## 1.0 Slides

**Slide 8**:

* Title of module 4 missing
* Might consider reiterating here how the videos, notebooks, and live sessions fit together in the module

1. Order? Watching all the videos, then doing the notebooks? Or doing them in the order provided?
2. How to use notebooks? Just read through them? Encourage them to experiment, etc.?

**Slide 11**:

Some recommendations around reframing the learning objectives as measurable outcomes:

* 1. Describe the basic ideas and concepts underlying the practice of machine learning
  2. Identify where and how machine learning can play a key role in cybersecurity
  3. Analyze machine-learning models using statistical tools and choose the best model for a use case
  4. Implement for cybersecurity applications a variety of machine learning models, from classical models such as logistic regression to deep learning techniques such as convolutional neural networks

## Slides

**Title Slides:** Remove date.

**Slides 2 and 4:**

This might be part of the presentation—but it would be worth explaining what “Classical” ML models and “Statistical Machine Learning Framework” mean—i.e., is this to distinguish them from a non-classical or non-statistical approach?

**Slides 2-7**:

Might be part of your plan—but it could help to explain these with a concrete example illustrating what’s going on here (so you could say e.g. what in the given scenario the domain set would be, the objective would be, etc.)

Would also just be really explicit about how, as practitioners, they would be interacting with, say, loss functions, and where different loss functions might be good choices etc.

**Slide 8**:

Just want to make sure there’s some sort of transition here, moving from basic ML terminology and objectives to regularization

**Slides 9-11**:

Likewise, any concrete example(s) you can bring to bear here to illustrate would be extremely valuable

## Slides

**Slide 2:** Suggest beginning with a motivating example of some kind, and then explaining how these two techniques (discriminative vs generative) would approach it.

**End**: Are there any rules of thumb or guidelines you would provide around the strengths and weaknesses of discriminative vs generative approaches, or when, as a practitioner, your instinct should be to use one vs the other?

## Slides

Suggest beginning with some sort of link to the previous segment—this doesn’t need to be part of the slide deck necessarily. But suggest beginning by comparing or contrasting this new segment on neural nets to the previous

Also suggest, as before, beginning with some motivating example, or some description of where/when/how students may want to use neural nets before diving into what they are and how they work in detail

**End**: similar suggestion to last time…if possible maybe describe or summarize where practitioners might find themselves using classical methods vs different kinds of neural nets

## Slides

As usual, suggest contrasting with what came before, and including 1 or more examples to illustrate

**Slide 8**: Like this slide a lot. Might be an opportunity to mention use cases that would work or not work well with k-means.

Might also compare K-means to the different clustering approaches mentioned back in slide 5 and where learners might want to try them

**Slide 16:** This slide doesn’t exist but it could be a good opportunity to summarize the main takeaways from this section.

## Slides

The plan is still to set up a JupyterHub instance for learners so that they can do these labs in the cloud without installing anything locally—but you might want to mention the pros and cons of working in the cloud vs installing Python locally, or why they might want to do the latter even if the former is an option.

**Title Slide:** Remove date.

## Notebooks

I think they need more explanation in the form of markdown. Would also be as explicit as possible about how you want learners to learn from them and what you want learners to do with them.

E.g., after doing the logistic regression notebook, is the idea that they will be able to go on to code their own gradient descent functions? Or is the idea for them to play around with the code and walk away with a very general understanding of how it works?

Other notes:

Some pieces that don’t appear here—may be by design, just wanted to flag since it may require some explanation:

* focus seems to be entirely on classification, not regression
* no discussion of model selection (came up on the call)—I see e.g. that the notebooks look at classification accuracy for different models, that will require some explanation
* To what degree will learners be able to implement techniques that aren’t explicitly discussed in the slides? The sklearn classification notebook does delve into a number of techniques that aren’t mentioned in the PowerPoints…that’s fine but they’ll require some extra explanation
* Will they get notebooks showing them how to implement neural networks and the unsupervised learning techniques?
* Include summary slides after each module
* Based on the learning outcomes, begin thinking about some assignments you can create for participants. How do I chose the correct modeling for this particular use case? Or develop a worksheet for participants to work through?