



COURSE SYLLABUS CIS6930.011F19
Biometric Authentication on Mobile Devices
3 Credit Hours
College of Engineering
Department of Computer Science and Engineering

Semester: Fall 2019
Class Meeting Days: Monday, Wednesday
Class Meeting Time: 3:30PM – 4:45PM
Class Meeting Location: ISA 3050
Instructor: Tempestt Neal
Office Location: ENB 310

Office Hours: Monday 11AM-1PM, Thursday 12:30PM-2:30PM
- **Two 20-minute slots; please reserve a slot 12 hours prior.**
- **Request a cancellation as soon as you realize you cannot / do not need to / do not want to / should not attend.**

Request an appointment:
https://docs.google.com/spreadsheets/d/111NUk10aXU7cUtp6H66HkUycefytJF_IKwHwBHVvhQM/edit?usp=sharing

Phone Number: 813-396-9353
Email: tjneal@usf.edu

TA: Sayde King, saydeking@mail.usf.edu
TA Office Hours: Tues / Thurs 1PM-3PM
TA Office: ENB 329

Classes: August 26 – December 4
Reading Days: December 5 and 6

I. University Course Description

Topics include foundations of biometric systems, mobile biometric modalities and features, and adversary attacks.

II. Course Prerequisites

None.

III. Course Objectives

The objectives of this course are to develop students':

- (1) knowledge of biometric foundations.
- (2) understanding of behavioral and physical biometric modalities.
- (3) knowledge of data acquisition techniques on mobile platforms.
- (4) abilities to build and evaluate a biometric system.
- (5) abilities to relate classwork to published literature.
- (6) awareness of spoofing and common anti-spoofing techniques.
- (7) awareness of challenges in commercial systems.
- (8) abilities to prepare and develop a literature review.
- (9) abilities to identify research gaps.

IV. Student Learning Outcomes

Students will demonstrate the ability to:

- (1) define the modules and properties of biometric systems.
- (2) compare biometric modalities.
- (3) collect and preprocess biometric data.
- (4) implement a biometric system.
- (5) identify prominent themes in published literature.
- (6) identify various vulnerabilities in biometric systems.
- (7) communicate practical challenges.
- (8) summarize published literature.
- (9) propose future work for addressing open challenges.

V. Required Texts and/or Readings and Course Materials

- (1) Guo G, Wechsler H. Mobile Biometrics. London : Institution of Engineering and Technology, 2017. ISBN 9781785610967.
Available via USF Library:
<https://ebookcentral.proquest.com/lib/usf/detail.action?docID=5123268>
- (2) Jain AK, Ross AA, Nandakumar K. Introduction to Biometrics. New York : Springer, c2011.; 2011.
Available via USF Library:
<http://ezproxy.lib.usf.edu/login?url=http://dx.doi.org/10.1007/978-0-387-77326-1>
- (3) Zobel, J. (2014). Writing for computer science. Springer. Available via USF Library:
<http://ezproxy.lib.usf.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=catalog00847a&AN=usflc.033918869&site=eds-live>

VI. Grading Scale

Final grades will not be curved.

Final grades will be rounded to the nearest tenth.

Grading Scale (%)	
94-100	A
90 – 93.9	A-
87 – 89.9	B+
84 – 86.9	B
80 – 83.9	B-
77 – 79.9	C+
74 – 76.9	C
70 – 73.9	C-
67 – 69.9	D+
64 – 66.9	D
60 – 63.9	D-
0 – 59.9	F

VII. Grade Categories and Weights

Assessment	Percent of Final Grade
Literature Review	40%
Projects	20%
Homework	10%
Midterm	15% (10/14/19)
Final Exam	15% (12/11/19, 12:30PM-2:30PM, ISA 3050)

VIII. Course Schedule (* Note: The Schedule is subject to revision)

Week	Date	Topic
1	8/26	Course Introduction and Foundations of Biometrics
2	9/2	Overview of Python and ML
3	9/9	Overview of Python and ML (cont.)
4	9/16	ROC/DET Curves, Score Distribution Plots, Calculating Error
5	9/23	Face – Building a dataset (Using a webcam) and feature extraction
6	9/30	Voice – Building a dataset (Using a microphone) and feature extraction
7	10/7	Fusion (Face + Voice)
8	10/14	Midterm (10/14/19)
9	10/21	Project I Presentations
10	10/28	Touch and keystroke – Building a dataset
11	11/4	Touch and keystroke – Feature extraction
12	11/11	Gait
13	11/18	Usage data
14	11/25	Adversary Attacks and Countermeasures
15	12/2	Project II Presentations
16	12/9	Final exam (12/11/19, 12:30PM-2:30PM)

