

**Syllabus Template**

*This template provides a general outline for creating a syllabus for iSchool courses. Unless otherwise indicated elements are mandatory, [OPT] indicates optional elements. Explanations, suggestions, and exemplars are italicized.*

**Full Course Title: Social Sensing and Human-Cyber-Physical Systems**

**Course Number (ISXXX)** [OPT-include CRN typically 5-digit unique ID]: TBD (Graduate students level course)

**Semester Year** *(fall 2021)*

**Classroom and Class Time** [OPT indicate online/on campus]: TBD; Online (if the pandemic continues in the fall)

[OPT-date last updated]: Jan. 26, 2021

**Weekly contact hours required** (on-campus courses) "Course meets 2 times per week for 1:20 minutes, 3 times per week for 0:50 minutes, or 1 time per week for 2:50 minutes.": 1 time per week

This syllabus may be obtained in alternative formats upon request. Please contact the

instructor.

**Name of instructor: Dong Wang**

**Instructor’s office address and office hours: TBD**

**Instructor’s telephone number and email address**

*Indicate preferred contact method*

Phone: 217-244-6412

Email (preferred): [dwang24@illinois.edu](mailto:dwang24@illinois.edu)

**Name of any instructional assistants: TBD (I would like to keep the size of the class to be under 35 for the 1st time offering if possible (It is project based and I would like to discuss with each group about their projects throughout the semester).)**

**Assistants’ office addresses and office hours: TBD**

**Assistants’ telephone numbers and email addresses: TBD**

*Indicate preferred contact method*

**Course Description***[ideally one that expands on the catalog description]*

*[OPT] Note any course for which this is a pre-requisite. Note degree requirements met by taking course.*

Online social media (e.g., Twitter, Facebook), smartphones, and ubiquitous internet connectivity have greatly facilitated data sharing at scale, allowing for a firehose of human and sensor observations to pour in about the physical world in real-time. This opens up unprecedented challenges and opportunities in the field of social sensing and cyber-physical systems (CPS) where an important goal is to efficiently organize the real-time data feeds and accurately reconstruct the "states of the world", both physical and social. This course offers students the opportunity to learn the theoretical foundations, state-of-the-art techniques, and hands-on experience in this exciting area. The topic of this class is timely due to the increasing interest in online social networks, big data, and human-in-the-loop systems, as well as the proliferation of computing artifacts that interact with or monitor the physical world.

The class contains four main components: (i) the introduction to social sensing and cyber-physical systems; (ii) key technical challenges (e.g., big data analytics, system reliability, user mobility, energy, privacy, etc.); (iii) state-of-the-art techniques and systems (e.g., MapReduce/Hadoop, fact-finding, etc); (iv) emerging applications (smartphone-based crowdsensing, online social media sensing, participatory/opportunistic sensing, intelligent transportation, smart buildings, body area networks etc). The students will have the opportunities to work with real world social sensing and cyber-physical system problems.

**Pre- and Co-requisites**

*Note any pre- and/or co-requisites by course name and title or state “none.”*

**The pre-requisite of this course include: 1) graduate standing; 2) proficiency in the Python programming language.**

**# Credit hours: 4 credits**

*If variable credit is offered, note requirements/expectations for each level and how they will be accounted for in the final grade for all students, including graduate and undergraduate if applicable.*

**Student Learning Objectives or Outcomes***Describe learning objectives or outcomes that students will achieve if they complete the course.*

Upon successful completion of the course, students will:

* Understand the concept of social sensing and human-centric cyber-physical systems (CPS)
* Learn the theoretical foundation, state-of-the-art techniques, hands-on experience in social sensing and CPS
* Develop independent research projects to address the real-world exciting problem in social sensing
* Improve critical reading, discussion, presentational and team-working skills

**Course Context**

This course meets a number of learning outcomes connected to program objectives for

the \_\_\_ *Ph.D. in information sciences and MS/IM*\_\_ program, which in turn connect to larger iSchool and University of Illinois learning goals. (*Visual example at end)*

