WENHAN GAO

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COMPUTING, PROGRAMMING, CONBINATORICS, AND CS-RELATED

AMS 595, Fundamentals of Computing Grade: A, 4.0/4.0

- Scripting, data structures, algorithms, scientific computing, performance optimization, software engineering, version control(git), program development tools.
- **Projects in Python, Matlab, and C++.**

MAT 331, Computer-Assisted Math Problem Solving Grade: A, 4.0/4.0

- **Projects written in Python**: Cryptograph(Caesar, Vigenere, RSA), Apollonian packing(Fractal), Coloring Julia/Mandelbrot Set and Newton's Method. The course also covers Monte-Carlo Methods, Numerical ODE, Numerical Differentiation and Integration, Tower of Hanoi(Recursion).

EST 320, Communication Tech Systems Grade: A, 4.0/4.0

- Textbook: **Principles of Computer Networks and Communication**, D. Barry, S. Morris

ET-704, Networking Fundamentals I Grade: A, 4.0/4.0

- Textbook: **Network+ Guide to Networks**

EST 305, Applications Software for Information Management Grade: A, 4.0/4.0

- Textbook: **VBA for Modelers: Developing Decision Support Systems with Microsoft Excel**, 4th edition, S. Christian Albright; Duxbury
- Textbook: **Management Science: The Art of Modeling with Spreadsheets**, 4th ed, PowelL and Baker
- **Project written in Visual Basic**: Projecting the Effectiveness of Covid Vaccines with User Interfaces

ET-570, Creating Smartphone Applications Grade: A, 4.0/4.0

- **Created a web-based mobile game with JavaScript**(unfortunately, does not work on iOS).

MA-471 Introduction to Discrete Structures Grade: A, 4.0/4.0

- Textbook: **Discrete Mathematics and Its Applications**, 6th Ed., by Kenneth Rosen

MAT 312, Applied Algebra Grade: A, 4.0/4.0

- Textbook: **Numbers, Groups and Codes**, 2nd Ed., by Humphreys and Prest

AMS 303, Graph Theory Grade: A, 4.0/4.0

- Textbook: **Introduction to Graph Theory**, 5th Ed., by R. Wilson
- Textbook: **Applied Combinatorics**, Sixth Edition, by A.Tucker, John Wiley & Sons.
- **Final Project on Cryptography**, wrote a Python program to assist in visualizing frequency patterns.

AMS 301, Finite Mathematical Structures Grade: A, 4.0/4.0

- Textbook: **Applied Combinatorics**, Sixth Edition, by A.Tucker, John Wiley & Sons.

AMS 341 Operations Research I: Deterministic Models Auditing

- Audited this course offered via zoom from Stony Brook.

· Analytical methods(non-proof-based) in Linear Programming including formulation and interpretation of linear programming models; simplex method and its variations; primal dual methods

PROGRAMMING CERTIFICATES/ONLINE COURSES

Machine Learning Coursera

· Linear Regression, Logistic Regression, Regularization, Neural Networks, Machine Learning System Design, Support Vector Machines, Unsupervised Learning(K-means clustering), Dimensionality Reduction(Principal Component Analysis), Anomaly Detection, Recommender Systems, Online Learning

Deep Learning Specialization by Andrew Ng(DeepLearning.AI) Coursera

· Learn to build neural network architectures such as Convolutional Neural Networks, Recurrent Neural Networks, etc.. and to make NNs better with strategies such as Dropout, BatchNorm, and Xavier/He initialization. Implemented some industry applications using Python and TensorFlow.

Getting Started with AWS Machine Learning Coursera

· Key problems that Machine Learning can address and ultimately help solve.

Python Specialization Coursera

· Five Courses in the Python Specialization offered by University of Michigan. Fundamental programming concepts including data structures, networked application program interfaces, and databases.

Mastering Programming with MATLAB Coursera

· Advanced concepts related to functions such as recursion and function handles.
· Learn basics of Object Oriented Programming and how to write efficient programs.
· Learn to write Live Scripts and create GUIs.

