

A Distance Learning Version of the Sheffield MSc

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■ Outline

- ◆ Clive Anderson:
 - Background, objectives and planning —

- ◆ Nick Fieller
 - Lessons learnt in practice



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■ The Sheffield MSc

- ◆ Long established
- ◆ Broad based
- ◆ Successful



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■ Why Distance Learning?

- ◆ Career moves into Statistics
- ◆ Skills updates
- ◆ Student priorities



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■ The Aim:

Set up a Distance Learning Arm to the MSc that

- ◆ can be followed by part-time study
- ◆ will be of high quality – fully equivalent to existing MSc
- ◆ can be developed and sustained with available resources



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■ Organizational Consequences

- ◆ Adaptation of existing courses
 - Lecture courses
 - Practical/professional skills courses
- ◆ Basic delivery technology
 - WebCT
- ◆ Distance Learning Manager
- ◆ Teaching & Learning Support Unit Advice



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■ Structure

- ◆ Lecture Modules
 - Linear Modelling, Inference, Dependent Data
 - Sampling, Design, Medical
 - Lecture notes, exercises, assignments
- ◆ Practical/Professional Skills Modules
 - Data Analysis, Statistical Laboratory, Enterprise
 - Projects, communication, role play, **group work**
 - Computing
- ◆ Dissertation
 - 1/3 of course, individual project



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■ Needs of Distant Learners

- ◆ Time, determination, equipment
- ◆ Encouragement
 - contact with department
 - contact with other students
 - weekly reports to Caitlin
- ◆ Route map
- ◆ Supplements to lecture material
 - amplification
 - reinforcement: five-finger exercises
- ◆ Feedback



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■ Our Solution

- ◆ Residential weeks
- ◆ Regular contact
- ◆ Course guide
- ◆ Discussion board
- ◆ Extended course materials



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■ Lessons learnt in practice

- ◆ Structure of the Sheffield MSc
- ◆ Courses I was teaching
- ◆ Starting point
- ◆ WebCT
- ◆ Next steps
- ◆ Reflections
- ◆ WebCT illustrated



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■ Summary

- ◆ Substantial work:- **additional 150%** load
 - 50% setup costs, 100% running course
 - could be less if time in summer sacrificed
 - setup costs reduce only slowly
 - some additional load unscheduled
 - responding to queries, providing feedback
- ◆ Delivered product better (for residents)
- ◆ Danger of **over-teaching**



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■ Sheffield MSc Course

- ◆ **6 modules of 2 hrs per wk + dissertation**
 - some modules split into 2 'linked' topics in separate semesters
- In year one 3 modules needed in DL form
 - ◆ **Statistical Laboratory**
 - (involves some collaborative work)
 - ◆ **Dependent Data**
 - Multivariate (I) & Time Series (II)
 - ◆ **Linear Modelling**
 - Linear models (I) & Generalized Linear Mods (II)



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- In year two, further 3 modules:
 - ◆ **Medical Statistics & Sampling/Design**
 - ◆ **Data Analysis**
 - (high proportion of group work & presentations)
 - ◆ **Inference**
 - Classical Inference (I) & Bayesian (II)
- Residential Students have other options
 - ◆ **Most courses have lectures in common with level 3/4 UGs**
 - (separate tutorials/exams)



- I was teaching
 - ◆ **Multivariate Data Analysis** (semester 1)
 - ◆ Medical Statistics (semester 1)
 - ◆ Data Analysis (semester 1)
 - ◆ Classical Inference (semester 1)
(and had been for several years)
- Only **multivariate** needed in DL form
 - ◆ but inevitably made similar modifications to other courses as well, but more needed



- **Starting Point (for MVA)**
 - ◆ Detailed course booklet (~80 pages) of lecture notes (in *Word*, using *MathType*)
 - + notes copied onto OHPs
 - ◆ 5 Exercise Sheets + Solutions (in *Word*)
 - ◆ ~30 OHPs of diagrams + minitab transcripts &c
- Lectures consisted of:
 - ◆ Talking through notes with the additional OHPs
 - ◆ Demonstrating Minitab/S-plus (with laptop)
 - ◆ Doing examples



- Similar for Medical Statistics
 - ◆ But more extensive notes (~140 pages) (since course repeated in Finland [MSc & PhD] every two years)
- Data Analysis is different
 - ◆ Sequence of projects with minimal lectures
 - ◆ Report writing, group work, presentations
 - ◆ Next year???????



- **Some Practicalities**
 - ◆ PDF has turned out to be the preferred vehicle for putting material on Web, from both *Word* and *Latex* sources
 - HTML for maths not viable
 - ◆ we have adapted *WebCT* to our needs: our use is *non-standard*



- **WebCT**
 - ◆ Decision made early to use **WebCT** as medium for course delivery to DLs
- Web based system for
 - ◆ organizing/storing files e.g.
 - web pages
 - postscript or pdf documents
 - data sets
 - ◆ discussion lists, email,.....
 - ◆ &c., &c.



