

Course Number

UNIVERSITY OF SOUTHERN MINDANAO

Course Syllabus for STATISTICAL THEORY

Math 313 Rev. No. Ø Page 1 of 10



EFFECTIVE DATE	REV. NO.	REVISION TYPE	CHANGE DESCRIPTION	PAGE AFFECTED	ORIGINATOR
August 8, 2022	Ø	New	Newly established syllabus for BS Applied Mathematics program for use. Flexible mode of instructions is adapted. Suggested readings with corresponding pages URL and supplemental materials are included.	AFFECTED	Anna Jean S. Garcia/Daryl Mae Mamon
	a.e.				
	All y Same		ELECTRONICALLY RELEASED		
			2025.07.09		

INSTITUTIONAL POLICIES

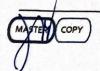
Author:	Reviewer:	Verifier:	Validator:	Final Approver:	DCC USE ONLY
ANNA JEAN S. GARCIAN DARYL MAE C. MAMON Course Developer	JENEATH LICAROS, Ph.D Department Curriculum Coordinator	LEONARD M. PALETA, PhD Department Chairperson	JONALD L. PIMENTEL, PhD Dean	GEOFFRAY R. ATOK, PhD Vice President for Academic	
Date: 2022-08-0)	Date: 2022.08.02	Date: 2022 · 08 . 03	Date: 2022-08.04	Affairs Date: 2022-09. 05	MASTER COPY 2022 - 08-11





		UNIVERSI	TY OF SOUTHERN MINDANAO			
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3	INSTITUTIONAL POLICIES
Vision	Quality and relevant education for its clientele to be globally competitive, culture sensitive and morally responsive human resources for sustainable development.
Mission	Help accelerate socio-economic development ^{Mz} , promote harmony property the diverse cultures ^{M2} and improve quality of life ^{M3} through instruction, research, extension and resource generation in Southern Philippines.
Core Values	G-Goodness, R-Responsiveness, E-Excellence, A-Assertion of Circuit and T-Truth
USM Quality Policy Statement	The University of Southern Mindanao, as a premier up to mity, is committed to provide quality instruction, research development and extension services and resource generation that exceed stakeholders' expectations force in the management of continual improvement efforts on the following initiatives. 1. Establish key result areas and performance indicators across all mandated functions; 2. Implement quality educational program 3. Guarantee competent educational service providers; 4. Spearhead need-based research outputs for commercialization, publication, patenting, and develop technologies for food security, climate change mitigation and improvement in the quality of lift; 5. Facilitate transfer of technologies perferated from research to the community for sustainable development; 6. Strengthen relationship with the holders; 7. Sustain good governance and control requirements.
als of the lege	1. The College of Science and Mathematics of the University of Southern Mindanao is committed to the comprehensive preparation of the next generation of scientists and mathematicians in this part of the country. 2. The College supplies a condition in which faculty can advance and support high-quality research programs in which students can collaborate and contribute to new knowledge that improves quality of life. 3. The College aspires to be the center of excellence in Science and Mathematics in order to serve diverse students, preparing them for their future careers in line with the vision and mission of the University. 4. The College serves the community and the industry as an impartial source of quality graduates in Science and Mathematics that provides education, literacy, innovation and solution generation to challenges.





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<u> </u>	INSTITUTIONAL POLICIES .
	The Department of Mathematics and Statistics aims to:
	1. produce students with mastery in the core areas of mathematics and statistics, including algebra, analysis, and geometry;
Department	2. develop students skills in pattern recognition, generalization, abstraction, critical analysis, synthesis, problem-solving and rigorous arguments
Objectives	other disciplines; and
	4. develop students' skills in creating and evaluating mathematica conjectures and arguments, and in validating their own mathematical thinking.

		PROGRAM INFORMATION		3.56	
Degree Program	Bachelor of Science in Applied Mathematics	CHED CMO Reference	408 Series 2017	BOR Approval	BOR Res. No. 24, s
					2020

Course Title	Statistical Theory	and the state of t			
Course Number	MATH 313	Company Compan	Curriculum Component	Major Course	
Credit (Unit)	3	LECTI SE (Unit-Hours)	3-3		
Prerequisites Fundamental Concepts of Mathematics, Calculus III		Co- equisites	None	LABORATORY (Unit-Hours) Year Level/Semester Offered	o-o 3 rd Year / First Semester
Course Description	This course is an introduction t	o statistics and data analysis. It coint and interval estimation, and	covers the following: reasons for do	oing Statistics, collection, summarization	on and presentation of data,
aculty in charge		The state of the community and	a hypothesis testing.		erene () same college recepts alleged out on the life back same
onsultation Hours			A CONTROL OF THE CONT	The second secon	





