Project Work

The Project Work component will be a major feature of the Data Analytics in Healthcare Course.   In all, there will be 5 labs in which participants will be trained on the use of the R statistical package to acquire the necessary basic skills to undertake data analytics in healthcare.

The Course Project Work will comprise 5 labs each of 1.5 hour duration. (No coding/ programming skill is needed)

Course participants are required to bring their own laptop for the labs.

Course Details

www.gatewaypl.com /dahc

GATEWAY CONSULTING
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Enquiries

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Course Tutor

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Professor KC Lun ('KC') received his PhD in biometrical genetics from the University of Birmingham, UK in 1975 under an 1851 Royal Exhibition Overseas Science Research Scholarship and a MSc in medical demography from the London School of Hygiene & Tropical Medicine, University of London in 1981 under a Colombo Plan Scholarship. His academic career spans over 30 years including 26 years with the NUS Faculty of Medicine and 6 years with the NTU School of Biological Sciences which he helped to establish in 2001 and served as Founding Vice Dean (Academic).

A student of Emeritus Professor Michael Healy and Professor John Osborn of the London School of Hygiene and Tropical Medicine, KC has taught biomedical statistics for over 30 years and is one of the most sought after teachers for biomedical and clinical statistics in Asia. While at NUS, he had provided consultancy services to many clinicians and research scientists on projects and clinical trials. In addition, he had served as statistical consultant and given workshops and courses in many Asian countries, including North Korea, for international agencies such as IDRC, WHO and UNDP.

Internationally, KC had served as President of the International Medical Informatics Association (IMIA) from 2001-04. In recognition of his international contributions to health informatics, he was conferred the 'Excellence for Singapore' award in 2002.

In recent times, KC has leveraged on his multiple skill sets in biostatistics, epidemiology, medical demography and biomedical informatics to focus on healthcare analytics. For the Data Analytics in Healthcare Course, KC brings with him a wealth of experience in training participants the tools and techniques of data analysis in healthcare.

Gateway Consulting presents

Data Analytics in Health Care

A 3-day Course
by
Prof K C Lun

Introduction

With the increasing use of IT in healthcare, consolidating the large volumes of data generated daily from a healthcare institution's array of information systems is increasingly posing a massive challenge to administrators, care providers and researchers. Leveraging on such data is vital to the healthcare institution in terms of gathering business intelligence, streamlining workflows, keeping operating costs down and having the means to track and improve operations so as to offer the highest quality of customer service and patient care. To maximize the yield of information from its operations data, it is strategic for healthcare institutions to acquire in-house analytic skills which can provide them with the professional competence to collect, clean, process and analyse data and generate results especially for workflow dashboards and KPIs for use by its management, care providers and various stakeholders.

As statistics is the bedrock of data analytics, the Gateway Consulting's *Data Analytics in Healthcare* Course is tailored to enable participants to acquire the necessary data analytic skills as a first step in the training of data scientists in healthcare. The emphasis on acquiring basic statistical skills is done over 3 days of full-day training using a combination of lectures, case studies and hands-on labs. Participants will also get to learn the use of the open-source R-Commander statistical package (no coding is needed). All lectures and labs will be conducted by Professor KC Lun, CEO of Gateway Consulting.

Course Syllabus

Unit 1. Strategic Importance of fostering a data-driven culture in healthcare organizations
1.1 Business value of data to a healthcare organization
1.2 Types of data analytics techniques and their strengths and weaknesses
1.3 Data governance and what it means to a healthcare organization
1.4 Importance of fostering a data-driven culture in a healthcare organization
1.5 The data scientist – what it takes to have the "sexiest job of this century"
1.6 What skill sets should a data analytics team have?

Unit 2. Health data processing and reporting techniques
2.1 The Data Life Cycle
2.2 Healthcare data sources and data structures
2.3 Measuring quality and safety of care
2.4 Defining and Developing Key Performance Indicators
2.5 Dashboards – uses and design pitfalls

Unit 3. Study designs & sampling techniques (including sample size estimations)
3.1 Common study designs used in healthcare
3.2 Types of Probability and Non-Probability Sampling Techniques
3.3. Statistical issues involving the use of sampling in healthcare
3.4 Principles of sample size estimation & power calculations for basic statistical tests
3.5 Use of WinSSize for sample size and power calculations
(course participations will get a FREE copy of WinSSize developed by Prof KC Lun for WHO)

Unit 4. Health data summary and visualization techniques
4.1 Statistics – the basics all healthcare data scientists should know
4.2 Data summary techniques (for measurement and categorical data)
4.3 Visualization techniques (for measurement and categorical data)
4.4 Interactive visualization techniques
4.5 Common misuses of data visualization

Unit 5. Basic Statistical Techniques for Analysis of Measurement and Non-Measurement Data
5.1 Techniques for Statistical Inference - the 95% Confidence Interval
5.2 General principles involving test of statistical significance - Null Hypothesis, p-value and interpreting test outcomes
5.3 Basic statistical tests involving measurement outcome variables
5.4 Basic statistical tests involving non-measurement outcome variables
5.5 Misuses of statistical tests of significance

Unit 6. Predictive Analytics involving Regression Techniques
6.1 Principles of predictive analytics
6.2 Predicting one outcome variable from a predictor variable – simple linear regression
6.3 Predicting one measurement outcome variable from several predictor variables – multiple linear regression
6.4 Predicting one binary outcome variable from several predictor variables – multiple logistic regression
6.5 Misuses of regression techniques in predictive analytics

Unit 7. Predictive Analytics involving Non-Regression Techniques
7.1 Introduction to Bayesian techniques in predictive analytics
7.2 Application of Bayesian techniques in predicting health screening outcomes
7.3 Principles of Survival Analysis (techniques for analyzing time-related events)
7.4 Use of Support Vector Machines for cluster analysis in healthcare
7.5 Strategic applications of Sentiment Analysis in Healthcare