Designing Big Data Analytics
Undergraduate and Postgraduate
Programmes for Employability

BDA EdCon 2014
Las Vegas, USA
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Context

- A very wide gap between demand and supply of "Analytics" skilled and literate graduates with "analytics smarts"
  - UK 30k new practitioners by 2018
  - USA 150k by 2018, plus 1.5M analytics aware staff

- Businesses and Universities need plans B and C

- Computer Science tends to be Technology Focused

- Multi Disciplinary skills and teams
Academic Context

- University of Derby
  - College of Engineering and Technology
    - Department of Computing and Maths
- BSc Programmes
  - Information Technology (some SAS based Analytics)
  - Computer Science
  - Networks and Security
  - Computer Forensics Investigation
  - Computer Games Programming
- Joint Honours Programmes
  - Informatics (Minor)
  - Analytics (Joint)
SAS Data Science Survey 2014

Skills required:

- technical proficiency
- mathematical talent
- business savvy
- good communicators

Approach to Analytics

- BSc IT
  - Now including SAS based Analytics in each year
- MSc Big Data Analytics (Jan 2015)
- Joint Honours
  - Multi-Disciplinary
  - BSc Analytics (50% of Programme) with
    - (e.g.) Geography, Maths, History, Accounting, Business Management, Media Studies or Sociology
  - Based on shared BSc IT modules
Subject Pairing with Analytics

Analytics is Zone 3, can pair with Zones 1, 2 and 4

<table>
<thead>
<tr>
<th>ZONE 1</th>
<th>ZONE 2</th>
<th>ZONE 3</th>
<th>ZONE 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education Studies</td>
<td>American Studies</td>
<td>Architectural Design</td>
<td>Accounting</td>
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<tr>
<td>Film and TV Studies</td>
<td>Applied Criminology</td>
<td>English</td>
<td>Early Childhood Studies</td>
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<td>Geography</td>
<td>Biology</td>
<td>Geology</td>
<td>Environmental Hazards</td>
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<tr>
<td>Marketing</td>
<td>Business Management</td>
<td>Human Resources Management</td>
<td>History</td>
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<tr>
<td>Mathematics</td>
<td>Creative Writing</td>
<td>Law</td>
<td>International Relations &amp; Global Development</td>
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<tr>
<td>Psychology</td>
<td>Dance &amp; Movement Studies</td>
<td>Popular Music Production</td>
<td>Professional Writing</td>
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<tr>
<td>Media Studies</td>
<td>Third World Development</td>
<td>Property Development</td>
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<td>Zoology</td>
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<td>Sociology</td>
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<td>Sports &amp; Exercise Studies</td>
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<td></td>
<td></td>
<td>Theatre Studies</td>
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</tbody>
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JHS Analytics

- **Year 1**
  - Introduction to Computer Science (technical and study / employability Skills and PDP)
  - The IT Design Studio (with SAS Visual Analytics and SAS JMP)
  - Programming Principles (with base SAS and SAS Studio)

- **Year 2**
  - IT Services Management
  - Databases (includes SAS)
  - Data Management and Business Intelligence (with base SAS and SAS Studio)

- **Year 3**
  - Advanced Analytics (with advanced components of SAS)
  - Sustainable Information and Corporate Governance
  - Enterprise Systems
# MSc Big Data Analytics

<table>
<thead>
<tr>
<th>Module Code</th>
<th>Module Title</th>
<th>Credits</th>
<th>Status</th>
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</thead>
<tbody>
<tr>
<td>7CS094</td>
<td>Studying at Masters Level &amp; Research Methods</td>
<td>20</td>
<td>Core</td>
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<tr>
<td>7MAxxxxx</td>
<td>Statistical Techniques</td>
<td>20</td>
<td>Core</td>
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<tr>
<td>7CS512</td>
<td>Business Analytics with SAS</td>
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<tr>
<td>7CSxxxxx</td>
<td>Processing Big Data</td>
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<tr>
<td>7CSxxxxx</td>
<td>Information Visualisation</td>
<td>20</td>
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<tr>
<td>7CSxxxxx</td>
<td>Analytics: Ethics, Trust and Governance</td>
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<tr>
<td>7CSxxxxx</td>
<td>Natural Language Processing</td>
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<tr>
<td>7MAxxxxx</td>
<td>Optimisation</td>
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<td>7CSxxxxx</td>
<td>Comparative Analytics Tools</td>
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<td>7CS997</td>
<td><strong>Independent Scholarship</strong></td>
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<td>Core</td>
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</table>
Self Assessment for PDP

- Personal Development Planning
  - Links academic activity to Industry required skills
- Use SFIA and the new NOSs
  - Frameworks for CPD and Job Specifications
- Links academic evidence to Skills claims
  - Benefits job applications
  - Develops confidence
Foundation to Programmes

- Common Theme - Employability, Skills and Evidence
- Skills For an Information Age
  - SFIA Foundation, E-skills UK and British Computer Society, etc
- E-Skills UK
  - National Occupational Standards for
    - Data Analysis
    - Data Management
    - Data Science
- Use many environments (IBM, SAS, R, Cloud-based etc.)
The Future

- **New BSc programme**
  - BSc Big Data Science (Sept 2015?)

- **New MSc Programmes**
  - Under consideration for development
    - Big Data - Data Science
    - Big Data – Data Systems Architecture
    - Big Data - Data Management and Governance
    - Etc.

- **Strategic Alliances with Relevant experts**