SHRI VAISHNAV VIDHYAPEETH VISHVAVIDHYALAYA, INDORE

SHRI VAISHNAV INSTITUTE OF FORENSIC SCIENCE

GENERIC ELECTIVE

POST GRADUATE III SEMESTER

Course Code	Course Name	TEACHING & EVALUATION SCHEME								
		THEORY			PRACTICAL		L	T	P	Credits
		End Semester University Exam	Two Term Exam	Teachers Assessment*	End Semester University Exam	Teachers Assessment*				
GPFS101	Forensic Biometrics	60	20	20	00	00	3	0	0	3

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; C - Credit.
***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Learning Objectives: After studying this course the students will know –

- The characteristics of biometrics
- The physiological biometrics (Fingerprint, Face, Eye, Ear, Hand Geometry)
- The behavioral biometrics (Signature, Handwriting etc)
- The Speaker Identification

Learning Outcomes: After studying this course the student will be able to-

- Understand the features of good biometrics
- Familiar with various types of biometrics techniques.

UNIT-I

Introduction: Biometric fundamentals – Biometrics vs traditional techniques; Types of Biometrics; Characteristics of a good biometric system ; Benefits of biometrics; Key biometric processes: verification, identification and biometric matching ; Performance measures in biometric systems.

UNIT II

Fingerprint : Minutiae Based Fingerprint Matching, Non-minutiae Based Representations, Fingerprint Enhancement, and Fingerprint Classification, AFIS.

Face Recognition: Introduction –Image acquisition: 2D sensors ,3D sensors- Face detection- Feature extraction -matching.

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UNIT III
Eye Scan: Iris Scan, Retina Scan;
Ear recognition.
Hand geometry

UNIT-IV
Signature and Handwriting technology - Technical description – classification – keyboard / keystroke dynamics

UNIT-V
Voice Biometrics: data acquisition - feature extraction - characteristics - strengths – weaknesses-deployment.
Gait Biometrics: feature extraction and matching;

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Suggested Readings:

1. Massimo Tistarelli, Christophe Champod, Handbook of Biometrics for Forensic Science,Springer, 2017
2. James wayman,Anil k.Jain ,Arun A.Ross ,Karthik Nandakumar, ―Introduction to Biometrics‖, Springer, 2011
3. John Vacca "Biometrics Technologies and Verification Systems" Elsevier 2007
4. James Wayman,Anil Jain,David MAltoni,DasioMaio(Eds) "Biometrics Systems Technology",Design and Performance Evalution.Springer 2005
5. Khalid saeed with Marcin Adamski, Tapalina Bhattasali, Mohammed K. Nammous, Piotr panasiuk, mariusz Rybnik and soharab H.Sgaikh, ―New Directions in Behavioral Biometrics‖, CRC Press 2017
6. .Paul Reid "Biometrics For Network Security "Person Education 2004
7. Shimon K.Modi , ―Biometrics in Identity Management :concepts to applications‖, Artech House 2011
8. D. Maltoni, D. Maio, A. K. Jain, and S. Prabhakar; "Handbook of Fingerprint Recognition"; Springer Verlag, 2003.
9. A.K. Jain, R. Bolle, S. Pankanti (Eds.); "BIOMETRICS: Personal Identification in Networked Society", Kluwer Academic Publishers, 1999.

10. J. Wayman, A.K. Jain, D. Maltoni, and D. Maio (Eds.); Biometric Systems: Technology, "Design and Performance Evaluation"; Springer, 2004.