Transcript of Coursework

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This file contains the important courseworks and the self-study subjects I had over in my career.

Contents:

ADA University

A **MATH 1111**, *Calculus I*, Spring 2025, Javanshir Azizov
Standard Calculus Course. Limits, Convergence and Divergence of Limits, Differentiation of the functions, Anti-Derivatives, Integration, Fundamental Theorem of Calculus, Area Between Curves, Volumes by Rotation, Initial Value Problems, Introductory Differential Equations.
Textbook: Thomas' Calculus Early Transcendentals.

A **MATH 1201**, *Abstract Algebra*, Spring 2025, Rafael Alizade
Group Theory, Permutations, Cosets and Theorem of Lagrange, Rings, Fields, Integral Domains, Rings of Polynomials, Vector Spaces, Euler's and Fermat's Theorems.
Textbook: John Fralelgh's A First Course in Abstract Algebra.

A **CSCI 1101**, *Programming Principles I*, Spring 2025, Rashad Aliyev
Standard Introductory Programming course for C and C++. Logic, Variables, Loops, Arrays, Strings, Functions, Pointers, Dynamic Memory Allocation, Bitwise Operation, Elementary Algorithms.
Textbook: None.

A **MATH 3501**, *Linear Algebra*, Fall 2025, Elchin Hasanilzade
Computation focused Linear Algebra course. Vectors, Hyperplanes, System of Linear Equations, Matrices, Echalon and Row Canonical Forms, Span and Basis, Permutations, Determinants, Inverse of Matrices, Linear mappings and transformations, Change of Basis, Similarity, Orthogonal Basis, Gram-Schmit Algorithm, Diagonalization, Eigenvalues, Eigenvectors, Linear Functional and Dual Spaces.
Textbook: Schaum's Outline of Linear Algebra.

A **MATH 1100**, *Pre-Calculus*, Fall 2025, Javanshir Azizov
Standard (compulsory!) Pre-Calculus course. Definition of Functions, Injective and Surjective Functions, Trigonometric Functions etc.
Textbook: Stewart's Precalculus.

A **SITE 1101**, *Principles of Information Systems*, Fall 2025, Rashad Aliyev, Araz Yusubov
A course that introduces concepts of general Information Systems. Introduction to Programming, Computer Networks, Principles of Designing Software, Development Pipeline etc.
Textbook: None.

P **PDEV 2302**, *Data And Computing Skills*, Fall 2025, Khalil Israfilzada.
Introductory course focused on Excel and Data Analysis.
Textbook: None.

Self-Study

Probability and Statistics
Discrete and Continous Random Variables, Expectation, Variance, Distribution of Random Variables, Cumultative Distribution Function, Probability Density Function, Convergence in Distribution and Probability, Law of Large Numbers, Central Limit Theorem, Statistical Models, Parametric and non-Parametric Inference, Point Estimator, Bias, Method of Moments, Maximum Likelihood, Bootsrap, Hypothesis Testing and p-values, Risk and Loss Functions etc.
Textbook: Wasserman's All of Statistics A Concise Course in Statistical Inference
Technologies Practiced: Python Libraries such as Pandas, Numpy, Scipy, Matplotlib, Seaborn.
Status: Have studied Part I and Part II of the book.

Real Analysis
Axiom of Completeness, Supremum and Infimums, Converence of Sequences, Monotone Convergence Theorem, Subsequences and Bolzano-Weierstrass Theorem, Cauchy Sequences, Topolofy of $\mathbb{R}$: Open, Closed, Perfect, Compact Sets, Functional Limits, Continous and Uniformly Continous Functions, Intermediate Value Theorem, Derivatives, Mean Value Theorem
Textbook: Stephen Abbot's Understand Analysis
Status: Have Studied all the chapters except for Integrals and Series chapters

(Analytical) Classical Mechanics, Physics
Currently in Chapter I, started to study for my Physics Simulation Projects.
Textbook: Herbert Goldstein's Classical Mechanics