

**D.N.R COLLEGE OF ENGINEERING & TECHNOLOGY**  
**Department of Electronics and Communication Engineering**  
**Academic Year: 2019- 2020 (ODD Semester)**  
**Innovative Teaching Method**

**B-Tech, Semester& Branch:** II/ I Semester ECE

**Title:** Random Variables & Stochastic Processes

**Name of the Faculty member:** G.Suri Babu

**Name of the Topic:** Random Variable

**Name of the Innovative Practice:** Problem solving and exercises

**Date& Duration:** 18.07.2019 & 40 Minutes

**Problem solving and exercises:**

Problem-solving and exercises teaching methodology focuses on actively engaging students in solving problems and completing exercises as a primary means of learning. This approach emphasizes practical application, critical thinking, and the development of problem-solving skills. Here are some key aspects of this teaching methodology:

**Benefit of the Problem solving and exercises:**

- By employing problem-solving and exercises teaching methodology, educators empower students to become active learners and critical thinkers. This approach equips students with valuable skills that extend beyond the classroom and prepares them for future challenges in their academic and professional lives.
- By using a problem-solving and exercise teaching methodology, students actively engage with probability theory, apply their knowledge to practical scenarios, and develop critical thinking and analytical skills.

This hands-on approach enhances their understanding of probability concepts and prepares them to apply probability theory in various real-world situations.

**REFERENCE BOOKS:**

1. Probability Theory and Stochastic Processes – B. Prabhakara Rao, BS Publications
2. Probability and Random Processes with Applications to Signal Processing, Henry Stark and John W. Woods, Pearson Education, 3rd Edition.
3. Schaum's Outline of Probability, Random Variables, and Random Processes.
4. An Introduction to Random Signals and Communication Theory, B.P. Lathi, International Textbook, 1968.
5. Random Process – Ludeman , John Wiley
6. Probability Theory and Random Processes, P. Ramesh Babu, McGrawHill, 2015.

**D.N.R COLLEGE OF ENGINEERING & TECHNOLOGY**  
**Department of Electronics and Communication Engineering**  
**Academic Year: 2019- 2020 (Even Semester)**  
**Innovative Teaching Method**

**B-Tech, Semester& Branch:** III/ II Semester ECE

**Title:** Bio-Medical Engineering

**Name of the Faculty member:** G.Suri Babu

**Name of the Topic:** Biochemical Transducers

**Name of the Innovative Practice:** Zero Minute Speech

**Date& Duration:** 17.02.2020 &10 Minutes

**Description:**

The activities included in this line are directed towards the development of electrochemical and optical / photonic transducers based on different transduction principles with the aim of improving transducers performance and developing new (bio)sensor approaches, autonomous systems, and implementation into platforms for lab-on-a-chip analytical systems. Specific research is carried out on:

Electrochemical devices: Ion-selective field effect transducers (ISFETs), impedimetric microelectrodes, voltammetric and amperometric transducers based on two and three-electrode cells, microelectrode arrays, nanomaterial-based transducers.

Photonic/Optical devices: Different configurations for recording spectral response, scattering and phase modulation analytical signals.

Silicon based devices: Micro-optical components, interferometric devices, optomechanical components, Si nanocrystal light emitters.

Hybrid Si/polymer integration: Development of polymeric optical elements, multiple internal reflection devices (MIR), and integration in micro fluidic lab-on-chip systems.

Advanced materials and processes: Functional organo-inorganic polymeric materials, nanostructured materials, wax. Material processing technologies for integration into analytical microsystems.

Chemical sensor systems and arrays: Electrical protein microarray readers, multisensor systems, wireless RFID-like sensors.

**References:**

1. "Introduction to Bio-Medical Equipment Technology", 4th Edition, Joseph J. Carr, John M. Brown, Pearson Publications.
2. "Hand Book of Bio-Medical Instrumentation", Khandapur. McGrawHill

**Significance of Results:****Assessment of Effectiveness/Success of the Activity:**

The assessment of effectiveness of the activity was felt when the students were asked questions on the topic on the next week they were able to answer easily

**Reflective Critique:** **Benefits:**

The students were more interested in learning the concepts if they are doing sketch noting the points. They clarified their doubts with the neighbouring students and the faculty. They learnt the concepts of propagation mechanism clearly by performing sketch noting. They asked more doubts in the topic and learnt many things.

**Challenges:**

Basically some time is needed to explain the basic concepts of propagation mechanism. Then after explaining the students have to register the concepts in their mind and need to execute the concepts in terms of drawings or points in the paper.

**REFERENCES :**

1. Wireless Communications – Theodore. S. Rappoport, Pearson education, 2nd Edn., 2002.
2. Wireless and Mobile Communications – Lee McGraw Hills, 3rd Edition, 2006.
3. Mobile Cellular Communication – G Sasibhushana Rao Pearson
3. Wireless Communication and Networking – Jon W. Mark and Weihua Zhqung, PHI, 2005.