■ Machine Learning Study Schedule (16 Weeks)

■ Objective: Learn theoretical foundations, apply real models, and understand the math behind ML.

■ Books:

• Hands-On ML (HOML) → Applications with Python, Keras, TensorFlow
• Introduction to Statistical Learning (ISLR) → Statistical foundations
• Mathematics for ML (MfML) → Linear algebra, calculus, probability, optimization

■ Phase 1: Fundamentals (Weeks 1–4)

Objective: Familiarize with ML basics, statistics, and math review.

Week	Book	Content
1	ISLR	Ch. 1–2: Introduction + Linear regression
1	MfML	Ch. 1–2: Linear algebra (vectors, matrices)
2	HOML	Ch. 1–2: What is ML + example projects
3	ISLR	Ch. 3: Classification (kNN, logistic regression)
3	MfML	Ch. 3: Subspaces, projections
4	HOML	Ch. 3–4: Classification + model training

■ Phase 2: Classical Models + Math Foundations (Weeks 5–8)

Objective: Deepen knowledge in classical techniques and mathematics.

Week	Book	Content
5	ISLR	Ch. 4: Multiple linear regression
5	MfML	Ch. 4: Calculus (derivatives, gradients)
6	HOML	Ch. 5–6: Regression models and trees
7	ISLR	Ch. 5–6: Model selection + trees
8	MfML	Ch. 5: Basic probability

■ Phase 3: Neural Networks + Optimization (Weeks 9–12)

Objective: Dive into deep learning and optimization.

Week	Book	Content

9	HOML	Ch. 10–11: Neural networks + Keras
9	MfML	Ch. 6: Optimization and gradient descent
10	ISLR	Ch. 9–10: SVM + PCA
11	HOML	Ch. 12: Regularization, Dropout, BatchNorm
12	HOML	Ch. 13: Intro to CNNs

■ Phase 4: Final Projects + Review (Weeks 13–16)

Objective: Consolidate with applied projects + theoretical review.

Week	Activity
13–14	Project 1: Classification (HOML + ISLR + tuning)
15	Project 2: Neural network in Keras (CNN or RNN)
16	Global review: summaries, common errors, weak chapters

■■ Estimated Weekly Effort

Activity	Hours/week
Reading (2 books)	~5 hours
Coding / exercises	~4 hours
Notes / review / videos	~2–3 hours