EEE425– Mobile Network Architectures

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| **Module Code** | EEE425 | **Module**  **Title** | Mobile Network Architectures | | | |
| **Credits** | 2 | **Hours/ Week** | **Lectures** | 14 | **Pre/Co –**  **requisites** |  |
| **Tutorials** |  |
| **GPA/NGPA** | GPA | **Continuous Assessment** | 42 |
| **Learning Outcomes** | | | | | | |
| At the end of the module the student will be able to: | | | | | | |
| 1. | Compare different generations of Mobile Systems 1G to 5G with respect to key technologies, capacity and scalability | | | | | |
| 2. | Explain elements of Mobile Network Architectures – GSM and LTE | | | | | |
| 3. | Explain 5G Mobile System key features | | | | | |
| 4. | Analyze 5G performance metrics | | | | | |
| **Outline Syllabus** | | | | | | |
| 1. | Key Technologies in Mobile Systems: AMPS, D-AMPS, GSM, 3G, 4G LTE, 5G Radio  Access Technologies – TDMA, FDMA, CDMA, OFDMA, EVDO, HSPA | | | | | |
| 2. | Elements of Mobile Network Architecture: Services/Applications, UE (ME, SIM), Access  Network, Core Network | | | | | |
| 3. | Type of Architectures and its elements: GSM+UMTS, LTE | | | | | |
| 4. | GSM & UMTS Network Architectures | | | | | |
| 5. | LTE Network Architecture | | | | | |
| 6. | 5G Mobile Systems: New use cases, extremely diverse requirements, Key Technology Components: New spectrum, Massive MIMO, Flexible frame design, Distributed architecture, Multi-connectivity (5G, LTE, WiFi), 5G Performance metrics – spectral efficiciency, latency, throughput, Signalling and Device power consumption, 5G Architecture | | | | | |
| 7. | **3GPP Standard: Overview, Standardization Process, Technical Specification Groups**  **(TSG) and Working Groups (WG), Specifications (latest releases)** | | | | | |
| 8. | Cellular IOT (Internet of Things) | | | | | |
| **Mapping of Learning Outcomes to Program Outcomes and Assessment Methods for each Learning**  **Outcome** | | | | | | |

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|  | **Assessment**  **Method** | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO  10 | PO  11 | PO  12 |
| LO1 | Presentation, exam | **H** |  |  |  |  |  |  |  |  |  |  | **H** |
| LO2 | Presentation, exam | **H** |  |  |  |  |  |  |  |  |  |  | **H** |
| LO3 | Presentation, exam | **H** |  |  |  |  |  |  |  |  |  |  | **H** |
| LO4 | Project, exam | **H** | **M** | **M** | **H** |  |  |  |  | **H** |  |  | **H** |
| **Overall Contribution to POs** | | **H** | **M** | **M** | **H** |  |  |  |  | **H** |  |  | **H** |
| **Recommended Text Books** | |  | | | | | | | | | | | |
| **Lecturer in Charge** | |  | | | | | | | | | | | |