**Program Learning Outcomes**

*List relevant program learning outcomes, selected from here:*

https://uofi.box.com/s/sjujck8dtnqzaqe999f4g7qbbbyr9lhq

**MS/IM**

Graduates of the Illinois MS/IM program will be able to:

1. Apply foundational concepts, theories, and principles to problems of information management.
2. Communicate capably with diverse stakeholders.
3. Understand some of the larger socio-technical contexts in which information management occur.
4. Apply appropriate analytic approaches to the needs of a given problem and understand how aspects of logic, statistical analysis and broader domain knowledge can inform the interpretation and confidence in their analyses.
5. Have an awareness of the rapid change in the evolving information professions, the change in technologies and methods deployed, evolving ethical principles around information use, and the need to be continually learning new skills and sub-specializations in order to be a valuable member of a multidisciplinary team.

**PhD**

1. Global Information Consciousness
   1. **Definition:** The iSchool’s PhD students will discover how complex, interdependent global systems— including informational, social, and technical —affect and are affected by the characteristics and behavior of individuals, communities, and institutions.
2. Intellectual Reasoning and Knowledge
   1. **Definition:**The iSchool’s PhD students will acquire broad and deep expertise, including knowledge and skills, across subfields of information science. This includes the ability to engage with, plan, and conduct interdisciplinary research.
3. Creative Inquiry and Discovery
   1. **Definition:** The iSchool’s PhD students will apply their knowledge and skills to promote inquiry, discover solutions, generate new ideas, and communicate their research. This includes conducting independent and exemplary research, presenting their work in public settings, and publishing their work in peer-reviewed venue.
4. Social and Cultural Awareness and Understanding
   1. **Definition:** The iSchool’s PhD students will develop a critical and reflective orientation toward such social and cultural differences as race, indigeneity, gender, class, sexuality, language, and disability. This includes the ability to conduct ethical and responsible research.
5. Effective Leadership and Community Engagement
   1. **Definition:** The iSchool’s PhD students will build and sustain productive relationships to respond to information-centric, civic and social challenges at local, national, and global levels, creating positive impact in their communities. This includes the ability to convey their knowledge to others, e.g., by teaching or TA courses or workshops, and through outreach and service activities.

**iSchool Goal**This course meets the following goal:

* Maintain global leadership in education for the information professions

**University of Illinois Campus-Wide Learning Goals (*Choose all that apply*)**

*This course meets the following goals): I think it applies to all items below.*

1. Intellectual Reasoning and Knowledge

2. Creative Inquiry and Discovery

3. Effective Leadership and Community Engagement

4. Social Awareness and Cultural Understanding

5. Global Consciousness

**Course materials**

*For both required and recommended texts list: author(s), publisher, date of publication, plus where to obtain texts (including any found online)*

Recommended (but not required) Textbook:

Dong Wang, Tarek Abdelzaher and Lance Kaplan, " Social Sensing: Building

Reliable Systems on Unreliable Data", Morgan Kaufmann Publishers

(Elsevier), 1th Edition, ISBN-10: 0128008679; ISBN-13: 978-0128008676

The course will primarily be open discussions on the emerging topics in social sensing and cyber-physical systems area. The lectures will be supplemented with a variety of articles from top venues in this field (e.g., ACM and IEEE proceedings), project websites, and so forth.

**[OPT] Bio of Instructor**

Dong Wang is an associate professor in the School of Information Sciences (iSchool) at the University of Illinois Urbana-Champaign (UIUC). He received his Ph.D. in Computer Science from UIUC. His research interests lie in the area of social (human-centric) sensing, intelligence and computing, big data analytics, human cyber-physical systems, and smart city applications. Dong Wang has published over 100 technical papers in peer reviewed conferences and journals. His research on social sensing, intelligence and computing resulted in software tools that found applications in academia, industry, and government research labs. He authored a monograph “Social Sensing: Building Reliable Systems on Unreliable Data” published by Elsevier 2015. He received the NSF CAREER Award in 2019, Google Faculty Research Award in 2018, Young Investigator Program (YIP) Award from Army Research Office in 2017, NSF CRII Award in 2016, Wing Kai Cheng Fellowship from University of Illinois, and the Best Paper Award of IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS).

