# Unit 4. Checklist

## General Scheme of the Digital Communication System

* Do I know what a symbol is?
* Do I have a clear understanding of all the blocks in the system representation?
* Do I understand the purpose of each block?

## Signal Space

* Do I clearly understand the concepts of an orthonormal set of basis functions, signal space, constellation, and decision region?
* Do I know how to compute an orthonormal set of basis functions given a set of signals?
* How is the energy of a signal related to its vector in the signal space?

## Decision Criteria

* What do the MAP and ML criteria consist of?
* What is the geometric interpretation of the ML criterion?

## Error Probability Calculation

* Do I know how to calculate the exact value of the error probability in a simple, one-dimensional constellation? And can I do the same if the noise is not AWGN?
* For more complex cases, do I understand how bounds work?
* What is the difference between the union bound and the simplified union bound? When are they equal?
* What parameters can I modify in the system to reduce the probability of error?

## System Implementation

* Do I clearly understand each of the detector implementations: the bank of correlators and the bank of matched filters?
* Do I clearly understand the decisor’s implementation?

## Have I completed the review problem?