

## 1. Description:

For the mini group project, students will work in groups of 3-4 to design and analyze an advanced antenna system for a 5G/6G telecommunication application. Each group will be assigned a specific problem statement related to antenna design and will be expected to use simulation tools and techniques to propose a solution that meets the specified performance requirements.

The project will consist of the following key components:

- Problem statement: Each group will be assigned a specific problem statement related to antenna design for 5G/6G systems.
- Antenna design: Students will use simulation tools and techniques to design and optimize an advanced antenna system that meets the specified performance requirements.
- Analysis: Students will analyze the performance of their antenna system and evaluate its impact on overall network performance.
- Report: Each group will be required to submit a report detailing their design methodology, analysis results, and conclusions.
- Presentation: Each group will give a short presentation to the class summarizing their project and highlighting key findings.

Through this project, students will have the opportunity to apply the theoretical concepts they have learned in class to a real-world antenna design problem. They will also develop critical thinking skills and the ability to work collaboratively in a group setting.

## 2. Possible Projects

- Design and simulation of antenna arrays for 5G/6G systems
- Design and simulation of millimeter-wave antennas
- Beamforming simulation and analysis
- Performance evaluation of MIMO systems