**Assignments and Methods of Assessment**

*This section should detail the grading policy (what constitutes an A, B, C, etc.) and also delineate the differences among variable credit assignments.*

1. All assignments are required for all students. Completing all assignments is not a guarantee of a passing grade.
2. All work must be completed in order to pass this class. Late or incomplete assignments will not be given full credit unless the student has contacted the instructor prior to the due date of the assignment (or in the case of emergencies, as soon as practicable).
3. Late or incomplete assignments will not be given full credit unless the student has contacted the instructor prior to the due date of the assignment (or in the case of emergencies, as soon as practicable).
4. Criteria for grading homework assignments include (but are not limited to) creativity and the amount of original work demonstrated in the assignment. However, students are permitted to use and adapt the work of others, provided that the following guidelines are followed:
   1. Use of other people’s material must not infringe the copyright of the original author, nor violate the terms of any licensing agreement. Know and respect the principles of fair use with respect to copyrighted material.
   2. Students must scrupulously attribute the original source and author of whatever material has been adapted for the assignment. Summarize the changes or adaptations that have been made. Make plain how much of the assignment represents original work.

Grade Distribution:

The assignments of the course mainly include 1) three individual based programming assignments; 2) one group-based in-class paper presentation; 3)one group-based semester-long research project. The grade distribution is as follows:

 10% of the grade will be assigned on individuals' active class participation and discussion of lecture topics and project presentations (Individual based).

 10% of the grade will be assigned on an in-class paper presentation on the selected topic by each group. (Group based)

 30% of the grade will be assigned on individuals' homework assignment (Individual based).

 50% of the grade will be determined by a group course project. This grade includes project proposal, mid-term report, mid-term project presentation, a final project presentation, a final project paper, and project updates and demonstrations (to the instructor). The project will implement some innovative social sensing model, service, system, or computing environment. Students will be allowed to work in groups of up to 3 on the project. (Group based)

 5%: Project discussion and updates

 5%: Project proposal

 5%: Mid-term project presentation

 10%: Mid-term project report

 10%: Final project presentation

 15%: Final project paper

**Note:**For individual based work, each student will receive the credit based on her/his own work. For the group based work, every student in the group will receive the same credit based on the group's work.

**Incomplete grades**

An exceptional request for an incomplete grade is most often granted to students encountering a medical emergency or other extraordinary circumstances beyond their control. Students must request an incomplete grade from the instructor. The instructor and student will agree on a due date for completion of coursework. The student must submit an Incomplete Form signed by the student, the instructor, and the student’s academic advisor to the front office: <https://uofi.app.box.com/s/sx7arobhr0gfw12teaetmp1qq32ifdrd>

Please see the Student Code for full details: <http://studentcode.illinois.edu/article3/part1/3-104/>

[OPT] *Exemplar language:*

1. *Incomplete (temporarily excused) grades: Students must initiate an incomplete request by contacting the instructor. The instructor and student must agree on a due date for completion of coursework. The student must fill out the Incomplete Form and get it signed by the student, the instructor, and the student’s academic advisor.*

**Grading Scale**

*Include the grading scale used in the course. If you permit A+ grades, or have other measures for grading please include them here. Suggested grading scale:*

94-100 = A

90-93 = A-

87-89 = B+

83-86 = B

80-82 = B-

77-79 = C+

73-76 = C

70-72 = C-

67-69 = D+

63-66 = D

60-62 = D-

59 and below = F

[OPT] **Course Policies**

*If the instructor has any strong concerns, policies or expectations, include them here, i.e. readings must be done before the class meets, tardiness is frowned upon, etc.*

Note that the readings for each week will help the students to be ready for the lecture and the discussion. The students are expected to read at least the abstract and introduction of the papers (the papers will be posted on the course website).

**Attendance/ Participation Policy**

The iSchool expects students to attend all classes except in cases of emergency.

