Course Code	CSE441/541
Course Name	Advanced Biometrics
Credits	4
Course Offered to	UG/PG
Course Description	This course will introduce advanced topics in biometrics to students. The course will involve studying algorithms for image quality, feature extraction and matching. To understand the concepts involved, topics from machine learning, image processing and pattern recognition will also be presented. The projects will enable them to design, implement, and analyze biometric systems.

Pre-requisites		
Pre-requisite (Mandatory)	**Pre-requisite (Desirable)**	**Pre-requisite(other)**
	MTH201 Probability & Statistics	
	CSE343/CSE543 Machine Learning	
Pattern Recognition or Machine Learning		

Post Conditions*(For suggestions on verbs please refer the second sheet)			
CO1	**CO2**	**CO3**	**CO4**
The students will get an overview of biometrics and in depth information regarding biometric modalities	The students will be equipped with the necessary tools to design, implement and evaluate biometric systems	The student will be able to analyze existing theories, methods and interpretation in the field of biometrics and working independently on solving theoretical and practical biometrics	

Weekly Lecture Plan			
Week Number	**Lecture Topic**	**COs Met**	**Assignment/Labs/Tutorial**
1	Introduction to Biometrics and Modalities	C01	Paper Reading
2	Performance Evaluation of Biometric Systems	C01, C02	Coding assignment
3,4,5,6,7	Physiological Biometrics: Face, Fingerprint and Iris	C01, C02, C03	Coding assignment and paper reading
8,9	Behavioral Biometrics	C01, C02, C03	Coding assignment and paper reading
10,11	Continuous Authentication	C01, C02, C03	Coding assignment and paper reading
12,13	Privacy and Template Protection, Presentation Attacks	C01, C02, C03	Coding assignment

*Please insert more rows if required

Weekly Lab Plan			
Week Number	**Laboratory Exercise**	**COs Met**	**Platform (Hardware/Software)**
Course does not have a lab component			

*Please insert more rows if required

Assessment Plan	
Type of Evaluation	**% Contribution in Grade**
Quiz	10
Assignment	25
Paper presentation	10
Project	40
Mid-sem	10
End-sem	10

*Please insert more row for other type of Evaluation

Resource Material	
Type	**Title**
Reference	Handbook of Biometrics, Jain, Flynn, Ross, 2008
Internet Resource	Will be provided in class