Module 1 – Machine Learning Ensembles

- What is a machine learning ensemble?
- Decision tree ensembles are state-of-the-art
- Boosted decision tree ensembles

Module 2 – Gradient Boosting with xgboost

- The gradient boosting algorithm
- Preparing data for xgboost
- Training xgboost using tidymodels
- Hands-on Lab #1

Module 3 – Tuning xgboost

- The many xgboost hyperparameters
- Grid searches and cross-validation with tidymodels
- Practical approaches for tuning xgboost models
- Hands-on Lab #2

Module 4 – Evaluating xgboost models

- Classification Metrics
  - Accuracy
  - Sensitivity
  - Specificity
- Regression Metrics
  - RMSE
  - MAE
- Collecting metrics using tidymodels
- Hands-on Lab #3

Module 5 – Explainable xgboost Models

- Explainable Machine Learning Models
  - The Goldilocks Zone
  - Controlling Complexity
- What is SHAP?

- SHAP and xgboost
- Hands-on Lab #4

Module 6 – Course Wrap-Up
- Want to Kaggle?
- Additional Resources