

SALISBURY UNIVERSITY DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE
SYLLABUS (Tentative)
MATH 300 *Introduction to Abstract Mathematics*

Intended Audience: Students minoring in mathematics, particularly prospective teachers, will find this course a good capstone to their undergraduate mathematical experience. Students majoring in mathematics who have not already completed a 400-level mathematics course will find this a valuable course to help them develop a better understanding of the connection between computational and theoretical mathematics.

Objective: To provide students with an opportunity to develop the foundations of abstract mathematics.

Prerequisite: MATH 210 (or equivalent) completed with a grade of C or better.

Text: “Mathematical Reasoning: Writing and Proof,” version 2.1, by Ted Sundstrom. Available as a *free* PDF download from <https://www.tedsundstrom.com/mathreasoning>

Topics	Weeks
Logic and Proof Methods of proof – direct, contraposition, contradiction, induction; logical operators; logical equivalence; logical negation; recursion	3
Sets and Functions Set theory; properties of functions; compositions of functions; Inverse functions; functions acting on sets	3
Equivalence Relations Relations; equivalence classes; modular arithmetic	2
Number Theory Division algorithm; greatest common divisor; prime factorization; Euclidean algorithm; Diophantine equations; congruence	3
Finite and Infinite Sets Cardinality; countable and uncountable sets; Cantor’s Diagonal Argument	2
Tests	1
Total	14

EVALUATION

Homework: 20-30%	Boardwork: 20-30%
Tests: 20-30%	Final Exam: 20-30%

Additional notes:

- This course complies with Salisbury University’s Writing Across the Curriculum expectations. Students will be expected to effectively communicate mathematics and mathematical ideas in writing.
- Once a student has received credit, including transfer credit, for a course, credit may not be received for any course with material that is equivalent to it or is a prerequisite for it.