



Type of course: Core

Prerequisite: Basics of Mathematics

Rationale: As security continues to be a major concern for today's society, a reliable means of personal identification is required by commercial, law enforcement and physical access control applications. Biometrics is the science of identifying or authenticating an individual's identity based on behavioral or physiological characteristics. Government Ids, secure electronic banking, retail sales, and health and social services all have benefited from the use of biometric technology and will continue to do so as biometric research advances. This course introduces students to the basic principles and methods used for biometric identification. The objective is to provide students with the scientific foundations needed to design, implement, and evaluate large scale biometric identification systems.

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Marks				Total Marks
L	T	P		Theory Marks		Practical Marks		
			ESE (E)	PA(M)	ESE (V)	PA(I)		
3	0	0	3	50	0	0	0	50

L- Lectures; T- Tutorial/Teacher Guided Student Activity; P- Practical; C- Credit; ESE- End Semester Examination; PA- Progressive Assessment

Contents:

Sr. No.	Practical / Hands on Exercise	Teaching Hrs.	Module % Weightage
1	UNIT-I Concepts - biometric recognition, biometrics, requirements for biometrics, Biometric systems, their modes and architectures, Biometric system errors and evaluation,	12	30
2	UNIT-II Overview, comparison and evaluation of various biometrics, Unimodal biometric systems, their advantages, disadvantages and limits, Multimodal biometric systems, their modes of operation, levels of fusion	10	30
3	UNIT-III Biometric pattern recognition methods, Privacy protection and social acceptance, Biometric standardization, data formats, Design and implementation of biometric systems, applications of biometric systems, biometric databases, security of biometric systems	12	30
4	UNIT-IV Biometric system vulnerabilities, circumvention, covert acquisition, quality control, template generation, interoperability, data storage	8	10
	Total	42	

Reference Books:

1. Biometrics, Michael Thieme, Samir Nanavati, Raj Nanavati; WILEY
2. Introduction to Biometrics, Anil K. Jain, Arun A. Ross, Springer

Suggested Specification table with Marks (Theory): (For BVOC only)



GUJARAT TECHNOLOGICAL UNIVERSITY

Syllabus for Bachelor of Vocation (B.Voc), 6th Semester

Branch: Software Development

Subject Name: Introduction to Biometrics

Subject Code: 1160204

**With effective
from academic
year 2018-19**

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
10	20	20	0	0	0

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above Levels (Revised Bloom's Taxonomy)

Course Outcomes:

Sr. No.	CO Statement	Marks % Weightage
CO-1	Understand the basics of Biometrics	30
CO-2	Understand the various models of biometrics system	30
CO-3	Understand the biometrics pattern recognition methods	30
CO-4	Understand the biometric system vulnerabilities	10

List of Open Source Software/learning website :

List of Journals / Periodicals / Magazines / Newspapers / Web resources, etc.

1. NPTEL
2. <https://www.coursera.org/>
3. <https://www.udemy.com/course/biometrics/>