Course Descriptor
<Math204-Probability and Statistics>

Proposed Academic Year	2021-2022	**Last Reviewed Academic Year**	2020-2021
Course Code	Math 204	**Course Title**	Probability and Statistics
Credit hours	3	**Level of study**	Year3
College / Centre	Applied and Health Science	**Department**	Basic Science
Co-requisites	Nil	**Pre-requisites**	Math102

1. COURSE OUTLINE

Students of Probability and Statistics will develop the skills needed to be successful in subsequent courses in college of Engineering. These skills will enhance their ability to do research, by introducing the statistical methods of collecting, representing, analyzing data and testing Hypothesis. These statistics also help in a better decision making. Students will continue to use the web-based course supplement to access course material and communicate with classmates and the instructor. They will enhance teamwork and leadership skills by working in groups to achieve the solutions to designate exercises.

2. AIMS

This course is to lay a firm foundation for students in Probability and Statistics. The course will introduce students to the Basic Concepts and rules of Probability and Statistics, Descriptive and Inferential Statistics, Discrete and continuous random variables and probability distributions, point estimation, confidence Intervals based on a single sample, Test of hypotheses based on a single sample, regression analysis and finding equation of linear regression.

3. LEARNING OUTCOMES, TEACHING, LEARNING and ASSESSMENT METHODS

Learning Outcomes ***(Definitive)*** Upon successful completion of this course, students will be able to**:**	**Teaching and Learning methods** ***(Indicative)***	**Assessment** ***(Indicative)***
1. Analyze the Basic Concepts and rules of Probability and Statistics including Frequency Distribution, Graphs, measures, counting rule and Baye's theorem	Online Lectures and Discussion sessions, distance presentation, pre-designed videos, google research, moodle and open educational resources	Participation, Quiz I, Midterm exam Final exam
2. Identify properties of Discrete and continuous probability distributions including Binomial Distribution, Poisson Distribution, Normal	Online Lectures and Discussion sessions, distance presentation, pre-designed videos, google research, moodle and open educational resources	Participation, Quiz 1, Midterm exam and Final exam

	Distribution, Standard Norma Distribution		
3.	Use inferential statistics to find confidence interval for the population mean and to test hypothesis for the population mean	Online Lectures and Discussion sessions, distance presentation, pre-designed videos, google research, moodle and open educational resources	Participation, Quiz 2, Midterm exam, and Final exam
4.	analyze Correlation and Regression	Online Lectures and Discussion sessions, distance presentation, pre-designed videos, google research, moodle and open educational resources	Participation, Assignment, and Final exam

4. ASSESSMENT WEIGHTING

Assessment	Percentage of final mark (%)
Quiz 1	10%
Quiz 2	10%
Midterm Exam	20%
Assignment	10%
Participation	10%
Final exam	40%
TOTAL	**100%**

5. ACHIEVING A PASS

Students will achieve 3 credit hours for this course by achieving a minimum overall score of 50% and attending at least 80% of class lectures.

6. COURSE CONTENT (Indicative)

Lecture topic
Overview and basic concept of probability and statistics
frequency distributions and graphs
Measures of central tendency and dispersion
Basic concept of probability and axioms: Probability and counting rules: Sample space and probability, Multiplication Rules and Conditional Probability
Baye's theorem and applications, Exercises
Discrete random variables and probability distributions, Expected value
Binomial and Poisson Distributions
Continuous random variables and probability distributions, PDF, CDF and Expected value
The Normal Distribution: Properties, Standard Normal, applications, Central Limit Theorem.
point estimation
Statistical Intervals based on a single sample
Test of hypotheses based on a single sample
Analyze regression and find linear regression equation.

Application of probability and statistics	
TOTAL HOURS	**45**
Plus **RECOMMENDED INDEPENDENT STUDY HOURS**	**0**
TOTAL COURSE HOURS	**45**

7. RECOMMENDED REFERENCES

Textbook: Probability and Statistics for Engineers, by Miller and Freund, 8th edition, ISBN No. 9780321694980, Pearson Education Publications.

Reference: Elementary Statistics, by Allan Bluman(Author), 9th Edition, ISBN-13: 978-0078136337ISBN-10: 0078136334.

Reference: Probability and Statistics for Engineers and science, by Jay L. Devore, 8th edition, ISBN-13: 978-0-538-73352-6, ISBN-10: 0-538-73352-7.

Reference (OER):
https://open.bccampus.ca/browse-our-collection/find-open-textbooks/?uuid=1a2a3483-52e3-47b0-b9d9-a4934aceec4d&contributor=&keyword=&subject=