<table>
<thead>
<tr>
<th>Course name</th>
<th>ECE 51000 Introduction to Biometrics</th>
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<tr>
<td>Credit and contact hours</td>
<td>(3 cr.) Class 3</td>
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<tr>
<td>Course coordinator’s name</td>
<td>Paul Salama</td>
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<td>Textbook</td>
<td>None</td>
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| Course information | **2014-16 IUPUI Campus Bulletin description:**
ECE 51000 Introduction to Biometrics (3 cr.) P: ECE 30200 or graduate standing. Class 3. Basic concepts of biometrics, biometrics systems, and fundamental theories in biometrics; help student learn how to design and develop a biometric system for multi-level security applications. Topics include introduction to biometrics, face recognition, iris recognition, fingerprint recognition, speaker recognition, other biometrics, multimodal biometrics, issues and concerns in biometrics, and future biometrics. |
| Prerequisites/ Co-Requisite | ECE 30100 and ECE 30200; or Graduate Standing |
| Required, Elective, or Selected Elective: | EE Elective, CE Elective |
| Goals for the course | Upon successful completion of the course, students should be able to
1. Understand the scope and options for biometrics. [a, c, g, k]
2. Familiar with various biometric technologies and systems. [a, c]
3. Select and preliminary design of a biometric system for positive human identification for specific application scenario. This biometric system can be unimodal or multimodal. [a, b, c, e, g, k]
4. Evaluate of various biometric systems. [a, c, j, k]
5. Have working knowledge of each of the biometric technologies covered in lectures. [a, c, i, k] |
| List of topics to be covered | 1. Introduction to Biometrics (1 class)
2. Brief introduction of digital image processing and Matlab in biometric image/signal processing (3 classes)
3. Face recognition algorithms and systems (5 classes)
4. Fingerprint recognition algorithms and systems (3 classes)
5. Iris recognition algorithms and systems (6 classes)
6. Speech & speaker recognition algorithms and systems (4 classes)
7. Brief introduction of other biometrics (2 classes):
   a. Vein recognition
   b. Hand Geometry
   c. Palm recognition
   d. Gait recognition
   e. Other biometrics |
| 8. Multimodal biometrics (2 classes) |
| 9. Privacy issues and other aspects of biometrics (1 class) |
| 10. Applications of biometrics & future trends (1 class) |
| 11. Exams and quizzes (2 classes and Final exam period) |

| Syllabi approved by | Paul Salama |
| Date of approval    | 03/05/2016  |