# Rutgers University
## Electrical and Computer Engineering Department

**ECE 499/593**

**Wearable and Implantable Electronic Systems**

**Index Number**
- Undergrads: 0112618 (14:332:493:01),
- Graduate Students: 0114247 (16:332:599:01)

**Date:**
- Fall 2016

**Credits:**
- 3

**Time:**
- 10:20 AM – 1:20 PM Tuesdays

**Location**
- CORE 538

**Grading**
- 15% Paper Presentation #1,
- 15% Paper Presentation #2,
- 15% Paper Presentation #3,
- 15% Mandatory Guest Lecture Attendance,
- 10% Pop Quizzes,
- 30% Final Project Report and Presentation

**Final Exam**
- None

**Instructor**
- Mehdi Javanmard, PhD.

**Course TA:**
- TBA

**Textbook:**
- Class slides will be available on the class website.
- A series of Journal Manuscripts and Conference Proceedings will be assigned for reading and in class discussions.

**Prerequisites:**
- 14:332:361 Electronic Devices

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**Description of Course:** This course will cover the fundamentals of next generation wearable and implantable technologies from the device level to the system level.

**Course intent**

- Explain fabrication techniques for wearable and implantable systems.
- Describe the fabrication and operating principles of common wearable systems for biomedical applications.
- Analyze performance; including sensitivity, noise, bandwidth, and dynamic range for common wearable and implantable systems a variety of applications.
- Design interface circuitry, and identify appropriate signal processing and data processing algorithms for a given application.
- Evaluate the methods, results, and conclusions from a technical paper and extract relevant details for a performance comparison.
- Recommend appropriate process steps for a device based on tolerances, size, cost, operating conditions, and capabilities.
- Describe design tradeoffs in selecting, developing or redesigning wearable and implantable solutions.
<table>
<thead>
<tr>
<th>Week Number</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1</td>
<td>Introduction</td>
</tr>
<tr>
<td>Week 2</td>
<td>Molecular Biology (DNA, Proteins, Cells) and Physiology (Cardiovascular, Brain)</td>
</tr>
<tr>
<td>Week 3</td>
<td>Basic Electronics Part I (Impedance, Electrodes, Characterization)</td>
</tr>
<tr>
<td>Week 4</td>
<td>Basic Electronics Part II (Circuit Interfaces to physiological monitoring systems)</td>
</tr>
<tr>
<td>Week 5</td>
<td>Micro- and Nanofabrication Fundamentals</td>
</tr>
<tr>
<td>Week 6</td>
<td>Wearable Technologies Part I</td>
</tr>
<tr>
<td>Week 7</td>
<td>Wearable Technologies Part II</td>
</tr>
<tr>
<td>Week 8</td>
<td>Wearable Technologies Part III</td>
</tr>
<tr>
<td>Week 9</td>
<td>Implantable Technologies Part I</td>
</tr>
<tr>
<td>Week 10</td>
<td>Implantable Technologies Part II</td>
</tr>
<tr>
<td>Week 11</td>
<td>Implantable Technologies Part III</td>
</tr>
<tr>
<td>Week 12</td>
<td>Energy Sources for Wearable and Implantable Systems</td>
</tr>
<tr>
<td>Week 13</td>
<td>Wearable Systems: Signal Processing, Data Processing, and Communications</td>
</tr>
<tr>
<td>Week 14</td>
<td>Wearable Environmental Monitoring Technologies</td>
</tr>
<tr>
<td>Week 15</td>
<td>Review and Final Project Presentation</td>
</tr>
</tbody>
</table>