CENTRAL UNIVERSITY OF KERALA
DEPARTMENT OF COMPUTER SCIENCE
M.Sc. COMPUTER SCIENCE

ELECTIVE COURSE					
COURSE CODE	COURSE TITLE	CONTACT HRS/WEEK			CREDITS
		LEC	LAB	TUT	
CSC5011	Biometrics	2	2	1	4

Lec = Lecture, Tut = Tutorial, Lab = Practical

This is a participatory and experimental **skill development course**.

Course Objective:
The objective of the course is to provide theoretical and practical aspects of biometrics.

By completing this course, students will obtain the following course/learning outcomes:
1. Knowledge gained:
   (i) Theoretical concepts of developing methods and algorithms for biometrics
2. Skill gained:
   (ii) Critical analyzing and logic skills in developing biometrics related methods and algorithms.
3. Competency gained:
   (iii) Modelling and development of biometric applications.

Prerequisites: Basic knowledge of image processing

Grading:

Lab implementation	– 15%
Participatory based group Project	– 10%
Assignment/Quiz/presentation	– 5%
Class Test	– 10%
Final Exam	– 60%

CSC5011 – Biometrics

Module 1: Introduction to biometrics
Introduction, operation of a biometric system, types of biometrics, benefits of biometrics, verification versus identification, performance of a biometric system, biometric characteristics, Applications of biometrics.

Module 2: Fingerprint recognition and verification
Introduction, Fingerprint sensing and database creation, Fingerprint segmentation, Feature extraction -Local ridge orientation and frequency, Minutiae extraction, matching -Correlation-based techniques, Minutiae-based methods, finger print classification, Finger print recognition and verification, performance evaluation. challenges in fingerprint biometric, current literatureon fingerprint.

Module 3: Face recognition and verification
Introduction, face sensing and database creation, face detection, feature extraction -subspace techniques-Eigen faces, Fisher faces and Laplacian faces and their variants, face recognition and verification, performance evaluation, challenges in face biometric, current literatureon face recognition.

Module 4: Signature recognition and verification
Introduction, Types of signatures -offline and online signature. Feature extraction –Parameter and function based features, signature matching schemes, Signature recognition and verification, performance evaluation, challenges in signature biometric, current literatureon signature.

References:
1. Jain A. K., Flynn P and Ross A. A. Handbook of biometrics. Springer, 2008.
2. Wayman J., Jain A. K., Maltoni D and Maio D. Biometric Systems –Technology, Design and Performance evaluation. Springer, 2005.
3. Gregory P and Simon M A. Biometrics for dummies. Wiley Publishing Inc, 2008.