Student Code on Attendance: <http://studentcode.illinois.edu/article1/part5/1-501/>

*Describe any other requirements for attendance, participation, class conduct, etc. Note any requirements regarding excused absences, late work, make-up exams, use of electronics, etc. Class discussion/participation grades must be based on the quality of what was said and how it added to the discussion, rather than the quantity of the participation by a student. Class discussion/participation should evaluate actual participation and not mere attendance. For a graduate level course, attendance is expected, and should not be counted toward the final grade.*

1. If you have an emergency, communicate with the instructor as early as possible to prevent negatively impacting your grade. Students missing more than one class—or who regularly arrive late or leave early—will not pass the class unless alternate arrangements are made.
2. Enrollment in this course includes expectation of regular attendance. If you find you must miss (or have missed) class, contact the instructor as soon as possible. Students  
   may miss one class session with no penalty; thereafter, each unexcused absence will result in your grade being lowered by one step (for example, an A- will become a B+). Repeated tardiness or leaving sessions early may be considered an unexcused absence unless alternate arrangements have been made with the instructor.

[OPT] *Example class conduct language:*

1. Students share some of the responsibility for fostering an inclusive classroom. Students are expected to be respectful of others' perspectives and lived experiences during class discussion.
2. Students are expected to demonstrate respect for the ideas and opinions of all other members of the class at all times. Failure to observe this course requirement can result in a failing course participation grade, and may result in a failing grade for the course.

**Academic Integrity**

The iSchool has the responsibility for maintaining academic integrity so as to protect the quality of education and research in our school and to protect those who depend on our integrity. Consequences of academic integrity infractions may be serious, ranging from a written warning to a failing grade for the course or dismissal from the University.

See the student code for academic integrity requirements: <http://studentcode.illinois.edu/article1/part4/1-401/>

[OPT] *Example academic integrity statements:*

1. *Please review and reflect on the academic integrity policy of the University of Illinois, http://studentcode.illinois.edu/article1/part4/1-401/ to which we subscribe. By turning in materials for review, you certify that all work presented is your own and has been done by you independently, or as a member of a designated group for group assignments.*
2. *If, in the course of your writing, you use the words or ideas of another writer, proper acknowledgement must be given (using \_\_BibTex\_\_\_\_ style). Not to do so is to commit plagiarism, a form of academic dishonesty or plagiarism. Please be aware that the consequences for plagiarism or other forms of academic dishonesty will be severe. Students who violate university standards of academic integrity are subject to disciplinary action, including a reduced grade, failure in the course, and suspension or dismissal from the University.*

A note on collaboration:

The programming assignments are to be completed individually.

The in-class presentation and course project will be completed in a group of 2 or 3 students.

You are encouraged to seek out and exploit external manuals, books, websites, and other documentation that will help you to complete the assignment and project, provided that you indicate what sources you have used. However, all software development, experimental work, and writing of results must be done solely by you and your partner(s).

This class follows the student code for academic integrity at UIUC. The graded work you do in this class must be your own. In the case where you collaborate with other students make sure to fairly attribute their contribution to your project.

You must read and abide by the student code for academic integrity requirements: <http://studentcode.illinois.edu/article1/part4/1-401/>

**Statement of Inclusion**

[**http://www.inclusiveillinois.illinois.edu/mission.html**](http://www.inclusiveillinois.illinois.edu/mission.html)

As the state’s premier public university, the University of Illinois at Urbana-Champaign’s core mission is to serve the interests of the diverse people of the state of Illinois and beyond. The institution thus values inclusion and a pluralistic learning and research environment, one which we respect the varied perspectives and lived experiences of a diverse community and global workforce. We support diversity of worldviews, histories, and cultural knowledge across a range of social groups including race, ethnicity, gender identity, sexual orientation, abilities, economic class, religion, and their intersections.

**Religious Observances**

In keeping with our Statement of Inclusion and Illinois law, the University is required to reasonably accommodate its students' religious beliefs, observances, and practices in regard to admissions, class attendance, and the scheduling of examinations and work requirements.

Religious Observance Accommodation Request form: <https://cm.maxient.com/reportingform.php?UnivofIllinois&layout_id=19>

Other accommodations may be available.

