ELLIOTT YOON

Transcipt of Relevant Coursework

NORTHWESTERN UNIVERSITY

A **CS 211**, *Fundamentals of Computer Programming 2*, Branden Ghena — Winter 2022
- Introduction to C: build system & pointers, memory management, linked lists; introduction to C++: objects, generics, smart pointers, inheritance, RAII memory management. Designed, created, and tested an aim trainer application using GE211 game engine in C++ for final project.
  Textbook: None

A **CS 150**, *Fundamentals of Computer Programming 1.5*, Kate Compton — Winter 2022
- Introduction to object-oriented programming in Python, data structures: stacks, queues, dictionaries, lists. Substantial usage of libraries and APIs. Project work includes Twitterbots, matchmaking algorithms, webscraping, and unsupervised learning algorithms (k-means clustering).
  Textbook: None

A **CS 111**, *Fundamentals of Computer Programming 1*, Ian Horswill — Fall 2021
- Introduction to functional and imperative programming paradigms. Emphasis on recursion, creating and traversing binary search trees.
  Textbook: Abelson and Sussman's *Structure and Interpretation of Computer Programs*

A- **MATH 291-2**, *Intensive Linear Algebra and Multivariable Calculus*, Aaron Peterson — Winter 2022
- Orthogonality in Euclidian and Hermitian spaces, the determinant function, diagonalizability, topology of the real topology, limits, continuity, and directional derivatives, Taylor polynomials.
  Textbook: (optional) Bretscher's *Linear Algebra with Applications*, Colley's *Vector Calculus*

A **MATH 291-1**, *Intensive Linear Algebra*, Aaron Peterson — Fall 2021
- Foundations. Systems of linear equations, linear transformations, vector spaces, subspaces, linear independence, and invertibility. The course emphasizes theory and proofs.
  Textbook: (optional) Bretscher's *Linear Algebra with Applications*

COURSERA

96% **Machine Learning** *by Stanford University*, Andrew Ng — Fall 2018
- A broad introduction to machine learning, data mining, and statistical pattern recognition. Topics include: Supervised learning (parametric/non-parametric algorithms, support vector machines, kernels, neural networks), unsupervised learning (clustering, dimensionality reduction, recommender systems, deep learning), and best practices in machine learning (bias/variance theory; innovation process in machine learning and AI).
  Certification: https://coursera.org/share/1b91122166dba2abf1d6e6de8f1ae612

CASE WESTERN RESERVE UNIVERSITY

B **MATH 308**, *Introduction to Abstract Algebra*, Nick Gurski — Fall 2020
- A first course in abstract algebra, studied on an axiomatic basis. The major algebraic structures studied are groups, rings and fields. Topics include Lagrange's Theorem, homomorphisms, Isomorphism Theorems, and quotient structures.
  Textbook: Dummit and Foote

A **MATH 321**, *Fundamentals of Analysis I*, Long Tran — Fall 2020
- Abstract mathematical reasoning in the context of analysis in Euclidean space. Introduction to formal reasoning, sets and functions, and the number systems. Sequences and series; Cauchy sequences and convergence.
  Textbook: Thomson-Bruckner's *Elementary Real Analysis*

A **CSDS 132**, *Introduction to Programming in Java*, Orhan Ozguner Spring 2021

· An introduction to modern programming language features, computer programming and algorithmic problem solving with an emphasis on the Java language. Computers and code compilation; conditional statements, subprograms, loops, methods; object-oriented design, inheritance and polymorphism, abstract classes and interfaces; types, type systems, generic types, abstract data types, strings, arrays, linked lists; software development, modular code design, unit testing; strings, text and file I/O; GUI components, GUI event handling; threads; comparison of Java to C, C++, and C#.
Textbook: Uses Evans & Flanagan's *Java in a Nutshell* as a reference.

