

Communication Systems: An Open Communications Design Project

Introduction:

In the Design Project project you will first decide on a communications project that of interest to you. This design will be:

- A full communication system (e.g. Broadcast AM using Envelope detector vs Synchronous detector, SSB, Narrow band FM for communications, Broadcast FM, Each of the previous ones – choose a detector type from those in the text but add “Zero Crossing Counter” or if you are really ambitious, FM Using my patented “Power Mean Frequency” FM detection system.) from audio in to audio out. Or you could do a research topic taken from one of the later text chapters.
- You will simulate your design in MatLab/Simulink including:
 - All subsystems and the connecting transmission channel
 - The transmission subsystem will introduce adjustable amounts of Gaussian white noise and out of channel interfering signals (Adjacent channel, Image, ...).

Deliverables (Team uploads to Blackboard):

1. **Project Definition:** Identify your team (2-3 members) and define your project choices.
2. **Full Project Report:** including Theoretical analysis for comparisons, plots of your simulation results as well as documenting your design objectives, chosen solutions, and discussion of results.
3. **Project Simulation Files:** upload a full set of your MatLab/Simulink simulation files in a zip archive.
4. **PowerPoint-based presentation:** covering your system and results. All team members should take part in the presentation.

The presentations will take place in-class before and during Finals week.