**THE UNIVERSITY OF MANCHESTER**

**ALLIANCE MANCHESTER BUSINESS SCHOOL**

### Academic Year 2020/21

**Semester Semester 2**

### Course Unit Code BMAN60422

**Course Unit Title Data Analytics for Business Decision Making**

**Credit Rating 15**

### Year PGT course unit

**Course Coordinator and contact details**

*Dr. Yu-wang Chen (YWC) – Semester 2 (AMBS 3.074, Ext. 56345)*

*Email:* [*yu-wang.chen@manchester.ac.uk*](mailto:yu-wang.chen@manchester.ac.uk)

*Office hours (online Q&A sessions): Friday 10:00 – 12:00, or by appointment.*

**Other Staff Involved and contact details**

*Prof. Julia Handl (JH) – Semester 2 (AMBS 3.065, Ext. 63333)*

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*Office hours (online Q&A sessions): Friday 10:00 – 12:00 (Week 10), or by appointment*

*Teaching assistant: Ms. Chimdimma Noelyn Onah (Noelyn)*

*Email:* [*chimdimma.onah@postgrad.manchester.ac.uk*](mailto:chimdimma.onah@postgrad.manchester.ac.uk)

### Programme Restrictions

*This course unit is core to MSc Business Analytics, and optional to other relevant MSc programmes.*

### Pre-requisites

*Applied statistics.*

### Co-requisites

*NA*

### Dependent course units

*NA*

### Aims

*The aim of this course is to provide students with an understanding of data analytics for business decision making. It will discuss a wide range of data analytical techniques, including data preprocessing, classification, clustering, predictive modelling, text mining, visual analytics and big data analytics. Emphasis will be placed on the use of industry-leading software tools, e.g., SAS.*

### Learning Outcomes

*At the end of the course unit, student should be able to:*

* *Understand the fundamentals of data analytics and its application to business and management decision making,*
* *Understand a variety of data analysis techniques, such as data classification and clustering, prediction and forecasting, association rule mining & text mining, etc.,*
* *Discuss how visual analytics can be used to understand big data, extract insights and identify patterns,*
* *Demonstrate the ability to use specialized software tools, such as SAS, to analyse large sets of data in real-world problems.*
* *Improve teamwork and collaboration skills from group coursework project.*

### Employability

* *Digital skills on data analytics and specialized software tools,*
* *Consulting report writing and presentation skills.*

### Social Responsibility

*Data analytics helps to be proactive rather than reactive in responding to data-driven economic, societal and environmental decision making for social responsibility.*

### Methods of Delivery

*Online lectures & Lab sessions*

### *Lecture* Hours

*20 hours (2 x 2 hours lecture per week, over 5 weeks, plus additional drop-in sessions)*

### *Seminar/*Tutorial*/Workshop/Lab Hours*

*10 hours (2 hours lab session per week, over 5 weeks)*

### Private Study

*120 hours, including independent lab work*

### Total Study Hours

*150 hours*

### Attendance

*Attendance at all lectures and lab sessions is compulsory in order to achieve the learning outcomes.*

### Syllabus and Teaching Schedule

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| --- | --- | --- | --- | --- | --- |
| **Lecture & Tutorial** | Pre-recorded lectures & other teaching materials: (Monday 9:00 – 11:00 & Friday 10:00 – 12:00)  Online Tutorial 1: AMBS\_2.012/2.013, Monday 15:00 – 17:00  Online Tutorial 2: AMBS\_2.012/2.013, Tuesday 13:00 – 15:00  Online Tutorial 3: AMBS\_2.012/2.013, Tuesday 15:30 – 17:30  Online Tutorial 4: AMBS\_2.012/2.013, Wednesday 10:00 – 12:00 | | | | |
|  |  | | | | |
| **Topic** | **Date** | **Lecturer** | **Topics** | **Case Studies** | **Readings** |
| **Week 7** | 22/03/21 | YWC | Introduction to Business and Data Analytics | Getting Started with SAS & SAS Enterprise Guide (Case study)  – YWC & Noelyn | GS Chapter 1 &  JH Chapter 1 |
| 26/03/21 | YWC | Data Management and Preparation | GS Chapter 2 &  JH Chapter 2 |
| Easter Vacation | | | | | |
| **Week 8** | 12/04/21 | YWC | Data Preprocessing and Wrangling | SAS Enterprise Guide (Case study) &  Trifacta (Case study)  – YWC & Noelyn | GS Chapter 3, 4 &  JH Chapter 3 |
| 16/04/21 | YWC | Predictive Modelling: Decision Trees | GS Chapter 6, 9 &  JH Chapter 8 |
| **Week 9** | 19/04/21 | YWC | Predictive Modelling: Neural Networks | SAS Enterprise Miner (Case studies)  – YWC & Noelyn | GS Chapter 11 &  JH Chapter 9 |
| 23/04/21 | JH | Applied Clustering Techniques | GS Chapter 15 &  JH Chapter 11 |
| **Week 10** | 26/04/21 | JH | Customer Segmentation & Market Basket Analysis | SAS Enterprise Miner (Case studies)  – JH & Noelyn | GS Chapter 14 |
| 30/04/21 | JH | Text Mining & Sentiment Analysis | GS Chapter 20 |
| **Week 11** | 03/05/21 | YWC | Advanced Analytics - I | SAS Enterprise Miner (Case studies) & Specialist Analytics Tools – Case studies  – YWC & Noelyn | Supplementary Text |
| 07/05/21 | YWC | Advanced Analytics - II | Supplementary Text |
| **Week 12** |  | YWC | Additional live drop-in Q&A sessions to support you to complete your group coursework project | | |

