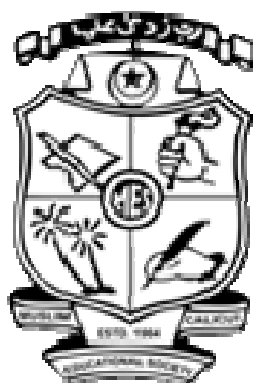# MES College Nedumkandam

Affiliated to Mahatma Gandhi University, Kottayam and Accredited by NAAC

Course Outcome- Statistics

For 2020-21 Academic year

Chembalam PO, Idukki District, Kerala

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B.Sc. Mathematics

Semester: 1

Course code	Course Title		Course Outcome
ST1CMT01	Descriptive Statistics	CO1	Ability to think logically
		CO2	Able to reason and recognize patterns and be able to make conjectures.
		CO3	Capable to create, read, and interpret graphs, charts, histograms, and diagrams.
		CO4	Can perform operations on matrices and apply them.
		CO5	Efficient to perform set - theoretic operations and understand their applicability to surveys.
		CO6	Proficient to collect, organize, and represent data, and be able to recognize and describe relationships.
		CO7	The student is able to understand and use the basic measure of central tendency.

Semester: 2

Course code	Course Title		Course Outcome
ST2CMT02	Probability Theory	CO1	Basic probability axioms and rules and the moments of discrete and continuous random variables as well as be familiar with common named discrete and continuous random variables.
		CO2	How to derive the probability density function of transformations of random variables and use these techniques to generate data from various distributions.
		CO3	How to calculate probabilities, and derive the marginal and conditional distributions of bivariate random variables.
		CO4	How to translate real-world problems into probability models.
		CO5	
		CO6	

Semester: 3

Course code	Course Title		Course Outcome
ST3CMT03	Probability Distributions	CO1	Learn how probabilities are distributed.
		CO2	Can calculate expected number from theoretical probability.
		CO3	Apply problem solving techniques to solving real world

Course code	Course Title		Course Outcome
			events.
		CO4	Understand the most common discrete and continuous probability distributions and their real life applications.
		CO5	
		CO6	
Semester: 4			
Course code	**Course Title**		**Course Outcome**
ST4CMT04	Statistical Inference	CO1	Formulate null and alternative hypotheses and apply small, large sample and non-parametric tests in real life problems.
		CO2	Perform Test of Hypothesis as well as calculate confidence interval for a population parameter for single sample and two sample cases. Understand the concept of p-values.
		CO3	Learn non-parametric test such as the Chi-Square test for Independence as well as Goodness of Fit.
		CO4	Ability to illustrate the concept of risk and how to reduce it.
		CO5	Calculate and interpret confidence intervals for proportion.

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Semester: 1

Course code	Course Title		Course Outcome	
ST1CMT01	Basic Statistics and Introductory Probability Theory	CO1	Ability to think logically	
		CO2	Able to reason and recognize patterns and be able to make conjectures.	
		CO3	Capable to create, read, and interpret graphs, charts, histograms, and diagrams.	
		CO4	Can perform operations on matrices and apply them.	
		CO5	Efficient to perform set - theoretic operations and understand their applicability to surveys.	
		CO6	Proficient to collect, organize, and represent data, and be able to recognize and describe relationships.	
		CO7	The student is able to understand and use the basic measure of central tendency	
		CO8	Find links between variables.	
		CO9	Able to use how correlation is used to identify relationship between variable	
		CO10	Describe how regression analysis is used to predict outcomes.	

Semester: 3

Course code	Course Title		Course Outcome
ST3CMT02	Advanced Statistical Methods	CO1	Understand the most common discrete and continuous probability distributions and their real life applications.
		CO2	Formulate null and alternative hypotheses and apply small, large sample and non-parametric tests in real life problems.
		CO3	Perform Test of Hypothesis as well as calculate confidence interval for a population parameter for single sample and two sample cases. Understand the concept of p-values.
		CO4	Learn non-parametric test such as the Chi-Square test for Independence as well as Goodness of Fit.