Bayesian Statistics: From Concept to Data Analysis Coursera

· This course introduces the Bayesian approach to statistics, starting with the concept of probability and moving to the analysis of data.
· Key differences between Bayesian and Frequentist approaches

PROOF-BASED MATH COURSES

MAT 310, Linear Algebra Grade: A, 4.0/4.0

· Textbook: **Linear Algebra Done Right**, 3rd Ed., by Sheldon Axler

MAT 342, Applied Complex Analysis Grade: A, 4.0/4.0

· Textbook: **Complex Variables and Applications**, 9th Ed.; Brown and Churchill

MAT 320, Introduction to Analysis Grade: A, 4.0/4.0

· Textbook: **Introduction to Real Analysis**, 4th Ed., by Bartle and Sherbert

MAT 312, Applied Algebra Grade: A, 4.0/4.0

· Textbook: **Numbers, Groups and Codes**, 2nd Ed., by Humphreys and Prest

MAT 360, Geometric Structures Grade: A, 4.0/4.0

· Textbook: **Euclidean and Non-Euclidean Geometries Development and History**, 4th Ed., by Marvin J. Greenberg

MAT 200, Logic, Language and Proof Grade: A, 4.0/4.0

· Textbook: **An Introduction to Mathematical Reasoning: Numbers, Sets and Functions**, 1st Ed., by Eccles, Peter J.

MA-471 Introduction to Discrete Structures Grade: A, 4.0/4.0

· Textbook: **Discrete Mathematics and Its Applications**, 6th Ed., by Kenneth Rosen

NON-PROOF-BASED MATH COURSES

AMS 311, Probability Theory Grade: A, 4.0/4.0

· Textbook: **A First Course in Probability**, 10th Ed., by Sheldon Ross

AMS 333, Mathematical Biology Grade: A, 4.0/4.0

· Textbook(recommended): **Essential Mathematical Biology**, by Nicholas Britton, Third, Ed.
· **Projects with Matlab Simulation**: Analysis of Bacteria Growth, LV Model, Influenza Epidemics

MAT 341, Applied Real Analysis Grade: A, 4.0/4.0

· Textbook: **Boundary Value Problems and Partial Differential Equations**, 6th Ed., by D. Powers

AMS 303, Graph Theory Grade: A, 4.0/4.0

· Textbook: **Introduction to Graph Theory**, 5th Ed., by R. Wilson
· Textbook: **Applied Combinatorics**, Sixth Edition, by A.Tucker, John Wiley & Sons.
· **Final Project on Cryptography**, wrote a Python program to assist in visualizing frequency patterns.

AMS 301, Finite Mathematical Structures Grade: A, 4.0/4.0

· Textbook: **Applied Combinatorics**, Sixth Edition, by A.Tucker, John Wiley & Sons.

AMS 315, Data analysis Grade: A, 4.0/4.0

· Textbook: **An Introduction to Statistical Methods and Data Analysis**, by Ott and Longnecker, 7th Edition
· **Final Project written in R(programming)**.

AMS 341 Operations Research I: Deterministic Models Auditing

· Unofficially audited this course offered via zoom from Stony Brook.
· Analytical methods(non-proof-based) in Linear Programming including formulation and interpretation of linear programming models; simplex method and its variations; primal dual methods

AMS 361, Applied Calculus IV: Differential Equations Grade: A, 4.0/4.0

· Textbook: **Lectures, Problems and Solutions for Ordinary Differential Equations**, by Yuefan Deng, Second Edition

AMS 310, Survey of Probability and Statistics Grade: A, 4.0/4.0

· Textbook: **Probability and Statistics for Engineering and Science with Examples in R**, Second Edition, by Hongshik Ahn

AMS 210, Applied Linear Algebra Grade: A, 4.0/4.0

· Textbook: **Introduction to Linear Algebra: Models, Methods and Theory**, by Alan Tucker

MAT 203, Calculus III with Applications Grade: A, 4.0/4.0

· Textbook: **Multivariable Calculus**, 8th Edition, by James Stewart