**Accessibility Statement**

To obtain accessibility-related academic adjustments and/or auxiliary aids, students with disabilities must contact the course instructor and the Disability Resources and Educational Services (DRES) as soon as possible. To contact DRES you may visit 1207 S. Oak St., Champaign, call 333-1970 (V/TTY), or e-mail a message to [disability@illinois.edu](mailto:disability@uiuc.edu).

[OPT] *Exemplar language:*

*To insure disability-related concerns are properly addressed from the beginning of the semester, I request that students with disabilities who require assistance to participate in this class contact me as soon as possible to discuss your needs and any concerns you may have. The University of Illinois may be able to provide additional resources to assist you in your studies through the office of Disability Resources and Educational Services (DRES). This office can assist you with disability-related academic adjustments and/or auxiliary aids. Please contact them as soon as possible by visiting the office in person: 1207 S. Oak St., Champaign; visiting the website:* [*http://disability.illinois.edu*](https://www.google.com/url?q=http://disability.illinois.edu&sa=D&ust=1554320104283000&usg=AFQjCNFMdQmkGPHmJdkMyVBNSJ_WvllGGA)*; calling (217) 333-4603 (V/TTY); or via e-mail*[*disability@illinois.edu*](mailto:disability@illinois.edu)*. NOTE: I do not require a letter from DRES in order to discuss your requested accommodations.*

**[OPT] Land acknowledgement Statement**

*Adopted by the University of Illinois in 2018*

More information: <https://chancellor.illinois.edu/land_acknowledgement.html>

As a land-grant institution, the University of Illinois at Urbana-Champaign has a responsibility to acknowledge the historical context in which it exists. In order to remind ourselves and our community, we will begin this event with the following statement. We are currently on the lands of the Peoria, Kaskaskia, Peankashaw, Wea, Miami, Mascoutin, Odawa, Sauk, Mesquaki, Kickapoo, Potawatomi, Ojibwe, and Chickasaw Nations. It is necessary for us to acknowledge these Native Nations and for us to work with them as we move forward as an institution. Over the next 150 years, we will be a vibrant community inclusive of all our differences, with Native peoples at the core of our efforts.

Land Acknowledgement Statement Suggested by Native American House:   
I/We would like to begin today by recognizing and acknowledging that we are on the lands of the Peoria, Kaskaskia, Piankashaw, Wea, Miami, Mascoutin, Odawa, Sauk, Mesquaki, Kickapoo, Potawatomi, Ojibwe, and Chickasaw Nations. These lands were the traditional territory of these Native Nations prior to their forced removal; these lands continue to carry the stories of these Nations and their struggles for survival and identity.   
As a land-grant institution, the University of Illinois has a particular responsibility to acknowledge the peoples of these lands, as well as the histories of dispossession that have allowed for the growth of this institution for the past 150 years. We are also obligated to reflect on and actively address these histories and the role that this university has played in shaping them. This acknowledgement and the centering of Native peoples is a start as we move forward for the next 150 years.

**[OPT] Resources to help you succeed:**

Instructors may wish to include a section with advice and resources for student success.

**[OPT] Library Resources**

<https://www.library.illinois.edu/infosci/>

**[OPT]** **Writing Resources**

For Undergraduate Students:

Undergraduate Academic Support & Tutoring

<https://go.ischool.illinois.edu/BSIStutoring>

Students will find a variety of Academic and Support Services on-campus and within the community. We encourage you to engage with these resources early and often. Most of these services are of no charge. Our iSchool offices are always happy to help connect you with the correct resources to ensure you are receiving support (ischool-is@illinois.edu). Your academic career, professional development, and your physical and mental health is very important to us.

The Writers Workshop (<https://writersworkshop.illinois.edu/>) provides writing support to students, including individual consultations, workshops, and resources. In response to the ongoing COVID-19 pandemic, all Writers Workshop consultations are currently offered online (<https://writersworkshop.illinois.edu/services/consultations/online/>).

To request disability-related accommodations for our services, please contact Dr. Carolyn Wisniewski at wow@illinois.edu or call 217-333-8796.

