

University of Technology
Computer Engineering Department
Academic Year 2023 - 2024
Fourth Year – First Semester – (IE/NE) Branch



Code	Biometric	2 Hours/Week	2 Units
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Contents of Syllabus	Hours
Introduction of biometric: traits and its aim, Image processing/pattern recognition/statistics, Error types.	2
Image processing basics: what is image, acquisition, type, point operations, Geometric transformations. Linear interpolation, brightness correction, histogram.	2
Biometric system: authentication, physiological and behavioral properties, properties of biometric system, application areas.	2
Biometric Resources and Standards	2
Biometric System Modalities <ul style="list-style-type: none"> • Face Recognition • Fingerprint recognition • Iris Recognition • Hand Shape Recognition 	8
Other Biometric Modalities	2
Identification/verification, Threshold, Score distribution, FAR/FRR, System design issues.	2
Positive/negative identification, Biometric system security, Authentication protocols, Authentication methods.	4
Matching Techniques: null and alternative hypothesis h_0 , h_1 , Error type I/II, Matching score distribution, FM/FNM, ROC curve, DET curve, FAR/FRR curve.	4
Multimodal Biometrics	2

Textbook:

1. **Biometrics in the New World, Julian Ashbourn, 2014**
2. **Introduction to Biometrics, Prof. Anil K. Jain & Dr. Arun A. Ross, 2011**