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In 3-5 years, the graduates of USM shall: PROGRAM EDUCATIONAL OBJECTIVES (PEO)	N. C.	IISSION	
	M1	M ₂	M3
PEO 1 Provide leadership in various development programs both public and private PEO 2 Equip with technical concentral and but and private	✓		in the second
PEO 2 Equip with technical, conceptual and human resource skills PUrsue entrepreneurial activities	<u> </u>		1
PEO 4 Able to adapt to diverse culture			1
PEO 5 Pursue advanced studies in emerging related fields	A contract of the contraction of the contract	1	
NOTE: The PEO's are based on the professional, industry, local, national and intermedian land		1	1

NOTE: The PEO's are based on the professional, industry, local, national and international needs and requirer ents of the program identified through consultation with constituents and stakeholders.

PROGRAM OUTCOMES (***) Upon graduation, the University of Southern Mindanao BSAM students must be alle to:	PE01	PE02	PE03	PE04	PEOS	6 6	PE08	E09	PE010
a) Articulate and discuss the latest development in the specific field of purious					100 - 110 - 100				_
D) Effectively communicate orally and in writing using both English and Six lines.		1							
c) Work effectively and independently in multidisciplinary and multi-sult palteams		1			1				
d) Act in recognition of professional, social and ethical responsibility		ale in	1	1					
e) Preserve and promote "Filipino historical and cultural heritag	1								
Participate in the generation of new knowledge in research and evelopment projects.		(Albert	177.00	1	200		- Farmer	7,745	
Demonstrate broad and coherent knowledge and undertinding in the country of the control of		1							
Demonstrate broad and coherent knowledge and undest inding in the core areas of physical and natural sciences. Apply critical and problem solving skills using the scientific method.		1							
Interpret relevant scientific data and male in the scient. Comethod.		1	-			+			
) Interpret relevant scientific data and make judgement, that include reflection on relevant scientific and ethical issues.	1	1			1		1		
Carry out pasic matriematical and statistical computations and use appropriate technologies in the computations and use appropriate technologies.	·	7	- 4		•	- 3			
y commonicate information, ideas, problems, and solutions, both orally and in writing to other activities to	+-	000	2000		•				
Library Country of the Country of th	~	1	1	1					
.) Design and perform safe and responsible techniques and procedures in laboratory or field practices.		1	1	1	1			My const	
Critically evaluate input from others.		1							
Appreciate the limitations and implications of science in everyday life.		1		1					
Commit to the integrity of data.		1				+			
Gain mastery in the cores areas of mathematics: algebra, analysis, and geometry.		1		1	1			-	
Demonstrate skills in pattern recognition and living demonstrate skills in pattern recognition and living demonstrate skills in pattern recognition.		1		\dashv	./	9.5			
Demonstrate skills in pattern recognition, generaliztion, abstraction, critical analysis, synthesis, problem-solving and rigorous argument. Develop an enhanced perception of the vitality and importance of mathematics in the	-	1		_	1				
Develop an enhanced perception of the vitality and importance of mathematics in the modern world including inter-relationships within math and its connection to other disciplines.	-		66						
the commence of the disciplines.		1		1					





			UNIVERSI	TY OF SOUTHERN MINDANAO					
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t.) Appreciate	the concept and role of p	proof and reasoning a	nd demonstrate knowledge in re	eading and writing mathematical proofs.		1		7	
- if it die die	evaluate mathematical co	niectures and argume	ents and validate their own mat	hematical thinking		1		1	The second second
v.) Communic	ate mathematical ideas o	orally and in writing us	ing clear and precise language.		1	1			

NOTE: Minimum PO's shall come from the PSG/CMO of the program if applicable. Other additional PO's may come from consultations with constituents and stakeholders.

