

IB9CS-15 Big Data Analytics

20/21

Department

Warwick Business School

Level

Taught Postgraduate Level

Module leader

Tobias Preis

Credit value

15

Module duration

9 weeks

Assessment

100% coursework

Study location

University of Warwick main campus, Coventry

Description

Introductory description

This module will cover a wide range of cutting edge research in Big Data Analytics. The module has a particular focus on the extensive value of data from the Internet, much of which is freely available if students have the skills to mine it.

Module aims

The module aims will include:

Linking stock market movements to online data.

Measuring sentiment with online data.

Predicting consumer behaviour with online data.

Getting quicker measurements of key economic indicators with online data.

Measuring where people are and where they are going with mobile phone data and online data.

Predicting crime and epidemics.

Understanding social networks.

The module will also teach students the practical skills they need to work with online data.

Students will learn:

How to mine data on Google searches

How to mine data on Wikipedia page views

How to mine data on photographs uploaded to Flickr

How to mine Twitter data
How to make data visualisations
How to design and execute a small data science project of their own

As part of this, the module will teach students how to use R, an industry standard programming language for data analytics.

Outline syllabus

This is an indicative module outline only to give an indication of the sort of topics that may be covered. Actual sessions held may differ.

The sessions in this module are made up of lectures, seminars and lab sessions.

Lectures will help students understand use cases for big data, and will provide them with some guidance on acquiring practical data science skills.

Seminars will focus on the acquisition of statistical skills in R, as well as techniques for visualisation.

Lab sessions will enable the students' acquisition of practical programming skills in R.

The course will follow the structure below.

Week 1

Lecture: Data science - an introduction

Week 2

Lecture: Getting quicker measurements with big data

Lab session: Mining Google data

Week 3

Lecture: Making predictions with big data - 1

Seminar: Basic statistics in R - 1

Lab session: Mining data from photos

Week 4

Lecture: Making predictions with big data - 2

Seminar: Basic statistics in R - 2

Lab session: Mining Wikipedia data

Week 5

Lecture: Measuring emotions and personality

Seminar: Basic statistics in R - False discoveries

Lab session: Mining Twitter data

Week 6

Lecture: Big data in the city

Seminar: Visualising data

Lab session: Visualisations

Week 7

Lecture: Data science - your own project

Seminar: Final project

Lab session: Project work

Week 8

Lab sessions: Project work

Week 9

Lab sessions: Project work

Weeks are specified in module weeks, not term weeks.

Learning outcomes

By the end of the module, students should be able to:

- Understand research methods in big data analytics and computational social science.
- Demonstrate understanding of results of research in big data analytics and computational social science.
- Understand and identify links between big data resources and real world events.
- Critically evaluate empirical research.
- Acquire and mine large data sets using a range of methods.
- Preprocess data sets to allow their subsequent application to real world problems.
- Visualise extensive data sets, applying methods which both allow the visualisation consumer to ask their own questions, and methods which directly answer specific questions.
- Formulate hypotheses and apply statistical methods for their evaluation.

Indicative reading list

Please see Talis bibliography at the following link:

<https://rl.talis.com/3/warwick/lists/E1DCBC50-A278-379F-F255-3D29A326D2AB.html>

Subject specific skills

Apply methods in big data analytics and computational social science.

Perform small pilot studies in big data analytics.

Demonstrate business relevant data science skills.

Demonstrate confidence in discussing research results and their practical relevance in the real world.

Transferable skills

Write in an academically appropriate way.

Study

Study time

Type	Required
Lectures	7 sessions of 1 hour 30 minutes (7%)
Seminars	5 sessions of 1 hour (3%)
Other activity	16 hours (11%)
Private study	47 hours 30 minutes (31%)
Total	150 hours

Type	Required
Assessment	71 hours (47%)
Total	150 hours

Private study description

Private study to include preparation for lectures, seminars and lab sessions

Other activity description

Laboratory sessions - 1.5 hours per week in weeks 2 to 6 of module, 2 hours in week 7 of module and 3.5 hours per week in weeks 8 and 9 of module

Costs

No further costs have been identified for this module.

Assessment

You do not need to pass all assessment components to pass the module.

Assessment group A1

	Weighting	Study time
Two Coursework Exercises	20%	14 hours
3000 word individual essay	80%	57 hours

Feedback on assessment

Individual feedback on assessed project report via online coursework feedback system.

Availability

Courses

This module is Optional for:

- Year 1 of TIBS-N300 MSc in Finance
- Year 1 of TIBS-N1C2 Postgraduate Taught Business (Accounting & Finance)
- Year 1 of TIBS-N1B0 Postgraduate Taught Business (Marketing)
- Year 1 of TIBS-LN1J Postgraduate Taught Finance and Economics

This module is Option list C for:

- Year 1 of TIBS-N2N1 Postgraduate Taught Management