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| School: Advanced Informatics School (UTM AIS)Universiti Teknologi Malaysia | **Muka surat :** 1/4 |
| |  |  | | --- | --- | | **Code &**  **Course Name** | **:** MANB 1123  Business Statistics for Data Science | | **Total Hours** | **:** 42 | | **Semester :** 1  **Sesi :** 2016/2017 |

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| **Lecturer:** Dr. Nurulhuda Firdaus Bt Mohd Azmi  **Room No.:** J2213 Blok J  **Telephone No.: 03-26154786**  **Email:** huda@utm.my  **SYNOPSIS:**  This course introduces students to a range of statistical techniques which managers use. The students will apply these techniques to relatively simple practical examples. The students will use statistical tools such as R Studio (R Programming), SAS, MATLAB, SPSS and many others to perform calculations associated with statistical techniques. This course will begin with a brief overview of the discipline of statistics and will then quickly focus on descriptive statistics, introducing graphical methods of describing data. The students will learn about combinatorial probability and random distributions, the latter of which serves as the foundation for statistical inference.  We will also examine the techniques to study the relationship between two or more variables; this is known as regression. The focus in this subject is on how to analyze and interpret results or the output from statistical packages. The students will learn how to apply these techniques by working with examples which are relevant to most major business disciplines and the functional areas of large organizations. These include examples from Accounting (particularly Auditing), Economics, Finance, Financial Planning, Human Resource Management, Information Technology, Logistics and Transport and Marketing. At the end of the course students will have advanced the knowledge and skills to collect, organize, analyze, and interpret business statistical output.  **LEARNING OUTCOMES:**  At the end of the course, students will be able to: | | | | | |
| **Course Learning Outcomes** | | **Programme Outcome(s)** | **Taxanomies**  **(C,P,A)** | **Assessment Methods** | **Weightage (%)** |
| CO1 | **Undertake** independent statistical analysis to make informed decisions and provide advice accordingly. | **PO2** | **P1 – P4**  **A1-A4** | **T = 15%**  **F = 20%**  **A = 5%** | **40%** |
| CO2 | **Apply** statistical methods to business related such as sales, human resource, logistic and supply chain and others. | **PO1** | **C1 – C6** | **A = 5%**  **F = 20%** | **25%** |
| CO3 | **Develop** analytics decision model to solve business problems by finding new ideas and alternative solutions using statistical methods. | **PO3** | **P1 – P4**  **CTPS1 – CPTPS3** | **PR = 15%**  **Pr = 5%** | **20%** |
| CO4 | **Formulate** statistical solution for business problems to find and manage relevant information from many sources. | **PO6** | **A5**  **LL1 – LL3** | **PR = 10%**  **Pr = 5%** | **15%** |
| **TEACHING & LEARNING AND ASSESSMENT METHODS FOR MANB1123**   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **PO** | **SCHOLARSHIP OF KNOWLEDGE** | **LEARNING ENVIRONMENT** | **TEACHING AND LEARNING METHODS** | **ASSESSMENT CRITERIA** | | **PO1** | Possessed detail and in depth knowledge and specific discipline or professional area including relevant professional knowledge and skills with global perspective | * Involve discussions * Critic ideas * Create hypothesis * Seek opinion from others | * Knowledge sharing * Cooperative learning | * Subject Knowledge | | **PO2** | Ability to apply appropriate research methodologies, techniques and tools within the discipline | * Relevant research areas | * Cooperative learning * Guided Lectures * Group Discussion | * Systematic review * Research contribution | | **PO3** | Ability to demonstrate critical thinking and creative problem solving; | * Involve discussions * Critic ideas * Seek opinion from others * Think scholarly | * Guided Lectures * Group Discussion * Paper Critique * Knowledge sharing | * Subject Knowledge | | **PO6** | Ability to conduct independent work or studies. | Independent and interdependent works | Problem based learning | * Knowledge acquisition * Curiosity of the latest knowledge |   **Legend:**  A : Assignment Pr : Presentation PR : Project T :Test F :Final | | | | | |

