UNIVERSITY OF SOUTHERN MINDANAO

COURSE SYLLABUS for THEORY OF INTEREST

Course Number	MATH 323	Rev. No.	Ø	Page 1 of 11

EFFECTIVE DATE	REV. NO.	REVISION TYPE	CHANGE DESCRIPTION	PAGE AFFECTED	ORIGINATOR
January 13, 2023	Ø	New	Newly established in accordance with the Quality Management System Requirements	ALL	Anna Jean S. Garcia

Author:	Reviewer:	Verifier:	Validator:	Final Approver:	DCC USE ONLY
ANNA JEAN S. GARCIA Faculty	JEANETH R. LICAROS, Ph.D. Department Curriculum Coordinator	LEONARD M. PALETA, Ph.D. Department Chairperson	PHILIP LESTER P. BENJAMIN, Ph.D. Dean	GEOFFRAY R. ATOK, Ph.D. Vice President for Academic Affairs	DOCUMENT CONTROL INDICATOR MASTER / COPY
Date: 2023.01.09	Date: 2023.01.09	Date: 2023.01.10	Date: 2023.01.11	Date: 2023.01.12	2023.01.13

MASTER COPY

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[M1], promote harmony among 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 right and **T**-Truth
USM Quality Policy Statement	The University of Southern Mindanao, as a premier university, is committed to provide quality instruction, research development and extension services and resource generation that exceed stakeholders' expectations through 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 programs. 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 life. 5. Facilitate transfer of technologies generated from research to the community for sustainable development. 6. Strengthen relationship with stakeholders. 7. Sustain good governance and culture, sensitivity; and 8. Comply with customer, regulatory and statutory requirements.
Goals of the College	The College of Arts and Sciences pursues the development of well-rounded persons through a culture of excellence in the arts and sciences for the establishment of a just and humane society.
Department Objectives	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; 2. develop students' skills in pattern recognition, generalization, abstraction, critical analysis, synthesis, problem-solving and rigorous argument; 3. express 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;and 4. develop students' skills in creating and evaluating mathematical conjectures and arguments, and in validating their own mathematical thinking.

PROGRAM INFORMATION					
Degree Program	**Bachelor of Science in Applied Mathematics**	CHED CMO Reference	**48 series of 2017**	BOR Approval	**BOR Res. No. 24, s 2020**

COURSE DETAILS					
Course Title	**Theory of Interest**				
Course Number	**MATH 323**		Curriculum Component	**(Curriculum Element C)**	
Credit (--Unit)	**3**	LECTURE (Unit-Hours)	**3-3**	LABORATORY (Unit-Hours)	**0-0**
Prerequisites	**Calculus III**	Co-requisites	**None**	Year Level/Semester Offered	**3rd Year / First Semester**
Course Description	This course covers measures of interest, present and future values, equations of value, annuity certain, general annuity certain, yield rates, extinction of debts, and bonds and securities.				
Faculty in charge					
Consultation Hours			Contact Information		

PROGRAM EDUCATIONAL OBJECTIVES (PEO)		MISSION		
In 3-5 years, the graduates of USM shall:		*M1*	*M2*	*M3*
PEO 1	Provide leadership in various development programs both public and private	✓		
PEO 2	Equip with technical, conceptual and human resource skills	✓		✓
PEO 3	Pursue entrepreneurial activities	✓		✓
PEO 4	Able to adapt to diverse culture		✓	
PEO 5	Pursue advanced studies in emerging related fields		✓	✓