LAKELAND COMMUNITY COLLEGE

A **MATH 2500**, *Calculus/Analytical Geometry 1*, Paul Zachlin Fall 2018

· Topics include limits and continuity, the derivative, differentiation, the differential, applications of differentiation, the indefinite integral, the definite integral, and the calculus of the transcendental functions.
Textbook: Briggs, Cochran, Gillet, Schulz's *Calculus (Third Edition)*

A **MATH 2600**, *Calculus/Analytical Geometry 2*, William Arstrong Spring 2019

· Topics include applications of integration, techniques of integration, L'Hopital's rule, improper integrals, sequences, infinite series, power series, Taylor's series, conic sections, parametric equations, polar coordinates, and applications.
Textbook: Briggs, Cochran, Gillet, Schulz's *Calculus (Third Edition)*

A **MATH 2700**, *Calculus/Analytical Geometry 3*, Carl Stitz Spring 2020

· Topics include vectors, differential calculus of functions of more than one variable, directional derivative, gradients, applications of partial derivatives, multiple integration, and line integrals.
Textbook: Herman & Strang's *Calculus Volume 3*

A **MATH 2800**, *Linear Algebra*, Paul Zachlin Fall 2019

· This course includes a study of systems of linear equations, matrix algebra, determinants, vector spaces, linear transformations, eigenvalues, eigenvectors, diagonalization, and applications.
Textbook: Schay's *A Concise Introduction to Linear Algebra*

A **MATH 2850**, *Differential Equations*, Paul Zachlin Summer 2019

· This course includes a study of techniques for solving first, second, and higher order differential equations, techniques for solving linear differential equations, elementary applications, power series solutions, the Runge-Kutta method, the Laplace transform, and applications of differential equations to physical problems.
Textbook: Trench's *Elementary Differential Equations* with Tenenbaum & Pollard's *Ordinary Differential Equations*

A **MATH 2900**, *Topology*, Carl Stitz Spring 2020

· Topological Spaces: Finite-Closed Topology, Euclidean Topology, Product Topology; basis for a topology, limit points, closure, neighborhoods, connectedness, subspaces, homeomorphisms, compactness, the Heine-Borel Theorem, continuity.
Textbook: Munkres's *Topology*

A **MATH 2900**, *Number Theory*, Paul Zachlin Spring 2021

· Pythagorean triples, divisibility, congruences, Fermat's Little Theorem, Euler's Formula, Euler's Phi Function, Chinese Remainder Theorem, Mersenne Primes, quadratic reciprocity, Jacobi Symbol, square-triangular numbers, Pell's Equation, Gaussian Integers, unique factorization domains.
Textbook: Silverman's *A Friendly Introduction to Number Theory*

A **CHEM 1500**, *General Chemistry 1*, Jason Thomas Spring 2018

· This course focuses on the principles of college chemistry, including measurements and dimensional analysis, formulas, equations and stoichiometry, solution reactions, gas laws, thermochemistry, atomic and electronic structure, the periodic table, bonding, and molecular geometry.
Textbook: None

A **CHEM 1600**, *General Chemistry 2*, Jason Thomas Fall 2018

· This course continues the study of the principles of college chemistry, including organic nomenclature, solids and liquids, solutions, chemical kinetics, molecular equilibrium, acid-base theory, acid-base equilibrium, precipitation and complex ion equilibrium, oxidation-reduction, and electrochemistry.
Textbook: None

A **PHYS 1610**, *General Physics 1*, Thomas Ciferno Fall 2019

· Topics include vectors, kinematics, Newton's laws, energy, linear and angular momentum, rotational dynamics, fluids and thermodynamics.
Textbook: None

A **PHYS 2420**, *Science/Engineering Physics 2*, Thomas Ciferno Spring 2020

· Topics, which are calculus-based, include electrostatics, including Gauss's law and electric potential; capacitance; DC circuits; electromagnetism, including the Biot law, Ampere's law, Faraday's law and Lenz's law; mechanical waves; and geometrical and physical optics.
Textbook: Walker's *Fundamentals of Physics*