M.Sc. OPERATIONS RESEARCH AND COMPUTER APPLICATIONS. (M.Sc. OR & CA)

			Semester: 1
Course code	**Course Title**		**Course Outcome**
CE020101	Statistical Inference	CO1	Determine the probability that an observation will be above or below or between two points using standard normal distribution.
		CO2	Significance of sample in learning the characteristics of population.
		CO3	Determine the probability that the sample mean or sample proportion will be above or below or between two points using standard normal distribution.
		CO4	Capable to supervise hypothesis testing and the test procedure to make conclusion about the parameter of the population.
		CO5	Comprehend the general idea of Analysis of Variance and its application in real life problems.
		CO6	Comparison between parametric and non-parametric methods and characteristics of chi –square distribution.
Course code	**Course Title**		**Course Outcome**
CE020102	Linear Programming and Simulation	CO1	A clear awareness of the concept of simplex and geometric interpretation using convex sets.
		CO2	A concrete understanding of the basic concepts of Linear Programming Problem and analyze the foundation for the development of the general simplex algorithm.
		CO3	To illustrate the use of LPP in the real applications and are formulated and solved using Solver. Economic interpretation of sensitivity analysis.
		CO4	Ability to find out the shipping schedule that minimizes the total shipping cost while satisfying supply and demand.
		CO5	Expertise the concept of computerized imitation of the random behavior of a system for the purpose of estimating its measures of performance.
		CO6	
Course code	**Course Title**		**Course Outcome**
CE020103	Decision Analysis	CO1	Importance of decision making process in business.
		CO2	The concept of posterior probability using Bayesian analysis.
		CO3	Make decisions under various decision making environments.
		CO4	Determine the expected value of perfect information, expected opportunity loss and expected monetary value associated with any decision.
Course code	**Course Title**		**Course Outcome**

Course code	Course Title		Course Outcome
CE020104	Introduction to Operating Systems	CO1	Fundamental concepts of systems software and functions of operating systems as a resource manager
		CO2	Strategies for constrained resource allocation and process scheduling
		CO3	Memory and I/O Management techniques
		CO4	Salient features of popular operating systems
Course code	**Course Title**		**Course Outcome**
CE020105	Java Programming	CO1	Let students install and work with JDK, also make them aware the use of java doc.
		CO2	Practice basic data types, operators and control structures in Java
		CO3	Practice basic handling of classes and objects in Java
		CO4	Introduce the following selected APIs: I/O, Strings, Threads, AWT, Applet, and Networking
		CO5	Idea to approach and use a new package
Semester: 2			
Course code	**Course Title**		**Course Outcome**
CE020201	Non Linear programming	CO1	Solve optimization problem in nonlinear programming using mathematical tools.
		CO2	The distinction between the mathematical tools and the tools available in OR in solving nonlinear problems.
		CO3	Provide a conceptual background of solving a particular class of a nonlinear programming known as unconstrained nonlinear programming.
		CO4	Provide a conceptual background of solving a particular class of a nonlinear programming known as constrained nonlinear programming.
		CO5	Produce some procedures to solve some of the complicated nonlinear programming such as quadratic programming using different methods.
Course code	**Course Title**		**Course Outcome**
CE020202	Queuing theory and statistical forcasting	CO1	Distinguish between Poisson process and the exponential random variable and apply this knowledge to solve problems involving memory less processes.
		CO2	Understand various components of a queuing system and description of each of them.
		CO3	Characterize the concept of time series and its application in statistical forecasting.
		CO4	Role of regression analysis in statistical forecasting.
		CO5	Comparison between different forecasting techniques and select appropriate model in real life situations.
Course code	**Course Title**		**Course Outcome**
CE020203	Data base management system	CO1	Be aware of basic concepts of data bases and data base management systems.
		CO2	Be aware of concepts of relational data bases.

