COURSE OVERVIEW

Full Course Title: 5G Technology

Instructional Hours (Contact Hours): 30

Course Description:

This hands-on course is designed to provide students with a comprehensive understanding of 5G Technology and method, with a strong emphasis on practical applications. Participants will gain practical skills and experience in leveraging 5G Technology to extract meaningful insights from diverse Open Source Tool. The course covers a range of topics, including RAN 5G, 5G Core Network, LTE-NR, 5G-NR and Call Flow 5G Use Case, preparing students for real-world scenarios in various industries.

Learning Outcomes:

- Apply designing methods to address a range of real-world problems.
- Handle extensive methods to preparing Antenna.
- Evaluate 5G Use Case visualizations based on how well they are designed.
- Analyze the data using various learning techniques and algorithms.
- Implement algorithms to real-world scenarios.
- Refine the models obtained.
- Report on the predicted accuracy by using the models.

Learning Activities:

- ☒ Class Discussions/Discussion Boards
- ☒ Peer-to-Peer Work (pairs, small groups)
- ☒ Written Assignments (reports, essays)
- ☒ Case Study Analysis
- ☒ Student Projects
- ☒ Readings
- ☒ Textbook/Workbook Exercises
- ☐ Other: Click to enter

Methods of Assessment/Grading Criteria:

- ☒ Class/Discussion Boards Participation
- ☒ Written Assignments (reports, essays)
- ☒ Exams/Quizzes
- ☒ Individual Projects/Presentations
- ☒ Group Projects/Presentations
- ☐ Other: Click to enter

Course Topics:

- **5G Evolution:** 1G to 5G
- **Technology & Standards:**
  - 3GPP Standards

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- o 5G Design Principle
- **5G Core Network:**
  - o Evolution of Mobile Network
  - o Core Design for Network
- **RAN 5G:** Tools and techniques using Matlab
- **5G NR :**
  - o IP Multimedia Subsystem (IMS)
  - o Matlab signal Frequency Spectrum Signal Design
- **LTE-NR:**
  - o Connectivity Schemes
  - o Internetwork process
  - o Modulation of Signal At LTE-NR
  - o Communication Design for Massive Machine

Prerequisites:

Previous knowledge of general communication related latency, Speed, Capacity, Network Slicing or equivalent is required before taking this course.