IX. Course Policies: Grades (as applicable)

Late Work Policy: **Late work will not be accepted. Your work is considered late after 10 minutes of the time it is due. If your assignment is due at 11:59:00 PM, it is considered late any time after 12:09:00 AM.** In case of documented hardship, grades may be adjusted. Hardships must be documented to the instructor by the appropriate USF service (e.g., Counseling Center, Health Services, etc.).

Grades of "Incomplete": The current university policy concerning incomplete grades will be followed in this course. For USF Tampa undergraduate courses and USFSM undergraduate and graduate courses: An "I" grade may be awarded to a student only when a small portion of the student's work is incomplete and only when the student is otherwise earning a passing grade. The time limit for removing the "I" is to be set by the instructor of the course. For undergraduate students, this time limit may not exceed two academic semesters, whether or not the student is in residence, and/or graduation, whichever comes first. For graduate students, this time limit may not exceed one academic semester. "I" grades not removed by the end of the time limit will be changed to "IF" or "IU," whichever is appropriate.

Make-up Exams Policy: If a student cannot be present for an examination for a valid reason (validity to be determined by the instructor), a make-up exam will be given only if the student has notified the instructor in advance that s/he cannot be present for the exam. Make-up exams are given at the convenience of the instructor.

Group Work Policy: Everyone must take part in group work. All members of a group will receive the same score; that is, the project is assessed, and everyone receives this score.

Final Examinations Policy: All final exams are to be scheduled in accordance with the University's final examination policy.

X. Course Policies: Technology and Media

Canvas: This course will be use USF's learning management system (LMS), Canvas. If you need help learning how to perform various tasks related to this course or other courses being offered in Canvas, please view the following videos or consult the Canvas help guides. You may also contact USF's IT department at (813) 974-1222 or help@usf.edu.

Laptop Usage: Laptops should be brought to class for in-class coding tasks.

XI. **Course Policies: Student Expectations**

Policies about disability access, religious observances, academic grievances, academic misconduct, and several other topics are governed by a central set of policies, which apply to all classes at USF:

<https://www.usf.edu/provost/faculty-info/core-syllabus-policy-statements.aspx>

Attendance Policy: Students are expected to attend classes. I will accommodate excused absences by making arrangements with students ahead of time (when possible) or by providing a reasonable amount of time to make up missed work.

Professionalism Policy: Per university policy and classroom etiquette; mobile phones, iPods, etc. **must be silenced** during all classroom and lab lectures. Those not heeding this rule will be asked to leave the classroom/lab immediately so as to not disrupt the learning environment. Please arrive on time for all class meetings. Students who habitually disturb the class by talking, arriving late, etc., and have been warned may suffer a reduction in their final class grade.

End of Semester Student Evaluations: All classes at USF make use of an online system for students to provide feedback to the University regarding the course. These surveys will be made available at the end of the semester, and the University will notify you by email when the response window opens. Your participation is highly encouraged and valued.

Food and Drink Policy: Please adhere to the firm policy of no beverages (other than bottled/capped water), food, tobacco products, or like items in the classroom. Your understanding of the necessity for this policy and cooperation will be greatly appreciated. This policy will be strictly enforced.

Turnitin.com: In this course, turnitin.com will be utilized. Turnitin is an automated system which instructors may use to quickly and easily compare each student's assignment with billions of web sites, as well as an enormous database of student papers that grows with each submission. After the assignment is processed, as instructor I receive a report from turnitin.com that states if and how another author's work was used in the assignment. For a more detailed look at this process visit <http://www.turnitin.com>.

The Writing Studio: The Writing Studio is a free resource for USF undergraduate and graduate students. At the Writing Studio, a trained writing consultant will work individually with you, at any point in the writing process from brainstorming to editing. Appointments are recommended, but not required. For more information or to make an appointment, visit <http://www.lib.usf.edu/writing/>, stop by LIB 2nd Floor, or call 813-974-8293.