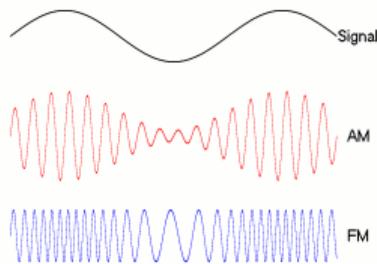


# Amplitude Modulation

Is concerned with the fundamental principles of **communication systems**. The basic or the key principles that are necessary to understand the functioning of communication systems. Several communication systems starting from the most basic ones such as based on amplitude, **modulation**, frequency, modulation to most modern ones such as based on **digital communication** and similar systems. So as I was saying



*figure: Amplitude modulation*

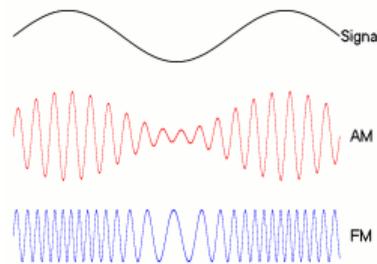
It is a very fundamental course. It is a undergraduate.



*figure: Telecommunications*

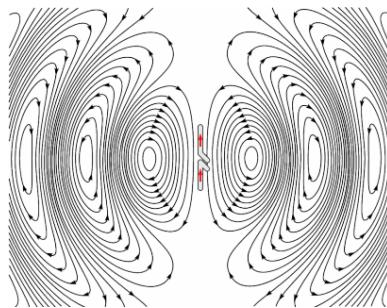
Is an undergraduate level course, but also the groundwork for some concepts in graduate level courses such as wireless **communications** and more modern **communication systems**. So, we are going to cover the various fundamental concepts of communication systems which are essential, which can lay the groundwork or lay the foundation to understand more advanced concepts of communication systems such as when we look at sellar communication systems or cooperative communication systems. So let us look at some of these concepts. One of the key concepts that we are going to start with is basically amplitude **modulation**. It is one of the most fundamental and oldest techniques of an allow communication. Amplitude modulation is one of the earliest techniques of **radio wave communication** in which sage signal modulates the amplitude of high frequency carrier wave and in amplitude modulation, there are several issues for instance. How is amplitude modulation performed? what are the various factors that amplitude

modulation, what are the various demodulation and modulation strategies? what are the various techniques of amplitude modulation such as single side band modulation double side band modulation: vestigial side band modulation. These are the techniques that we are going to look at and we are going to understand amplitude modulation in a very fundamental way. Since **carrier modulation** is also employed in all the **major communication systems** such as when you look at cellular communication systems or dual communication systems. Even in the modern wireless communication



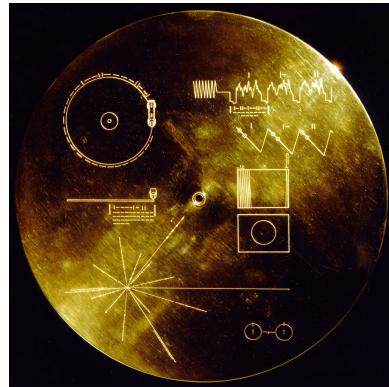
*figure: Frequency modulation*

Now frequency **modulation**



*figure: Radio wave*

That is another interesting, the one of the very fundamental again, one of the oldest **communication systems**, employing radio wave signals so in which the frequency of a high frequency carrier wave is varied in proportion to a modulating signal. Now, we would like to understand how is frequency **modulation** carried out. This is the performance of frequency modulation robust? how do we generate frequency **frequency modulation system**? what are the principles governing the generation of frequency modulation system, frequency modulated signals and the demodulation of frequency modulated signals. What various parameters



*figure: Communication*

Now following this, we will have a transition to digital communication systems. That is we have analog information signals, analog message signals such as voice, video, speed signal, video signal and several other signals. Now, how do you convert them into a digital digital format or digital information symbol? so as to make it so as to make them suitable for transmission over the modern digital communication system? or why wireless digital communication systems such as cellular? so how do you process the information? how do you sample? naturally, one has to sample these signals? so what are the properties of this sampling operation? that distortions that are induced by this sampling operation. How do you ensure that information the original analogue information can be reconstructed accurately from this sample signal, from the digital information that is generated from this sample signal. So, these are the aspects. And these are the fundamental principles which govern all the communication systems and which are necessary for understanding even advanced systems, **advanced communication** systems that we are going to look at in this course all right. So this course, I would like to again say it looks at the fundamentals with principles of **communications** which are necessary to understand.

These will be explained in a very clear and logical fashion, so that it bridges the gap between the theory, the theoretical concepts that students are aware of and the application of these, and supposed to lay the foundation all right solid foundation to understand and motivate understanding of **advanced communication** of the more modern wireless **communication systems** such as similar g. Three g g and now even g wireless communication systems, up and **several other communication systems** such as cooperative communication systems or cognitive radio communication systems. This course is intended for primarily anyone who is interested in learning more about the principles of communication engineering students in students management at the undergraduate also the postgraduate levels. Students were looking to enhance the understanding of the fundamental of communication systems can take this course. And so the part two of this course which is expected to come later, which is expected to bridge the bridge focus on the performance of communication systems in noise and more important. Digital communication systems information theoretic aspects. Some coding aspects era. And since this is a fundamental course, the prerequisites are fairly basic. It requires knowledge, basic knowledge of mathematics, differentiation rules of differentiation integration

A basic theory of signals and systems such as the freer transform discrete for year series and also some familiarity with high level concepts such as **modulation** noise will additionally be beneficial, although strictly speaking. This is not necessary, so once again, i would like to take this opportunity to welcome you to this fundamental course. On **communication systems** i hopefully i hope you will benefit and you learn a lot from this course and the principles and the concepts that you learn from this course will motivate. You will also help you understand the properties behavior analyzing the performance of **communications** or more **advanced communication** systems that you will encounter in the future or in a graduate level course.

Thank you very

A iiiiiichaaaaach

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