# MINOR IN MACHINE LEARNING

Machine learning (ML) is the science of creating algorithms that learn from data. ML systems are everywhere, from cars and smartphones to various home devices. Businesses of all sizes are investing in ML technology. ML is also ubiquitous across the sciences: Many areas of science generate large amounts of data and rely on ML to assist in making new discoveries in fields ranging from particle physics to medicine.

The ML minor provides students a path that includes introductory and advanced machine learning courses along with the necessary foundational coursework and skills in computing, math, and statistics.

## Learning Outcomes

Upon successful completion of this program, students will be able to:

1. Develop ML approaches for complex real-world problems.
2. Use a broad range of ML tools, techniques, and algorithms.
3. Apply ML tools in an ethical and socially responsible manner, with an awareness of biases that can result from their indiscriminate use.
4. Communicate results of complex analyses using appropriate visualization techniques.

Computer Science has competitive entrance requirements. Please contact a department advisor for more information.

## Requirements Effective Fall 2022

**A minimum grade of C (2.000) is required in all courses required for the minor.**

**Additional coursework may be required due to prerequisites.**

**Students must satisfactorily complete the total credits required for the minor. Minors and interdisciplinary minors require 12 or more upper-division (300- to 400-level) credits.**

| Code | Title | Credits |
|---|---|---|
| CS 165 | CS2--Data Structures | 4 |
| CS 220 | Discrete Structures and their Applications | 4 |
| CS 345 | Machine Learning Foundations and Practice | 3 |
| CS 445 | Introduction to Machine Learning | 4 |
| Select one course from the following: | | 2-4 |
| CS 162 | CS1--Introduction to Java Programming | |
| CS 163 | CS1---No Prior Programming Experience | |
| CS 164 | CS1--Computational Thinking with Java | |
| Select one course from the following: | | 3-4 |
| DSCI 369 | Linear Algebra for Data Science | |
| MATH 369 | Linear Algebra I | |
| Select one course from the following: | | 1-3 |
| STAT 301 | Introduction to Applied Statistical Methods | |
| STAT 302A | Statistics Supplement: General Applications | |
| STAT 303/ ECE 303 | Introduction to Communications Principles | |
| STAT 307 | Introduction to Biostatistics | |
| STAT 315 | Intro to Theory and Practice of Statistics | |
| **Program Total Credits:** | | **21-26** |