UNIVERSITY OF WISCONSIN
DATA SCIENCE

Program Prerequisite Pre-Approved UW Options

The following is a list of pre-approved options through the University of Wisconsin that will meet the required prerequisites for admission to the Data Science program. Note: this is not an all-inclusive list. If you have other courses available to you at your local community college or university, these can be considered. Please contact an enrollment adviser for more details.

The primary courses we recommend include:

Elementary Statistics
Green Bay, La Crosse, Parkside, Stevens Point:
Statistics for Healthcare – HIMT 350
https://himt.wisconsin.edu/program-information/course-information/#HIMT350

Introductory Computer Programming
Green Bay, La Crosse, Parkside, Stevens Point:
Programming for HIMT Professionals – HIMT 345
https://himt.wisconsin.edu/program-information/course-information/#HIMT345

Database Systems
Stevens Point
Database Design and Implementation - CIS 210
https://catalog.uwsp.edu/preview_course_nopop.php?catoid=22&coid=67078

OR

Milwaukee, Oshkosh, Platteville, River Falls, Stevens Point
Database Management I – APC 360
https://appliedcomputing.wisconsin.edu/courses/apc-360-database-management/

To see the full list of pre-approved UW course options, please select the link below:

Elementary Statistics

Introductory Computer Programming

Introduction to Databases

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Elementary Statistics

- ==**Recommended**== Green Bay, La Crosse, Parkside, Stevens Point: Statistics for Healthcare – HIMT 350
    - This is an introductory course in statistical methods for the health sciences. The course will emphasize the principles of statistical reasoning, underlying assumptions, hypothesis testing, and careful interpretation of results. Some topics covered: major study designs, descriptive statistics, graphical displays of data, probability confidence intervals and tests for means, differences of means, sample size and power, differences of proportions, chi-square tests for categorical variables, regression, multiple regression, and non-parametric statistics.
    - https://himt.wisconsin.edu/program-information/course-information/#HIMT350

- UW Independent Learning: Elementary Statistics – U3600
    - Includes measures of central tendency, measures of variability, grouped data, the normal distribution, the central limit theorem, hypothesis testing, estimation, T-distribution, and chi-square test. *Note: this course is in a self-paced format.*
    - https://il.wisconsin.edu/course-catalog/

- Green Bay Data Science Certificate:
    - Introducing descriptive statistics, frequency and contingency tables, correlations and co-variances, Estimation, confidence intervals, hypothesis testing and t-tests.
    - https://www.uwgb.edu/certificate-programs/data-science/

- Eau Claire: Elementary Statistics – MATH 246
    - Basic statistical analysis, including descriptive statistics, probability, confidence intervals, hypothesis testing, simple linear regressions, correlation, Chi-Square, and Analysis of Variance (ANOVA)
    - https://www.uwec.edu/blugold-central/academic-planning/register-classes/class-schedules/

- Green Bay: Business Statistics – BUS ADM 216
    - The course examines descriptive statistics, sampling and sampling distributions, hypothesis testing, independent and paired t-tests, analysis of variance, regression, chi-square, and variance comparisons. The course will also ensure students are literate in computer-based statistical packages (e.g., SPSS, SAS, or Minitab).
    - http://sis.uwgb.edu/schedule/

- Superior: Elementary Statistics – MATH 130
    - Introductory course for students of all disciplines. Includes descriptive statistics, probability, the binomial and normal distributions, confidence intervals, correlation and linear regression, Central Limit Theorem, and one-sample (population mean and population proportion) and two-sample (population means) hypothesis testing. Problems are taken from various fields dependent on statistical decision making.
    - https://www.uwsuper.edu/classschedules/

- Superior: Business Statistics - BUS 270
    - Introduction to descriptive and inferential statistics as applied to business situations. Includes tabular, graphical and numerical summary measures; probability distributions; sampling and

sampling distributions; hypothesis testing; analysis of variance; and regression/correlation analysis.