For Graduate Students:

The iSchool Writing Resources is the in-house writing support team for graduate students at the iSchool. They are here to help you with your writing and help you feel more comfortable and confident in your skills. The writing consultants are not professors or evaluators. They simply know the struggles of graduate and undergraduate-level writing and want to help you learn how to succeed and improve your writing skills. The iSchool writing consultants can help you with every step of the writing process. For detailed information on our services please visit our website:

<https://publish.illinois.edu/ischoolwritingresources/>

**Week-by-Week Topic and Assignment Schedule**

*This section should EITHER*

* *include chronological list of the topics that will be covered, readings, and assignments, including due dates OR*
* *link to an online learning management system (LMS) with that information.*

*Consider including a statement regarding possible changes, e.g., “Schedule and readings subject to change.”*

## Tentative Schedule

**Note:** Schedule and readings are subject to change.

|  |  |  |
| --- | --- | --- |
| **Week** | Lecture | **Materials** |
| Aug. 23 | Social Sensing and Cyber-Physical Systems Landscape | Reading: [Introduction to Social Sensing](https://www3.nd.edu/~dwang5/courses/spring20/papers/intro/socialsense.pdf) [Cyber-Physical Systems: The Next Computing Revolution](https://www3.nd.edu/~dwang5/courses/spring20/papers/intro/cps-raj.pdf) **Assignment 1 is out, due: Sept. 6** |
| Sept.6 | Classical CPS Challenges | Reading: [Liu and Layland Seminal Paper](https://www3.nd.edu/~dwang5/courses/spring20/papers/real-time/liu73.pdf) [Priority Inheritance Protocols](https://www3.nd.edu/~dwang5/courses/spring20/papers/real-time/pip.pdf) [A Comprehensive Suervey on Real-time Scheduling Theory](https://www3.nd.edu/~dwang5/courses/spring20/papers/real-time/survey.pdf) **Project Title, Abstract and Member List Due Friday, Sept. 3rd** |
| Sept. 13 | Classical CPS Challenges and Data Reliability | Reading: [Truth Discovery in Social Sensing](https://www3.nd.edu/~dwang5/courses/spring20/papers/truth-discovery/ipsn12.pdf) [Quantifying the Quality of Information](https://www3.nd.edu/~dwang5/courses/spring20/papers/truth-discovery/jsac13.pdf) [Using Humans as Sensors](https://www3.nd.edu/~dwang5/courses/spring20/papers/truth-discovery/ipsn14.pdf) **Assignment 2 is out, due: Sept. 27** |
| Sept. 20 | Project Kick-off Meetings | Please sign up your meeting slot on Doodle |
| Sept. 27 | Data Reliability and Information Overload Cont. | Reading: [Exploitation of Physical Constraints](https://www3.nd.edu/~dwang5/courses/spring20/papers/truth-discovery/rtss13.pdf) [Handling Conflicting Claims](https://www3.nd.edu/~dwang5/courses/spring20/papers/truth-discovery/tosn14.pdf) [Provenance-Assisted Social Signal Classification](https://www3.nd.edu/~dwang5/courses/spring20/papers/truth-discovery/jstsp14.pdf) **Project Proposal Due Friday, Noon, Oct. 1st** **Assignment 3 is out, due: Oct. 11** |
| Oct. 4 | Data Reliability and Online Social Media Sensing | Reading: [Earthquake Shakes Twitter Users](https://www3.nd.edu/~dwang5/courses/spring20/papers/media-sensing/twitter-earthquake.pdf) [From Tweets to Polls](https://www3.nd.edu/~dwang5/courses/spring20/papers/media-sensing/tweets-to-polls.pdf) [You Are Where You Tweet](https://www3.nd.edu/~dwang5/courses/spring20/papers/media-sensing/twitter-geolocation.pdf) [Groundhog Day: Near-Duplicate Detection on Twitter](https://www3.nd.edu/~dwang5/courses/spring20/papers/media-sensing/twitter-duplicate.pdf) |
| Oct. 11 | Project Mid-term Meetings | Please sign up your meeting slot on Doodle |
| Oct. 18 | Mid-term Project Presentations | **Mid-term Project Presentation** **Project Mid-term Report Due Monday, Noon, Oct. 22** |
| Oct. 25 | Online Social Media Sensing and Big Data Issues | Reading: [Big Table Paper](https://www3.nd.edu/~dwang5/courses/spring20/papers/big-data/Bigtable.pdf) [Map-Reduce Paper](https://www3.nd.edu/~dwang5/courses/spring20/papers/big-data/Mapreduce.pdf) [Data Cube Paper](https://www3.nd.edu/~dwang5/courses/spring20/papers/big-data/DataCubeGray.pdf) |
