1.	Name of Course	**Business Statistics**
2.	Course Code	BMBS2029
3.	Name(s) of academic staff	
4.	Rationale for the inclusion of the course/module in the programme	A statistic is the consequence of applying an appropriate utility (algorithm) to a set of accessible data. Statistical theory characterizes statistic as a function of an illustration or a particular thing where the function itself is independent of the sample's distribution and separation. Statistics can be employed from simple to complex in diverse fields. It can be used for counting things. It is applied in mathematics; however its 'main use is in research tasks. It makes data collection easier. It is concerning all about simplification of things in a real world. It plays a vital role in calculations in science subjects. It is helpful to keep and improve the record of an organization. Business management is incomplete without education of statistics. This shows that statistics is playing a role in all of the fields. So it's important and animated role in any way cannot be denied. Many of today's brightest business minds use this study to create charts and graph that allow them to stress a certain aspect of the business they are dealing with. Market research agencies, News rooms, marketing divisions of large corporations, NGOs, accounting firms etc. are full of people who specialise in basic statistics.
5.	Semester and Year offered	1/2

6.	Total Student Learning Time (SLT)	Face to Face				Total Guided and Independent Learning
	L = Lecture T = Tutorial P = Practical O= Others	L	T	P	O	Guided = 42 Independent = 84 **Total =** **126**
		28	14			

7.	Credit Value	3
8.	Prerequisite (if any)	None
9.	Objectives:	

	• Explain the concepts and statistical techniques used to analyze business data. • Use the essential tools of applied statistics, including data analysis, basic probability, probability models (distributions), sampling theory, point and confidence interval estimation, hypothesis testing, analysis of variance, linear regression and correlation, and multiple regression. • Apply statistical methodology properly in their future academic and professional careers. • Use statistical analysis as decision support in all areas of business; customer service, production operations management, and quality control. • Apply quantitative analysis to the problems found in managing a business, government, or non-profit organization, whether production or service oriented. • Understand the complex, dynamic, and multidimensional issues and perspectives involved in statistical analyses of business situations. • Employ critical thinking and independent problem-solving skills to everyday tasks. • Communicate clearly the results of a statistical analysis. • Handle the discomfort of learning something new, formulate questions, and discover plausible answers--all independently or with increasing self-reliance.
10.	Learning outcomes: At the completion of the subject, students should be able to perform the following tasks: • By actively participating in class discussions and in-class assignments, each student will improve communication and analytical skills through learning statistical concepts and business applications • By completing homework assignments, each student will enhance analytical skills, as well as, improve competency utilizing Microsoft Excel for data entry and analysis. • By finishing five examinations, each student will improve teamwork, analytical, and communication skills through identifying and applying statistical analysis to common business problems. • By working with a team to isolate and analyze a business need, students will create marketing research to support an organization's ability to fully define the need and the target market
11.	Transferable Skills: • To enhance the student's ability in applying demand analysis and segmentation techniques in the business statistics. • To develop the student's ability to utilise statistical skills for managing the firm's efforts directed to the business development. • Provide a framework for understanding business statistics theory and development and, thereby, provide the student with decision-making capabilities in the field.

12.	Teaching-learning and assessment strategy
	A variety of teaching and learning strategies are used throughout the course, including:
• Lecture sessions
• Tutorial sessions
• Case Studies
• Student-Lecturer discussion
• Collaborative and co-operative learning
• Workshops and Training Seminars
• Independent study

Assessment strategies include the following:
• Ongoing quizzes
• Midterm tests
• Performance Assessment (Participation, project, Assigned exercises)
• Case Presentations |
| 13. | Synopsis:

This introductory course covers the concepts and techniques concerning exploratory data analysis, frequency distributions, central tendency and variation, probability, sampling, inference, regression, and correlation. Students will be exposed to these topics and how each applies to and can be used in the business environment. Students will master problem solving using both manual computations and statistical software. |
| 14. | Mode of Delivery: Face to Face
• Lecture sessions
• Tutorial sessions |
| 15. | Assessment Methods and Types:
The assessment for this course will be based on the following: |

Coursework	**50%**
Quizzes	10%
Assignments	10%
Project	10%
Mid-Semester Exam	20%
Final Examination	**50%.**
Total	**100%**

16.	Mapping of the course/module to the Programme Aims					
	The individual course is mapped to the programme aims using a scale of **one** to **five** where (one being the least relevant/related and five being the most relevant/ related).					
	A1	A2	A3	A4	A5	A6
	4	2	4	2	2	2

17.	Mapping of the course/module to the Programme Learning Outcomes											
	The learning outcomes of this course are mapped to the eight MQF domains using a scale of **one** to **five** where (one being the least relevant/related and five being the most relevant/ related).											
	LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8	LO9	LO10	LO11	LO12
	2	4	2	2	2	2	4	2	2	2	4	4

18.