- https://www.uwsuper.edu/classschedules/

- **Whitewater**: Basic Statistical Methods – PSYCH 215
  - An introduction to descriptive and inferential statistics. Topics include preliminary concepts, frequency distribution, graphic methods, measures of central tendency and variability, percentiles, probability, normal distribution, correlation analysis, sampling theory, parametric and selected non-parametric hypothesis-testing procedures. Lectures are supplemented by computational laboratory sessions.
  - http://www.uww.edu/registrar/schedule-of-classes

- **UW Milwaukee**: Elementary Statistical Analysis - CGS MAT 215x
  - Elementary probability theory; descriptive statistics; sampling distributions; basic problems of statistical inference including estimation; tests of statistical hypothesis in both one- and two-sample cases. *Note: this course is in a competency-based format.*
  - https://flex.wisconsin.edu/curriculum/associate-of-arts-and-sciences/mathematical-and-natural-sciences/

Introductory Computer Programming

- **<mark>**Recommended**</mark> Green Bay, La Crosse, Parkside, Stevens Point:** Programming for HIMT Professionals – HIMT 345
    - This course covers introduction to programming in the areas of conditional execution as well as using functions, iterations, strings, files, lists, dictionaries, and tuples in Python.
    - https://himt.wisconsin.edu/program-information/course-information/#HIMT345

- **Milwaukee, Oshkosh, Platteville, River Falls, Stevens Point:** Programming I – APC 300
    - - This course offers an introduction to the history of computing, fundamental computer concepts and structured programming techniques. Java will be used to teach the basic concepts of program analysis, design, implementation, debugging and testing. It provides hands-on coverage of simple data types, problem solving, program design, conditional execution, loops, and basic user-defined methods.
    - https://appliedcomputing.wisconsin.edu/courses/programming-i/

- **Green Bay Data Science Certificate:**
    - Providing an introduction to the history of computing, fundamental computer concepts, procedural and structured programming techniques, including Python.
    - https://www.uwgb.edu/certificate-programs/data-science/

- **Milwaukee**: Introductory Computer Programming – COMPSCI-250.
    - Problem solving with structured programming techniques using an object-oriented programming language, including control structures, functions, arrays, vectors, and predefined objects.
    - https://catalog.uwm.edu/course-search/

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Introduction to Databases

- <mark>**RECOMMENDED****</mark> Stevens Point: Database Design and Implementation - CIS 210
    - Analyze and design databases to support computer-based information systems. Develop and program relational database management systems using SQL.
    - https://catalog.uwsp.edu/preview_course_nopop.php?catoid=22&coid=67078

- <mark>**RECOMMENDED****</mark> Milwaukee, Oshkosh, Platteville, River Falls, Stevens Point: Database Management I – APC 360
    - This course covers the design and implementation of relational database management systems to support computer-based information systems. Topics include: data modeling techniques such as entity-relationship modeling, extended entity-relationship modeling, database normalization techniques, and basic and advanced features of database query language SQL.
    - https://appliedcomputing.wisconsin.edu/courses/apc-360-database-management/

- Green Bay: Database Design & Management – COMP SCI 221.
    - This introductory course focuses on how databases and database systems work and how they are used in various data-driven applications. The course covers relational databases, SQL, different ways of designing databases, and management of databases. The course provides hands-on experience with exercises using SQL Server and Microsoft Access and includes group discussions. The course also introduces some advanced topics, including database security, data privacy, data analytics, and big data. Working knowledge of Microsoft Office suite and Windows is required for this course.
    - http://sis.uwgb.edu/schedule/

- Green Bay Data Science Certificate:
    - Providing an overview of basic concepts of SQL (Structured Query Language and basic concepts of relational database systems.
    - https://www.uwgb.edu/certificate-programs/data-science/

- Milwaukee: Database Information Retrieval Systems – INFOST-410.
    - Introduces the design and development of different types of electronic information systems, including database types, design issues, application development, and software selection and evaluation.
    - https://catalog.uwm.edu/course-search/

- Parkside: Database Management Systems – MIS 328.
    - Data modeling techniques including object-oriented modeling, database systems concepts, and use of structured query language for information processing, client/server architecture, distributed databases. This course may be offered online.
    - https://www.uwp.edu/learn/courseschedule/