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| **Teaching and Learning Activities** | **Student Learning Time (hours)** |
| * Face-to-Face Learning | |
| * + Lecturer-Centered Learning     1. Lecture | 20 |
| * + Student-Centered Learning (SCL)     1. Laboratory/Tutorial     2. Student-centered learning activities – Active Learning, Project Based Learning | -  22 |
| * Self-Directed Learning | |
| * Non-face-to-face learning or student-centered learning (SCL) such as manual, assignment, module, etc. | 29 |
| * NALI/MOOCs/e-Learning | 20 |
| * Revision | 14 |
| * Assessment Preparations | 10 |
| * Formal Assessment | |
| * + Continuous Assessment: Research Proposal | 2 |
| * + Final Exam | 3 |
| **Total (SLT)** | **120** |

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| **Weekly Schedule** | |
| **Week** | **Topics** |
| Week 1 | Introduction to Data Analytic, Business Statistics and Data Science  Using Statistical techniques in Business  Procedure for Collecting Data  Population, Samples and Sampling Technique  Data Types, Data Measurement Level and Variables |
| Week 2 -3 | Graphs, Charts and Tables – Describing the Data  Describing Data using Numerical Values:   * Measures of Center and Location * Measures of Variation * Using the Mean and Standard Deviation   Basic and Rules of Probability  Discrete Probability Distribution  Continuous Probability Distribution |
| Week 4-5 | Estimating Single Population Parameters  Hypothesis Testing:   * Hypothesis Test for Means * Hypothesis Test for Proportion * Type II Errors |
| Week 6-7 | Estimation and Hypothesis Testing for Two Population Parameters  Hypothesis Tests and Estimation for Population Variances |
| Week 8 | SEMESTER BREAK |
| Week 9-11 | Analysis of Variance:   * One Way Analysis of Variance * Randomized Complete Block Analysis of Variance * Two-Factor Analysis of Variance   Goodness-of-Fit Tests and Contingency Analysis  Linear Regression and Correlation Analysis |
| Week 12-13 | Multiple Regression Analysis and Model Building  Analyzing and Forecasting Time-Series Data |
| Week 14 - 15 | Project Presentation  Examination Review |

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| **GRADING** | |  |  |  |  |
| **No** | **Assessment** | | **Quantity** | **% Each** | **%Total** |
| **1** | **Assignment** | | **1** | **10** | **10** |
| **2** | **Case Study Project** | | **1** | **25** | **25** |
| **3** | **Project presentation (Oral)** | | **1** | **10** | **10** |
| **3** | **Test (Mid Exam)** | | **1** | **15** | **15** |
| **4** | **Final Exam** | | **1** | **40** | **40** |
| **TOTAL** | | | | | **100%** |

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| **REFERENCES** |
| 1. Peng, R.D. 2015. R Programming for Data Science. Learnpub. Available at: <https://leanpub.com/rprogramming> 2. Mendenhall, W., Beaver, R. J., Beaver, B. M. 2012. Introduction to Probability and Statistics 14th Edition. Duxbury Press. ISBN: 1133103758 3. Downing, Douglas, and Jeffrey Clark. *Business statistics*. Barron's Educational Series, 2010. 4. Berenson, Mark, et al. *Basic business statistics: Concepts and applications*. Pearson Higher Education AU, 2012. 5. Weiers, Ronald M. *Introduction to business statistics*. Cengage Learning, 2010. 6. Groebner Shannon Fry. *Business statistics a Decision Making Approach (9th Edition)*. Pearson International, 2014.  |  |  | | --- | --- | | Prepared By  **Name: Dr. Nurulhuda Firdaus Bt Mohd Azmi**  **Signature :**  **Date :** 11 August 2016 | Certified By : Head of Department  **Name : Dr. Nazri Kama**  **Date :** 11 August 2016 | |