### Reading List

*Core Text:*

* *[GS]: Galit Shmueli, et al.; Data Mining for Business Analytics: Concepts, Techniques, and Applications - in R (e-book available from the university library) or in Python, John Wiley & Sons, 2018.*
* *[JH]: Jiawei Han, Micheline Kamber, Jian Pei; Data mining: concepts and techniques (3rd edition). Elsevier, (e-book available from the university library) 2012.*

*Supplementary Text:*

* *Frank J. Ohlhorst, Big Data Analytics: Turning Big Data into Big Money, Wiley, 2012*
* *McKinsey Analytics, Analytics comes of age, McKinsey & Company, 2018.*
* *INFORMS Analytics Magazine,* [*http://www.analytics-magazine.org/*](http://www.analytics-magazine.org/)

*NOTE: additional references/readings will be given in lectures*

### Assessment

* *50% Coursework (3,000 words group report for assessment)*
* *50% Exam (Open book)*

*All coursework submission should be through Blackboard/Turnitin.*

*2nd Semester coursework report:* ***3.00pm Friday 14th May 2021***

### Resits

*Exam only*

### Marking Process

*A fair, rigorous and transparent marking process will be followed for all summative work, and the adapted grade descriptors for the course unit are available to view separately on the blackboard page.*

### Feedback

* *Informal advice and discussion during a lecture, seminar, workshop or lab.*
* *Responses to student emails and questions from a member of staff including feedback provided to a group via an online discussion forum.*
* *Written and/or verbal comments on assessed or non-assessed coursework.*

### Feedback on Coursework

|  |  |  |
| --- | --- | --- |
| *Submission deadline* | *Feedback Release Date* | *Method of Feedback* |
| *14.05.2021* | *04.06.2020* | *Feedback sheet.*  *One-to-one discussion of feedback with course coordinator if requested.* |

### Feedback on Exams

*Generic feedback will be posted on Blackboard regarding the overall examination performance and the form of how each question was answered – what students did well, what could be improved, where there were weaknesses.*

*Note: You should not expect to find detailed written comments on an exam script as you would for coursework.  Any comments on the exam script are predominantly part of the marking process and are not extensive in the way that individual feedback is given for coursework.*

### Methods of Feedback from Students/Course Unit Survey

*The main channel will be via the course unit survey. You are also encouraged to provided informal feedback by email or in person throughout the course.*

**Penalty and Plagiarism Information**

**Penalties for late or non-submission of coursework:**

Unless granted a formal extension for submitting coursework by AMBS’s Student Support Team, a mark penalty will apply in the case of late submission of an assignment. The mark awarded will reduce by 10% of the maximum amount available per 24 hours.

*Please note that it is not at the discretion of the individual lecturer to abate University Policy.*

Example:

If the work is marked out of 100, this means a deduction of 10 marks for each 24 hours late. If the work is marked out of 20, the deduction would be 2 marks for each 24 hours late. The penalty applies as soon as an assignment is late; a 10% deduction would be issued if an assignment is submitted immediately after the deadline, and the work would continue to attract further penalties for each subsequent 24 hours the work was late, until the assignment is submitted or no marks remain.

Faculty guidance on late submission can be found here:

<http://documents.manchester.ac.uk/display.aspx?DocID=24561>

**Penalties for Exceeding the Length of a Piece of Coursework:**

If submitted coursework exceeds the stated word length by more than 10% then marking will be adjusted accordingly for failure to present work within the published word limit. Further comment on this will also be provided in your coursework feedback.

Please note that individual course coordinators may specify a penalty for exceeding the length of a piece of coursework. If penalties are to be applied full details will be published in the full course outline.

**Plagiarism**

Please refer to the Plagiarism section on your online handbook to see the definition of plagiarism and other forms of academic malpractice and how to avoid them.