Welcome

CSCI 270
Wheaton College
Thomas VanDrunen
Spring 2026

Applied Mathematical

TOPICS

for Computer Science

Please keep phones and other devices silenced and put away—not seen or heard (or used) any time during class.

Evolution of the CSCI supporting requirements:

Requirements for a major in Computer Science are a minimum of 48 hours, including:

Major Requirements		
CSCI 235	Programming I: Problem Solving	2-4
or CSCI 236	Accelerated Introduction to Programming	
CSCI 243	Discrete Mathematics and Functional Programming	4
CSCI 245	Programming II: Object-Oriented Design	4
CSCI 335	Software Development	4
CSCI 345	Data Structures & Algorithms	4
CSCI 351	Introduction to Computer Systems	4
CSCI 494	Social and Ethical Issues in Computing	2
Select 12 additional credits of computer science above 300 [1]		12
Supporting Courses		
MATH 235	Calculus I	4
MATH 245	Linear Algebra	4
PHYS 231	Introductory Physics I	4
Total Credits		**48-50**

[1] Excluding CSCI 493 Mentored Research Seminar, CSCI 495 Independent Study, and CSCI 496 Internship.

Requirements for a major in Computer Science are CSCI 231, 241 or 242, 345, 355, 357, 494, and 12 additional hours of computer science above 300. Supporting requirements are PHYS 231 and MATH 231, 243, and another four-hour mathematics course numbered higher than 231.

Wheaton College Catalog 2004–2005

Wheaton College Catalog 2025–2026

From ACM/IEEE Computer Science Curricula 2023

CS degree must require." Instead, we outline two sets of *core* requirements, a CS Core set suited to hours-limited majors and a more expansive set of CS Core plus KA Core to align with technically focused programs. The principle here is that considering the additional foundational mathematics needed for AI, data science, and quantum computing, programs ought to consider as much as possible from the more expansive CS+KA version unless there are sound institutional reasons for alternative requirements.

Note: the hours in a row (example: linear algebra) add up to 40 (= 5 + 35), reflecting a standard course; shorter combined courses may be created, for example, by including probability in discrete mathematics (29 hours of discrete mathematics, 11 hours of probability).

Knowledge Unit	CS Core	KA Core
Discrete Mathematics	29	11
Probability	11	29
Statistics	10	30
Linear Algebra	5	35
Calculus	0	40
Total	**55**	**145**

MSF-Statistics: Statistics

CS Core:

1. Basic definitions and concepts: populations, samples, measures of central tendency, variance
2. Univariate data: point estimation, confidence intervals

KA Core:

3. Multivariate data: estimation, correlation, regression
4. Data transformation: dimension reduction, smoothing
5. Statistical models and algorithms
6. Hypothesis testing

Probability and statistics courses from the math program (Wheaton College Catalog, 2025–2026).

MATH 263. Introduction to Statistics. (4 Credits)
An introduction to statistics, sampling theory, and statistical decision making from a solid mathematical basis for non-mathematics majors. Topics chosen from discrete and continuous distributions, moments, hypothesis testing, correlation and multiple correlation, regression (linear, multivariate, logistic), ANOVA, contingency tables with tests for independence, sampling theory, and rudimentary non-parametric statistics. Students will use selected software packages for data processing and analysis and will need access to a laptop and a graphing calculator with an inverse t-distribution function.

MATH 363. Probability Theory. (4 Credits)
An introduction to probability theory, including discrete and continuous distributions. Topics covered include independence, conditional probability, expectation, variance and covariance, random vectors, and the central limit theorem. Students will need access to a non-CAS (Computer Algebra System) graphing calculator with an inverse t-distribution function. Prerequisite: MATH 236 and MATH 245.

Also **MATH 386 Topics in Statistics**, **MATH 463 Mathematical Statistics**, **MATH 464 Bayesian Statistics**, and **MATH 465 Applied Machine Learning**.

For next time:

▶ Finish discrete math review

As best you can, complete the handout from class listing the discrete math terms to review. It's OK if you can't formulate the formal definitions, but at least give your best guess at an informal description or an example. Try to do this from memory (+ reasoning). If you are really stumped, you may check your CSCI 243 notes or textbook or confer with a classmate (i.e., a person enrolled in this course), but avoid getting answers from elsewhere.

▶ Take syllabus quiz on Canvas