	COURSE OUTCOMES (CO)	Poa	POP POP	2 2	POe	POf	Pog	PO I	Poj	Pok	<u>0</u>	Pom	o d	S S	Poq	Por	So	2 6	Š	Pow	Pox	PO 70
Upon	passing this course, the students must be able to: Course Alignment to Program Outcomes														ķ.							
CO 1	Demonstrate knowledge of the basic terms, concepts and procedures in statistics					ı																
° 2	Use appropriate methods of data collection and presentation;				Conc. No.	ı	ī	1							1	1		Ī	ī			
CO 3	Summarize data using different numerical measures					1	1	1		1	·C.	4			1	1		Ī	ı		0.1	
CO 4	Apply rules of probability in handling probability sampling distributions					ı	ī	ī		4.18					1	i		Desc.	ı			
CO 5	Make inferences about the mean and proportion of one indivo populations using sample information through estimation and hypothesis testing.				-Pence 6	ı	ī	Ī		1				ı	1	1			1			3 3
CO 6	Investigate the linear relationship between two variables by measuring the strength of association and obtaining a regression equation to describe the inlationship	V.		N/A	ÀC:	I	1	ı		ı				I	1	ī			ı	Total Control		
CO 7	Analyze data resulting from the conduct of experiments			0.50	, A	-1.	1	ı		ī				ı	1	1			1			
:08	Guard against misuses of statistics					ī			30	67%				I	1	Te			1			

[J]Introductory. This introduces the student to the Program Outcome (PO) [E] Enabling. This enables the student to attain the Program Outcome (PO)

[D]Demonstrative. This demonstrates the student's attainment of the Program Outcome (PO)





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Intended Learning Outcomes (ILO)			COURSE	LEARNING PLAN				
By the end of the learning experience*, students must be able to:	Aligned to CO:	Time Frame (Week)	(, 5)	Teaching & Learn Teaching Activities	ning Activities (TLA) Learning Activities	Learning Materials	Assessment Tasks (AT)	Suggested Readings
 1.1 Explain the vision, mission, UQPS of the University 1.2 Explain the goals and objectives of the college. 1.3 Explain the Program Educational Objectives, Students Outcomes, and Course Outcomes. 		1	Orientation on Classroom and University Policies as well as Grading System • Discussion on PEO, SO and CO	Orientation Lecture/Discussion	Reading; Assignment	Computer; Chalkboard	Recitation	[1] page 26, 32-33
 2.1 Discuss use of statistics in their field of study. 2.2 Advocate statistical data in making important decisions. 	CO1	1-2	I. Introduction of Stat. rics Description and his ory of statistical science Basic Concepts, Data and Variables Summer and and Factorial Notation.	Lecture/ Video Presentation/ Module	Reading Discussion Assignment Practice Activities VLE Tasks	Chalkboard Book PDF Workbook Laptop/PC	Quizzes Exams Practice Activities Reports/ Reflective paper	[2] page 75 [3] pages 17-20 [4] pages 1-2 [5] pages 2-6
3.1 Demonstrate sample selection using different sampling method. 3.2 Classify the sources and type of data gathered. 4.1 Present data by creating statistical	CO ₂ CO ₄	3	Il Collection and Sampling Methods of data collection Population and Sample Sampling Method Sample Size Determination	Lecture/ Video Presentation/ Module	Reading Discussion Assignment Practice Activities VLE Tasks	Chalkboard Book PDF Workbook Laptop/PC	Quizzes Exams Practice Activities Reports/ SUMMATIVE EXAM 1	[2] pages 10-23 [5] pages 10-15
tables and graphs such as frequency table, histogram and the likes and interpret them meaningfully. 2 Advocate the use of online statistical tools to present data in tables and graphs.	4		Frequency distribution, Histogram, Stem plot, Cross tabulation	Lecture/ Video Presentation/ Module	Reading Discussion Assignment Practice Activities VLE Tasks	Chalkboard Book PDF Workbook Laptop/PC	Quizzes Exams Practice Activities Reports/ SUMMATIVE EXAM 2	[2] page 77, 96- 101 [3] pages 38-45 [4] pages 2-5 [5] pages 19-31
L Discuss the different numerical	CO3	6-7	V. Numerical Measures of	Lecture/	Discussion	Chalkboard	Quizzes	[2] pages 77-9