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

PROGRAM OUTCOMES (PO) Upon graduation, the University of Southern Mindanao BSE Math students must be able to:	PEO1	PEO2	PEO3	PEO4	PEO5	PEO6	PEO7	PEO8	PEO9	PEO10	...
a) Articulate and discuss the latest development in the specific field of practice.		✓									
b) Effectively communicate orally and in writing using both English and Filipino		✓			✓						
c) Work effectively and independently in multidisciplinary and multi-cultural teams.			✓	✓							
d) Act in recognition of professional, social and ethical responsibility	✓										
e) Preserve and promote "Filipino historical and cultural heritage"				✓							
f) Participate in the generation of new knowledge in research and development projects.		✓									
g) Articulate the rootedness of education in philosophical, sociocultural, historical and psychological and political context.		✓									
h) Demonstrate mastery of subject matter/discipline		✓									
i) Facilitate learning using wide range of teaching methodologies and delivery modes appropriate to specific learners and their environment.		✓									
j) Develop innovative curricula, instructional plans, teaching approaches and resources for diverse learners.		✓									
k) Apply skills in the development and utilization of ICT to promote quality, relevant and sustainable educational practices.		✓									
l) Demonstrate a variety of thinking skills in planning, monitoring, assessing, and reporting learning processes and outcomes.		✓									
m) Practice professional and ethical teaching standards sensitive to the local, national, and global realities.	✓			✓							
n) Pursue lifelong learning for personal and professional growth through varied experiential and field-based opportunities.					✓						
o) Exhibit competence in mathematical concepts and procedures		✓									
p) Exhibit proficiency in relating mathematics to other curricular areas		✓									
q) Manifest meaningful and comprehensive pedagogical content knowledge (PCK)of mathematics		✓									
r) Demonstrate competence in designing, constructing and utilizing different forms of assessment in mathematics		✓									
s) Demonstrate proficiency in problem-solving by solving and creating routine and non-routine problems with different levels of complexity.		✓									
t) Use effectively appropriate approaches, methods, and techniques in teaching mathematics including technological tools		✓									
u) Appreciate mathematics as an opportunity for creative work, moments of discovery, and gaining insight.		✓									

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	POb	POc	POd	POe	POf	POg	POh	POi	POj	POk	POl	POm	POn	POo	POp	POq	POr	POs	POt	POu	POv	POw	POx	POy	POz
Upon passing this course, the students must be able to:	**Course Alignment to Program Outcomes**																										
CO 1	Apply appropriate formulas, concepts and procedures to solve various investment problems.							E	E	E								I									
CO 2	Distinguish different types of interest rates and how to use these in finding the present value or future value of an investment. Moreover, learn how to compare these rates to make sound judgment as to which rate gives the best return.							I		I		I						I	I								
CO 3	Recognize different types of annuities and learn how to find its value at the start, at the end and on any date within or outside its term.							I		I		I						I	I								
CO 4	Learn to track the growth/diminution of an investment/ a loan.							I	I	I		I						I	I								
CO 5	Determine the value/price, as well as the yield rate of different types of financial instruments like stocks and bonds at different dates during its term.							I	I	I		I						I	I								

__Level__(follow the legend used in themost relevant PSG/CMO)*

[I]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)

COURSE LEARNING PLAN

Intended Learning Outcomes (ILO) *By the end of the learning experience*, students must be able to:*	Aligned to CO:	Time Frame *(Week)*	Course Content *(Topics)*	Teaching & Learning Activities (TLA) Teaching Activities	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	**I. 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	[5] Pages 1-30
2.1 Discuss different simple interest concepts. **2.2** Differentiate ordinary from exact interest **2.3** Solve problems on ordinary and exact simple interest using appropriate formulas.	CO1 CO2	2	**II. Simple Interest I** • Overview of Simple Interest Concepts • Derived formulas in simple interest • Discounts • Ordinary and exact Interest	*Lecture/ Video Presentation/ Module*	*Discussion* *Seat work* *Group Reporting* *MyOpenMath Tasks* *Khan Academy Tasks*	Chalkboard Book PDF Workbook Projector Laptop/PC	Quizzes Exams Seatworks Reflective paper	[1] Pages 67-68, 73-75 [2] Pages 1-5 [3] Page 13-14 [4] Page 521-535
3.1 Differentiate Actual time from Approximate Time **3.2** Solve problems on simple interest using actual time and approximate time.	CO1 CO2	3	**III. Simple Interest II** • Actual and Approximate Time • Interest between dates • Present Value	*Lecture/ Video Presentation/ Module*	*Discussion* *Seat work* *Group Reporting* *MyOpenMath Tasks* *Khan Academy Tasks*	Chalkboard Book PDF Workbook Projector Laptop/PC	Quizzes Exams Seatworks Reflective paper	[1] Pages 70-72 [2] Pages 16-23 [4] Page 536-552
4.1 Discuss different simple discount concepts. **4.2** Differentiate simple interest and simple Discount **4.3** Solve problems on simple discount using appropriate formulas.	CO1 CO2		**IV. Simple Discount I** • Concepts in Simple Discount • Derived formulas in simple interest discounts	*Lecture/ Video Presentation/ Module*	*Discussion* *Seat work* *Group Reporting* *MyOpenMath Tasks* *Khan Academy Tasks*	Chalkboard Book PDF Workbook Projector Laptop/PC	Quizzes Exams Seatworks Reports/ Reflective paper	[1] Pages 83-87 [2] Pages 31-40
5.1 Discuss different concepts of promissory notes. **5.2** Determine whether the promissory	CO1 CO2	5	**V. Simple Discount II** • Promissory Notes • Discounting	*Lecture/ Video Presentation/ Module*	*Discussion* *Seat work* *Group Reporting*	Chalkboard Book PDF	Quizzes Exams Seatworks	[1] Pages 88-93 [2] Pages 41-52 [3] Page 33-38