■ Immediate Problems

- ◆ **Lecture notes not self-contained for DL**
 - ⇒ Expand notes to include verbal explanations & additional diagrams & computer transcripts given in lectures
 - ⇒ Provide simple *task sheets* each week
- ◆ **Web pages for DLs useful for Residents but UGs have no access to these**
 - ⇒ I provided duplicate web pages for UGs, (data sets, solutions,)
 - some others did not do this



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■ Introduced problems

- ◆ **What are lectures for??**
 - if web material is self-contained?
 - ⇒ Demonstrate more examples
 - ⇒ Provide summary notes for lecture display (e.g. for Medical Statistics)
- ◆ Too much expected by students
 - e.g. formal solutions expected for Task Sheets such as **verify result 2.3** ('easy to shew that..')
 - ⇒ **refuse** firmly & resolutely



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■ Extra teaching features: Discussion Lists

- ◆ more open discussion available to all
 - necessary to discourage direct emails & personal queries
 - reply **only** to discussion lists
- ◆ weekly news summaries for each course
 - material covered, queries raised
 - sometimes repeated verbally in lectures



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■ Next Steps

- ◆ None of us feel we got it 100% right
- ◆ More revision of notes & c required
 - more and simpler exercises
 - hot linked cross-references, index, contents
- ◆ Data Analysis course
 - group work for DL & Residents????
 - Presentations???? (PowerPoint???)
- ◆ More feedback would be desirable
 - Time????
 - other WebCT facilities? more WebCT training?



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■ Reflections – pro tem

- ◆ Set-up & running costs proving high
- ◆ Maintenance costs may be lower than expected
 - not too many direct phone queries (*only through Caitlin*)
- ◆ Admirable students
- ◆ Long-term benefits?
 - as intended?
 - spin-offs to other teaching?



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- (my) course material at

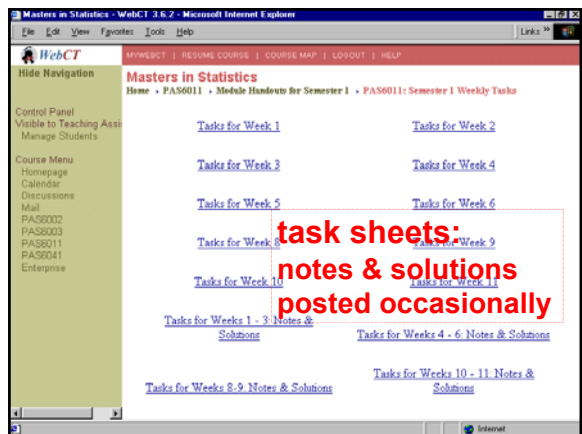
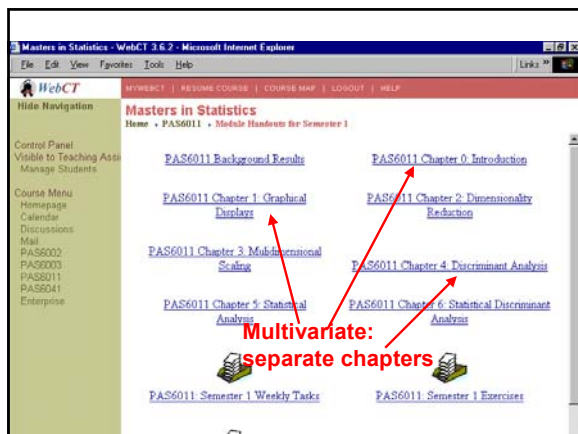
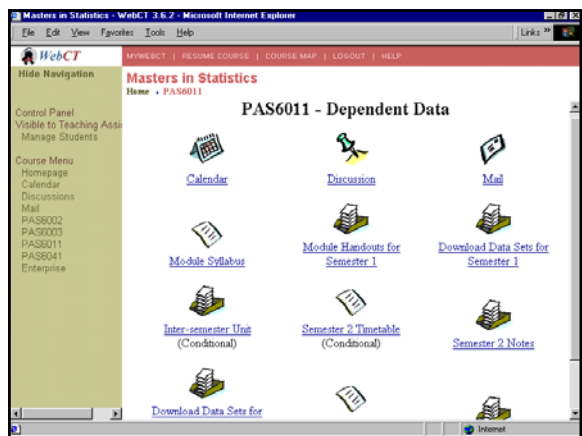
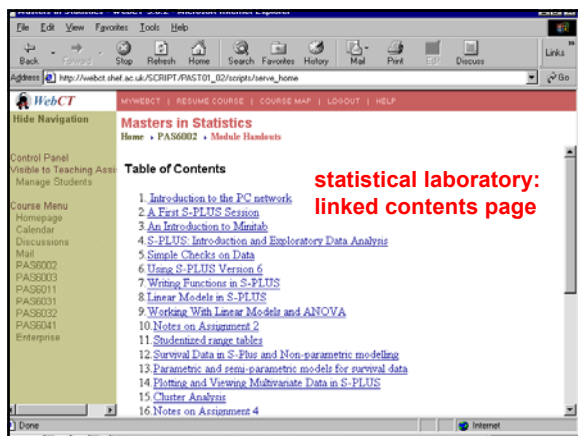
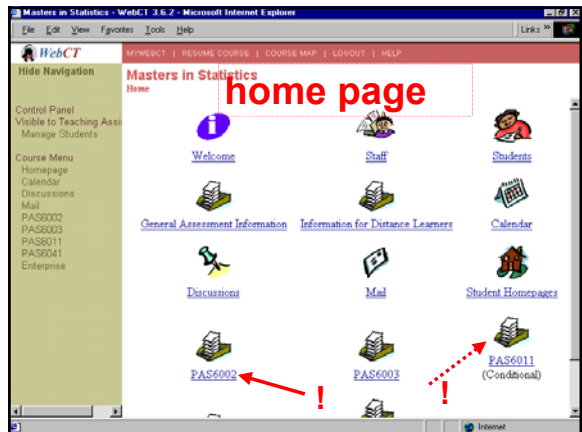
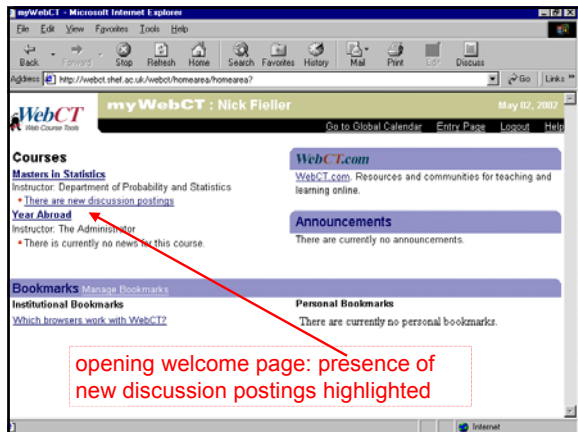
<http://www.shef.ac.uk/nickfieller>