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Intended Learning Outcomes (ILO)	Aligned	Tiles	COURSE	LEARNING PLAN				
students must be able to: measures of description	to CO:	Time Frame (Week)	(Topics)	Teaching & Learn Teaching Activities	ning Activities (TLA) Learning Activities	Learning Materials	Assessment Tasks (AT)	Suggested Readings
on summary statistics such as mean, standard deviation and the likes.	C0.4		 Description Measures of Central Tendency and Location Measures of Variation Measures of Skewness The Boxplot 	Video Presentation/ Module	Assignment Practice Activities VLE Tasks	Book PDF Workbook Laptop/PC	Exams Practice Activities Reports/ Reflective paper	[3] pages 23-37 [4] pages 5-15 [5] pages 36-56
 6.1 Discuss probability, its properties and its use in different field of study. 6.2 Demonstrate and cite the differences of the two rules in solving probability. All ILOs covered in Midterm		8	V. Probability Random experiments, sample spaces, eve its Properties of probability Addition and Multiplication Rule of Probability	Video Presentation/	Discussion Assignment Practice Activities VLE Tasks	Chalkboard Book PDF Workbook Laptop/PC	Quizzes Exams Practice Activities Reports/ SUMMATIVE	[3] pages 58-66 [4] pages 45-69 87-96 [5] pages 53-73
7.1 Understand the concept of random	CO ₄	9		MIC	OTERM EXAMINATION	NI .	EXAM ₃	
 variable 7.2 Discuss the concept of probability distributions and its types. 7.3 Discuss normal distribution and other common distributions and their actual application in day-to-day living. 	CO4	3	VI. Pobs bility Distributions Concept of random variable Siscrete and continuous Probability distributions Expected values The Normal Distributions Other common distributions	Lecture/ Video Presentation/ Module	Discussion Assignment Practice Activities VLE Tasks	Chalkboard Book PDF Workbook Laptop/PC	Quizzes Exams Practice Activities Reports/ Reflective paper	[2] pages 110- 121 [4] pages 114- 116, 132-136 [5] pages 82-8
3.1 Understand the concept of random variable 2.2 Discuss the importance of sampling distribution	CO4	11 V	The second of the second	Video Presentation/ Module	Discussion Assignment Practice Activities VLE Tasks	Chalkboard Book PDF Workbook Laptop/PC	Quizzes Exams Practice Activities Reports/ SUMMATIVE	[2] page 125



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Intended Learning Outcomes (ILO) By the end of the learning	Aligned	Time	COURSE	LEARNING PLAN				
By the end of the learning experience*, students must be able to: 9.1 Understand the concept of interval	to CO:	Frame (Week)	(Tapics)	Teaching & Leari Teaching Activities	ning Activities (TLA) Learning Activities	Learning Materials	Assessment Tasks (AT)	Suggested Readings
9.2 Discuss the procedures of constructing a confidence interval for one population mean and proportion.	CO ₅ CO ₇ CO8	12	 VIII. Estimation Basic concepts of estimation Confidence Interval for Population Mean Confidence Interval for Population Proportion 	Lecture/	Discussion Assignment Practice Activities VLE Tasks	Chalkboard Book PDF Workbook Laptop/PC	Quizzes Exams Practice Activities Reports/	Wedgings
 10.1 Understand the concept of hypothesis testing and its application to their field of study. 10.2 Discuss the procedures of establishing statistical hypotheses and the role of Type I and Type II error. 10.3 Use different statistical test for differences among the means of several groups. 10.4 Use online statistical tools to calculate and interpret numerical data. 	CO ₅ CO ₇ CO ₈	13-15	IX. Tests of Hypothes Basic concepts of Statistical Hypothesis Pesting Testing the Appothesis on the population mean Testing the hypothesis on the population proportion Itstilig the difference of two means Sesting the difference of two proportions Test of independence		Reading Discussion Assignment Practice Activities VLE Tasks	Chalkboard Book PDF Workbook Laptop/PC	EXAM 5 Quizzes Exams Practice Activities Reports/ SUMMATIVE EXAM 6	[2] pages 131 169 [3] pages 240 256, 307-317, 373-389, 438- 450,578-623 [4] pages 261 272,294-297, 322-334 [5] pages 125- 177
11.1Interpret the SLR model parameters 11.2Interpret and write effective reports about the statistical outputs of performing specific tasks. 11.3Use online statistical tools to calculate and interpret numerical data.	CO6 CO ₇ CO8	16-17		Lecture/ Video Presentation/ Module	Discussion Assignment Practice Activities VLE Tasks	Chalkboard Book PDF Workbook Laptop/PC	Quizzes Exams Practice Activities Reports/ Reflective paper	[2] pages 186 213
All ILOs covered in the Course any interaction, course, program, or other exp		18	Gaza, secondo de la como	-	INAL EXAMINATION			

^{*} any interaction, course, program, or other experience in which learning takes place (https://www.edglossary.org/learning-experience/).





