Fall 2018: Outline of CSE Standard Course Syllabi

- **Course number:** EECS 410
- **Course title:** Mobile Health (mHealth) Technology
- **Prerequisites:**
  
  M.S and Ph.D. students who have strong Java programming skills.

- **Course objectives:**

  1) Draw the general model of a personalized health system, describe the function of each of the blocks, define technical terms relevant to the model, and the data mining modules.

  2) Design mobile app to transmit medical and health data across wireless channels and understand the wearable sensor sensing, sampling, and communication principles.

  3) Survey state-of-art wireless-sensor-based hardware. This includes wearable IMU, force sensor, head mounted display, and other wearable sensor design.

  4) Learn to search scientific studies using CWRU library resources and use Latex for technical writing.

- **Course description:** Advances in communications, computer, and medical technology have facilitated the practice of personalized health, which utilizes sensory computational communication systems to support improved and more personalized healthcare and healthy lifestyle choices. The current proliferation of broadband wireless services, along with more powerful and convenient handheld devices, is helping to introduce real-time monitoring and guidance for a wide array of patients. Indeed, a large research community and a nascent industry is beginning to connect medical care with technology developers, vendors of wireless and sensing hardware systems, network service providers, and data management communities. Students in the course and labs will explore cutting-edge technologies in 1) mobile computing technologies and 2) healthcare/medical applications, through lectures, lab assignments, exams, presentations, and final projects. The overall course objectives are to introduce electrical engineering, computer engineering, and computer science students the fundamentals of wearable sensors, mobile health informatics, big data analysis, Internet of Things (IoT), and human computer interaction considerations.

- **Time and day of class meetings:** MW 12:45pm – 2:00pm

- **Class meeting location:** Rockefeller 309
• **Instructor name:** Ming-Chun Huang

• **Instructor phone number and email and office location:**

  TEL) 216.368.0397  
  Email) ming-chun.huang@case.edu  
  Office) Glennan 514B

• **Instructor office hours:** MW 2:00pm – 3:00pm or by appointment

• **Grading policy** *(homework, tests, quizzes, number, dates, percentage contribution to grade, etc.)*

  Total 100 points *(20% off for any late submission within a week)*

  - Labs (6 projects, 10%, 15%, 10%, 15%, 10%, 15%) – 75%
  - Final Comprehensive Exam – 10%
  - Presentation and Final Reports – 15%

• **Planned topics**

  - Overview mHealth Technology and Applications.
  - Mobile Computing and Application Development using Android
  - Android User Interface and Data Collection
  - Mobile-Health: Using Mobile Computing for Remote Monitoring
  - Machine Learning Algorithms for Data Analysis
  - Vision-based Technologies for Human Computer Interaction
  - Big Data Analysis Tool and Evaluation Metrics
  - Smartphone and Microcontroller Communication
  - Bless and Curse: Limitations of the Mobile and IoT Environment

• **Reports (Labs and the Final project)**

  - Cover page (report title, team#, student name and ID) and report content should be combined in a single PDF file.

  - Source files related to your writing should be archived and zipped into a single folder, including: Latex .tex and .bib files, setting files (.cls), figures, etc.

• **Groups**

  Each group should be made up of two students. Labs and the associated reports are viewed as team assignments, but Presentation, Final Report, and Final exam will be evaluated as individual assignments.
• **Cheating**
  Cheating in no form will be tolerated. All students found to be cheating will be reported.

• **Course Website**
  You will need to download your slides, assignments, final projects, and any other necessary information (such tutorials and miscellaneous supplements) from the course website. **It is your responsibility to check the course website for any important announcement.**

• **References**
  Internet is a good source for quick info. Nevertheless, **all material must be properly referenced**. Plagiarism will not be tolerated. Check the materials section of the website for additional handouts that will be necessary to complete the projects.

  **Recommended readings:**

• **CSE Academic Integrity Statement**

  **Academic Integrity Policy:** All students in this course are expected to adhere to University standards of academic integrity. Cheating, plagiarism, misrepresentation, and other forms of academic dishonesty will not be tolerated. This includes, but is not limited to, consulting with another person during an exam, turning in written work that was prepared by someone other than you, making minor modifications to the work of someone else and turning it in as your own, or engaging in misrepresentation in seeking a postponement or extension. Ignorance will not be accepted as an excuse. If you are not sure whether something you plan to submit would be considered either cheating or plagiarism, it is your responsibility to ask for clarification. For complete information, please go to

  https://students.case.edu/community/conduct/aiboard/policy.html

  **Disability Resources:** ESS Disability Resources is committed to assisting all CWRU students with disabilities by creating opportunities to take full advantage of the University's educational, academic, and residential programs. For further information, please go to

  https://students.case.edu/academic/disability/