- WebCT illustrations follow



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Index of discussions: some unread

Topic	Unread	Total	Status
All	2	390	
Ann	0	2	public, unlocked
Notes	0	0	public, unlocked
Enterprise module	0	3	public, unlocked
General MS: matters	0	44	public, unlocked
PAS6001 - data analysis	0	4	public, unlocked
PAS6002 - statistical laboratory	2	109	public, unlocked
PAS6003 - linear modelling	0	69	public, unlocked
PAS6004 - inference	0	17	public, unlocked
PAS6011 - dependent data	0	73	public, unlocked

Discussion Messages: PAS6002 - statistical laboratory

Select topic: PAS6002 - statistical laboratory

Subject	Author	Date
486 Re: ARIMA Model Simulation	Jane Helen Bentley (jhp01jhb)	Sun May 05, 2002 2
487 Re: ARIMA Model Simulation	David James Jenkinson (dpj01djj)	Sun May 05, 2002 2

Subject Re: Multivariate Assignment --- supplement

Message no. 258 Branch from no. 257 Posted by Nick Fieller (stlnrf) on Wed Jan 09, 2002 13:09

Worried of Harrington asks:

> Hi Nick,

> I am looking at the multivariate project in 3-Plus and have attempted to get a dissimilarity matrix for the first seven languages (using the Daisy() function). However the diagonals of the resulting matrix are not equal to zero. I think this has something to do with how I have put the data in, I have simply typed the first letter of each word into the appropriate languages column in a data set (reproduced the first table on the assignment sheet but only using the first letters of the words).

> The data function calculates dissimilarities

anonymized query pasted onto discussion board

Subject Re: Multivariate Assignment --- supplement

Message no. 259 Branch from no. 258 Posted by Nick Fieller (stlnrf) on Wed Jan 09, 2002 13:53

Still worried of Harrington replies:

> Ok I tried that and this is what I get:

> >daisy(Eng2Esp)

> Problem in log(X)/.Internal(log(10), "do_math", T, 106): Non-numeric first operand Use traceback() to see the call stack

> I'm assuming that when you say 'have the columns as numerals' you mean the number that the first letter of the word appears in the alphabet (i.e. a = 1 z = 26)?

>

Ah, I had envisioned you would keep them as letters but

questioner still wanting to be incognito

Subject Week 4

Message no. 96 Posted by Nick Fieller (stlnrf) on Fri Oct 26, 2001 16:58

The task sheet for Week 4 has been placed on the appropriate page.

This week has been spent finishing off talking about Principle Component Analysis and associated material and then giving an introduction to the material on Scaling methods --- talking about the pros and cons of the technique. Next week will be devoted to a more detailed discussion of the mathematical underpinning of the methods and concentrating on the implementation and applications.

Some considerable time was spent on talking about Task Sheet 3 where it was clear that several people taking the parallel version of the courses at 00 level were having difficulty in finding the eigenvalues of matrices of the form $\begin{pmatrix} a & b \\ b & a \end{pmatrix}$. My intention, if circumstances permitting, is to put some solutions (with explanations and rather more detailed than I had originally intended)

week 4 summary

resolving unforeseen difficulty

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<http://www.shef.ac.uk/nickfieller>

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