| Nov. 1 | Crowdsensing and Mobile Sensing | Reading: [A Survey of Mobile Sensing](https://www3.nd.edu/~dwang5/courses/spring20/papers/crowd-sensing/mcs-survey.pdf) [How Long to Wait: Bus Arrival Time Prediction](https://www3.nd.edu/~dwang5/courses/spring20/papers/crowd-sensing/bus-predict-mobysis12.pdf) [Automatically Characterizing Places](https://www3.nd.edu/~dwang5/courses/spring20/papers/crowd-sensing/csp-ubicom12best.pdf) |
| Nov. 8 | Automotive Sensing and Intelligent Transportation | Reading: [GreenGPS: A Participatory Sensing Fuel-Efficient Maps Application](https://www3.nd.edu/~dwang5/courses/spring20/papers/auto-sensing/GreenGPS.pdf) [SignalGuru: A Collaborative Traffic Signal Schedule Advisory Service](https://www3.nd.edu/~dwang5/courses/spring20/papers/auto-sensing/SignalGuru.pdf) [CarSpeak: A Content-Centric Network for Autonomous Driving](https://www3.nd.edu/~dwang5/courses/spring20/papers/auto-sensing/CarSpeak.pdf) |
| Nov. 15 | Medical Sensing, Privacy or Open Issues (Students In-class Presentation) | **In-class Paper Presentation** Reading: Medical Sensing: [Detecting Cocaine Use with Wearable Electrocardiogram Sensors](https://www3.nd.edu/~dwang5/courses/spring19/papers/medical/p1.pdf) [Sensor Selection for Energy-Efficient Ambulatory Medical Monitoring](https://www3.nd.edu/~dwang5/courses/spring19/papers/medical/p2.pdf) [Real-time Clinical Monitoring and Deterioration Warning](https://www3.nd.edu/~dwang5/courses/spring19/papers/medical/p3.pdf) [Context-Aware Assisted-Living and Residential Monitoring](https://www3.nd.edu/~dwang5/courses/spring19/papers/medical/p4.pdf) [Cyber-Physical Modeling of Implantable Cardiac Medical Devices](https://www3.nd.edu/~dwang5/courses/spring19/papers/medical/p5.pdf) [BiliCam: Using Mobile Phones to Monitor Newborn Jaundice](https://www3.nd.edu/~dwang5/courses/spring19/papers/medical/p6.pdf) [Contactless Sleep Apnea Detection on Smartphones](https://www3.nd.edu/~dwang5/courses/spring19/papers/medical/p7.pdf) [MyHealthAssistant: An Event-driven Middleware for Multiple Medical Applications on a Smartphone-Mediated Body Sensor Network](https://www3.nd.edu/~dwang5/courses/spring19/papers/medical/p8.pdf) [SADHealth: A Personal Mobile Sensing System for Seasonal Health Monitoring](https://www3.nd.edu/~dwang5/courses/spring19/papers/medical/p9.pdf) [Recognizing Academic Performance, Sleep Quality, Stress Level, and Mental Health using Personality Traits, Wearable Sensors and Mobile Phones](https://www3.nd.edu/~dwang5/courses/spring19/papers/medical/p10.pdf) Privacy: [ProtectMyPrivacy: Detecting and Mitigating Privacy Leaks on iOS Devices](https://www3.nd.edu/~dwang5/courses/spring19/papers/privacy/p1.pdf) [Cloud-Enabled Privacy-Preserving Collaborative Learning for Mobile Sensing](https://www3.nd.edu/~dwang5/courses/spring19/papers/privacy/p2.pdf) [Understanding Users' Mental Models of Mobile App Privacy through Crowdsourcing](https://www3.nd.edu/~dwang5/courses/spring19/papers/privacy/p3.pdf) [Privacy Manipulation and Acclimation in a Location Sharing Application](https://www3.nd.edu/~dwang5/courses/spring19/papers/privacy/p4.pdf) [Privacy-aware Regression Modeling of Participatory Sensing Data](https://www3.nd.edu/~dwang5/courses/spring19/papers/privacy/p5.pdf) [Privacy.Tag: Privacy Concern Expressed and Respected](https://www3.nd.edu/~dwang5/courses/spring19/papers/privacy/p6.pdf) [Privacy-Preserving Compressive Sensing for Crowdsensing based Trajectory Recovery](https://www3.nd.edu/~dwang5/courses/spring19/papers/privacy/p7.pdf) [A Privacy-Preserving Vehicular Crowdsensing-Based Road Surface Condition Monitoring System Using Fog Computing](https://www3.nd.edu/~dwang5/courses/spring19/papers/privacy/p8.pdf) [Location Privacy-Preserving Task Allocation for Mobile Crowdsensing with Differential Geo-Obfuscation](https://www3.nd.edu/~dwang5/courses/spring19/papers/privacy/p9.pdf) [AnonySense: Privacy-Aware People-Centric Sensing](https://www3.nd.edu/~dwang5/courses/spring19/papers/privacy/p10.pdf) [Is This Thing On?](https://www3.nd.edu/~dwang5/courses/spring19/papers/privacy/p11.pdf) |
| Nov. 22 | Fall Break |  |
| Dec. 6 | Body-Area Sensor Network | Reading: [Body Sensor Networks (BSN)](https://www3.nd.edu/~dwang5/courses/spring20/papers/bsn/BSNOverview.pdf) [BodyScope: A Wearable Acoustic Sensor for Activity Recognition](https://www3.nd.edu/~dwang5/courses/spring20/papers/bsn/BodyScope.pdf) |
| Dec. 13 | Final Project Presentations | **Final Project Presentation** **Final Project Paper Due Friday, Noon, Dec. 17** |