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[1] USM Student Manual

Textbook/References

- [2] Daniels, L. and Minot, N. 2020. An introduction to Statistics and Data Analysis using STATA. SAGE publications Inc.: USA. [3] Jaisingh, L. 2011. Statistics for the Utterly Confused, 2nd Ed. The McGraw-Hill Companies, Inc.: USA.
- [4] Lipschutz, S. 2000. Probability. The McGraw-Hill Companies, Inc.: USA.
- [5] Supe, Arnulfo P. 1999. Elementary Statistics. Iligan City.

Research

Life-Ing Learning Opportunity

Course Outcomes (CO)	Course Evaluation				
CO 1: Demonstrate knowledge of the basic terms, concepts and	Ass ssment Task Addressing CO	Weight (%)	Satisfactory Rating	Target Standard	
procedures in statistics	My ferm Exam	60	60		
p. ococores in statistics	inal Exam	40		90% of the class obtained a satisfactory	
CO at the same of	Quizzes/Summative Exams			rating	
CO 2: Use appropriate methods of data collection and presentation	Midterm Exam	60	60	0/-511	
	Final Exam	40		90% of the class obtained a satisfactory rating	
50-5	Quizzes/Summative Exams			raung	
CO 3: Summarize data using different numerical measures	Midterm Exam	60	60		
	Final Exam	40		90% of the class obtained a satisfactory	
CO 4: Apply rules of probability in handling probability securing	Quizzes/Summative Exams			rating	
distributions	Midterm Exam	60	60	0.04 0.511	
	Final Exam	20		90% of the class obtained a satisfactory rating	
CO 5: Make inferences about the mean and proportion cone and two	Quizzes/Summative Exams	20 -		Tatilig	
populations using sample information through estimation and	Midterm Exam	60	60		
hypothesis testing	Final Exam			90% of the class obtained a satisfactor	
CO 6: Investigate the linear relationship between two variables by		40		rating	
of the stigate the inlear relationship between two variables by	Quizzes/Summative Exams	60	60		
measuring the strength of association and obtaining a	Midterm Exam		. 00	00% of the slees obtained and	
regression equation to describe the relationship	Final Exam	40		90% of the class obtained a satisfactor	
	Quizzes/Summative Exams			(Guilly	
O 7: Analyze data resulting from the conduct of experiments	Midterm Exam	60	60		
	Final Exam			90% of the class obtained a satisfactor	
	Quizzes/Summative Exams	40		rating	
O 8: Guard against misuses of statistics	Midterm Exam	60	60		
	Final Exam			90% of the class obtained a satisfactor	
This document is a sole property of UNIVERSITY		40		rating	





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Midterm Grade Quizzes/Summative Exams30% Assignments/Seat works/Grave B	Grading System	
Assignments/Seat works/Group Reports30% Midterm Exam40%	Final Grade 50% Midterm Grade+50% Final Term Grade	
Final Term Grade Quizzes/Summative Exams30% Assignments/Seat works/Group Reports30% Final Exam40%	Passing Grade 50%	

Classroom Policies

- 1. Come to class prepared for recitation, class discussions, or unannouned quizzes always. Demonstrate personal responsibility by obtaining notes and finding out any instructions/important
- 2. Absence is not a right, nor a privilege. The University Code on absence and tardiness applies. 20% of the total class hours means you are DROPPED from the course. Absences can be excused only after presenting official documents.
- 3. All submissions must be your original work. Cite sources proper lagiarism and any form of academic cheating get a corresponding grade of 5.0 (Failed) and can be grounds for suspension or expulsion.
- 4. During online class, students are expected to:
- a. Show up on a scheduled time and wait to be admitted in the class.
- b. Be always respectful. If your video is on, avoid hand gest res or inappropriate language.
- c. Stay on mute. Click a raise hand button if you have a question or something to share.
- d. Stay focused and on task, so you don't miss anything the speaker says.
- e. Class participation is highly encouraged.
- 5. Consultation: You can approach your class mayor for your concerns so he/she will relay them once to your professor
- 6. All information and queries regarding our class will be posted in our official group chat or facebook group. Refrain from posting unrelated topics in these platforms as these will take up space in the messenger box and will make it difficult to backread important messages.
- 7. Observe proper decorum when sending messages to your professors.
- 8. Avoid sending messages online outside office hours or during evening.
- g. All submissions must be in USM VLE. Submissions made outside VLE will not be accepted.

