**Hong Kong Baptist University**

**School of Business**

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| Programme: | **Master of Science in Data Analytics and Business Economics** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Department: | Economics | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Course Code: | ECON 7910 | | | | | | | | | | | | Level: | | | | | | | Taught Postgraduate | | | | | | | | |
| Course Title: | Data Visualization with Story-telling | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Prerequisites: | Nil. | | | | | | | | | | | | Medium of Instruction | | | | | | | English | | | | | | | | |
| Duration: | 39 hours | | | | | | | | | | | | Units: | | | | | | | 3 (3, 3, 0) | | | | | | | | |
| Course Description:  (including Aims & Objectives) | Having too much information at our fingertips can make it harder to communicate. This course aims for anyone who needs to communicate important business ideas using data to others. The topics including data connection, integration, preparation, data exploration, data visualization, data analysis and data storytelling will be covered. Students will also learn a wide range of graph types from the most basic scatter, bar, line and bubble plots to the advanced smoothed, animated, 3D, and interactive plots for different reasoning using either Tableau to present their data stories. | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Texts & References:  *(\* recommended textbook(s))* | 1. Cole N. K. (2015). *Storytelling with data: A data visualization guide for business professionals*. 1st Ed. Wiley. 2. Milligan J. N. (2016). *Learning Tableau 10*. 2nd Ed. Packt Publishing Ltd. 3. Yau N. (2011). *Visualize this: The flowing data guide to design, visualization, and statistics*. Wiley. 4. Few S. (2012). *Show me the numbers: Designing tables and graphs to enlighten*. Analytics Press. 5. Murray D.G. (2016). *Tableau your data! Fast and easy visual analysis with Tableau software*. Wiley. 6. Evergreen S.D.H. (2016). *Effective data visualization: The right chart for the right data*. Sage publication. 7. Wickham H. (2016). *ggplot2: Element Graphics for Data Analysis (Use R!)*. 2nd Edition. Springer. | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Learning Outcomes: | Upon completion of this course, students should be able to:   1. Describe the business context and choose an appropriate visual display. 2. Evaluate various types of visualization. 3. Carry out table combination and data filtering for producing visual reports. 4. Customize the charts effectively. 5. Leverage Tableau to create compelling visual reports and dashboards that will help people make decisions. | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Teaching & Learning Activities: |  | | | | | | Learning Outcome Addressed: | | | | | | | | |  | | | | | | Learning Outcome Addressed: | | | | | | |
|  | | | | | | 1 | 2 | | 3 | | 4 | | 5 | |  | | | | | | 1 | 2 | | 3 | | 4 | 5 |
| Lecture | | | | | | ✓ | ✓ | | ✓ | | ✓ | | ✓ | | Services Learning | | | | | |  |  | |  | |  |  |
| Guest speakers | | | | | |  |  | |  | |  | |  | | Internship | | | | | |  |  | |  | |  |  |
| Case Study | | | | | |  |  | |  | |  | |  | | Field study | | | | | |  |  | |  | |  |  |
| Role playing | | | | | |  |  | |  | |  | |  | | Company visits | | | | | |  |  | |  | |  |  |
| Student presentation | | | | | | ✓ | ✓ | | ✓ | | ✓ | | ✓ | | e-learning | | | | | |  |  | |  | |  |  |
| Project | | | | | | ✓ | ✓ | | ✓ | | ✓ | | ✓ | | Independent study | | | | | | ✓ | ✓ | | ✓ | | ✓ | ✓ |
| Simulation game | | | | | |  |  | |  | |  | |  | | Others | | | | | |  |  | |  | |  |  |
| Exercises and problems | | | | | | ✓ | ✓ | | ✓ | | ✓ | | ✓ | |  | | | | | |  |  | |  | |  |  |
| Major Assessment Methods:  For each Major Assessment Method below, please indicate the specific pedagogical /assessment methods involved (by putting a ✓ in the relevant box(es) on the right-hand side). | | Role Playing  Case Study |  | Individual project/paper  Student Presentation | Group project/paper | Simulation Game | | | Exercises & problems | | Service learning | | | | Internship | | Field Study | Company visits | Written examination | | Oral examination | | |  | | Learning Outcomes Addressed | | |
| Class Participation/  Discussion (10%) | |  |  | ✓ |  |  | | |  | |  | | | |  | |  |  |  | |  | | |  | | 1 to 5 | | |
| Assignment(s) (60%) | |  |  | ✓ |  | ✓ | | |  | | ✓ | | | |  | |  |  |  | |  | | |  | | 1 to 5 | | |
| Test(s) (30%) | |  |  |  | ✓ |  | | |  | |  | | | |  | |  |  |  | |  | | |  | | 1 to 5 | | |
| Examination (0%) | |  |  |  |  |  | | |  | |  | | | |  | |  |  |  | |  | | |  | |  | | |
| Others *(please specify)*  \_\_\_\_\_\_\_\_\_\_\_\_ ( %) | |  |  |  |  |  | | |  | |  | | | |  | |  |  |  | |  | | |  | |  | | |
| Course Web: | | Course templates are available at BU eLearning (formerly called “BU Moodle”), programme website and Staff Area in School website *(for staff only).* | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Course Content: | | |  |  |  | | --- | --- | --- | |  | Hours | Learning Outcome no. | | 1. Fundamental Concepts of Data Visualization    1. Understand the business context    2. Distinguish exploratory from explanatory analysis    3. Familiarize various types of visual displays    4. Identify problems of clutters    5. Evaluate pre-attentive attributes | 9 | 1 to 5 | | 1. Introduction to Tableau    1. Navigate Tableau interface    2. Explore specific tools in Tableau    3. Explain relationship between data analytics and data visualization    4. Connect and combine data from various sources | 9 | 3 to 5 | | 1. Visual Analytics with Tableau    1. Create various kinds of charts    2. Differentiate discrete dates from continuous dates    3. Use date hierarchies to customize charts    4. Create calculated fields and apply aggregations    5. Create dual layer maps | 9 | 3 to 5 | | 1. Dashboards and Storytelling    1. Introduce planning and preproduction for visualization    2. Understand key metrics, indicators and decision triggers    3. Apply hierarchies, actions, filters, and parameters within Tableau    4. Study a range of examples and techniques to become an excellent storyteller | 12 | 1 to 5 | | Total | 39 hrs. |  | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Contribution to  the Mission of the  School: | | |  |  | | --- | --- | | 🗹 | to cultivate academic curiosity, integrity and leadership potential | | 🗹 | to enhance all-rounded training | | 🞏 | to develop consciousness of values and social responsibility | | 🗹 | to disseminate contemporary knowledge | | 🗹 | to foster a global vision | | 🞏 | to disseminate the research findings of faculty members in the School | | 🞏 | to develop awareness in public policy | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Contribution to the Learning Goals of the Programme: | | |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | The learning goals of the MSc in Data Analytics and Business Economics Programme:   |  |  | | --- | --- | | 🞏 | Identify the challenges of digital economy and apply economic principles to think strategically about business decisions. | | 🞏 | Define business problem clearly and identify appropriate analytical tools to address the issues. | | 🞏 | Demonstrate ability in choosing appropriate algorithms and implementing programming languages for business analysis. | | 🗹 | Interpret the data outcomes and deliver the crucial findings and insights effectively through data visualization for business analysis. | | 🗹 | Formulate solutions to real-world problems with data analytics and/ or economic principles. | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Course Co-ordinator: | | Dr. Shui Ki WAN | | | | | | | | | | | | | | | | | | | | | | | | | | |