MASTER COPY

COURSE LEARNING PLAN

Intended Learning Outcomes (ILO) *By the end of the learning experience*, students must be able to:*	Aligned to CO:	Time Frame *(Week)*	Course Content *(Topics)*	Teaching & Learning Activities (TLA) Teaching Activities	Learning Activities	Learning Materials	Assessment Tasks (AT)	Suggested Readings
note is an interest-bearing or a non-interest-bearing note. **5.3** Compute the value of a promissory note.			Promissory Notes		*MyOpenMath Tasks* *Khan Academy Tasks*	Workbook Projector Laptop/PC	Reports/ Reflective paper **SUMMATIVE EXAM 1**	
6.1 Discuss different compound interest concepts. **6.2** Differentiate simple interest and compound interest **6.3** Solve problems on present value and compound discount using appropriate formulas.	**CO1** **CO2**	**6**	**VI. Compound Interest I** • Concepts in Compound Interest • Compound Amount and Compound Interest • Present Value and Compound Discount	*Lecture/* *Video Presentation/* *Module*	*Discussion* *Seat work* *Group Reporting* *MyOpenMath Tasks* *Khan Academy Tasks*	Chalkboard Book PDF Workbook Projector Laptop/PC	Quizzes Exams Seatworks Reports/ Reflective paper	[1] Pages 94-100 [2] Pages 53-63 [3] Page 8-9
7.1 Solve problems on finding the compound interest rates **7.2** Solve problems on finding the time in compound interest problems.	**CO1** **CO2**	**7**	**VII. Compound Interest II** • The Compound Interest Rate • The time in Compound Interest	*Lecture/* *Video Presentation/* *Module*	*Discussion* *Seat work* *Group Reporting* *MyOpenMath Tasks* *Khan Academy Tasks*	Chalkboard Book PDF Workbook Projector Laptop/PC	Quizzes Exams Seatworks Reports/ Reflective paper	[1] Pages 101-105 [2] Pages 71-77
8.1 Differentiates effective rate and nominal rate **8.2** Compares interest yield using same interest rate but different conversion periods **8.3** Computes for a single payment in replacement of a set of obligations that are due at different periods at some compounded interest rates using the equations of value.	**CO1** **CO2**	**8**	**VIII. Compound Interest III** • Equivalent Rates • Comparison of rates • Equation of Values	*Lecture/* *Video Presentation/* *Module*	*Discussion* *Seat work* *Group Reporting* *MyOpenMath Tasks* *Khan Academy Tasks*	Chalkboard Book PDF Workbook Projector Laptop/PC	Quizzes Exams Seatworks Reports/ Reflective paper **SUMMATIVE EXAM 2**	[1] Pages 106-109 [2] Pages 83-97
All ILOs covered in Midterm		**9**	**Week 9: MIDTERM EXAMINATION**					

