Minnesota State University Moorhead

MATH 321: Financial Mathematics

A. COURSE DESCRIPTION

Credits: 3

Lecture Hours/Week: 3

Lab Hours/Week: 0

OJT Hours/Week: *.*

Prerequisites:
This course requires either of these prerequisites
MATH 229 - Topics in Calculus
MATH 261 - Calculus I

Corequisites: None

MnTC Goals: None

The purpose of this course is to provide an understanding of the fundamental concept of financial mathematics, and how those concepts are applied in calculating present and accumulated values for various streams of cash flows. Reserving, valuation, pricing, asset/liability management, investment income, capital budgeting and valuing contingent cash flows will be discussed. An introduction to financial instruments and the concept of no-arbitrage as it relates to financial mathematics will be given. This course covers topics of CAS/SOA Actuarial Exam 2/FM.

B. COURSE EFFECTIVE DATES: 02/02/2015 - Present

C. OUTLINE OF MAJOR CONTENT AREAS

D. LEARNING OUTCOMES (General)

1. Calculate future and present values.
2. Calculate loan balances at any point in time and the interest and principal repayments in loans.
3. Calculate the duration and convexity of cash flows.
4. Calculate yield rate and rate of return for portfolios.
5. Construct an investment portfolio to fully immunize a set of cash flows.
6. Know the correlations between price, redemption value, yield rate, coupon rate and the term of bonds.
7. Know the terms appropriate to the Actuarial Exam 2/FM.
8. Use/calculate annuities with level or non-level payments.
9. Use/calculate compound, nominal and effective interest and discount rates.

E. Minnesota Transfer Curriculum Goal Area(s) and Competencies

None

F. LEARNER OUTCOMES ASSESSMENT

As noted on course syllabus

G. SPECIAL INFORMATION

None noted