Department of Media Study, University at Buffalo

DMS 461 / ARC 571, Fall 2013

# Voids in the Internet of Things

## (Methods of Making II)

Instructor: Professor Marc Böhlen (marcbohlen@acm.org)
Registration #14061 / 21803
Mon 13:00 – 17:00; office hours by appointment

**Course description:**
This course gives students a media-centric overview of concepts and technologies underlying the Internet of Things (IoT). The course has two separate but related parts. One part is discursive and seeks to position the IoT as a new kind of design challenge, a next step in 'urban design' that knows no national boundaries. In this approach we will focus on the IoT as an opportunity for data interventions in the public realm.

The second part addresses some of the important technologies enabling the IoT, including data collection, programming and analysis. Students will be exposed to data acquisition through microprocessors and sensors (Arduino and Raspberry Pi), database programming (Postgresql and Python) and server side data management (cloud services). Students will work in teams to conceive an IoT concept and then implement particular aspects of the design as a prototype. Projects presented at the end of the semester are evaluated by their conceptual strength as well as by their implementation details.

**Course materials:**
All materials are available on the course website
www.realtechsupport.org/RESEARCH!/courses/IoTvoids.html

**Requirements:**
Graduate standing, curiosity

**Deliverables:**
a) active participation in class discussions and exercises.
b) semester project

**Grading:**
a) 15%, b) 85%

**Learning objectives:**
1) basic coding ability in processing and python
2) formulation and visualization of a project idea within the Internet of Things domain
3) execution of a specific detail of this design

**Assessment:**
1) these skills will be assessed during in class mini-exercises.
2) this ability will be assessed in the final project.
3) this ability will be assessed in the final project.

**Course schedule (subject to minor changes):**

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| W1 | August 26 | introduction |
| | August 28 | Arduino setup |
| W2 | September 2 | *No class (Labor Day)* |
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| W3 | September 9 | Arduino + Processing tutorial |
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| W4 | September 16 | Computing languages overview |
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| W5 | September 23 | Python tutorial |
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| W6 | September 30 | Sensing and electronics |
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| W7 | October 7 | Sensing and electronics |
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| W8 | October 14 | Raspberry Pi tutorial |
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| W9 | October 21 | Raspberry Pi tutorial |
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| W10 | October 28 | Data and algorithms |
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| W11 | November 4 | Data and algorithms |
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| W12 | November 11 | Data and databases (Postgresql tutorial) |
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| W13 | November 18 | Cloud computing – **semester proposal due** |
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| W14 | November 25 | Cloud computing |
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| W15 | December 2 | Project development |
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| W16 | December 9 | Semester project presentation |
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## DMS Policies:

- Students are entitled to a course syllabus with course content, meeting times, course requirements, grading criteria, statements on academic integrity, disabilities, sexual harassment
- Criteria for grading of projects and papers should be made explicit before the work is due; formats for examinations should be made explicit prior to their administration.
- All students must meet the academic requirements stated in the course syllabus. This includes papers, projects, class participation, and laboratory assignments that count toward the final grade.
- Late work is accepted only at the discretion of the instructor.
- Students who fail to adhere to punctuality or miss classes will see their grade impacted accordingly.
- Incomplete grades can be requested but remain at the discretion of the instructor. If request is approved, faculty member and student must complete and sign the "Departmental Request for Grade of Incomplete" form *http://src.buffalo.edu/pdf/RequestforIncompleteGrade.pdf*
- Students must adhere to DMS equipment access and usage rules as outlined in the Equipment Room Policy - *http://mediastudy.buffalo.edu/equipmentpolicy.php*
- Weapons are not allowed on campus. If students are planning a production that involves using anything which could be interpreted as a weapon they must obtain written permission from the University Police or the equivalent authority beforehand.
- No student can be required to view or respond to materials he/she deems offensive. Substitute materials will be made available, where possible.
- Collaboration is encouraged where appropriate and in accordance with the instructor's consent. However, plagiarism is never acceptable. Students must understand that they may under no circumstances knowingly represent as their own any idea or expression of an idea or work of another in any academic examination or term test, or in connection with any other form of academic work. If in doubt, the student should err on the side of caution and consult the instructor for guidance.
- If a student has a disability (physical or learning) the student may contact the Office of Disability Services *http://www.student-affairs.buffalo.edu/ods/* during the first two weeks of class. ODS will provide information on arrangements for reasonable accommodations.
- Sexual harassment of employees and students, as defined at *http://undergraduate-catalog.buffalo.edu/policies/conduct/nondiscrimination.shtml,* is contrary to university policy.
- Classes are to meet at the time and location listed in the schedule, unless changed with the consent of the entire class, and approved by the Department Chair.
- Instructors are to be available for consultation during office hours and, at the discretion of the instructor, by appointment.
- Instructors are required to justify a grade, if a student asks for this information. Instructors should retain academic records for one year after the end of the course.