Course code	Course Title		Course Outcome
		CO3	Know to normalize relational data bases.
		CO4	Skilled in using relational algebra and relational calculus.
		CO5	Develop skills to write database queries.
Course code	**Course Title**		**Course Outcome**
CE020204	Linux administration	CO1	To gain knowledge on the basic Linux commands.
		CO2	To have clear understanding in open source software
Course code	**Course Title**		**Course Outcome**
CE020205	python programming	CO1	Understand the concepts of python programming
		CO2	To improve the programming skills of students by object oriented concepts
		CO3	Create new GUI based programming to solve industry standard problems.
		CO4	To extend programming to find solutions to real world problems using libraries
		CO5	

		Semester: 3	
Course code	**Course Title**		**Course Outcome**
CE020301	Replacement, Reliability and Network Models	CO1	Ability to apply replacement policy for items whose efficiency deteriorates with time and for items that fail completely.
		CO2	Realize the need to study replacement and maintenance analysis techniques.
		CO3	Understand the importance of using PERT and CPM techniques for project management.
		CO4	To know the main difference between PERT and CPM network techniques.
		CO5	Construct network diagrams with single and three time estimates of activities of involved in a project.
Course code	**Course Title**		**Course Outcome**
CE020302	Inventory Theory and Dynamic Programming	CO1	To understand the meaning of inventory control as well as various forms and functional role of inventory.
		CO2	Calculate the economic order quantity for minimizing total inventory cost.
		CO3	Use various selective inventory control techniques to classify inventory items into broad categories.
		CO4	To learn how to control inventory costs and applications of Dynamic programming.

Course code	Course Title		Course Outcome
		CO5	Make distinction between linear programming and dynamic programming approaches for solving a problem.
		CO6	Make sense of various dynamic programming models and their applications in solving a decision-problem
Course code	**Course Title**		**Course Outcome**
CE020303	Software Engineering UML & Case Study	CO1	Understand the importance of basic processes in software Development life cycle.
		CO2	Understand the various activities incorporate with different models and know their Significance.
		CO3	Familiarize the requirements in engineering and systematic approach in classical Software design and development techniques.
		CO4	Familiarize with various software testing techniques and tools.
Course code	**Course Title**		**Course Outcome**
CE020304	Data analytics using Python	CO1	To learn the basics of the python programming environment.
		CO2	The course will introduce data manipulation and cleaning techniques using python data science library.
		CO3	By the end of this course, students will be able to take tabular data, clean it, manipulate it, and run basic inferential statistical analyses.
Semester: 4			
Course code	**Course Title**		**Course Outcome**
CE020401	Advanced Reliability Theory	CO1	Ability to apply replacement policy for items whose efficiency deteriorates with time and for items that fail completely.
		CO2	Realize the need to study replacement and maintenance analysis techniques.
		CO3	How to perform maintenance in a finite time span and failure detection.
		CO4	To apply recovery technique for computer system
		CO5	Understand reliability complexity and service reliability theory are theoretical proposed, and optimization in management science using reliability theory
Course code	**Course Title**		**Course Outcome**
CE840401	Quality Control and Assurance	CO1	Identify the elements that are part of the quality measuring process in the industry
		CO2	Understand and calculate the correction and uncertainty parameter as a result an instrument calibration
		CO3	Explain the regulation and the phases of quality system certification process
		CO4	Able to calculate, analyze and interpret quality costs

Course code	Course Title		Course Outcome	
		CO5	Distinguish usage areas of control charts	
		CO6	Calculate and interpret process capability index.	
Course code	**Course Title**		**Course Outcome**	
CE840402	Cyber Security	CO1	To familiarize various types of cyber-attacks and cyber-crimes.	
		CO2	To give an overview of the cyber laws	
		CO3	To study the defensive techniques against these attacks	
Course code	**Course Title**		**Course Outcome**	
CE840403	R-Programming	CO1	Master the use of the R interactive environment	
		CO2	Expand R by installing R packages	
		CO3	Explore and understand how to use the R documentation	
		CO4	Read Structured Data into R from various sources	
		CO5	Understand the different data types in R	
		CO6	Understand the different data structures in R	