COURSE LEARNING PLAN

Intended Learning Outcomes (ILO) *By the end of the learning experience*, students must be able to:*	Aligned to CO:	Time Frame *(Week)*	Course Content *(Topics)*	Teaching & Learning Activities (TLA) Teaching Activities	Learning Activities	Learning Materials	Assessment Tasks (AT)	Suggested Readings
9.1 Discuss different ordinary simple annuity concepts. **9.2** Discuss the differences between ordinary annuity, annuity due, and deferred annuity.	**CO3** **CO4**	**10**	**IX. Ordinary Simple Annuity I** • Concepts in Simple Annuities • Classification of Simple Annuity	*Lecture/ Video Presentation/ Module*	*Discussion* *Seat work* *Group Reporting* *MyOpenMath Tasks* *Khan Academy Tasks*	Chalkboard Book PDF Workbook Projector Laptop/PC	Quizzes Exams Seatworks Reports/ Reflective paper	[1] Pages 110-114 [2] Pages 107-108 [3] Page 85-90
10.1 Solve problems on finding the Amount and present value of an ordinary annuity. **10.2** Solve problems on finding the Interest rate of an ordinary annuity. **10.3** Solve problems on finding the Term of an annuity an ordinary annuity.	**CO3** **CO4**	**11**	**X. Ordinary Simple Annuity II** • Amount and present value of an ordinary annuity • Interest rate of an ordinary annuity • Term of an ordinary annuity	*Lecture/ Video Presentation/ Module*	*Discussion* *Seat work* *Group Reporting* *MyOpenMath Tasks* *Khan Academy Tasks*	Chalkboard Book PDF Workbook Projector Laptop/PC	Quizzes Exams Seatworks Reports/ Reflective paper	[1] Pages 115-120 [2] Pages 125-135 [3] Page 91-95
11.1 Solve problems on finding the Amount and present value of an annuity due. **11.2** Solve problems on finding the Term of an annuity an annuity due.	**CO3** **CO4**	**12**	**XI. Annuity Due** • Concepts in Annuity Due • Amount and present value of an annuity due • Term of an annuity due	*Lecture/ Video Presentation/ Module*	*Discussion* *Seat work* *Group Reporting* *MyOpenMath Tasks* *Khan Academy Tasks*	Chalkboard Book PDF Workbook Projector Laptop/PC	Quizzes Exams Seatworks Reports/ Reflective paper **SUMMATIVE EXAM 3**	[1] Pages 121-124 [2] Pages 136-145
12.1 Solve problems on finding the Amount and present value of an annuity due. **12.2** Solve problems on finding the Term of an annuity an annuity due.	**CO3** **CO4**	**13**	**XII. Deferred Annuity** • Concepts of deferred annuity. • Amount and present value of an annuity due • Term of an annuity due.	*Lecture/ Video Presentation/ Module*	*Discussion* *Seat work* *Group Reporting* *MyOpenMath Tasks* *Khan Academy Tasks*	Chalkboard Book PDF Workbook Projector Laptop/PC	Quizzes Exams Seatworks Reports/ Reflective paper	[1] Pages 126-128 [2] Pages 146-155
13.1 Prepares an Amortization Table	**CO4**	**14**	**XIII. Amortization**	*Lecture/ Video Presentation/*	*Discussion* *Seat work*	Chalkboard	Quizzes	[1] Pages 164-180

COURSE LEARNING PLAN

Intended Learning Outcomes (ILO) *By the end of the learning experience*, students must be able to:*	Aligned to CO:	Time Frame *(Week)*	Course Content *(Topics)*	Teaching & Learning Activities (TLA) Teaching Activities	Learning Activities	Learning Materials	Assessment Tasks (AT)	Suggested Readings
13.2 Computes for the outstanding balance	**CO5**		• Concepts in Amortizations • Amortization of a Debt • The Outstanding Balance	*Module*	*Group Reporting* *MyOpenMath Tasks* *Khan Academy Tasks*	Book PDF Workbook Projector Laptop/PC	Exams Seatworks Reports/ Reflective paper	[2] Pages 156-166
14.1 Determines the final amount of the sinking fund **14.2** Constructs the sinking fund schedule	**CO4** **CO5**	**15**	**XIV. Sinking Funds** • Concepts in Sinking Funds • The Sinking fund	*Lecture/* *Video Presentation/* *Module*	*Discussion* *Seat work* *Group Reporting* *MyOpenMath Tasks* *Khan Academy Tasks*	Chalkboard Book PDF Workbook Projector Laptop/PC	Quizzes Exams Seatworks Reports/ Reflective paper	[1] Pages 182-187 [2] Pages 176-185
14.1 Understand the different terminology on bonds. **14.2** Compute for the face value and redemption value of bonds.	**CO4** **CO5**	**16**	**XVI. Bonds I** • Definition of terms in Bonds • Bond Valuation	*Lecture/* *Video Presentation/* *Module*	*Discussion* *Seat work* *Group Reporting* *MyOpenMath Tasks* *Khan Academy Tasks*	Chalkboard Book PDF Workbook Projector Laptop/PC	Quizzes Exams Seatworks Reports/ Reflective paper	[1] Pages 311-317 [2] Pages 191-198 [3] Page 247-265
8.1 Understand the different terminology in bonds. **8.2** Compute for the bond premium and discount bonds **8.3** Prepare schedule for the bond premium and discount bonds.	**CO4** **CO5**	**17**	**XVIII. Bonds II** • Premium or Discount equation • Amortization of premiums	*Lecture/* *Video Presentation/* *Module*	*Discussion* *Seat work* *Group Reporting* *MyOpenMath Tasks* *Khan Academy Tasks*	Chalkboard Book PDF Workbook Projector Laptop/PC	Quizzes Exams Seatworks Reports/ Reflective paper SUMMATIVE EXAM 4	[1] Pages 319-328 [2] Pages 199-207 [3] Page 266-280
All ILOs covered in the Course		**18**	**FINAL EXAMINATION**					

