

| DEREE COLLEGE SYLLABUS FOR: CS 4267 APPLIED BUSINESS ANALYTICS |  |  |                   |  |  |                                    |            |  |  |            |   |                   |  |  |                        |           |  |
|--|--|--|-------------------|--|--|------------------------------------|------------|--|--|------------|---|-------------------|--|--|------------------------|-----------|--|
| (Updated Spring 2021)  |  | <b>UK LEVEL: 6</b><br><b>UK CREDITS: 15</b><br><b>US CREDITS: 3/0/3</b>                    |                   |  |  |                                    |            |  |  |            |   |                   |  |  |                        |           |  |
| <b>PREREQUISITES:</b>  | CS 1070 Introduction to Information Systems<br><b>or</b> ITC 1070 Information Technology Fundamentals<br>CS 2179 Business Information Systems<br><b>or</b> CS 3051 Business Driven Technology  |  |                   |  |  |                                    |            |  |  |            |   |                   |  |  |                        |           |  |
| <b>CATALOGUE DESCRIPTION:</b>                                  | Data exploitation for decision making purposes: Data Management for Decision Support, Business Intelligence, Business Analytics, Data Mining/Machine Learning, Reporting, Forecasting.   |  |                   |  |  |                                    |            |  |  |            |   |                   |  |  |                        |           |  |
| <b>RATIONALE:</b>  | This course focuses on the three areas of data exploitation for decision making purposes i.e. data management, business intelligence and business analytics, which are all taught through business case studies.   |  |                   |  |  |                                    |            |  |  |            |   |                   |  |  |                        |           |  |
| <b>LEARNING OUTCOMES:</b>                                      | As a result of taking this course, the student should be able to: <ol style="list-style-type: none"> <li>1. Demonstrate ability to process, manage and report data using appropriate software tools</li> <li>2. Apply data mining/machine learning techniques to real - life business problems using appropriate software tools</li> <li>3. Evaluate and explore big data to find patterns, trends and associations.</li> </ol>  |  |                   |  |  |                                    |            |  |  |            |   |                   |  |  |                        |           |  |
| <b>METHOD OF TEACHING AND LEARNING:</b>                        | In congruence with the learning and teaching strategy of the College, the following tools/activities are used: <ul style="list-style-type: none"> <li>• Lectures and class discussions. Laboratory practical sessions and problem solving.</li> <li>• Office hours held by the instructor to provide further assistance to students.</li> <li>• Use of the Blackboard Learning platform to further support communication, by posting lecture notes, assignment instruction, timely announcements, and online submission of assignments.</li> </ul>   |  |                   |  |  |                                    |            |  |  |            |   |                   |  |  |                        |           |  |
| <b>ASSESSMENT:</b>   | <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="3"><b>Summative:</b></td> </tr> <tr> <td style="width: 60%;">First Assessment - Midterm Project</td> <td style="width: 10%; text-align: center;"><b>40%</b></td> <td style="width: 30%;">Exploit (access, manage, process and report) real world data and answer business questions</td> </tr> <tr> <td>Final Assessment – Written and lab examination</td> <td style="text-align: center;"><b>60%</b></td> <td>Answers to questions and data analysis problems</td> </tr> <tr> <td colspan="3"><b>Formative:</b></td> </tr> <tr> <td>Business case problems</td> <td style="text-align: center;"><b>0%</b></td> <td></td> </tr> </table> |  | <b>Summative:</b> |  |  | First Assessment - Midterm Project | <b>40%</b> | Exploit (access, manage, process and report) real world data and answer business questions | Final Assessment – Written and lab examination | <b>60%</b> | Answers to questions and data analysis problems | <b>Formative:</b> |  |  | Business case problems | <b>0%</b> |  |
| <b>Summative:</b>  |  |  |                   |  |  |                                    |            |  |  |            |   |                   |  |  |                        |           |  |
| First Assessment - Midterm Project                             | <b>40%</b>   | Exploit (access, manage, process and report) real world data and answer business questions |                   |  |  |                                    |            |  |  |            |   |                   |  |  |                        |           |  |
| Final Assessment – Written and lab examination                 | <b>60%</b>   | Answers to questions and data analysis problems  |                   |  |  |                                    |            |  |  |            |   |                   |  |  |                        |           |  |
| <b>Formative:</b>  |  |  |                   |  |  |                                    |            |  |  |            |   |                   |  |  |                        |           |  |
| Business case problems   | <b>0%</b>  |  |                   |  |  |                                    |            |  |  |            |   |                   |  |  |                        |           |  |

