

IT8T1**BIOMETRICS****Credits:3****Lecture: 3 Periods/week****Internal assessment: 30 marks****Practice/Interaction: 1Period/week****Semester end examination: 70 marks****Objectives:**

- To explain Biometric Matching, Accuracy and Finger Scan Technology.
- To introduce Facial Scan, Iris Scan, Voice Scan and other Biometric Technologies.
- To explain Biometric Solution Matrix and various Biometric Standards.
- To explain the use of Biometrics in Network Security.

Outcomes:

Students will be able to

- Understand Finger Scan Technology and Accuracy of Biometrics.
- Understand Facial Scan and Iris Scan Technologies.
- Understand Voice Scan, other physiological Biometrics and Behavioral Biometrics.
- Identify Different Biometric Applications.
- Apply Biometrics for Network Security.

Prerequisites:

Data Communication and Computer Networks, Cryptography and Network Security.

Syllabus:**UNIT -I**

Introduction: Benefits of biometric security – Verification and Identification – Basic working of Biometric matching – Accuracy – False match rate – False non-match rate – Failure to enroll rate – Derived metrics – Layered biometric solutions.

Finger Scan: Features – Components – Operation (Steps) – Competing finger Scan technologies – Strength and weakness. Types of algorithms used for interpretation.

UNIT -II

Facial Scan : Features – Components – Operation (Steps) – Competing facial Scan technologies – Strength and weakness.

Iris Scan : Features – Components – Operation (Steps) – Competing iris Scan technologies – Strength and weakness.

UNIT- III

Voice Scan: Features – Components – Operation (Steps) – Competing voice Scan (facial) technologies – Strength and weakness.

Other physiological Biometrics: Hand scan – Retina scan – AFIS (Automatic Finger Print Identification Systems)-DNA Scan – Behavioral Biometrics – Signature scan keystroke scan.

UNIT- IV

Biometric Applications: Biometric Solution Matrix –Bio privacy Comparison of privacy factor in different biometrics technologies – Designing privacy sympathetic biometric systems. Biometric standards – (BioAPI , BAPI) – Biometric middleware.

UNIT -V

Biometrics for Network Security: Recommended Biometrics for network security, Biometric Spoofing.

Text Books:

1. Biometrics – Identity Verification in a Networked World – Samir Nanavati, Michael Thieme, Raj Nanavati, WILEY- Dream Tech.
2. Biometrics for Network Security- Paul Reid, Pearson Education.

Reference Books:

1. Introduction to Biometrics, Anil K. Jain, Arun A. Ross and Karthik Nanda kumar, 2011.
2. Guide to Biometrics, Ruud Bolle, Jonathan Connell, Sharanth Chandra Pankanti, Nalini Ratha and Andrew Senior, 2003.
3. Biometric Systems Technology, Design and Performance Evaluation, by James L. Wayman, Anil K. Jain, Davide Maltoni and Dario Maio, 2004.
4. Handbook of Face Recognition, Stan Z. Li and Anil K. Jain, 2005.

e-Learning Resources:

1. <http://freevideolectures.com/Course/3252/Biometrics>
2. <http://nptel.ac.in/courses/106104119/>