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| **Course Code** | CSU5307 |
| **Level** | 5 |
| **Course Title** | Data Communication |
| **Credit value** | 3 |
| **Core/Optional** | Optional |
| **Prerequisites** | (EL/CR in 6 credits from L4 Computer Science courses)(CSU5304)+(CSU5305) (EL/CR ) and EL/CR in 6 credits from L4 Computer Science courses |
| **Hourly breakdown** | **Theory** | **Practical****hours** | **Independent Learning** | **Assessments** | **Total hrs.** |
| 25 Sessions X 2 = **50 hrs.** | 6 DS x 3 hrs. = **18 hrs.** |  **-** | * Sessions (25 x 3)

 = 75 hrs.* Online = 05 hrs.

Total = **80 hrs.** | * Continuous Assessments (CA) : **02 hrs.**
 | **150 hrs.** |
| **Course Aim/s.** | To give knowledge in data communication concepts , data transmission methods with encoding and multiplexing types, data link control, PSTN, ADSL and Cellular networks, and the knowledge in 4G and beyond with communication security. |
| **PLOs addressed by course**  | **PLO1: Knowledge:** Explain the fundamental, principles and broader knowledge pertaining to the chosen science disciplines offered for the degree.**PLO5: Creativity and Problem Solving:** Identify and analyze problems using quantitative and/or qualitative approaches using scientific methodology to provide valid conclusions. **PLO9: Lifelong Learning**: Develop the capacity to foresee new trends and their impacts and continuously update knowledge and develop skills willingly to meet those future challenges. |
| **Course Learning Outcomes (CLO)** | At the completion of this course student will be able to; CLO1: Explain about Data communication concepts with history and communication models, protocol architecture including TCP/IP and ISO.OSI model, data transmission including analog and digital data with transmission imperilments (PLO1, PLO5, PLO9)CLO2: Understand types of data encoding with data communication interfaces (asynchronous and synchronous transmission) plus the multiplexing, FDM, TDM (PLO1 PLO5, PLO9)CLO3: Comprehend how PSTN and ADSL work.(PLO1 PLO5, PLO9)CLO4: Explore about cellular technologies evolution and present.(PLO1 PLO5, PLO9)CLO5**:** Extend the knowledge to understand Communication security (PLO1 PLO5, PLO9) |
| **Content** **(Main topics, sub topics)**  | History of data communication and objective of the study, Communication Model - in General, Communication Model - Functional description, TCP/IP layered structure, ISO/OSI Model , Transmission Terminology , Analog and Digital Data Transmission, Transmission Impairments and Channel Capacity, Digital Data, Digital Signal, Digital Data, Analog Signal, Analog Data, Digital Signal, Analog Data, Analog Signal, Asynchronous and Synchronous Transmission, Line Configuration, Frequency Division Multiplexing, Time Division Mulptiplexing, Flow Control, Public Switched Telephone Network, Asymmetric Digital Subscriber Line, Network Evolution, GSM- Global System for Mobile Communication, GSM Communication, 4G – LTE, Communication Network Security. |
| **Teaching Learning methods (TL)** | Self-learning/independent learning of self - study (IL)* Learning the course contents in course materials in print and web-based materials (SS)
* Additional reading materials/ recommended reading (RE)

Contact sessions* Day schools (discussion sessions) (Non-compulsory)
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| **Assessment strategy** | Overall Continuous Assessment Mark (OCAM): 40% | Final Assessment: 60 % |
| Details: Continuous Assessment (CA I) : **01 hr.**  Continuous Assessment (CA II) : **01 hr.** OCAM computation: OCAM= 60% of best CA I/CA II+ 40% of other CA I/CA II | Final Evaluation Theory: **02 hrs.** |
| **Recommended** **Readings:** | 1. Tannenburm A . 2015. *Data Communication* . India. Person
2. Stolling W. 2015. *Data Communication*
3. Forouzan A.B. 2012. *TCP/IP protocol suite.*
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