K to 12 BASIC EDUCATION CURRICULUM
SENIOR HIGH SCHOOL – CORE SUBJECT

Grade: 11/12
Core Subject Title: Statistics and Probability

No. of Hours/Semester: 80 hours/semester
Prerequisite (if needed):

Core Subject Description: At the end of the course, the students must know how to find the mean and variance of a random variable, to apply sampling techniques and distributions, to estimate population mean and proportion, to perform hypothesis testing on population mean and proportion, and to perform correlation and regression analyses on real-life problems.

CONTENT	CONTENT STANDARDS	PERFORMANCE STANDARDS	LEARNING COMPETENCIES	CODE
Random Variables and Probability Distributions	The learner demonstrates understanding of key concepts of random variables and probability distributions.	The learner is able to apply an appropriate random variable for a given real-life problem (such as in decision making and games of chance).	*The learner …* 1. illustrates a random variable (discrete and continuous).	**M11/12SP-IIIa-1**
			2. distinguishes between a discrete and a continuous random variable.	**M11/12SP-IIIa-2**
			3. finds the possible values of a random variable.	**M11/12SP-IIIa-3**
			4. illustrates a probability distribution for a discrete random variable and its properties.	**M11/12SP-IIIa-4**
			5. constructs the probability mass function of a discrete random variable and its corresponding histogram.	**M11/12SP-IIIa-5**
			6. computes probabilities corresponding to a given random variable.	**M11/12SP-IIIa-6**
			7. illustrates the mean and variance of a discrete random variable.	**M11/12SP-IIIb-1**
			8. calculates the mean and the variance of a discrete random variable.	**M11/12SP-IIIb-2**
			9. interprets the mean and the variance of a discrete random variable.	**M11/12SP-IIIb-3**
			10. solves problems involving mean and variance of probability distributions.	**M11/12SP-IIIb-4**
Normal Distribution	The learner demonstrates understanding of key concepts of normal probability distribution.	The learner is able to accurately formulate and solve real-life problems in different disciplines	*The learner …* 11. illustrates a normal random variable and its characteristics.	**M11/12SP-IIIc-1**
			12. constructs a normal curve.	**M11/12SP-IIIc-2**

CONTENT	CONTENT STANDARDS	PERFORMANCE STANDARDS	LEARNING COMPETENCIES	CODE
		involving normal distribution.	13. identifies regions under the normal curve corresponding to different standard normal values.	**M11/12SP-IIIc-3**
			14. converts a normal random variable to a standard normal variable and vice versa.	**M11/12SP-IIIc-4**
			15. computes probabilities and percentiles using the standard normal table.	**M11/12SP-IIIc-d-1**
Sampling and Sampling Distributions	The learner demonstrates understanding of key concepts of sampling and sampling distributions of the sample mean.	The learner is able to apply suitable sampling and sampling distributions of the sample mean to solve real-life problems in different disciplines.	*The learner …* 1. illustrates random sampling.	**M11/12SP-IIId-2**
			2. distinguishes between parameter and statistic.	**M11/12SP-IIId-3**
			3. identifies sampling distributions of statistics (sample mean).	**M11/12SP-IIId-4**
			4. finds the mean and variance of the sampling distribution of the sample mean.	**M11/12SP-IIId-5**
			5. defines the sampling distribution of the sample mean for normal population when the variance is: (a) known (b) unknown	**M11/12SP-IIIe-1**
			6. illustrates the Central Limit Theorem.	**M11/12SP-IIIe-2**
			7. defines the sampling distribution of the sample mean using the Central Limit Theorem.	**M11/12SP-III-3**
			8. solves problems involving sampling distributions of the sample mean.	**M11SP-IIIe-f-1**
Estimation of Parameters	The learner demonstrates understanding of key concepts of estimation of population mean and	The learner is able to estimate the population mean and population proportion to make sound	*The learner …* 1. illustrates point and interval estimations.	**M11/12SP-IIIf-2**
			2. distinguishes between point and interval estimation.	**M11/12SP-IIIf-3**

CONTENT	CONTENT STANDARDS	PERFORMANCE STANDARDS	LEARNING COMPETENCIES	CODE
	population proportion.	inferences in real-life problems in different disciplines.	3. identifies point estimator for the population mean.	**M11/12SP-IIIf-4**
			4. computes for the point estimate of the population mean.	**M11/12SP-IIIf-5**
			5. identifies the appropriate form of the confidence interval estimator for the population mean when: (a) the population variance is known, (b) the population variance is unknown, and (c) the Central Limit Theorem is to be used.	**M11/12SP-IIIg-1**
			9. illustrates the t-distribution.	**M11/12SP-IIIg-2**
			10. constructs a t-distribution.	**M11/12SP-IIIg-3**
			11. identifies regions under the t-distribution corresponding to different t-values.	**M11/12SP-IIIg-4**
			11. identifies percentiles using the t-table.	**M11/12SP-IIIg-5**
			12. computes for the confidence interval estimate based on the appropriate form of the estimator for the population mean.	**M11/12SP-IIIh-1**
			13. solves problems involving confidence interval estimation of the population mean.	**M11/12SP-IIIh-2**
			14. draws conclusion about the population mean based on its confidence interval estimate.	**M11/12SP-IIIh-3**
			15. identifies point estimator for the population proportion.	**M11/12SP-IIIi-1**
			16. computes for the point estimate of the population proportion.	**M11/12SP-IIIi-2**
			17. identifies the appropriate form of the confidence interval estimator for the population proportion based on the Central Limit Theorem.	**M11/12SP-IIIi-3**
			18. computes for the confidence interval estimate of the population proportion.	**M11/12SP-IIIi-4**
			19. solves problems involving confidence interval estimation of the population proportion.	**M11/12SP-IIIi-5**