**Additional Resources:**

* Center for Innovation in Teaching & Learning
  + Purposes of a Syllabi,<https://citl.illinois.edu/citl-101/teaching-learning/resources/teaching-strategies/creating-a-syllabus>
  + Guidelines to the Organization and Contents of a Syllabus, <https://citl.illinois.edu/docs/default-source/default-document-library/organization-of-syllabus.pdf?sfvrsn=2>
  + CITL resources on grading:  [https://citl.illinois.edu/citl-101/measurement-evaluation/exam-scoring/assigning-course-grades](file:///C:\Users\kmcdowel\Library\Containers\com.microsoft.Word\Data\Downloads\%20https:\citl.illinois.edu\citl-101\measurement-evaluation\exam-scoring\assigning-course-grades)
  + Course and syllabus design: <http://cte.illinois.edu/resources/topics/course_plan.html>
* Student Learning Outcomes (SLOs): <https://provost.illinois.edu/assessment/learning-outcomes-assessment/illinois-student-learning-outcomes/>.
* University of Illinois Student Learning Outcomes https://provost.illinois.edu/assessment/learning-outcomes-assessment/assessment-at-illinois/campus-student-learning-outcomes/
* e<http://www.grad.illinois.edu/courses-syllabi>
* Inclusion by Design:
  + About: <https://www.facultyfocus.com/articles/course-design-ideas/inclusion-by-design-tool-helps-faculty-examine-teaching-practices/>
  + Tool: <https://drive.google.com/file/d/0B0ulz5eHbyjYdmY0eF9ablRRcHM/view>
* Diversity checklist: <https://racebridgesstudio.com/creating-a-classroom-diversity-checklist/>
* Graduate college guidelines for participation/discussion grades:<https://grad.illinois.edu/content/participation-grade-guidelines>

Course context visual example: