Description for some courses I have taken

At my home university, the titles of some taught courses do not exactly match their official titles. The course title and description in the official syllabus cannot be easily changed, and the professor will instead adjust the unofficial (actual) course content according to what they believe is the most useful for students. Below are the list of computer science-related (and some mathematics-related) courses that are listed in my transcript and the content that was taught in the class.

Class Name	Unofficial Title	Description of Class
ICMA 219 Calculus of Several Variables	Applied Mathematical Analysis	• Vector analysis: algebra and geometry of vectors, vector differential and integral calculus, theorems of Green, Gauss, and Stokes; complex analysis: analytic functions, complex integrals and residues, Taylor and Laurent series. • I took this class during my exchange semester (Fall 2018) at University of Wisconsin-Madison. The corresponding course code is MATH 321.
ICMA 242 Discrete Mathematics	Discrete Mathematics	• Mathematical statements and logical deduction; proves and proof techniques including direct, contradiction, contrapositive, induction, and invariants; summation, asymptotics, and recurrences; counting: combinations, permutations, and basic counting techniques; discrete probability: finite probability space, events, conditional probability, independence, random variables, expectation, variance, covariance, discrete distributions; graphs: tree, tree traversal, undirected graphs, directed graphs, weighted graphs, Euler's tours, isomorphisms, spanning trees.

Class Name	Unofficial Title	Description of Class
ICMA 321 Linear Algebra	Linear Algebra	• Linear equations; system of linear equations; matrices; Euclidean spaces; traces and determinants; general vector spaces; linear transformations; eigenvalues and eigenvectors; inner product spaces.
ICMA 322 Advanced Calculus	Introduction to Real Analysis	• Real and complex number systems; functions; continuity; convergence; differentiation; integration. • Book: Understanding Analysis (2nd Ed.) by Stephen Abbott.
ICMA 346 Optimisation	Introduction to Optimisation	• Linear programming; duality; network flow problems; convex programming; non convex and combinatorial models • I took this class during my exchange semester (Fall 2018) at University of Wisconsin-Madison. This is a website (taught by a different professor) with the class contents: https://laurentlessard.com/teaching/524-intro-to-optimization/.
ICCS 202 Intermediate Computer Programming	Introduction to Programming II	• Principles of object-oriented design and problem solving; objects and classes; encapsulation, abstraction, and information hiding; inheritance and polymorphism; unit testing; elements of Java programming; the use of an integrated development environment.
ICCS 207 Introduction to File Processing	Introduction to Computer Systems	• Working in Linux environment; C programming; data representation; memory organisation and management.
ICCS 313 Introduction to Algorithms	Introduction to Algorithms	• Asymptotic algorithm analysis; algorithm selection strategies; algorithms of well-defined problems in computer science; recognizing strength and weakness of algorithms; distributed algorithms; introduction to P and NP classes of problems. • Book: Introduction to Algorithms (CLRS).

Class Name	Unofficial Title	Description of Class
ICCS 330 Object-Oriented Design and Methodology	Interaction Designs	• Requirement analyses, including non-functional and functional requirements; data gathering; software design and prototyping; principles of good design; the software life cycle; software-development methodologies; quality assurance; cost modelling in software projects.
ICCS 481 Special Topics in Computer Science II	Contemporary Algorithms	• Suffix trees; max-flow/min-cut; balanced trees; dimensionality reduction; I/O efficient algorithms; convex optimisation; LPs; hashing; nearest neighbours; parallel algorithms. • Course website: https://cs.muic.mahidol.ac.th/courses/calgo/
ICCS 482 Professional Practices on Database Management	Introduction to Deep Learning	• Image classification; HMM; reinforcement learning; generative learning; semi-supervised learning; active learning; computational learning theory.
ICPY 221 Computer Programming for Physics	Introduction to Programming I	• Fundamental principles of computer programs; basic programming constructs (condition, iteration, functions); problem formulation; and introduction to object-oriented programming. • The course is shared with Computer Science majors. • Course taught in Python.
ICPY 334 Numerical Methods For Physics	Numerical Methods	• Taylor series; root finding; differentiation and integration; systems of linear equations; gradient descent; differential equations; Monte Carlo method. • The course is shared with Computer Science majors.