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|------------------------------------|--|
|                                    | <p>The formative assessment(s) aim to prepare students for the summative ones.</p> <p>The First Assessment tests Learning Outcome 1.<br/>The Final Assessment tests Learning Outcomes 2 and 3.</p> <p>(Guidelines and assessment rubrics are distributed on the first day of classes along with the course outline)</p>  |
| <b>REQUIRED MATERIAL:</b>          | <ul style="list-style-type: none"> <li>• <u>Course notes provided by the instructor.</u></li> <li>• <u>Syphus, S., &amp; Bell, R. (2009). SAS Enterprise Guide 1: Querying and Reporting (Course Notes): Stacey Syphus and Richard Bell: 9781607640417: SAS Institute Inc.</u></li> <li>• <u>Christie, P. (2017). Applied Analytics Using SAS Enterprise Miner Course Notes: SAS Institute Inc.: 9781635261967: SAS Institute Inc.</u></li> <li>• Carlos Pinheiro et al. 2019. <i>Machine Learning Using SAS Viya</i>. Cary: SAS Institute Inc.</li> </ul>   |
| <b>RECOMMENDED MATERIAL:</b>       | <ul style="list-style-type: none"> <li>• Parr-rud, O. (2014). Business Analytics Using SAS Enterprise Guide and SAS Enterprise Miner - A Beginner's Guide.</li> <li>• Linoff, G., &amp; Berry, M. J. A. (2011). Data mining techniques: for marketing, sales, and customer relationship management. Wiley</li> <li>• Baesens, B. (2014). Analytics in a big data world: the essential guide to data science and its applications (2nd ed.). Wiley.</li> <li>• Chase Charlie W. (2013). Demand Driven Forecasting: A Structure Approach to Forecasting (2<sup>nd</sup> ed). Hoboken, NJ. Wiley.</li> </ul>  |
| <b>COMMUNICATION REQUIREMENTS:</b> | Use of appropriate academic conventions as applicable in oral and written communications.  |
| <b>SOFTWARE REQUIREMENTS:</b>      | SAS Enterprise Guide, SAS Viya, SAS Forecast Studio (web-based)  |
| <b>WWW RESOURCES:</b>              | <p><a href="http://www.dataminingapps.com/">http://www.dataminingapps.com/</a></p> <p><a href="https://www.sas.com/en_us/learn/academic-programs/resources/free-sas-e-learning.html">https://www.sas.com/en_us/learn/academic-programs/resources/free-sas-e-learning.html</a></p> <p><a href="http://support.sas.com/documentation/onlinedoc/guide/index.html">http://support.sas.com/documentation/onlinedoc/guide/index.html</a></p> <p><a href="http://support.sas.com/documentation/onlinedoc/va/index.html">http://support.sas.com/documentation/onlinedoc/va/index.html</a></p> <p><a href="http://support.sas.com/documentation/onlinedoc/miner/index.html">http://support.sas.com/documentation/onlinedoc/miner/index.html</a></p> |
| <b>INDICATIVE CONTENT:</b>         | <p><b>Introduction to Data Driven Decision Making.</b><br/><b>Access, Management, Processing and Reporting of Data</b></p> <ul style="list-style-type: none"> <li>- Overview of Enterprise Guide software.</li> <li>- Access data form various sources such as text files, Excel workbooks and databases.</li> <li>- Create queries using the graphical user interface of the software.</li> <li>- Create reports such as graphs and summary tables.</li> <li>- Export reports in various formats.</li> </ul>  |

**Data Mining/Machine Learning: Predictive Analytics and Pattern Discovery Using SAS Visual Data Mining and Machine Learning on SAS Viya**

- Introduction to Data Mining/Machine Learning.
- Pattern Discovery: clustering, association rules
- Predictive Analytics
- Case studies using Enterprise Miner

**Demand Forecasting in Practice Using Forecast Studio**

- Fundamental issues about demand driven forecasting
- Introduction to quantitative forecasting
- Case studies using Forecast Studio