Content outline of the course/module and the SLT per topic

WEEK	Details	SLT			
		L	T	Indep.	Total
WEEK 1	**Data and Statistics** • Obtain an appreciation for the breadth of statistical applications in business and economics. • Understand the meaning of the terms elements, variables, and observations as they are used in statistics. • Obtain an understanding of the difference between qualitative, quantitative, cross-sectional, and time series data. • Learn about the sources of data for statistical analysis both internal and external to the firm. • Be aware of how errors can arise in data. • Know the meaning of descriptive statistics and statistical inference. • Be able to distinguish between a population and a sample. • Understand the role a sample plays in making statistical inferences about the population.	2	1	6	9

WEEK 2	**Descriptive Statistics: Tabular and Graphical Methods** • Learn how to construct and interpret summarization procedures for qualitative data such as : frequency and relative frequency distributions, bar graphs and pie charts. • Learn how to construct and interpret tabular summarization procedures for quantitative data such as: • Frequency and relative frequency distributions, cumulative frequency and cumulative relative frequency distributions. • Learn how to construct a histogram as a graphical summary of quantitative data. • Be able to use and interpret the exploratory data analysis technique of a stem-and-leaf display.	2	1	6	9
WEEK 3	**Descriptive Statistics: Numerical Methods** • Understand the purpose of measures of location. • Be able to compute the mean, median, mode, quartiles, and various percentiles. • Understand the purpose of measures of variability. • Be able to compute the range, interquartile range, variance, and standard deviation. • Understand how z scores are computed and how they are used as a measure of relative location of a data value. • Know how Chebyshev's theorem and the empirical rule can be used to determine the percentage of the data within a specified number of standard deviations from the mean. • Learn how to construct a box-n-whisker plot. • Be able to compute a weighted mean.	2	1	6	9

	WEEK 4	**Introduction to Probability** • Obtain an appreciation of the role probability information plays in the decision making process. • Understand probability as a numerical measure of the likelihood of occurrence. • Know the three methods commonly used for assigning probabilities and understand when they should be used. • Know how to use the laws that are available for computing the probabilities of events. • Understand how new information can be used to revise initial (prior) probability estimates using Bayes' theorem.	2	1	6	9
	WEEK 5	**Discrete Probability Distributions** • Understand the concepts of a random variable and a probability distribution. • Be able to distinguish between discrete and continuous random variables. • Be able to compute probabilities using a binomial probability distribution and be able to compute these probabilities using Excel's BINOMDIST function. • Be able to compute probabilities using a Poisson probability distribution and be able to compute these probabilities using Excel's POISSON function.	2	1	6	9

WEEK 6	**Continuous Probability Distributions** • Understand the difference between how probabilities are computed for discrete and continuous random variables. • Be able to compute probabilities using a normal probability distribution. Understand the role of the standard normal distribution in this process. • Be able to use tables for the standard normal probability distribution to compute both standard normal probabilities and probabilities for any normal distribution. • Given cumulative probability be able to compute the z-value and x-value that cuts off the corresponding area in the left tail of a normal distribution. • Be able to use Excel's NORMSDIST and NORMDIST functions to compute probabilities for the standard normal distribution and any normal distribution. Be able to use Excel's NORMSINV and NORMINV function to find z and x values corresponding to given cumulative probabilities	2	1	6	9

WEEK 7	**Sampling and Sampling Distributions**
	• Understand the importance of sampling and how results from samples can be used to provide estimates of population characteristics such as the population mean the population standard deviation and / or the population proportion.
	• Know what simple random sampling is and how simple random samples are selected.
	• Understand the concept of a sampling distribution.
	• Know the central limit theorem and the important role it plays in sampling.
	• Know the characteristics of the sampling distribution of the sample mean and the sampling distribution of the sample proportion.
	• Learn about a variety of sampling methods including stratified random sampling, cluster sampling, and systematic sampling.
	• Know the definition of the following terms:
	   ○ simple random sampling
	   ○ standard error
	   ○ sampling without replacement
	   ○ sampling with replacement
	   ○ sampling distribution
	   ○ point estimator
		2	1	6	9