CONTENT	CONTENT STANDARDS	PERFORMANCE STANDARDS	LEARNING COMPETENCIES	CODE
			20. draws conclusion about the population proportion based on its confidence interval estimate	**M11/12SP-IIIi-6**
			21. identifies the length of a confidence interval.	**M11/12SP-IIIj-1**
			22. computes for the length of the confidence interval.	**M11/12SP-IIIj-2**
			23. computes for an appropriate sample size using the length of the interval.	**M11/12SP-IIIj-3**
			24. solves problems involving sample size determination.	**M11/12SP-IIIj-4**
Tests of Hypothesis	The learner demonstrates understanding of key concepts of tests of hypotheses on the population mean and population proportion.	The learner is able to perform appropriate tests of hypotheses involving the population mean and population proportion to make inferences in real-life problems in different disciplines.	*The learner …* 1. illustrates: (a) null hypothesis (b) alternative hypothesis (c) level of significance (d) rejection region; and (e) types of errors in hypothesis testing.	**M11/12SP-IVa-1**
			2. calculates the probabilities of committing a Type I and Type II error.	**M11/12SP-IVa-2**
			3. identifies the parameter to be tested given a real-life problem.	**M11/12SP-IVa-3**
			4. formulates the appropriate null and alternative hypotheses on a population mean.	**M11/12SP-IVb-1**
			5. identifies the appropriate form of the test-statistic when: (a) the population variance is assumed to be known (b) the population variance is assumed to be unknown; and (c) the Central Limit Theorem is to be used.	**M11/12SP-IVb-2**

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			6. identifies the appropriate rejection region for a given level of significance when: (a) the population variance is assumed to be known (b) the population variance is assumed to be unknown; and (c) the Central Limit Theorem is to be used.	**M11/12SP-IVc-1**
			7. computes for the test-statistic value (population mean).	**M11/12SP-IVd-1**
			8. draws conclusion about the population mean based on the test-statistic value and the rejection region.	**M11/12SP-IVd-2**
			9. solves problems involving test of hypothesis on the population mean.	**M11/12SP-IVe-1**
			10. formulates the appropriate null and alternative hypotheses on a population proportion.	**M11/12SP-IVe-2**
			11. identifies the appropriate form of the test-statistic when the Central Limit Theorem is to be used.	**M11/12SP-IVe-3**
			12. identifies the appropriate rejection region for a given level of significance when the Central Limit Theorem is to be used.	**M11/12SP-IVe-4**
			13. computes for the test-statistic value (population proportion).	**M11/12SP-IVf-1**
			14. draws conclusion about the population proportion based on the test-statistic value and the rejection region.	**M11/12SP-IVf-2**
			15. solves problems involving test of hypothesis on the population proportion.	**M11/12SP-IVf-g-1**

CONTENT	CONTENT STANDARDS	PERFORMANCE STANDARDS	LEARNING COMPETENCIES	CODE
ENRICHMENT **Correlation and Regression Analyses**	The learner demonstrates understanding of key concepts of correlation and regression analyses.	The learner is able to perform correlation and regression analyses on real-life problems in different disciplines.	1. illustrates the nature of bivariate data.	**M11/12SP-IVg-2**
			2. constructs a scatter plot.	**M11/12SP-IVg-3**
			3. describes shape (form), trend (direction), and variation (strength) based on a scatter plot.	**M11/12SP-IVg-4**
			4. estimates strength of association between the variables based on a scatter plot.	**M11/12SP-IVh-1**
			5. calculates the Pearson's sample correlation coefficient.	**M11/12SP-IVh-2**
			6. solves problems involving correlation analysis.	**M11/12SP-IVh-3**
			7. identifies the independent and dependent variables.	**M11/12SP-IVi-1**
			8. draws the best-fit line on a scatter plot.	**M11/12SP-IVi-2**
			9. calculates the slope and y-intercept of the regression line.	**M11/12SP-IVi-3**
			10. interprets the calculated slope and y-intercept of the regression line.	**M11/12SP-IVi-4**
			11. predicts the value of the dependent variable given the value of the independent variable.	**M11/12SP-IVj-1**
			12. solves problems involving regression analysis.	**M11/12SP-IVj-2**

Code Book Legend

Sample: M11/12SP-IIIa-1

LEGEND		SAMPLE	
First Entry	Learning Area and Strand/ Subject or Specialization	Mathematics	**M11/12**
	Grade Level	Grade 11/12	
Uppercase Letter/s	Domain/Content/ Component/ Topic	Statistics and Probability	**SP**
			-
Roman Numeral *Zero if no specific quarter*	Quarter	Third Quarter	**III**
Lowercase Letter/s *Put a hyphen (-) in between letters to indicate more than a specific week*	Week	Week one	**a**
			-
Arabic Number	Competency	illustrates a random variable (discrete and continuous)	**1**