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

Textbook/References

[1] Alhabeeb, M.J. Mathematical Finance.2012. ISBN 978-0-470-64184-2
[2] Aoanan, G.O., Cervillon, C.C. & Lomboy, B.O. 2003.Mathematcs of Investment. ISBN 971-08-[illegible]8.
[3] Broverman, S.A. 202. Mathematics of Investment & Credit. ISBN 978-1-64588-221-6.
[4] Lipson, J.E. 2008. Principles of Financial Mathematics. ISBN 978-0-521-61328-6
[5] USM Student Manual

Life-long Learning Opportunity

Course Evaluation

Course Outcomes (CO)	Assessment Task Addressing CO	Weight (%)	Satisfactory Rating	Target Standard
CO1: Discuss a broad overview of statistics and its applications in their field.	Quizzes/Summative Exams	20	75	60% of the class obtained a satisfactory rating
	Midterm Exam	40		
	Final Exam	40		
CO 2: Organize and present raw data in tables and interpret its result.	Quizzes/Summative Exams	20	75	60% of the class obtained a satisfactory rating
	Midterm Exam	40		
	Final Exam	40		
CO 3: Develop hypothesis-testing methodology as a technique for analyzing differences and making decisions.	Quizzes/Summative Exams	20	75	60% of the class obtained a satisfactory rating
	Midterm Exam	40		
	Final Exam	40		
CO 4: Use available statistical tools to arrange, analyze, and interpret data.	Quizzes/Summative Exams	20	75	60% of the class obtained a satisfactory rating
	Midterm Exam	40		
	Final Exam	40		
CO 5: Determine appropriate test designs for processing and managing numerical data.	Quizzes/Summative Exams	20	75	60% of the class obtained a satisfactory rating
	Midterm Exam	40		
	Final Exam	40		

MASTER COPY

Course Evaluation

Course Outcomes (CO)	Assessment Task Addressing CO	Weight (%)	Satisfactory Rating	Target Standard
CO 6: Interpret the statistical result in a way that addresses the question of interest.	Quizzes/Summative Exams	20	75	60% of the class obtained a satisfactory rating
	Midterm Exam	40		
	Final Exam	40		
	Quizzes/Summative Exams	20		
	Midterm Exam	40		

Grading System

Midterm Grade

Quizzes/Summative Exams----------30%
Assignments/Seat works/Group Reports----------30%
Midterm Exam---------- 40%

Final Term Grade

Final Grade

50% Midterm Grade+50% Final Term Grade

Passing Grade is 60%

Classroom Policies

a. Students who came late in three consecutive meetings are considered absent. Three consecutive absences equivalent to being dropped.
b. Students not in complete uniform shall not be allowed to attend the class.
c. Special exams shall only be administered within a maximum of three days after the conduct of exam with valid excuse letter noted by the college guidance counselor or medical certificate. No special quizzes shall be given.
d. Anyone who caught cheating or plagiarizing (in any form), both the cheater and the collaborator will get a failing grade in a subject. Knowledge is important. However, we will not neglect the values that the students need to possess. Honesty is a must and should be practiced in the class.
e. Students are required to participate in the laboratory activity. Absence or leaving early without valid reason would require that student to conduct the whole lab activity by himself/herself which will be scheduled thereafter but not conflicting with another scheduled lab activity.
f. A grade of INC shall be given only for those who passed the course but failed to conduct a lab activity and submit a lab report and/or other requirements before the deadline.
g. Students are not allowed to use cellphone or any gadgets for any activity unrelated to the class during lecture /laboratory session in entire duration.