicals*

In Class....

- Lectures delivered in 3 x 1 hour sessions per week
- Demonstrations and large group activities where appropriate
- Interactive lecturing style

Evaluation

Students now have a greater level of satisfaction with the module

Around two-thirds commented favourably on the **technical innovations** that had been introduced; in particular text-messaging

Evaluation

Students' performance in examinations has also improved. Exam failure rates as follows

2003/04	36%	
2004/05	27%	
2005/06	9%	} All changes implemented
2006/07	4%	

Questions?