Part A – Course Outline

Course description:
3 credits. Descriptive statistics, events and axioms of probability, Conditional probability, independence and the Bayes' Rule. Random variables and probability distribution,Mathematical expectation, Some discrete probability distributions, Some continuous probability distributions, Sampling distributions, Hypothesis testing, Simple linear regression and correlation
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Prerequisites:

- MATB110/MATH 101

Textbookrequired

1. *Probability and Statistics for Engineers and Scientists*, 8ᵗʰ edition or 9ᵗʰ edition. By R.E. Walpole, R.H. Myers, S.L.Meyers, and K. Ye (Prentice Hall)
2. *A Brief Course in Business Statistics*, 2nd Edition, by William Mendenhall, Robert J. Beaver and Barbara M. Beaver. Duxbury, ISBN: 0534381308.

References:
- *Statistics for Engineering and the Sciences*, 5th Ed., Mendenhall & Sincich, Prentice Hall
- *Introduction to Probability and Statistics*, 4th Ed., Milton & Arnold, McGraw-Hill

Course objectives:

1. Understand the fundamental theories and principles of probability and statistics.
2. Perform basic calculations for probability and statistical inference.
3. Be aware and appreciative of the importance of the usage of probability and statistics.
4. Possess the problem-solving skills and confidence necessary to educate themselves continually throughout their career.

Class/practice schedule:
3 lecture hoursand 1practice hour per week (13 weeks)

Course assessment:
The assessment of course objectives will be determined on the basis of:
- Homework, Midterm exam and Final exam

Course outline

Week	Course content	Homework	
1-3	**Introduction to Statistics** • Decision-Making Under Uncertainty • Probability v.s. Inferential Statistics **Probability Theory** • Addition Rule and Mutually Exclusive Events • Multiplication Rule and Statistically Independent Events • Conditional Probability and Bayes' Rule **Random Variables and Probability Distribution** • Discrete and Continuous Probability Distributions • Joint Probability Distributions	1-2	
4-6	**Mathematical Expectation** • Mean of Random Variable • Variance and Covariance of Random Variables • Chebyshev's Theorem **Some Discrete Probability Distribution** • Binomial Distribution • Hyper-geometric Distribution • Poisson Distribution	3,4	
7-8	**Some continuous Probability Distribution** • Normal Distribution • Area Under the Normal Curve • Normal Approximation to the Binomial • Chi-squared Distribution	5	
9	**Midterm examination**		
10	**Sampling Distribution** • Central Limit Theorem • Sampling Distribution of Means and Variances • t-Distribution • F-Distribution	6	
11-13	**One- and Two-sample Tests of Hypothesis** • One and Two-Tailed Tests • One- and Two-Sample Tests on Means • One- and Two-Sample Tests on Proportions • One- and Two-Sample Tests on Variances	7	
14	**Simple Linear Regression and Correlation**	8	
	Final Examination		

Part B General Course Information and Policies

Lecture

Lihu,XU Office: E11 3075 Office Phone Number: 83974429 Email: lihuxu@umac.mo	**Time/Venue:** Mon./Thur. 17:30– 18:45 E11 G015

Practice

Sihang GENG Email: mb35424@umac.mo	
Wed. 15:00–16:00, E11 G015	

Evaluation:

Attendance/Assignments   20%
Quizzes/Tests   30%
Final Exam   50%

Grading System:
The credit is earned by the achievement of a grade from 'A' to 'D'; 'F' carries zero credit.
Grades are awarded according to the following system:

Letter Grades	Grade Points	Percentage
A	4.0 (Excellent)	93-100
A-	3.7 (Verygood)	88-92
B+	3.3	83-87
B	3.0 (Good)	78-82
B-	2.7	73-77
C+	2.3	68-72
C	2.0 (Average)	63-67
C-	1.7	58-62
D+	1.3	53-57
D	1.0 (Pass)	50-52
F	0 (Fail)	Below 50

Comment:
All students are expected to attend all lectures and examinations. Classroom attendance will contribute numericallyto the final course grade, active class participation is also expected of all students and may help to boost up the course grade in those "borderline cases" between failing and passing. It is your responsibility to read the relevant chapters in the text before and after class and to ask questions during class discussion. In order to be successful in this course, you should get as much practice as possible in solving problems outside the class hours. This must be done on a timely and regular basis, as a good understanding of the material covered in any particular section of this course depends heavily on an equally good understanding of the material covered in previous sections.

Homework Policy:

All homeworks must be an individual effort unless specifically noted. Your work must be neat, with answers clearly noted and supporting information provided. Late homework will not be accepted in general.

Note:

- Cheating in any form will not be tolerated. STUDENTS WHO CHEAT ON ANY ASSIGNMENT, OR DURING ANY QUIZ OR EXAMINATION WILL BE ASSIGNED A FAILING GRADE FOR THE COURSE AND MAY RESULT IN SUSPENSION OR EXPULSION FROM THE UNIVERSITY. Therefore avoid all appearance of improper behavior. Students who witness cheating should report the incident to the instructor as soon as possible.

- Photocopies of the textbooks are illegal and are violation of the Macao copyright laws.

- Check UMMoodle (https://ummoodle.umac.mo/) for announcement, homework and lectures.