WEEK 8	**Interval Estimation**
	• Be able to construct and interpret an interval estimate of a population mean and / or a population proportion.
	• Understand the concept of a sampling error.
	• Be able to use knowledge of a sampling distribution to make probability statements about the sampling error.
	• Understand and be able to compute the margin of error.
	• Learn about the t distribution and when it should be used in constructing an interval estimate for a population mean.
	• Know the definition of the following terms:
	   ○ confidence interval
	   ○ alpha
	   ○ sampling error
	   ○ confidence level
	   ○ margin of error
	   ○ degrees of freedom
		2	1	6	9

WEEK 9	**Hypothesis Testing** • Learn how to formulate and test hypotheses about a population mean and/or a population proportion. • Understand the types of errors possible when conducting a hypothesis test. • Be able to determine the probability of making various errors in hypothesis tests. • Know how to compute and interpret p-values	2	1	6	9
WEEK 10	**Comparisons Involving Means** • Be able to conduct hypothesis tests about the difference between the means of two populations. • Know the properties of the sampling distribution of the difference between two means • Be able to use the t distribution to conduct statistical inferences about the difference between the means of two normal populations with equal or un-equal variances. • Understand the concept and use of a pooled variance estimate. • Learn how to analyze the difference between the means of two populations when the samples are independent and when the samples are matched.	2	1	6	9
WEEK 11	**Comparisons Involving Proportions** • Be able to conduct hypothesis tests about the differe between the proportions of two populations. • Know the properties of the sampling distribution of difference between two proportions. • Be able to conduct a goodness of fit test when population is hypothesized to have a multinor probability distribution. • For a test of independence, be able to set up a continge table, determine the observed and expected frequend and determine if the two variables are independent. • Understand the role of the chi-square distribution conducting tests of goodness of fit and independence.	2	1	6	9

WEEK 12	**Regression Analysis**
	• Be able to compute and interpret covariance and correlation as measures of association between two variables.
	• Understand how regression analysis can be used to develop an equation that estimates mathematically how two variables are related.
	• Understand the differences between the regression model, the regression equation, and the estimated regression equation.
	• Know how to fit an estimated regression equation to a set of sample data based upon the least-squares method.
	• Be able to determine how good a fit is provided by the estimated regression equation and compute the sample correlation coefficient from the regression analysis output.
	• Understand the assumptions necessary for statistical inference and be able to test for a significant relationship.
	• Learn how to use a residual plot to make a judgement as to the validity of the regression assumptions, recognize outliers, and identify influential observations.
	• Know the definition of the following terms:
	   o independent and dependent variable
	   o simple linear regression
	   o regression model
	   o regression equation and estimated regression equation
	   o scatter diagram
	   o coefficient of determination
		2	1	6	9

WEEK 13	**Multiple Regression** • Understand the model. • Be able to estimate a multiple regression equation. • Be able to test the independent variables for significance. • Be able to interpret the coefficients • Learn how to use residual plots to make a judgment as to the validity of the regression assumptions, recognize outliers, and identify influential observations. • Understand the concept of multicollinearity • Be able to forecast (predict) y based on a new x vector. • Be able to use and interpret a qualitative independent variable.	2	1	6	9
WEEK 14	**Student Presentation and Seminar** • Individual and Group Presentation of term Project	2	1	6	9
	Total	28	14	84	126

19.	**Main references supporting the course**: Levin & Fox. (2007). *Elementary Statistics in Social Research: The Essentials*, Pearson, (2nd Edition)
	Additional references supporting the course: 1. Anderson, Sweeney, and Williams, *Essentials of Modern Business Statistics with Microsoft Excel*, (2007). Cengage Publishing, (3rd Edition) 2. Render, Stair & Hanna. (2009). *Quantitative Analysis for Management*. Pearson, (10th Edition) 3. Sharpe, De Veaux & Velleman. (2010). *Business Statistics*. Pearson, (1st Edition).
20.	**Other additional information** All related subject materials will be available to the students during the period of the course